

20

SEP 13 2012



Chandler • Arizona
Where Values Make The Difference

MEMORANDUM Fire Department

DATE: SEPTEMBER 13, 2012

TO: MAYOR AND COUNCIL

THRU: RICH DLUGAS, CITY MANAGER *RD*

FROM: JEFF CLARK, FIRE CHIEF *jc*

SUBJECT: INTERGOVERNMENTAL AGREEMENT WITH THE CITY OF PHOENIX
FOR SHARING OF TELECOMMUNICATION FACILITIES

RECOMMENDATION: Staff recommends Council approve Amendment No. 01 to Intergovernmental Agreement No. 101746 between the City of Chandler and the City of Phoenix for the sharing of telecommunication communication facilities. Amendment No. 1 is an extension of the IGA for a second ten (10) year period.

BACKGROUND/DISCUSSION: In 2002, the Council approved the transfer of dispatching services for the Fire Department to the Phoenix Fire Regional Dispatch System. Included in this transfer was the participation of the Fire Department in the development of a valleywide 800 MHz radio system. The concept of a valleywide 800 MHz system has developed into the Regional Wireless Cooperative (RWC). In 2009 the City of Chandler entered into an IGA with the RWC to allow public safety (Police and Fire) in the City of Chandler to be part of a regional public safety radio network. As part of the original IGA in 2002, a 800 MHz radio tower was built at the Fire Department Training Facility to accommodate 800 MHz radio traffic in the City of Chandler. This tower continues to be a shared asset with the City of Phoenix and is necessary for participation in the RWC by both the Police and Fire Departments. This amendment extends this shared agreement for a second ten (10) year period.

FINANCIAL IMPLICATIONS: All parties continue to pay their prorated share of the costs to operate, maintain, and manage the RWC radio communication system.

PROPOSED MOTION: Move that Council approve Amendment No. 1 to Intergovernmental Agreement No. 101746 between the City of Chandler and the City of Phoenix for the sharing of telecommunication communication facilities.

Attachments: Intergovernmental Agreement No. 101746
Supplement Agreement No. 1 to IGA No. 101746
Amendment No. 1 to IGA 101746

**INTERGOVERNMENTAL AGREEMENT NO, 101746- AMENDMENT NO. 01
BETWEEN THE CITY OF PHOENIX
AND
THE CITY OF CHANDLER
FOR SHARING OF TELECOMMUNICATIONS COMMUNICATIONS FACILITIES**

This Amendment No. 001 ("AMENDMENT") is made and entered into by and between the City of Phoenix ("PHOENIX") and the City of Chandler ("CHANDLER"), when referenced together referred to as the "AGENCIES".

RECITALS

- A. PHOENIX and CHANDLER have the power to execute intergovernmental agreements pursuant to A.R.S. Section 11-952.
- B. PHOENIX has the power to execute intergovernmental agreements pursuant to Phoenix City Charter.
- C. CHANDLER has the power to execute intergovernmental agreements pursuant to Chandler City Charter
- D. On June 1, 2002, the AGENCIES entered into Intergovernmental Agreement No. 101746.
- E. By way of this AMENDMENT, the AGENCIES wish to extend the Term of the Agreement, and revise certain notice provisions.

NOW THEREFORE, it is agreed by and between parties as follows:

AMENDMENTS

- 1. **Section 3** of this AGREEMENT is deleted in its entirety and replaced with the following Section 3:
 - 3. **Site-Specific Supplemental Agreement.** Whenever an AGENCY desire to share telecommunications facilities owned by another AGENCY, such AGENCY shall give the other written notification specifying the site and the character of the equipment which the requesting AGENCY desires to install at the site. If the other AGENCY accepts the request, the AGENCIES shall then enter into a Site-Specific Supplemental Agreement which shall set forth all relevant terms and conditions with respect to the site. Each of the Site-Specific Supplemental Agreements shall make reference to this AGREEMENT and become supplements to this AGREEMENT. Amendments of this AGREEMENT, in accordance with Sections 3 and 9 shall automatically and without any further act of the participating AGENCIES modify any Site-Specific Supplemental Agreements which have been duly approved between the AGENCIES in accordance with this AGREEMENT. The AGENCIES will cooperate with each other in obtaining any necessary consents or right-of-way should the underlying ownership to the site be other than one of the AGENCIES who are parties to the Site-Specific Supplemental Agreement. Notwithstanding the preceding sentence, the cooperation of the AGENCY allowing the sharing of telecommunications facilities shall be non-monetary cooperation and any costs for acquisition of right-of-way or consents shall be the responsibility of the requesting AGENCY.
- 2. In Section 8 of the Agreement, the Term is extended for an additional period of ten (10) years beginning June 1, 2012 and ending at 11:59 p.m. on May 31, 2022.

3. **Section 9** of this AGREEMENT is deleted in its entirety and replaced with the following Section 9:
 9. **Option to Extend.** This AGREEMENT may be renewed for one additional ten (10) year term under the same terms and conditions as stated in this AGREEMENT or as set forth in any intervening amendments thereof. By extending this AGREEMENT, in the manner set forth herein and by the approval of each AGENCY'S governing body, such extension shall extend and modify any supplemental agreements that have been made between the same parties to this Agreement.
4. **Section 16** shall be deleted in its entirety.
5. In **Section 18** of the Agreement, notices intended for the City of Phoenix shall be addressed to the following and the Chandler Fire Chief will be added as an additional recipient of all notices:

Management Assistant I	Chandler Fire Chief
City of Phoenix- Regional Wireless Cooperative	Mail Stop 801
200 West Washington Street, 12 th Floor	PO Box 4008
Phoenix, AZ 85003	Chandler, AZ 85244-4008
Telephone: (602) 534-3781	Telephone: 480-782-2130
Fax: (602) 534-3644	Fax: 480-782-2150
6. All other terms and conditions of the Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have executed this Amendment 1 on the date last written below.

CITY OF PHOENIX, a municipal corporation **CITY OF CHANDLER**, a municipal corporation
 David Cavazos, City Manager

By: _____
 David Felix
 Assistant Chief Information Officer
 RWC Executive Director

By: _____
 Mayor

Date: _____

Date: _____

In accordance with A.R.S. Sec.11-952 this Amendment has been reviewed by the undersigned attorney who has determined that this Amendment is in proper form and within the powers and authority granted to the City of Phoenix under the laws of the State of Arizona.

In accordance with A.R.S. Sec.11-952 this Amendment has been reviewed by the undersigned attorney who has determined that this Amendment is in proper form and within the powers and authority granted to the City of Chandler under the laws of the State of Arizona.

 Phoenix City Attorney



 Chandler City Attorney

ATTEST:

ATTEST:

 City Clerk

 City Clerk

When recorded mail to:

Unofficial
Document

HOLD FOR PICK UP
CITY OF PHX. ACCT. #34

CAPTION HEADING: 101746

DO NOT REMOVE

This is part of the official document.

**INTERGOVERNMENTAL AGREEMENT NO. 101746
BETWEEN
THE CITY OF PHOENIX
AND
THE CITY OF CHANDLER
FOR SHARING OF TELECOMMUNICATIONS FACILITIES**

This Intergovernmental Telecommunications Facilities Sharing Agreement, (hereinafter called "AGREEMENT"), is made and entered into this 1st day of June, 2002 (the "Effective Date"), by and between the City of Phoenix, a municipal corporation duly organized and existing under the laws of the State of Arizona, located at 200 W. Washington Street, Phoenix, Arizona, (hereinafter called "Phoenix"), and City of Chandler, an Arizona municipal corporation (hereinafter called "Chandler"). The parties are sometimes referred to jointly herein as "AGENCIES" and individually as "AGENCY."

RECITALS:

- A. Phoenix and Chandler have the power to execute intergovernmental agreements pursuant to A.R.S. Section 11-952.
- B. Phoenix has the power to execute intergovernmental agreements pursuant to Chapter 2, Section 2(i) of the Phoenix City Charter.
- C. Chandler has the power to execute ^{Unofficial Document} intergovernmental agreements pursuant to Section 1.02 of the Chandler City Charter.
- D. Phoenix and Chandler desire to share telecommunications facilities owned by each AGENCY under the conditions set forth in this AGREEMENT.
- E. Phoenix and Chandler are agreeable to permitting such use under the terms and conditions set forth in this AGREEMENT.
- F. Potential electronic sites are limited, and in order to avoid a proliferation of site developments by a number of users, it is in the public interest for both AGENCIES to share those facilities that serve the common good.

AGREEMENT:

IT IS HEREBY AGREED, by and between the parties as follows:

1. Facilities Reciprocal Use. The AGENCIES agree to enter into Site-Specific Supplemental Agreements to share facilities owned by and/or operated by the other.
2. Subject to the terms specified in this agreement the AGENCIES each agree to allow the other AGENCY to use its telecommunications facilities, wherever

located, upon request of the other AGENCY and without a usage fee, except where the requested usage would cause substantial interference with the telecommunications operations or service of the AGENCY owning the facility, or where prohibited by this or other agreements.

3. Site-Specific Supplemental Agreement. Whenever an AGENCY desires to share telecommunications facilities owned by another AGENCY, such AGENCY shall give the other written notification specifying the site and the character of the equipment, which the requesting AGENCY desires to install at the site. If the other AGENCY accepts the request, the AGENCIES shall then enter into a Site-Specific Supplemental Agreement which shall set forth all relevant terms and conditions with respect to the site. Each of these Site-Specific Supplemental Agreements shall make reference to this AGREEMENT and become supplements to this AGREEMENT. The AGENCIES will cooperate with each other in obtaining any necessary consents or rights-of-way should the underlying ownership to the site be in a person other than one of the AGENCIES.
4. Consulting Fees. Any consulting fees incurred shall be paid by the AGENCY employing the consultant.
5. Frequency Protection. The responsibility for resolving interference problems shall be specified in the Site-Specific Supplement Agreement.
6. Use Approval Procedure. Reciprocal use by one AGENCY of another AGENCY'S telecommunications facilities shall be subject to the following conditions:
 - a. The AGENCY requesting the use of the facility shall submit a site installation plan to owner's telecommunications section, and obtain written approval from that section prior to installation.
 - b. The AGENCY requesting use of the facility shall bear the cost of purchasing, installing and maintaining the equipment necessary to complete the installation. Such AGENCY shall establish and maintain a budget according to its own rules and regulations.
 - c. The host AGENCY (of the facility) shall take reasonable precautions to protect the other AGENCY'S equipment located at the facility, but shall not be responsible for damage to, or loss of, such equipment whether by fire, theft or otherwise unless caused by negligence of the owner of the facility.
7. Reciprocal Use, Rights, and Obligations.
 - a. Each AGENCY shall have its transmitter frequencies examined by the telecommunications manager for the facility where the installation is to

take place to detect any potential cause of interference at the telecommunications site. Transmitters shall employ isolators, circulators, resonant cavities and other devices to reduce interference as the state-of-the art and good engineering practices dictate.

- b. Each AGENCY shall be responsible for obtaining and maintaining any licenses required by the Federal Communications Commission for the AGENCY'S telecommunication equipment.
 - c. Private vendor(s) on contract with an AGENCY shall be escorted by an employee of the City contracting with the vendor when working at the telecommunications site.
8. Term. The term of this AGREEMENT shall be for ten (10) years, commencing on June 1, 2002 and ending on June 1, 2012.
 9. Option to Extend. This AGREEMENT may be renewed for one additional ten (10) year term under the same terms and conditions as stated in this AGREEMENT and any intervening amendments thereof.
 10. Termination. The AGENCY owning a telecommunication facility may terminate this AGREEMENT or the other AGENCY'S use of any facility at any time by giving no less than 365 days written notice to the other AGENCY. The AGENCY not owning a telecommunication facility may terminate this AGREEMENT or its use of the other AGENCY'S telecommunication facility at any time by giving no less than ninety (90) days written notice to the other AGENCY. Either AGENCY may terminate this AGREEMENT at any time by giving no less than 365 days written notice to the other AGENCY. In the event this AGREEMENT is terminated, all Site Specific Supplemental Agreements will terminate automatically.
 11. Removal of Equipment. Equipment shall be removed or left in place and the facility restored as specified in the Site-Specific Supplement Agreement.
 12. Hold Harmless. Each AGENCY shall indemnify, defend and hold harmless each other AGENCY and its officers and employees from any liability, expense of damages resulting from the negligence of the AGENCY or its officers, employees, agents or contractors arising out of or in connection with this AGREEMENT.
 13. Successors and Assigns. This AGREEMENT shall be binding upon the AGENCIES and upon their successors and assigns. An AGENCY may assign its rights or obligations under this AGREEMENT.
 14. Modification. Any amendment or modification of this AGREEMENT shall be in writing and shall be effective only after signature of each of the AGENCIES. In

the event of any conflict in the provisions of this AGREEMENT and any Site-Specific Supplemental Agreement, the provisions of the Site-Specific Supplemental Agreement shall control.

15. Arbitration. In the event of a dispute under the AGREEMENT, the AGENCIES agree to use arbitration to the extent required under A.R.S. § 35-1518 and A.R.S. § 12-133.
16. Books. To the extent required by A.R.S. § 35-214, the parties agree to retain all books, accounts, reports, files and other records relating to the AGREEMENT and to make such records available at all reasonable times for inspection and audit by the City or the Auditor General of the State of Arizona, or their agents, during the term of and for a period of 5 years after the completion of the AGREEMENT.
17. Employment. The personnel of either Agency will not for any purpose be considered employees or agents of the other Agency and that each Agency assumes full responsibility for the actions of its personnel while performing services under this AGREEMENT, and shall be solely responsible for their supervision, daily direction and control, payment of salary (including withholding income taxes and social security), worker's compensation and disability benefits.
18. Notice. Any notice, consent or other communication ("NOTICE") required or permitted under this AGREEMENT shall be in writing and either delivered in person, sent by facsimile transmission, Unofficial Document deposited in the United States mail, return receipt requested, or deposited with any commercial air courier or express service addressed as follows:

If intended for the City of Chandler:

Communications Manager
 Mail Stop 604
 P.O. Box 4008
 Chandler, Az 85244-4008
 Telephone (480) 782-2221
 Fax (480) 782-2221

If intended for the City of Phoenix

Information Technology Department
 Wireless Communications Manager
 2441 S. 22nd Avenue
 Phoenix, AZ 85009
 Telephone: (602) 262-6973
 Fax: (602) 495-5698

20020806301

Notice shall be deemed received at the time it is personally served, on the day it is sent by facsimile transmission, on the second day after its deposit with any commercial air courier or express service or, if mailed five (5) days after the notice is deposited in the United States mail as above provided. Anytime period stated in a notice shall be computed from the time the notice is deemed received. Either party may change its mailing address, telephone or FAX number, or the person to receive the notice, by notifying the other party as provided in this section.

Notices sent by facsimile transmission shall also be sent by regular mail to the recipient at the above address. This requirement for duplicate notice is not intended to change the effective date of the notice sent by facsimile transmission.

- 19. Transactional Conflicts of Interest. Each AGENCY acknowledges that this AGREEMENT is subject to cancellation by the other pursuant to the provisions of Section 38-511, Arizona Revised Statutes.

IN WITNESS WHEREOFF, the parties have executed this Intergovernmental Agreement on the date first above written.

Attest:

CITY OF PHOENIX, an Arizona municipal corporation,
Frank Fairbanks, City Manager

Unofficial Document

DEPUTY

City Clerk

Gary D. Minton

By:

Danny W. Murphy
Chief Information Officer

Danny W. Murphy

7:02 JUL 30 AM '04
CITY CLERK DEPT.

Attest:

CITY OF CHANDLER, an Arizona municipal corporation,

Marla Padgett
City Clerk



By: *[Signature]*
Mayor

COPY

SUPPLEMENT AGREEMENT NO. 1
TO
INTERGOVERNMENTAL AGREEMENT NO. 101746
BETWEEN
CITY OF PHOENIX
AND
CITY OF CHANDLER
FOR SHARING OF COMMUNICATIONS FACILITIES

Pursuant to Intergovernmental Telecommunications Facilities Sharing Agreement No. 101746, ("Sharing Agreement") entered into as of June 1, 2002, the CITY OF PHOENIX and CITY OF CHANDLER enter into this site-specific agreement which shall be a Supplement No.1 (Supplement) to the Sharing Agreement.

1. SITE:

1.1. Chandler Fire Training Academy, located at 3550 S. Dobson Rd., Chandler, Arizona 85225 (Lat.33°15'14"N), (Long. 111°53'17"W). The City of Chandler, the property owner, grants Phoenix permission to use the existing property for the installation of 800 MHZ Trunked Radio Network transmitters, receivers, antennas and associated equipment identified in this supplement.

1.2. City of Chandler grants Phoenix permission to construct a 12' x 28' communications equipment building per the attached drawings. This building will be owned and operated by the City of Phoenix. Phoenix will also install a new 100' monopole and Emergency Generator to service the communications equipment building in the event of a commercial power outage. These items will remain Phoenix property and be maintained and operated by Phoenix. Electro-mechanical and HVAC equipment installed to service the new communications equipment building shall be provided by and maintained by Phoenix.

2. FACILITY OWNERSHIP: The City of Phoenix, as the facility installer, shall be the owner of the communications building, monopole, generator, and equipment installed as part of the 800 MHz Trunked Radio Network. If this agreement is ever terminated, Phoenix shall be responsible to remove all its facilities and restore the property to its pre-existing condition. If Chandler desires to retain the facility, a property transfer may be negotiated at the time of termination.

3. FREQUENCY USE:

3.1. Frequency Licensing: As stipulated in the Master Site Sharing Agreement each agency is responsible for the proper licensing of operating frequencies utilized at this site with the Federal Communications Commission (FCC).



3.2. Frequency Protection:

- 3.2.1. Phoenix shall be responsible for resolving interference problems generated by new Phoenix owned equipment which affect existing frequencies employed by Chandler, and shall bear the cost of such resolution. Phoenix will not be responsible for interference to Chandler equipment from Phoenix equipment that exists at the time any new Chandler equipment is added. Phoenix also agrees to work with Chandler to resolve any potential interference problems between their respective systems as Chandler transitions to its new Project 25 system.
- 3.2.2. Chandler shall be responsible for resolving interference problems generated by new Chandler owned equipment which affect existing frequencies employed by Phoenix, and shall bear the cost of such resolution. Chandler will not be responsible for interference to Phoenix equipment from Chandler equipment that exists at the time any new Phoenix equipment is added.
- 3.2.3. Phoenix and Chandler shall ensure that they are operating telecommunications equipment at this site in compliance with current licenses issued by the Federal Communications Commission (FCC). In the event that interference issues arise with either parties equipment and it is determined that the interfering party is in compliance with their FCC license then both parties will cooperate and work together to equitably resolve the problem per established FCC guidelines.

3.3. Frequency Assignment:

- 3.3.1. The Chandler Fire Training Academy site is an integral part of the City's 800 MHz Trunked Radio Network as a "Simulcast C Site". The site will consists of ten 800 MHZ NPSAC Channel assignments as follows:

VOICE CHANNELS:

<u>Channel Number</u>	<u>Frequency</u>
691	867.2000
704	867.3625
726	867.6625
742	867.8625
762	868.1375
774	868.2875
789	868.4750
751	867.9750
771	868.2500
785	868.4250

MICROWAVE FREQUENCIES:

- Chandler to DPS South Mountain.
- Chandler to Tempe Police South Substation.

4. EQUIPMENT INSTALLATION: (Drawing Package attached)

4.1. Phoenix will install the following facilities and equipment in the communications equipment building, (reference attached drawing package):

- 12' x 28' CMU Building
- 50 kW Diesel Generator
- 500 Gallon Fuel Tank
- Two 5 Ton HVAC units
- Remote Site Equipment (Simulcast C)
- 10 Channel Simulcast Linear Base Station
- 2 Harris Constellation Microwave radios & 48" & 72" Dishes
- TeNSr Channel Bank Equipment
- 3 Transmit Antennas
- 2 Receive Antennas
- 10 KW DC Power System

5. REMOVAL OF EQUIPMENT: Phoenix will remove all city owned facilities and equipment from Chandler property and return the property to its original condition upon termination of this agreement by either agency.
6. MAINTENANCE: Communications equipment installed at the site shall be maintained by the owner of the equipment. Chandler shall provide 24 hr/day access to the site by Phoenix personnel for preventive and corrective maintenance activities. Preventive and corrective maintenance performed by either agency that may affect the other agency's equipment or network systems shall be coordinated between the agencies prior to the start of work. Because this equipment supports Public Safety Operations network service interruptions shall be kept to an absolute minimum.
7. TERM: The term of this SUPPLEMENT shall be coterminous with the underlying AGREEMENT.
8. OPTION TO EXTEND: Agencies shall have the option to extend this site-specific agreement for one additional ten year term under the same terms and conditions as stated in this Supplement, the Basic Sharing Agreement, and any intervening amendments thereof. This agreement will automatically extend for the additional 10 year period unless terminated by either party per the terms of this supplement.
9. TERMINATION: Chandler, as the owner of the communications facility may terminate this Supplement or use of the facility at any time by giving no less than 365 days written notice to Phoenix. Phoenix not owning the property on which the City's communications facility is located, may terminate this Supplement at any time by giving no less than ninety (90) days written notice to Chandler. Unless sooner terminated, this Supplement and any extensions hereof shall automatically terminate upon termination of the Basic Sharing Agreement.

IN WITNESS WHEREOF, the parties have executed this Intergovernmental Agreement on the dates indicated below.

CITY OF PHOENIX
A municipal corporation
Frank A. Fairbanks, City Manager

By: _____
Danny W. Murphy
Chief Information Officer

Date: _____

ATTEST:

City Clerk

In accordance with A. R. S. Section 11-952 this Supplement has been reviewed by the undersigned attorney who has determined that this Supplement is in proper form and within the powers and authority granted to the City of Phoenix under the laws of the State of Arizona.

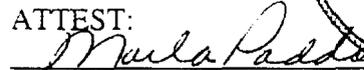
City Attorney

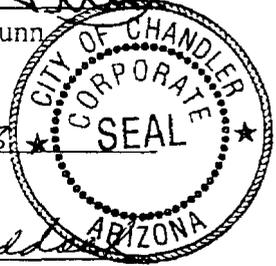
Date: _____

CITY OF CHANDLER
A municipal corporation

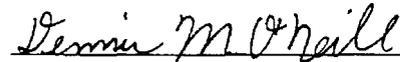
By: 
Mayor Boyd Dunn

Date: 2-28-2003

ATTEST:

City Clerk



In accordance with A. R. S. Section 11-952 this Supplement has been reviewed by the undersigned attorney who has determined that this Supplement is in proper form and within the powers and authority granted to the City of Chandler under the laws of the State of Arizona.


City Attorney

Date: 2-28-03



MOTOROLA

**ASTRO25 MULTI-ZONE SYSTEM
800 MHz RADIO PROJECT**

**NEW 90 FOOT MONOPOLE AND NEW SHELTER
LATITUDE 33°15'14"N, LONGITUDE 111°53'17"W**

**MOTOROLA SITE NAME:
CHANDLER FIRE TRAINING ACADEMY**

**SITE ADDRESS:
3550 S DOBSON RD
CHANDLER, AZ 85225**

**PROJECT #:
32**



phoenix design group
an equal opportunity company

10245 E. VIA LINDA, STE. 105
SCOTTSDALE, AZ. 85258
PHONE: 480-451-9773
FAX: 480-451-9246

ALL DRAWINGS AND WRITTEN MATERIAL CONTAINED HEREIN ARE PROPERTY OF THE ARCHITECT AND MAY NOT BE USED, DUPLICATED OR COPIED WITHOUT THE WRITTEN CONSENT OF ARCHITECT.

DWG. DATE: 09/20/02
DRAWN BY: MAB
CHECKED BY: VEO

REVISIONS		
NO.	DATE	COMMENTS
1	10/25/02	PERMIT DWGS



**ASTRO25 MULTIZONE SYSTEM
800 MHz RADIO PROJECT**

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE STATION ACADEMY

SITE ADDRESS

3550 S DOBSON ROAD
CHANDLER, AZ 85225

SHEET TITLE

PROJECT INFORMATION,
VICINITY MAP,
SHEET INDEX

SHEET NUMBER

TS-1 JOB # 1140-32

A/C	AIR CONDITIONING	MTL	METAL
ADJ	ADJUSTABLE	MFR	MANUFACTURER
AF7	ABOVE FINISH FLOOR	MGR	MANAGER
APPROX	APPROXIMATELY	MN	MINIMUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MISC	MISCELLANEOUS
AWG	AMERICAN WIRE GAUGE	N	NORTH
BLDG	BUILDING	NA	NOT APPLICABLE
BLK	BLOCK	NIC	NOT IN CONTRACT
BWR	BASE WIRE RADIO	NIS	NOT TO SCALE
B/S	BUILDING STANDARD	OC	ON CENTER
CLG	CEILING	OD	OUTSIDE DIAMETER
CLR	CLEAR	OPG	OPENING
C	CONDUIT	OPP	OPPOSITE
CONC	CONCRETE	PLYWD	PLYWOOD
CONST	CONSTRUCTION	PR	PAIR
CONT	CONTINUOUS	PROJ	PROJECT
DBL	DOUBLE	PROP	PROPERTY
DIA	DIAMETER	PAINT	PAINT (PAINTED)
DIAG	DIAGONAL	REQD	REQUIRED
DIAM	DIMENSION	ROOM	ROOM
DN	DOWN	ROSH	ROUGH OPENING
DR	DOOR	S	SOUTH
DTL DETL	DETAIL	SHT	SHEET
DWG	DRAWING	SH	SHOWER
E	EAST	SPEC	SPECIFICATION
EACH	EACH	SQ	SQUARE
ELEV	ELEVATION	SS	STAINLESS STEEL
ELECT	ELECTRICAL	STEEL	STEEL
EQ	EQUAL	STRUC	STRUCTURAL
EQUP	EQUIPMENT	SUSP	SUSPENDED
EW	EACH WAY	SV	SHEET VINYL
EXIST	EXISTING	THRU	THROUGH
EXT	EXTERIOR	THND	TIMED
FIN	FINISH	TOC	TOP OF CONCRETE
FLOOR	FLORESCENT	TOM	TOP OF MASONRY
FLR	FLOOR	TYP	TYPICAL
FT	FOOT	UBC	UNIFORM BUILDING CODE
GALV	GALVANIZED	UNO	UNLESS NOTED OTHERWISE
GC	GENERAL CONTRACTOR	VERT	VERTICAL
GND	GROUND	VIF	VERIFY IN FIELD
GYP BD	GYPSONUM BOARD	VT	VINYL TILE
HORIZ	HORIZONTAL	W	WEST
HR	HOUR	W/	WITH
HT	HEIGHT	WDW	WINDOW
HVAC	HEATING, VENTING & AIR CONDITIONING	W/D	WITHOUT
ID	INSIDE DIA	WP	WATERPROOF
INFO	INFORMATION		
INSUL	INSULATION		
INT	INTERIOR		
LB OR #	POUND(S)		
MAX	MAXIMUM		
MECH	MECHANICAL		

	REVISION		DETAIL REFERENCE
	DOOR NUMBER		ELEVATION REFERENCE
	ROOM NUMBER		SECTION REFERENCE
	KEYED NOTE		

ABBREVIATIONS AND SYMBOLS

NO.	DESCRIPTION
TS-1	TITLE SHEET
TS-2	PROJECT NOTES
SP-1	SITE PLAN
EL-1	EXT. ELEVATION
FP-1	FLOOR PLAN
D-1	DETAIL SHEET
D-2	DETAIL SHEET
SC-1	SPECIFICATIONS
C-1	SURVEY
E-1	ELEC SPECS
E-2	ELEC SPECS CONT
E-3	ELEC ABBR
E-4	ONE LINE DIAGRAM
E-5	GROUNDING DETAILS
E-6	ELEC DETAILS
E-7	BUS DETAIL
E-8	ELEC DETAILS
E-9	POWER SITE PLAN
E-10	GROUNDING PLAN

SHEET INDEX

ARCHITECT
PHOENIX DESIGN GROUP LLC
10245 E. VIA LINDA #105
SCOTTSDALE, AZ. 85258
PHONE: (480) 451-9773
FAX: (480) 451-9246

ELECTRICAL ENGINEER
SW ENGINEERING
426 E SOUTHERN, SUITE 102
TEMPE, AZ 85282
PHONE: (480) 731-5050
FAX: (480) 731-5353

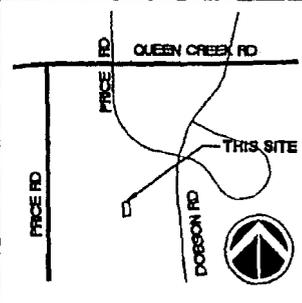
GEOTECHNICAL ENGINEER
AMMTEC CONSULTING, INC.
2447 W. 12TH ST., SUITE 1
TEMPE, AZ 85281
PHONE: (480) 927-0696
FAX: (480) 927-9797

CONSULTANT TEAM

THIS PROJECT INCLUDES:

- NEW EQUIPMENT BUILDING AND BUILDING FOUNDATION
- NEW MONOPOLE AND FOUNDATION
- NEW ELECTRICAL SERVICE
- NEW STANDBY GENERATOR AND FUEL TANK
- NEW CABLING AND SUPPORT BRIDGE
- NEW ANTENNAE AND CABLING INSTALLATION

PROJECT DESCRIPTION



VICINITY MAP

PROPERTY OWNER
CITY OF CHANDLER
25 S. ARIZONA PLAZA
CHANDLER, AZ 85225
CONTACT: DICK MCLBLAINE
PHONE: (480) 782-2065

APPLICANT
MOTOROLA
3332 E. BROADWAY #102
PHOENIX, AZ. 85040
CONTACT: LONNIE NICHOLS
PHONE: (602) 271-7838

CONSTRUCTION MANAGER
MOTOROLA
3332 E. BROADWAY #102
PHOENIX, AZ. 85040
PHONE: (602) 271-7817
FAX: (602) 438-1608
CONTACT: MICHAEL JOHNSON
CELL: (480) 326-8309

ZONING INFORMATION
TAX PARCEL: 303-37-004M
ZONING: R-43
PARK'G REQ: 1
PARK'G PROV: 1

BUILDING CODE INFORMATION
OCCUPANT GROUP: U2 TOWER
OCCUPANT GROUP: S2 SHELTER
OCCUPANT GROUP: B STATION
OCCUPANT LOAD: 0
CONSTRUCTION TYPE: V-N
BLDG. AREA (NEW): 336 S.F.

PROJECT SUMMARY

ANTENNAE, MOUNTS & CABLING

NEW MICROWAVE ANTENNAE, MOUNTS, CABLING AND CONNECTORS WILL BE PROVIDED, INSTALLED AND VERIFIED BY A SEPARATE CONTRACT. CONTRACTOR SHALL INCLUDE IN HIS BID ALL NECESSARY COORDINATION FOR THE TIMELY COMPLETION OF THIS WORK.

NEW OMNI ANTENNAE, CABLING AND CONNECTORS WILL BE PROVIDED BY THE OWNER AND INSTALLED AND VERIFIED BY THE CONTRACTOR. MOUNTS TO BE PROVIDED & INSTALLED BY CONTRACTOR SHELTER.

TOWER

CONTRACTOR TO PROVIDE & INSTALL 100' MONOPOLE, FOUNDATION, FOUNDATION DESIGN, ERECTION & SPECIAL INSPECTION AS DEFINED BY THE OWNER.

CONTRACTOR TO ACQUIRE SEPARATE PERMIT FOR THIS WORK WITH THE CITY OF CHANDLER.

SHELTER

CONTRACTOR TO PROVIDE & INSTALL EQUIPMENT BUILDING AS FOLLOWS:

'OLDCASTLE' 11'-10"x21'-10"x9' HIGH (INSIDE) CONCRETE EQUIPMENT BUILDING,

ONE ROOM TO INCLUDE (1) GALVANIZED & PAINTED STEEL 3'-6"x7'-0" DOOR WITH STAINLESS STEEL MORTISE DEAD BOLT LOCK SET, DRIP CAP, DOOR STOP WITH HOLD-OPEN HOOK.

EXPOSED AGGREGATE (PEA GRAVEL) CONCRETE EXTERIOR FINISH.

(1) 4'x4'x3/4' TELCO BACKBOARD.

225 AMP, 3 PHASE, 120/208 VOLT ELECTRICAL SYSTEM WITH MAIN BREAKER FOR DUPLEX OUTLETS EVERY 4' ON THREE WALLS, AND (9) 4' DUAL BULB FLUORESCENT LIGHTS AS REQUIRED WITH SWITCH.

EXTERIOR 200 AMP, 3 PHASE FUSED MAIN DISCONNECT SWITCH, AND METER

EXTERIOR 225 AMP AUTO TRANSFER SWITCH.

EXTERIOR GROUND FAULT DUPLEX RECEPTACLE AT A/C LOCATION.

DUAL-HEAD EMERGENCY LIGHT WITH BATTERY PACK.

(1) STANDARD EXTERIOR LIGHT.

TRANSECTOR SYSTEMS APEX 4120 WM STYLE SURGE ARRESTOR.

GROUNDING TO INCLUDE #2 STRANDED (CU. TINNED) HALO WITH (4) #2 STRANDED HALO DROPS THRU EXTERIOR WALL = 6' ABOVE FLOOR.

(2) OUTSIDE, WALL MOUNT, HIGH VOLUME, 6 TON AIR CONDITIONER UNITS WITH LEAD/LAG CONTROLLER.

R1200 FIRE SUPPRESSION SYSTEM TO INCLUDE THESE ALARM DEVICES (CONTRACT CLOSURE FOR REMOTE MONITORING) FOR HIGH/LOW TEMPERATURE, OPEN DOOR, SMOKE DETECTOR, HEAT DETECTOR, POWER FAIL.

10 LBS. DRY CHEMICAL (ABC) HAND-HELD FIRE EXTINGUISHER.

(15) 4" WAVEGUIDE ENTRY PORTS AND 54' COMBINED LINEAL FEET OF 12" WIDE CABLE TRAY.

ELECTRIC SERVICE TO BE SERIES RATED AND CABLE TRAY, DOOR AND FRAME TO BE GROUNDED.

PROVIDE SEPARATE PRICE FOR A HYDROGEN DETECTION SYSTEM AND 300 CFM EXHAUST FAN (WALL MTD) BOTH OF WHICH ACTIVATE A SHUNT TRIP IN THE BREAKER PANEL THAT WILL OPEN 3 SETS OF BREAKERS SERVING OWNER BATTERY CHARGER.

ENTIRE SHELTER TO BE CONSTRUCTED IN ACCORDANCE WITH MOTOROLA R56 STANDARD, AND CONTRACTOR TO ACQUIRE SEPARATE PERMIT FROM THE STATE OF ARIZONA FOR A PLANT MANUFACTURED BUILDING.

SHELTER PERMITTED BY THE STATE OF ARIZONA SHALL BE 1 HOUR RATED WITH NON-COMBUSTABLE EXTERIOR WALLS, S-2 OCCUPANCY GROUP, V-N CONSTRUCTION TYPE AND WITH NO OPENINGS IN EXTERIOR WALLS WHERE THE SITE PLAN SHOWS A PROPERTY LINE WITHIN 10'-0" MEASURED PERPENDICULAR TO SUCH PROPERTY LINE.



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group

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NO.	DATE	COMMENTS
1	10/25/02	PERMIT DWGS
2		
3		
4		
5		

MOTOROLA
ASTRO25 MULTIZONE SYSTEM
800 MHz RADIO PROJECT

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE STATION ACADEMY

SITE ADDRESS

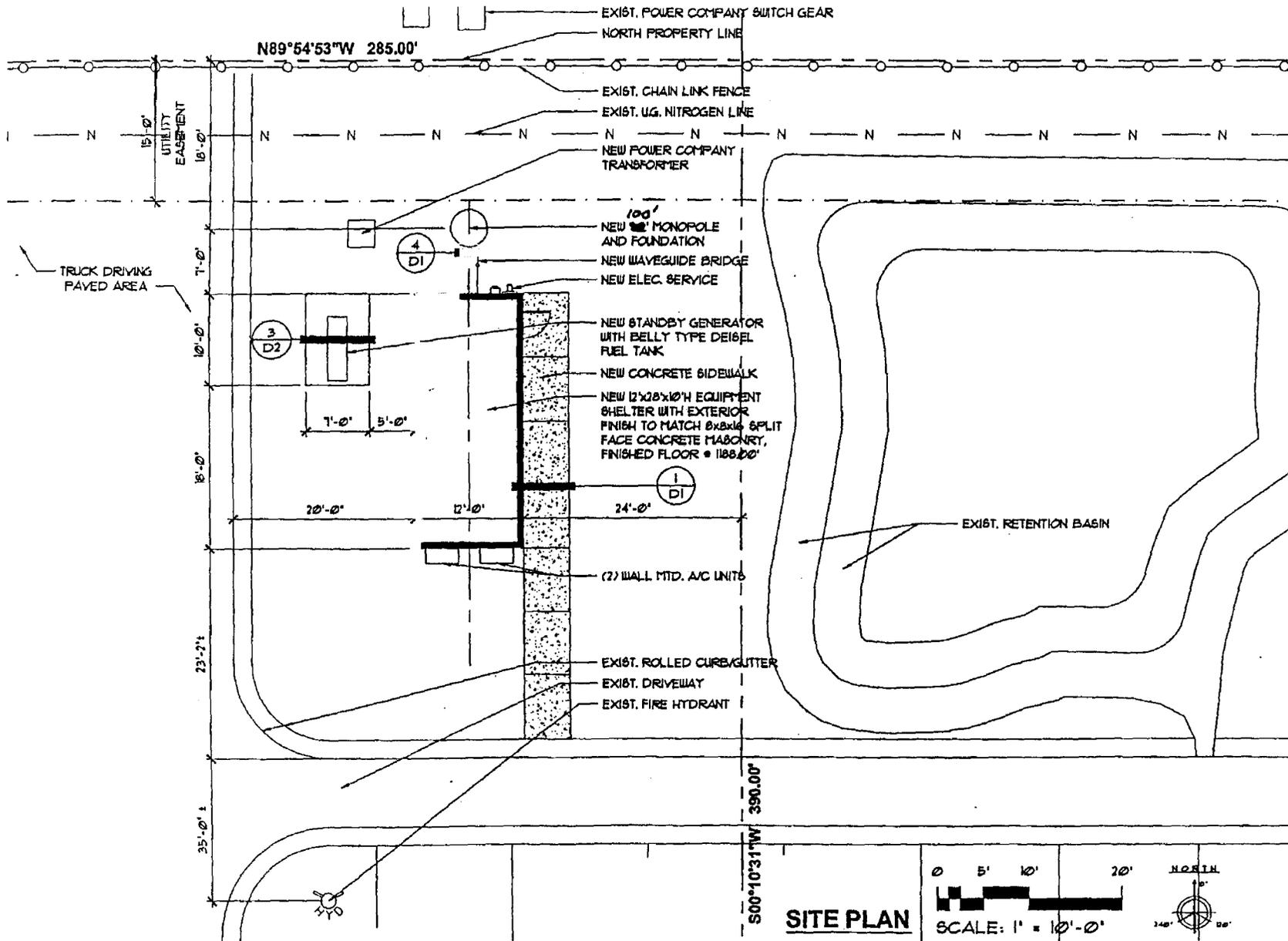
3550 S DOBSON ROAD
CHANDLER, AZ 85225

SHEET TITLE

MICROWAVE, ANTENNAE, TOWER, SHELTER SPECS

SHEET NUMBER

TS-2 JOB # 1140-32



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building mobility company

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ASTRO25 MULTIZONE SYSTEM
800 MHz RADIO PROJECT

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE STATION ACADEMY

SITE ADDRESS

3550 S DOBSON ROAD
 CHANDLER, AZ 85225

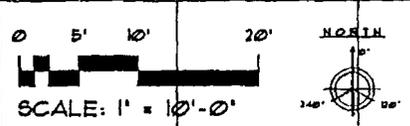
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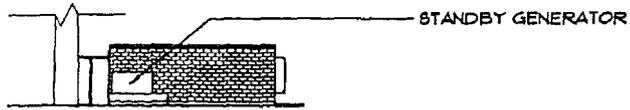
SITE PLAN

SHEET NUMBER

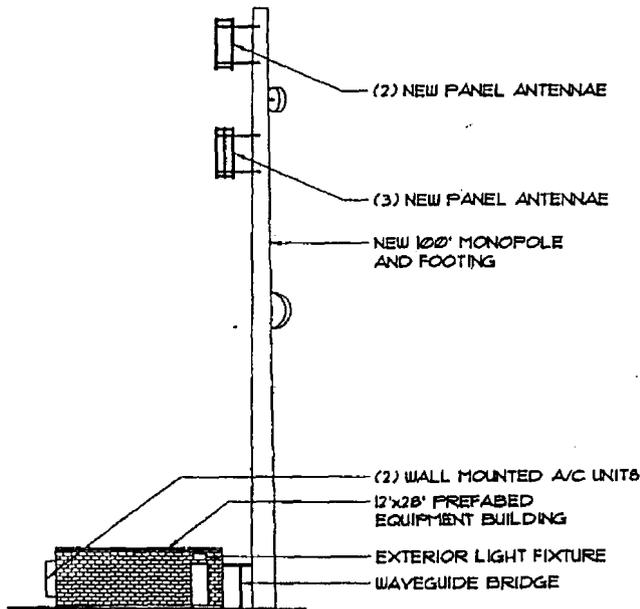
SP-1 JOB # 1140-32

SITE PLAN

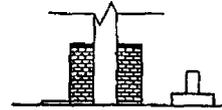
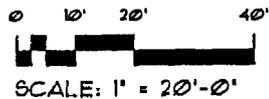




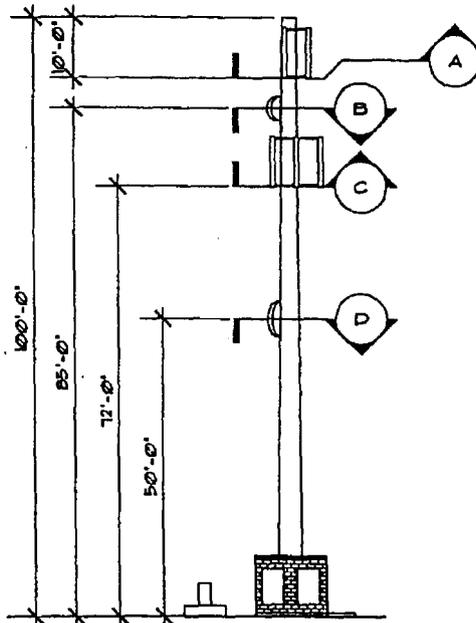
WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

(2) NEW PANEL ANTENNAE
 • AZ 160.00°
 NEW ANTENNAE MOUNT W/
 BI-BRACKET MTS' B2416,
 STRAIGHT ARM STANDOFF
 MTS' B1820, SECTOR CROSS-
 ARM MTS' B1821, AND PLAIN
 PIPE MTS' B1855

SECTION A

NEW 4' MICROWAVE
 ANTENNAE • AZ 327.94°

SECTION B

(3) NEW PANEL ANTENNAE
 • AZ 160.00°
 NEW ANTENNAE MOUNT W/
 BI-BRACKET MTS' B2416,
 STRAIGHT ARM STANDOFF
 MTS' B1820, SECTOR CROSS-
 ARM MTS' B1821, AND PLAIN
 PIPE MTS' B1855

SECTION C

NEW 6' MICROWAVE
 ANTENNAE • AZ 298.00°

SECTION D



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MOTOROLA
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 800 MHz RADIO PROJECT

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE
 STATION ACADEMY

SITE ADDRESS

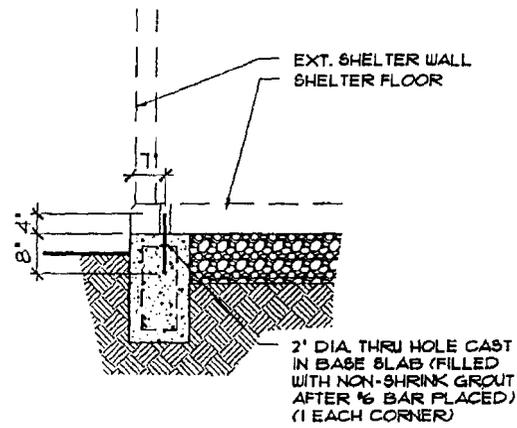
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SHEET TITLE

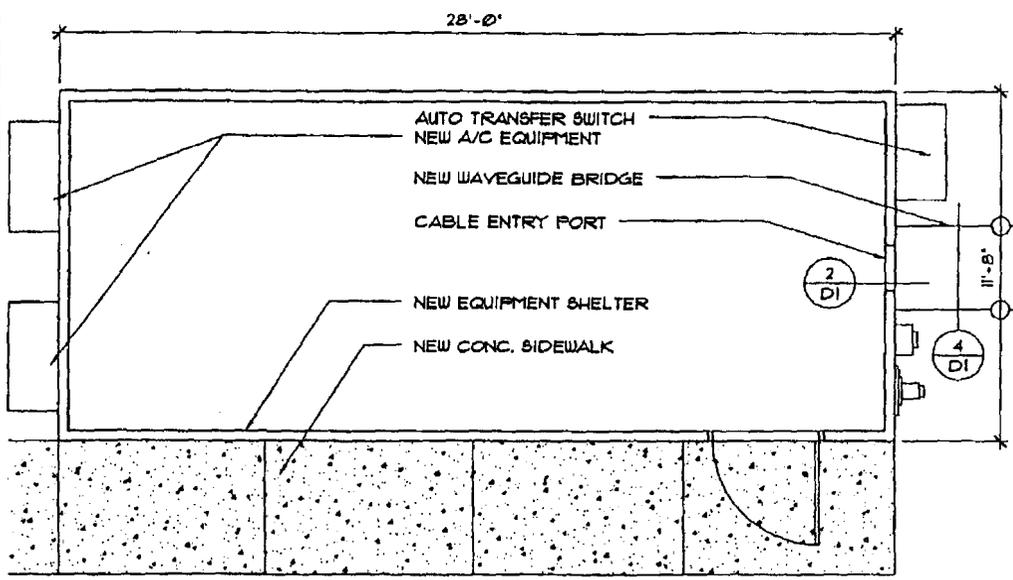
ELEVATION

SHEET NUMBER

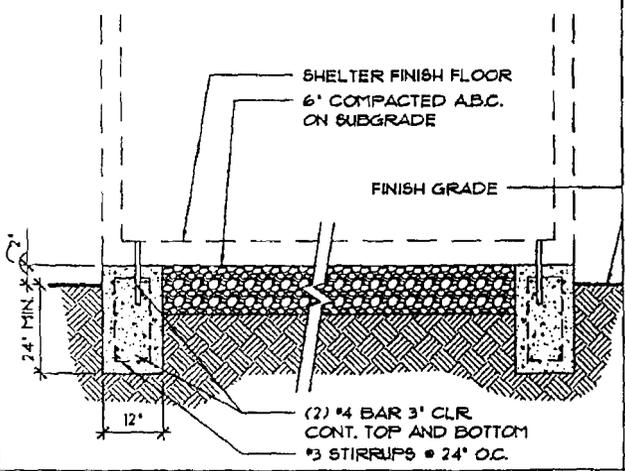
EL-1 JOB# 1140-32



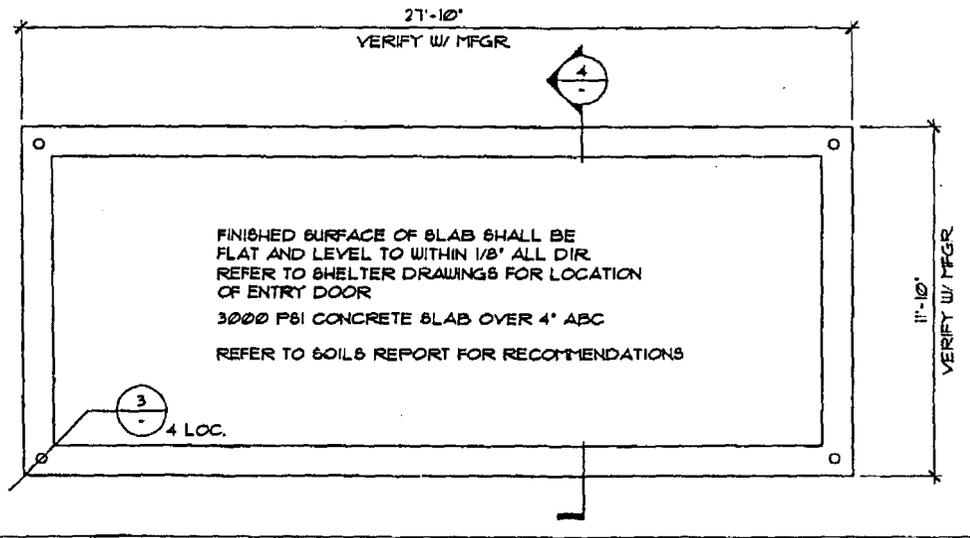
FOUNDATION TO BLDG. CONNECTION SCALE: 1" = 1'-0" 3



SHELTER FLOOR PLAN SCALE: 1/4" = 1'-0" 1



FOUNDATION DETAIL SCALE: 1/2" = 1'-0" 4



SHELTER FOUNDATION PLAN SCALE: 1/4" = 1'-0" 2

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MOTOROLA

**ASTRO25 MULTIZONE SYSTEM
800 MHz RADIO PROJECT**

APPROVALS

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PHOENIX INITIALS	DATE
OTHER INITIALS	DATE

SITE NAME
CHANDLER FIRE STATION ACADEMY

SITE ADDRESS
**3550 S DOBSON ROAD
CHANDLER, AZ 85225**

SHEET TITLE
EQUIPMENT ROOM LAYOUT

SHEET NUMBER

FP-1 JOB # 1140-32



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APPROVALS

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OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE STATION ACADEMY

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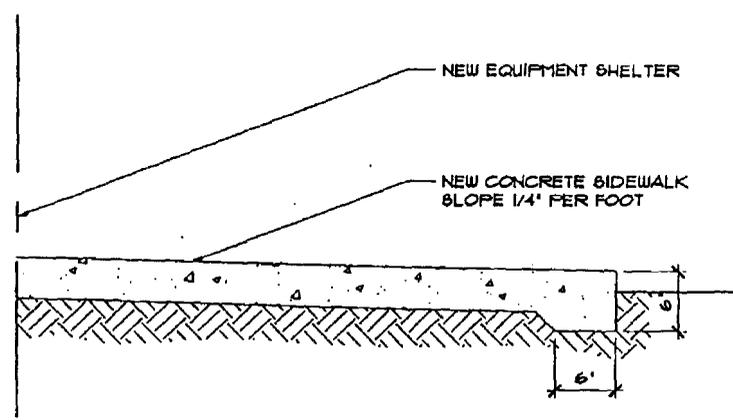
3550 S DOBSON ROAD CHANDLER, AZ 85225

SHEET TITLE

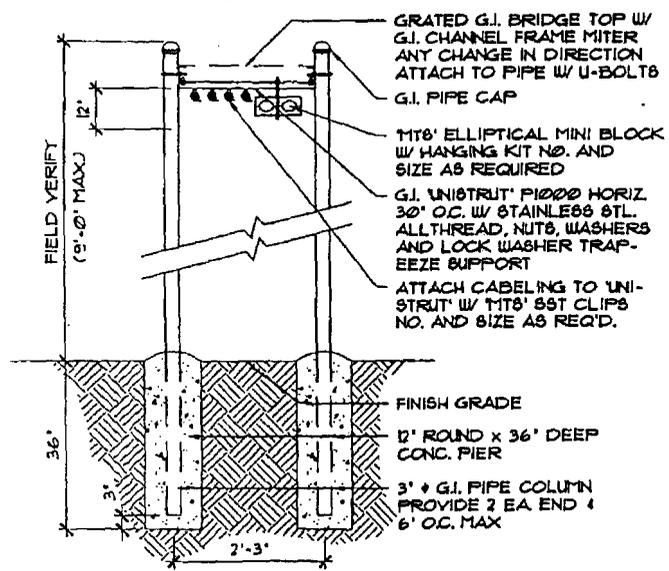
CONSTRUCTION DETAILS

SHEET NUMBER

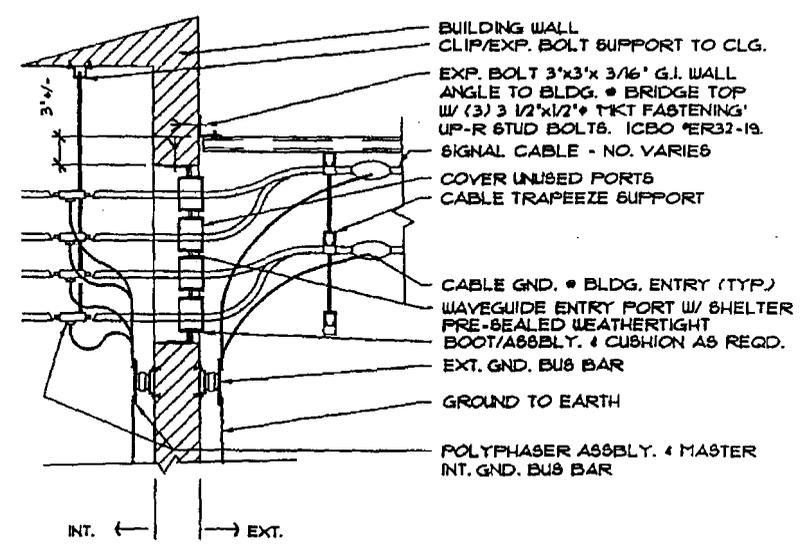
D-1 JOB # 1140-32



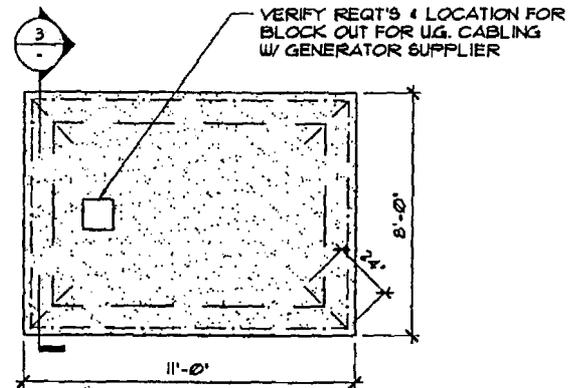
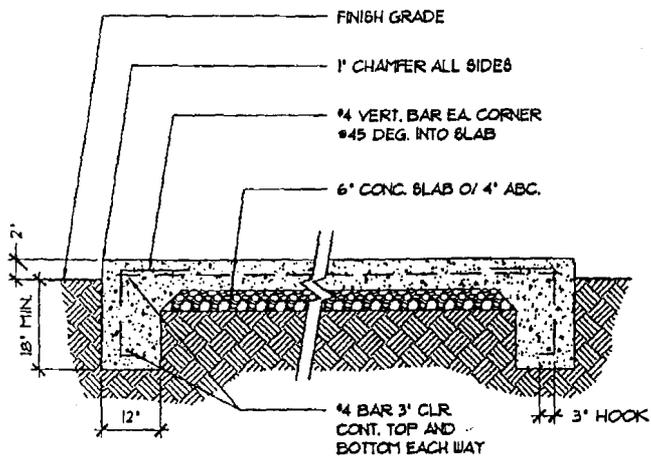
3 SIDEWALK DETAIL 1



WAVEGUIDE BRIDGE



4 CABLE ENTRY PORT 2



GENERATOR FOUNDATION DETAIL

3 GENERATOR FOUNDATION

1



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 based ability economy

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ASTRO25 MULTIZONE SYSTEM
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SITE NAME

**CHANDLER FIRE
 STATION ACADEMY**

SITE ADDRESS

**3550 S DOBSON ROAD
 CHANDLER, AZ 85225**

SHEET TITLE

FOUNDATION PLANS

SHEET NUMBER

D-2 JOB # 1140-32

ELECTRICAL SPECIFICATIONS

I. GENERAL

- A. ALL MATERIALS SHALL BE NEW AND MUST CARRY THE UNDERWRITER'S LABORATORIES APPROVAL COVERING THE PURPOSE FOR WHICH THEY ARE USED, IN ADDITION TO MEETING ALL REQUIREMENTS OF THE CURRENT APPLICABLE CODES AND REGULATIONS.
- B. THE CURRENT EDITIONS OF THE FOLLOWING INDUSTRY STANDARDS, SPECIFICATIONS AND CODES ARE MINIMUM REQUIREMENTS:
1. NATIONAL ELECTRICAL CODE.
 2. LOCAL CITY, STATE AND COUNTY CODE.
 3. UNDERWRITERS' LABORATORIES INCORPORATED STANDARDS.
 4. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION STANDARDS.
 5. AMERICAN STANDARDS ASSOCIATIONS.
 6. AMERICAN WITH DISABILITIES ACT.
 7. NATIONAL ENERGY POLICY ACT.
- C. GUARANTEE ALL MATERIALS AND WORKMANSHIP PROVIDED OR PERFORMED IN COMPLETION OF THIS PROJECT FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ANY DEFECTS IN MATERIAL OR WORKMANSHIP DEVELOPING IN THIS PERIOD SHALL BE CORRECTED AT NO EXPENSE TO THE OWNER.
- D. ALL ELECTRICAL CONDUIT, DEVICES AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY. DO NOT SCALE THE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS WITH ARCHITECT/OWNER PRIOR TO ANY ROUGH-IN.
- E. PLAN AND INSTALL WORK IN SUCH A MANNER AS TO PREVENT OBSTRUCTIONS, AND KEEP OPENINGS AND PASSAGeways CLEAR. CONSULT GENERAL CONTRACT DRAWINGS FOR CONDITIONS AFFECTING THIS WORK AND VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. NOTIFY ENGINEER IMMEDIATELY OF POSSIBLE CONFLICTS. WHERE INTERFERENCE'S WITH STRUCTURAL, MECHANICAL OR OTHER FEATURES EXIST, OR WHERE JOB CONDITIONS REQUIRE REASONABLE CHANGES IN LOCATIONS AND ARRANGEMENT OF INDICATED EQUIPMENT, CONDUIT, OUTLETS OR WIRING, CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT EXTRA COST TO OWNER, ARCHITECT OR ENGINEER.
- F. FOR ANY EXISTING CIRCUIT THAT IS SHOWN TO BE EXTENDED AND/OR DISTURBED THEN REESTABLISHED IN ANY WAY, MATCH EXISTING MATERIALS IN SIZE AND TYPE.
- G. CONTRACTOR SHALL NOT INTERRUPT OR REMOVE ANY EXISTING CIRCUITS OR EQUIPMENT UNLESS NOTED OTHERWISE ON PLANS. ANY DAMAGED OR DISRUPTED CIRCUITS OR EQUIPMENT SHALL BE RESTORED TO LIKE NEW CONDITION AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER.

- H. ALL PENETRATIONS OF FIRE-RESISTIVE FLOORS OR SHAFT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATIONS DETAILS THAT CONFORM TO UNDERWRITERS' LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL TO THE ARCHITECT. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.

II. MATERIALS.

A. RACEWAY

1. ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE.
2. ELECTRICAL METALLIC TUBING (EMT) MAY BE USED IN STUB WALLS OR ABOVE CEILINGS. FITTINGS SHALL BE STEEL COMPRESSION OR SET SCREW TYPE WITH INSULATED THROAT CONNECTORS.
3. FLEXIBLE METAL CONDUIT SHALL BE UTILIZED FOR ALL CONNECTIONS TO VIBRATING EQUIPMENT SUCH AS MOTORS (MINIMUM OF 2'-0" - MAXIMUM OF 6'-0") AND CONNECTION TO LAY-IN TYPE LIGHT FIXTURES.
4. CONDUIT SHALL BE SIZED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE. MINIMUM SIZE SHALL BE 1/2". FACTORY FURNISHED FIXTURE FLEX TAILS MAY BE 3/8".
5. PROVIDE EXPANSION TYPE FITTINGS FOR ALL CONDUITS WHICH CROSS EXPANSION JOINTS.

B. CONDUCTORS

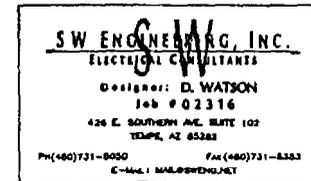
1. ALL WIRE SHALL BE THHN/THWN OR XHHW INSULATIONS. MINIMUM SIZE SHALL BE #12 AWG, COPPER.
2. FOLLOWING COLOR CODING SHALL BE UTILIZED.

120/208V

PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUND	GREEN

3. ALL BARE GROUND CONDUCTORS SHALL BE COPPER.

CONTINUED ON SHT. E-2



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APPROVALS

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SITE NAME	
CHANDLER FIRE STATION ACADEMY	
SITE ADDRESS	
3550 S DOBSON ROAD CHANDLER, AZ 85225	
SHEET TITLE	
ELECTRICAL SPECIFICATIONS HOT SPRINGS ROAD	
SHEET NUMBER	
E-1	JOB # 1140-32

ELECTRICAL SPECIFICATIONS CONTINUED

III. EXECUTION

- A. WORK SHALL BE PERFORMED BY SKILLED CRAFTSMEN IN ACCORDANCE WITH ALL ORDINANCES AND REGULATIONS. CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND LICENSES. INCLUDE ALLOWANCE OF \$2500.00 (TWO-THOUSAND FIVE HUNDRED DOLLARS) FOR ELECTRIC COMPANY DESIGN CHARGES.
- B. COOPERATE WITH OTHER TRADES SO THAT THE INSTALLATION OF THE ELECTRICAL OUTLETS AND EQUIPMENT WILL BE PROPERLY COORDINATED. CONDUIT, FIXTURES, AND OTHER EQUIPMENT LOCATIONS SHALL BE CHECKED WITH OTHER TRADES TO AVOID CONFLICT WITH PIPING, DUCTWORK, STEEL, BEAMS, OR OTHER OBSTRUCTIONS.
- C. ALL EXPOSED CONDUIT (INCLUDING CONDUIT INSTALLED IN CEILING PLENUMS) SHALL BE ROUTED PARALLEL OR PERPENDICULAR WITH THE BUILDING WALLS. SUPPORT CONDUIT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
- D. FURNISH AND INSTALL ALL ELECTRICAL WRING, RACEWAYS, OUTLET AND JUNCTION BOXES, MOTOR STARTERS, DISCONNECT AND CONTROLS FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS, UNLESS NOTED OTHERWISE.

IV. EMERGENCY POWER SUPPLY

- A. GENERATOR SHALL BE 50KW, 120/208V., 3Ø, 4W 60HZ DIESEL FUELED SYSTEM WITH AN IN FRAME FUEL CELL 500 GALLON UL 142 TANK FILLED WITH #2 DIESEL FUEL.
- B. GENERATOR SHALL COMPLY WITH ALL NEMA, IEEES, ANSI AND ISO 8528-5 STANDARDS FOR TEMPERATURE RISE, ELEVATION AND PERFORMANCE.
- C. GENERATOR RATINGS:
- STARTING VOLTAGE: 12VDC
 - OUTPUT POWER: 50KW AT 0.8 POWER FACTOR.
 - OUTPUT VOLTAGE: 120/208 VOLTS +/- 1 5% THREE PHASE.
 - INVERTER OUTPUT FREQUENCY: 60 HZ +/- 1 PERCENT.
 - EFFICIENCY: 90 PERCENT MINIMUM.
 - INSTRUMENTATION AND ALARMS: NFFA 110A.
- D. REMOTE TROUBLE MONITOR
- INSTRUMENTATION AND ALARMS: NFFA 110A.
 - ENCLOSURE: (SURFACE) MOUNTED WITH FINISH.
- E. THE GENERATOR SHALL COMPLY WITH THE FOLLOWING.
- NFFA 70 - NATIONAL ELECTRIC CODE, INCLUDING USE IN EMERGENCY AND STANDBY SYSTEMS IN ACCORDANCE WITH ARTICLE 701.

H. ACCESSORIES

- EXHAUST SILENCER, RESIDENTIAL WITH HOUSING MOUNTING KIT.
 - TAIL PIPE & RAIN CAP KIT.
 - WEATHER PROOF HOUSING (NEMA 3R ENCLOSURE).
 - FLEXIBLE FUEL LINES.
 - FUEL PRESSURE GAUGE.
 - BATTERY (LEAD ACID).
 - BATTERY CHARGER. (EQUALIZE / FLOAT TYPE).
 - AIR CLEANER (HEAVY DUTY).
 - LINE CIRCUIT BREAKER WITH SHUNT TRIP (NEMA 3R ENCLOSURE).
 - REMOTE AUDIO / VISUAL ALARM PANEL.
 - AUTOMATIC DIALER FPR OFF SITE NOTIFICATION OF GENERATOR STATUS.
- G. GENERATOR SHALL BE SIMILAR TO KOHLER MODEL #50REOZJB OR APPROVED EQUAL.

V. AUTOMATIC TRANSFER SWITCH.

- A. THE TRANSFER SWITCH SHALL BE MOUNTED IN A NEMA 3R ENCLOSURE FOR MOUNTING REMOTE FROM THE ENGINE GENERATOR.
- B. AUTOMATIC TRANSFER SWITCH (ATS) SHALL BE A 225 AMPS/ 3 POLE. 120/208 VOLTS, 3Ø, 4W AND SHALL INCLUDE DOUBLE THROW POWER TRANSFER SWITCH UNIT AND A CONTROL MODULE INTERCONNECTED TO PROVIDE COMPLETE AUTOMATIC OPERATION. THE CONTACT TRANSFER TIME IN EITHER DIRECTION SHALL NOT EXCEED ONE SIXTH (1/6) OF A SECOND.
- C. THE ATS SHALL COMPLY WITH THE FOLLOWING:
- UL 1008 - STANDARD FOR AUTOMATIC TRANSFER SWITCHES.
 - NFFA 70 - NATIONAL ELECTRICAL CODE, INCLUDING USE IN EMERGENCY AND STANDBY SYSTEMS IN ACCORDANCE WITH ARTICLE 701.
 - NFFA 110 - STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS.
 - NEMA STANDARD 1CS-2-447 - AC AUTOMATIC TRANSFER SWITCHES.
 - IEC - STANDARD AUTOMATIC TRANSFER SWITCHES.
 - THE CONTROL PANEL SHALL MEET OR EXCEED THE VOLTAGE SURGE WITHSTAND CAPABILITY IN ACCORDANCE WITH IEEE STANDARD 472-1974 (ANSI C37, 90a-1974) AND THE IMPULSE WITHSTAND VOLTAGE TEST IN ACCORDANCE WITH THE PROPOSED NEMA STANDARD IC 1-109.
- D. AUTOMATIC TRANSFER SWITCH SHALL BE OF THE SAME MANUFACTURE AS THE EMERGENCY GENERATOR. ATS SHALL BE SIMILAR TO KOHLER MODEL: KCT-ACTC-0225-S OR APPROVED EQUAL.

Professional Engineer
 CERTIFICATE NO.
 31172
 DAVID G.
 WATSON
 Exp. 12-22-07
 State of Arizona
 ARIZONA, U.S.A.

phoenix design group
 United States of America

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REVISIONS	
NO.	DATE
1	10/25/02 PERMIT DWGS

 **MOTOROLA**
 ASTRO25 MULTIZONE SYSTEM
 800 MHz RADIO PROJECT

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE STATION ACADEMY

SITE ADDRESS

3550 S DOBSON ROAD
 CHANDLER, AZ 85225

SHEET TITLE

ELECTRICAL SPECIFICATIONS CONTINUED

SHEET NUMBER

E-2 JOB # 1140-32

S.W. ENGINEERING, INC.
 ELECTRICAL CONSULTANTS
 Designer: D. WATSON
 Job # 02254
 100 S. WASHINGTON AVE. SUITE 100
 MESA, AZ 85204
 PH: 480-981-1000 FAX: 480-981-1002
 WWW.SWENGINEERING.COM

ELECTRICAL SYMBOLS

- (M) KWH METER
-  100/3 SWITCH SIZE AND NUMBER OF POLES INDICATED I.E. 100A/3 POLE.
-  FUSE SIZE AND TYPE INDICATED
-  100/3 CIRCUIT BREAKER SIZE AND NUMBER OF POLES INDICATED, I.E. 100A/3 POLE.
-  GROUND

ABBREVIATIONS

- | | | | |
|------|--|------|---------------------------------------|
| A | AMPERE | KVA | KILOVOLT AMPERE |
| AFC | AVAILABLE FAULT CURRENT | KW | KILOWATT |
| AFF | ABOVE FINISHED FLOOR | KHW | KILOWATT HOUR |
| AFG | ABOVE FINISHED GRADE | LTG | LIGHTING |
| AIC | AMPERE INTERRUPTING CAPACITY | MFR | MANUFACTURER |
| APS | ARIZONA PUBLIC SERVICE | MBJ | MAIN BONDING JUMPER |
| ATS | AUTOMATIC TRANSFER SWITCH | MH | MANHOLE |
| AL | ALUMINUM | MTD | MOUNTED |
| C | CONDUIT | N | NEUTRAL |
| CB | CIRCUIT BREAKER | NF | NON-FUSED |
| CKT | CIRCUIT | NL | NIGHT LIGHT |
| CT | CURRENT TRANSFORMER | P | POLE |
| CU | COPPER | PNL | PANEL |
| CWB | COLD WATER BOND | SCH | SCHEDULE |
| DISC | DISCONNECT SWITCH | SES | SERVICE ENTRANCE SWITCHBOARD |
| DN | DOWN | SRP | SALT RIVER PROJECT |
| EC | EMPTY CONDUIT | SW | SWITCH |
| EDF | ELECTRIC DRINKING FOUNTAIN | SWBD | SWITCHBOARD |
| EF | EXHAUST FAN | UC | UNDER COUNTER |
| FBO | FURNISHED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR | UNO | UNLESS NOTED OTHERWISE |
| GF | GROUND FAULT CIRCUIT INTERRUPTER | VP | VANDAL PROOF |
| GND | GROUND | WH | WATER HEATER |
| G | GROUND | WP | WEATHERPROOF |
| J.B. | JUNCTION BOX | X | EXISTING TO REMAIN |
| KAIC | KILO AMPERE INTERRUPTING CAPACITY | XFMR | TRANSFORMER |
| | | XRR | EXISTING TO BE REMOVED |
| | | XRR | EXISTING TO BE REMOVED AND RELOCATED. |
| | | Ø | PHASE |

SW ENGINEERING, INC.
 ELECTRICAL CONTRACTORS
 31172 DAVID G. WATSON
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 PHOENIX OFFICE: 480-451-8773
 TOLSON OFFICE: 480-451-9246

Professional Engineer (Electrical)
 CERTIFICATE NO. 31172
 DAVID G. WATSON
 09/22/01
 Signed
 ARIZONA

phoenix design group
 a total facility company

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 CHECKED BY: VEO

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MOTOROLA
 ASTRO25 MULTIZONE SYSTEM
 800 MHz RADIO PROJECT

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SITE NAME
 CHANDLER FIRE STATION ACADEMY

SITE ADDRESS
 3550 S DOBSON ROAD
 CHANDLER, AZ 85225

SHEET TITLE
 ELECTRICAL SYMBOLS & ABBREVIATIONS

SHEET NUMBER

E-3 JOB # 1140-32

200A., 120/208V, 3 ϕ , 4W.
NEMA 3R METER SOCKET PER
POWER CO. REQUIREMENTS.
OBTAIN APPROVAL PRIOR
TO ORDERING.

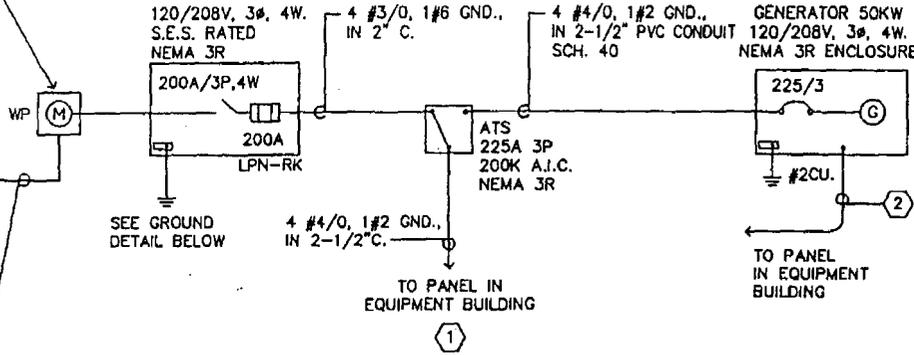
POWER CO.
PAD-MOUNT
TRANSFORMER

CONCRETE PAD
PER POWER CO.
REQUIREMENTS

4" PRIMARY POWER
CONDUIT, TRENCH, AND
BACKFILL PER POWER CO.
REQUIREMENTS. VERIFY
SIZE, ROUTING, & ALL
REQUIREMENTS WITH
POWER CO.

3" SECONDARY POWER
CONDUIT, TRENCH, AND
BACKFILL PER POWER CO.
REQUIREMENTS. VERIFY
SIZE, ROUTING, & ALL
REQUIREMENTS WITH
POWER CO.

AVAILABLE FAULT CURRENT =
14,000 RMS SYM. AMPERES.



ONE LINE DIAGRAM

N.T.S.

NOTE:
ALL EQUIPMENT SHALL BE
RATED FOR MINIMUM 14,000 A.I.C.

KEYED NOTES:

- ① DISTRIBUTION PANEL PROVIDED BY BUILDING MANUFACTURER SHALL BE RATED AT 10,000 AIC, 225A, 120/208V, 3 ϕ , 4W.
- ② 4#12, 1#12 GND., 1/2" C FOR BATTERY CHARGER, JACKET, WATER HEATER AND CONTROL CIRCUIT. ROUTE TO BUILDING EQUIPMENT PANEL. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THREE 20/1, CBS OF SAME MANUFACTURE, STYLE AND A.I.C. RATING AS PANEL. (FIELD VERIFY) E.C. TO MAKE FINAL CONNECTION.

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4/22/03
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CHECKED BY: VEO

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LOAD CALCULATION:

GENERAL RECEPTACLES - 336 S.F. @ 2.0VA/S.F.	x 100%	= 672 VA
GENERAL LIGHTING - 336 S.F. @ 3.0VA/S.F.	x 125%	= 1210 VA
MOTOROLA EQUIPMENT (PER PDG)	x 100%	= 5400 VA
LARGEST A/C UNIT (40.0 AMPS EST.)	x 125%	= 18000 VA
REMAINING A/C UNIT (40.0AMPS EST.)	x 100%	= 14400 VA
TOTAL	=	39682 VA
+(208V x $\sqrt{3}$)	=	110.2 AMPS

MOTOROLA
ASTRO25 MULTIZONE SYSTEM
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OTHER INITIALS DATE

SITE NAME

CHANDLER FIRE
STATION ACADEMY

SITE ADDRESS

3550 S DOBSON ROAD
CHANDLER, AZ 85225

SHEET TITLE

ELECTRICAL
ONE-LINE DIAGRAM

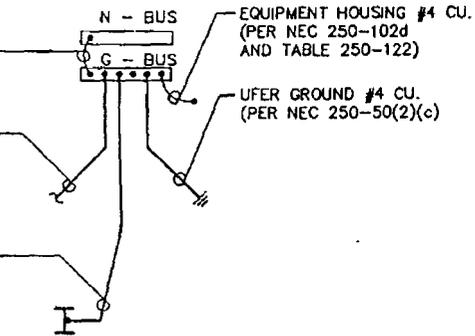
SHEET NUMBER

E-4 JOB # 1140-32

BONDING JUMPER #4 CU.
(PER NEC 250-102(c)
AND TABLE 250-66)

#4 CU. TO
ELECTROLYTIC
GROUND WELL

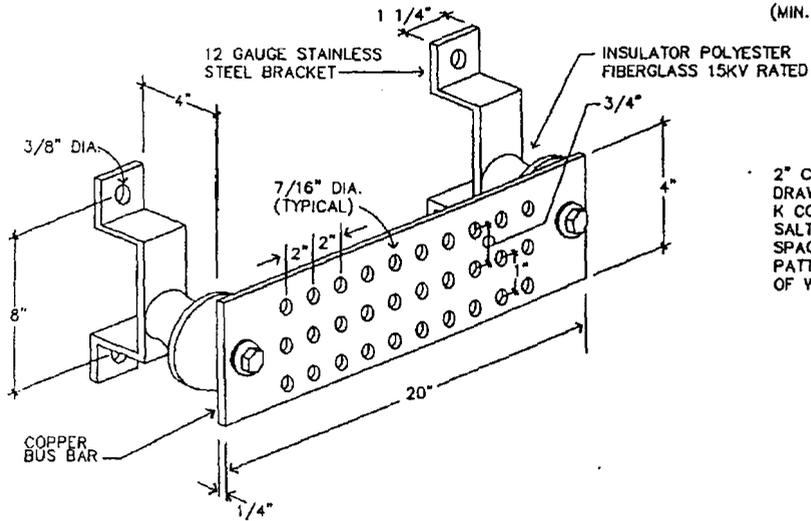
BUILDING STEEL #4 CU.
(PER NEC 250-104(4)(d)
AND TABLE 250-66)



GROUNDING DETAIL

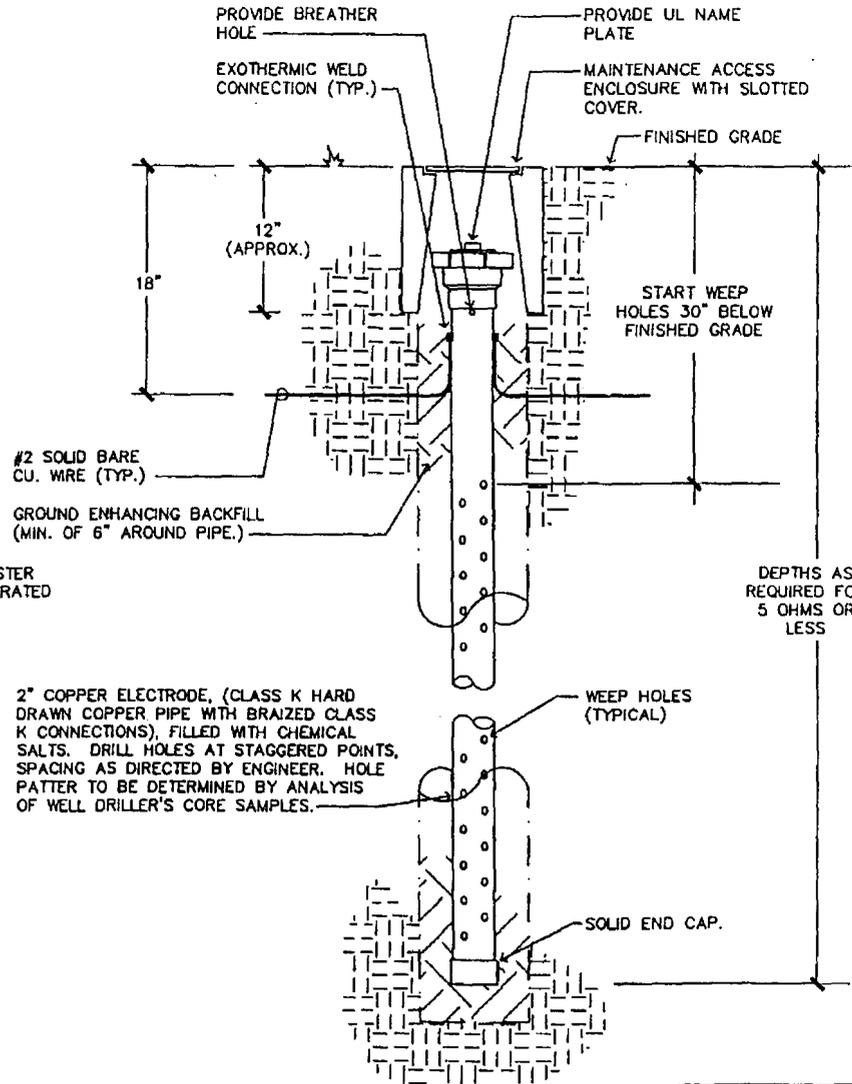
N.T.S.

J.W. ENGINEERING, INC.
Electrical Engineering
Professional: D. WATSON
100 # 022316
100 S. Mountain Ave., Suite 100
Tempe, AZ 85283
480-944-1111
Fax: 480-944-1111



EXTERNAL GROUND BUS DETAIL

N.T.S.



ELECTROLYTIC GROUNDING DETAIL

N.T.S.

Professional Engineer (Electrical)
 CERTIFICATE NO. 31172
 DAVID G. WATSON
 01-17-02
 ARIZONA, U.S.A.

phoenix design group
 Equal Opportunity Employer

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 CHECKED BY: VEO

NO.	DATE	COMMENTS
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REVISIONS

DEPTHS AS REQUIRED FOR 5 OHMS OR LESS

MOTOROLA

ASTRO25 MULTIZONE SYSTEM
 800 MHz RADIO PROJECT

APPROVALS

MOTOROLA INITIALS DATE

PHOENIX INITIALS DATE

OTHER INITIALS DATE

SITE NAME
 CHANDLER FIRE STATION ACADEMY

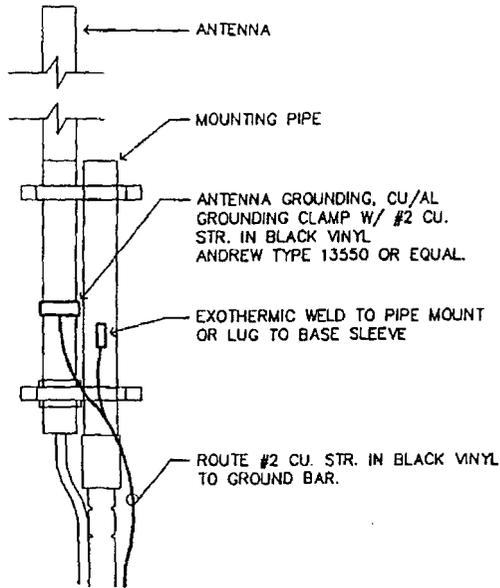
SITE ADDRESS
 3550 S DOBSON ROAD
 CHANDLER, AZ 85225

SW ENGINEERING, INC.
 ELECTRICAL CONTRACTORS
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 JOB # 02236
 401 S. GARDENWAY AVE. SUITE 100
 CHANDLER, AZ 85225
 PH: 480-771-0800 FAX: 480-771-0800

SHEET TITLE
 GROUNDING DETAILS

SHEET NUMBER
 E-5

JOB # 1140-32

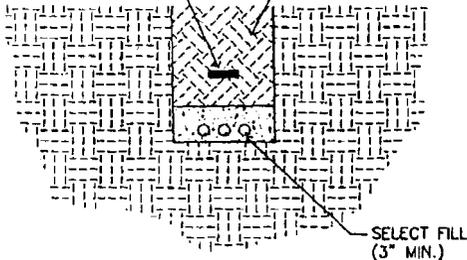


ANTENNAE GROUNDING

N.T.S.

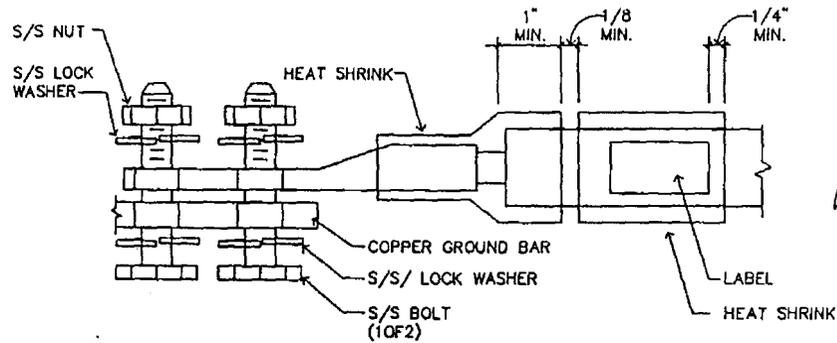
PROVIDE PANDUIT UNDERGROUND HAZARD TAPE - "CAUTION - ELECTRIC LINE BURIED BELOW" AT 12" ABOVE CONDUIT FOR THE ENTIRE LENGTH OF THE CONDUIT RUN.

NOTE: CONTRACTOR SHALL BACK FILL TRENCH IN 12" MAX. COMPACTED LIFTS AND SHALL OBTAIN A MIN. 95% MODIFIED PROCTOR COMPACTION ON LIFTS.



TRENCHING DETAIL

N.T.S.

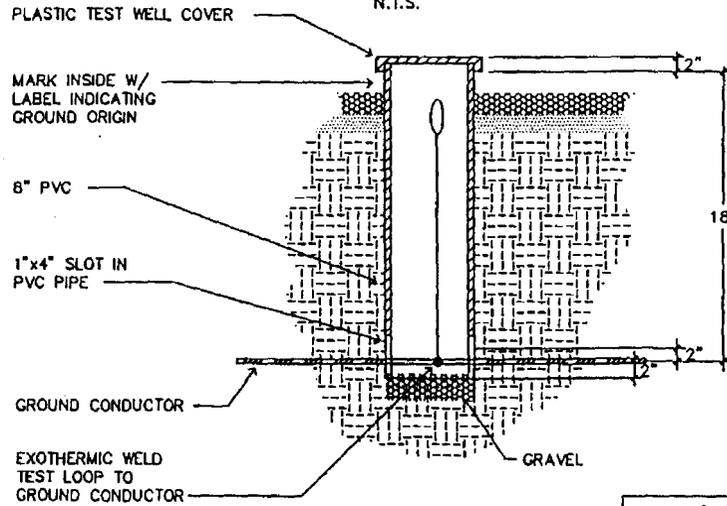


NOTES:

- 1) ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
- 2) FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD ANTIOXIDANT COMPOUND

LUG DETAIL

N.T.S.



GROUND TEST WELL DETAIL

N.T.S.

S.W. ENGINEERING, INC.
ELECTRICAL CONTRACTORS

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JAN 4 2004
401 E. WASHINGTON AVE. SUITE 100
TAMPA, FL 33604

Professional Engineer (Civil)
CERTIFICATE NO. 31172
DAVID G. WATSON
10-2-2001
ARIZONA REG. NO. 10-2-2001

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ASTRO25 MULTIZONE SYSTEM
800 MHz RADIO PROJECT

APPROVALS

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SITE NAME

CHANDLER FIRE STATION ACADEMY

SITE ADDRESS

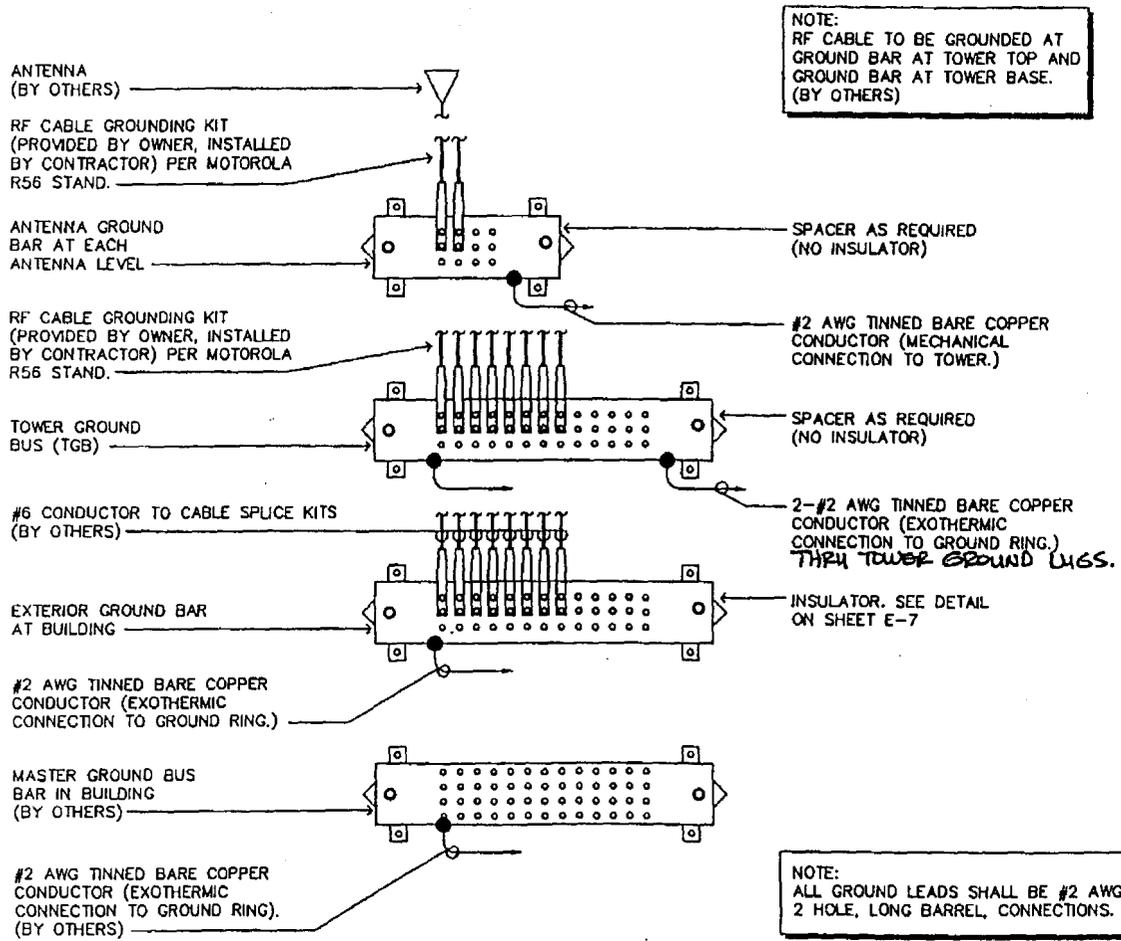
3550 S DOBSON ROAD
CHANDLER, AZ 85225

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-6 JOB # 1140-32



GROUNDING BUS DETAIL

N.T.S.

Professional Engineer (Electrical)
 REGISTERED PROFESSIONAL ENGINEER
 CERTIFICATE NO. 31172
 DAVID G. WATSON
 9/22/02
 State of Arizona, U.S.A.
 phoenix design group
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OTHER INITIALS DATE

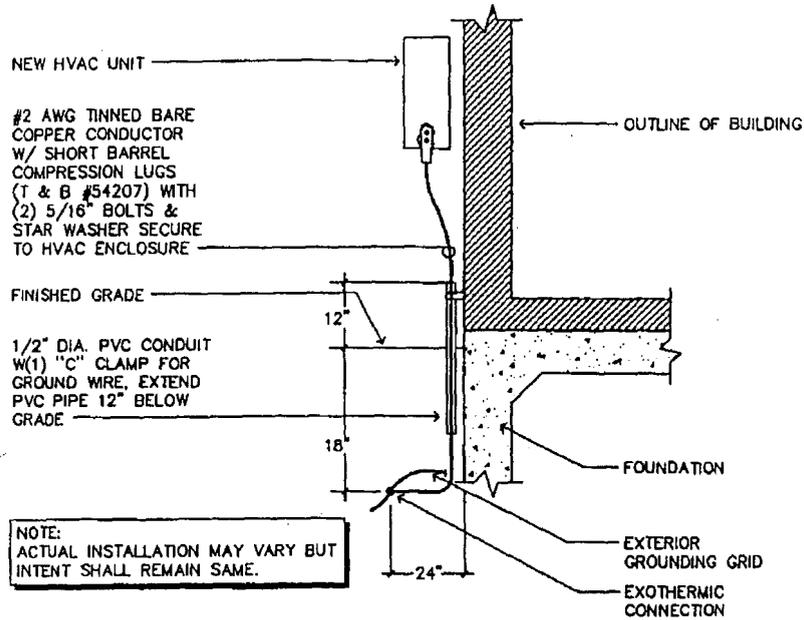
SITE NAME
 CHANDLER FIRE STATION ACADEMY

SITE ADDRESS
 3550 S DOBSON ROAD
 CHANDLER, AZ 85225

S.W. ENGINEERING, INC.
 ELECTRICAL ENGINEERS
 DAVID G. WATSON
 480 451-8773
 10245 E. VIA LINDA, STE. 105
 SCOTTSDALE, AZ 85258

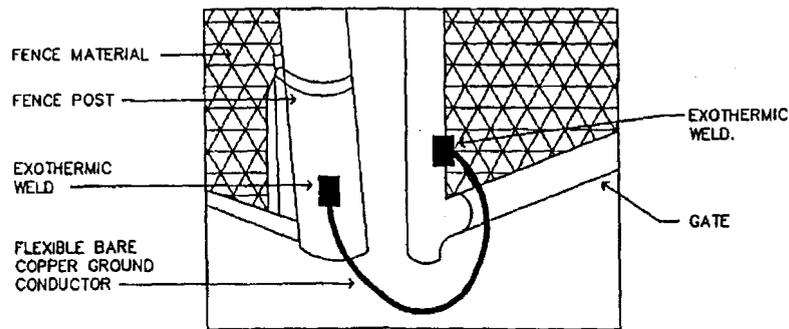
SHEET TITLE
 GROUNDING BUS DETAIL

SHEET NUMBER
 E-7 JOB # 1140-32



TYPICAL HVAC GROUNDING

N.T.S.



GATE BONDING

N.T.S.

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
 31172
DAVID G. WATSON
 9/10/22-07
 Signed
 ARIZONA, U.S.A.

phoenix design group
 United Quality Company

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SITE NAME

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SITE ADDRESS

3550 S DOBSON ROAD
 CHANDLER, AZ 85225

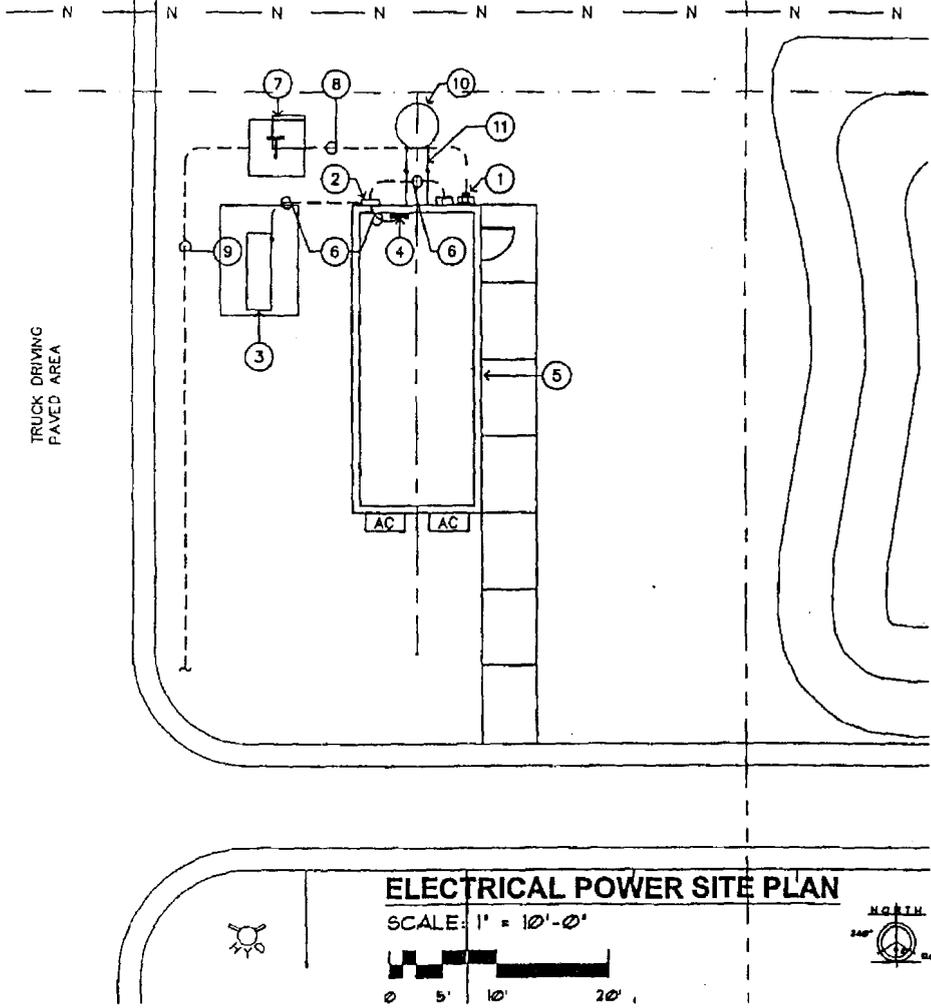
SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-8 JOB # 1140-32

SW ENGINEERING, INC.
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 PH: 480-970-1000 FAX: 480-970-1001
 E-MAIL: DAVID@SWENGINEERING.COM



KEYED NOTES

- ① 200A. METER AND S.E. EQUIPMENT RATED DISCONNECT SWITCH, NEMA 3R.
- ② 225A. AUTOMATIC TRANSFER SWITCH, NEMA 3R.
- ③ EMERGENCY GENERATOR AND FUEL TANK, 50 KW, 120/208V., 3ø, 4W, NEMA-3R.
- ④ FINAL CONNECTION TO PANEL IN BUILDING BY OTHERS.
- ⑤ NEW EQUIPMENT SHELTER.
- ⑥ SEE ONE LINE DIAGRAM, SHEET E-4 FOR SIZES.
- ⑦ NEW POWER COMPANY PAD MOUNTED TRANSFORMER. VERIFY EXACT LOCATION.
- ⑧ NEW SECONDARY POWER CONDUIT, TRENCH, AND BACKFILL PER POWER CO. REQUIREMENTS. SEE ONE-LINE DIAGRAM SHEET E-4.
- ⑨ NEW PRIMARY POWER CONDUIT, TRENCH, AND BACKFILL PER POWER CO. REQUIREMENTS. SEE ONE-LINE DIAGRAM SHEET E-4.
- ⑩ NEW 90' MONOPOLE.
- ⑪ NEW WAVEGUIDE BRIDGE.

POWER NOTES

- 1. ELECTRICAL CONTRACTOR SHALL CONTACT SRP REGARDING EXACT LOCATION OF ALL PRIMARY SERVICE EQUIPMENT, TRENCH LOCATIONS, TRANSFORMER LOCATION, METER LOCATION, ETC.
- 2. ELECTRICAL CONTRACTOR SHALL PROVIDE NECESSARY SECONDARY CONDUCTORS, POWER TRENCHING, BACKFILL, CONCRETE PADS FOR TRANSFORMERS AND SERVICE EQUIPMENT AND CONDUIT STUBS INTO TRENCH AS REQUIRED BY APS AND TO THEIR SPECIFICATIONS.
- 3. ALL WRING SHALL BE COPPER UNLESS NOTED OTHERWISE. INSULATION SHALL BE TYPE 'XHHW' OR 'THHN/THWN'.
- 4. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND COMPLIANCE WITH THE UTILITY COMPANY'S REQUIREMENTS. WITH-IN TWO WEEKS AFTER AWARD OF CONTRACT, SUBMIT (2) COMPLETE SETS OF PLANS, INCLUDING PLOT OF SURVEY, TO UTILITY COMPANY FOR COORDINATION. ROUTING OF INCOMING POWER SHOWN ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL ROUTING, CONDUIT, TRENCH, AND PAD REQUIREMENTS SHALL BE AS SPECIFIED BY THE BY THE UTILITY COMPANY. CONFIRM ALL REQUIREMENTS WITH UTILITES PRIOR TO INSTALLATION.



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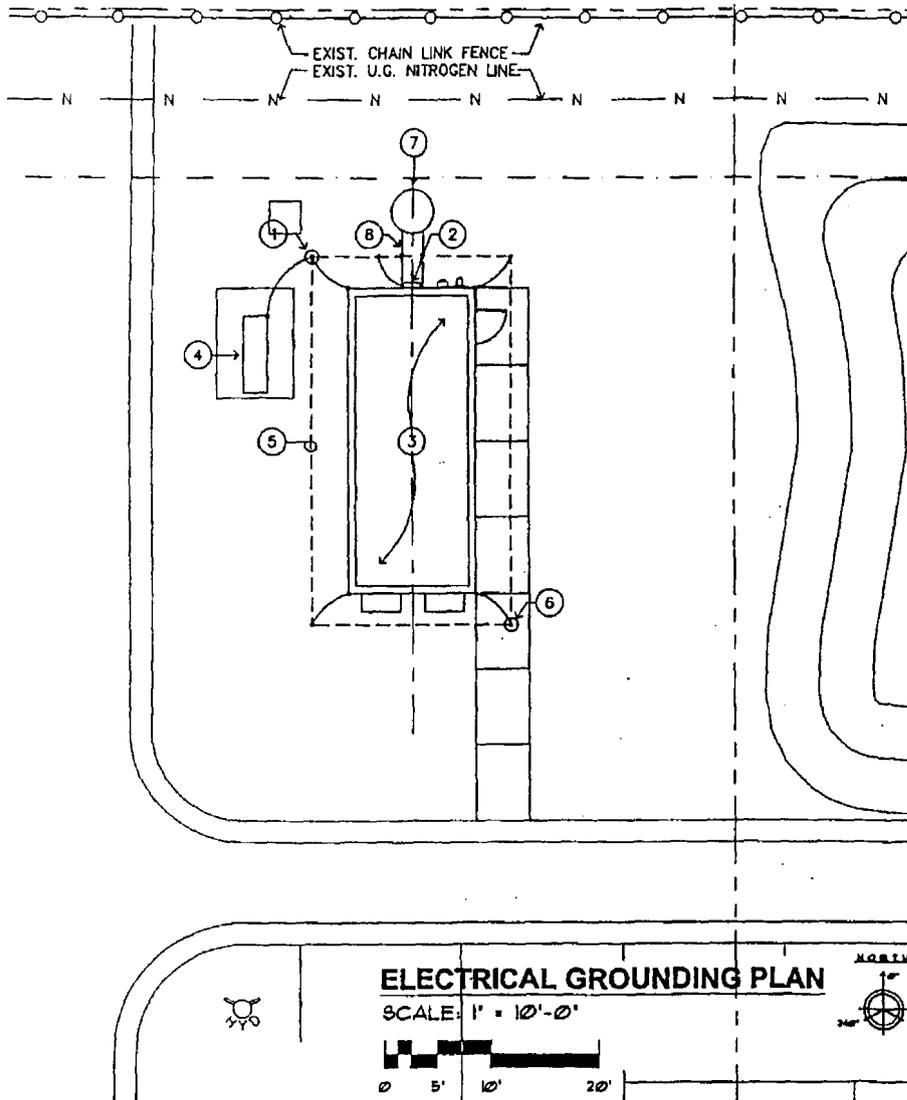
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MOTOROLA
 ASTRO25 MULTIZONE SYSTEM
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APPROVALS	
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SITE NAME	
CHANDLER FIRE STATION ACADEMY	
SITE ADDRESS	
3550 S DOBSON ROAD CHANDLER, AZ 85225	

SW ENGINEERING, INC.
 REGISTERED ELECTRICAL ENGINEERS
 DAVID G. WATSON
 480-451-8773
 10248 E. VA LINDA STE. 105
 SCOTTSDALE, AZ 85258

SHEET TITLE
ELECTRICAL POWER SITE PLAN
 SHEET NUMBER
E-9 JOB # 1140-32



KEYED NOTES

- ① ELECTROLYTIC GROUND WELL. SEE DETAIL ON SHEET E-5.
- ② EXTERNAL GROUND BUS (EGB) VERIFY LOCATION. SEE DETAIL ON SHEET E-5.
- ③ NEW EQUIPMENT SHELTER.
- ④ NEW EMERGENCY GENERATOR AND FUEL TANK.
- ⑤ #2 SOLID BARE COPPER DIRECT BURIED AT 2'-6" BELOW TOP OF FINISHED GRADE ALL AROUND SHELTER.
- ⑥ GROUND TEST WELL. SEE DETAIL ON SHEET E-6.
- ⑦ NEW 90' MONOPOLE & FOUNDATION.
- ⑧ NEW WAVE GUIDE BRIDGE.



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SITE ADDRESS
**3550 S DOBSON ROAD
 CHANDLER, AZ 85225**

SHEET TITLE
ELECTRICAL GROUNDING PLAN

SHEET NUMBER
E-10 JOB # **1140-32**

I.W. ENGINEERING, INC.
 ELECTRICAL ENGINEERS
 DAVID G. WATSON
 204 S. 22ND ST.
 CHANDLER, AZ 85225