

18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



# UTAH NATIONAL GUARD

## FORWARD OPERATING BASE

### CAMP W.G. WILLIAMS - SALT LAKE CITY, UTAH

PROJECT No. 07326480

DATE: JUNE 5, 2008

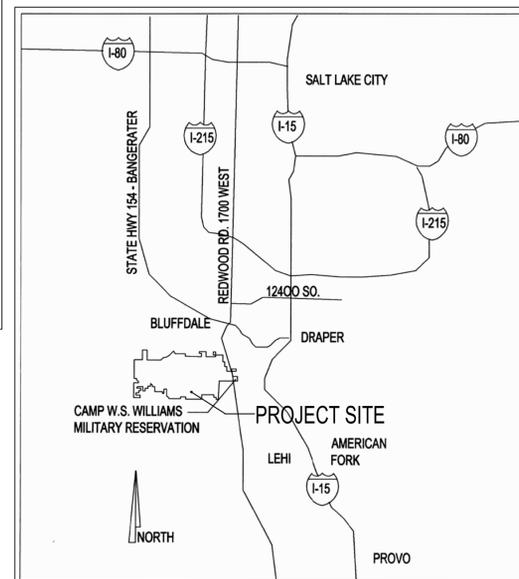
CONSULTANT INFORMATION

KEYED NOTES

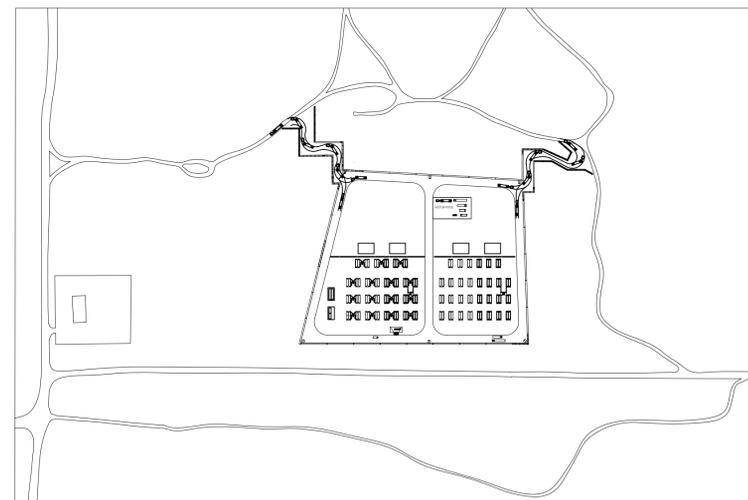
**BUILDING CODE DATA (GUARD TOWER)**

Occupancy Group: U  
Area: 64 sq. ft.  
Number of Stories: 1  
Height: 16 ft.  
Type of Construction: VB  
Wind Speed/Exposure: 90/C  
Floor Live Load: 40 psf  
Roof Live Load: 30 psf  
Ground Snow Load: 43 psf  
Seismic Design Category: D  
Site Class: D

Guard tower structure shall comply with requirements contained in the 2006 International Building Code (IBC) Chapter 2308 Conventional Light-Frame Construction.



LOCATION MAP



VICINITY MAP

STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES  
**DIVISION OF FACILITIES & CONSTRUCTION AND MANAGEMENT**  
4110 STATE OFFICE BUILDING  
SALT LAKE CITY, UTAH 84111  
801.538.3018

**INDEX OF DRAWINGS**

<b>GENERAL</b>	<b>ELECTRICAL</b>
GL001 COVER SHEET	EE001 SYMBOL LEGEND/SHEET INDEX
GL002 SCOPING PLAN	EE501 DETAILS
	EE601 SCHEDULES
<b>ARCHITECTURAL</b>	ES101 ELECTRICAL SITE PLAN
AS102 ENLARGED SITE PLAN	ES401 ENLARGED ELECTRICAL SITE PLAN -AREA "A"
AE201 ELEVATIONS	ES402 ENLARGED ELECTRICAL SITE PLAN -AREA "B"
AE202 TENT SLAB LAYOUT	ES403 ENLARGED ELECTRICAL SITE PLAN -AREA "C"

ARCHITECT:  
**HARRIS & ASSOCIATES**  
265 EAST 100 SOUTH, SUITE 350  
SALT LAKE CITY, UTAH 84111  
PH: 801.521.8564  
FAX: 801.355.2938  
www.3di.com

ELECTRICAL ENGINEER:  
**SPECTRUM ENGINEERS**  
175 SOUTH MAIN STREET, SUITE 300  
SALT LAKE CITY, UTAH 84111  
PH: 801.328.5151  
FAX: 801.328.5155  
www.spectrumengineers.com

**NOTE:**

THIS PROJECT WHICH IS LOCATED ON A REMOTE SITE OF CAMP WILLIAMS IS CONSTRUCTED TO REPLICATE A UNITED STATES ARMY FORWARD OPERATING BASE AS FOUND OVERSEAS WHERE SOLDIERS ARE CURRENTLY WORKING. IT IS MEANT TO BE AN AUSTERE REMOTE SITE WHERE SOLDIERS HAVE LIMITED LIVING CONDITIONS AND NO HABITABLE STRUCTURES, ONLY CONCRETE PADS FOR TENTS. IT IS USED TO KEEP ENEMY FIRE OUT AND PROVIDE TEMPORARY LIVING CONDITIONS INSIDE.

**APPROVALS:**

Prime Agency \_\_\_\_\_ Date \_\_\_\_\_

DFCM \_\_\_\_\_ Date \_\_\_\_\_

APPROVAL DOES NOT RELIEVE A/E OF DESIGN LIABILITY



**SHEET TITLE**  
**COVER SHEET**

REVISIONS	DATE	BY	DESCRIPTION
△			
△			
△			
△			

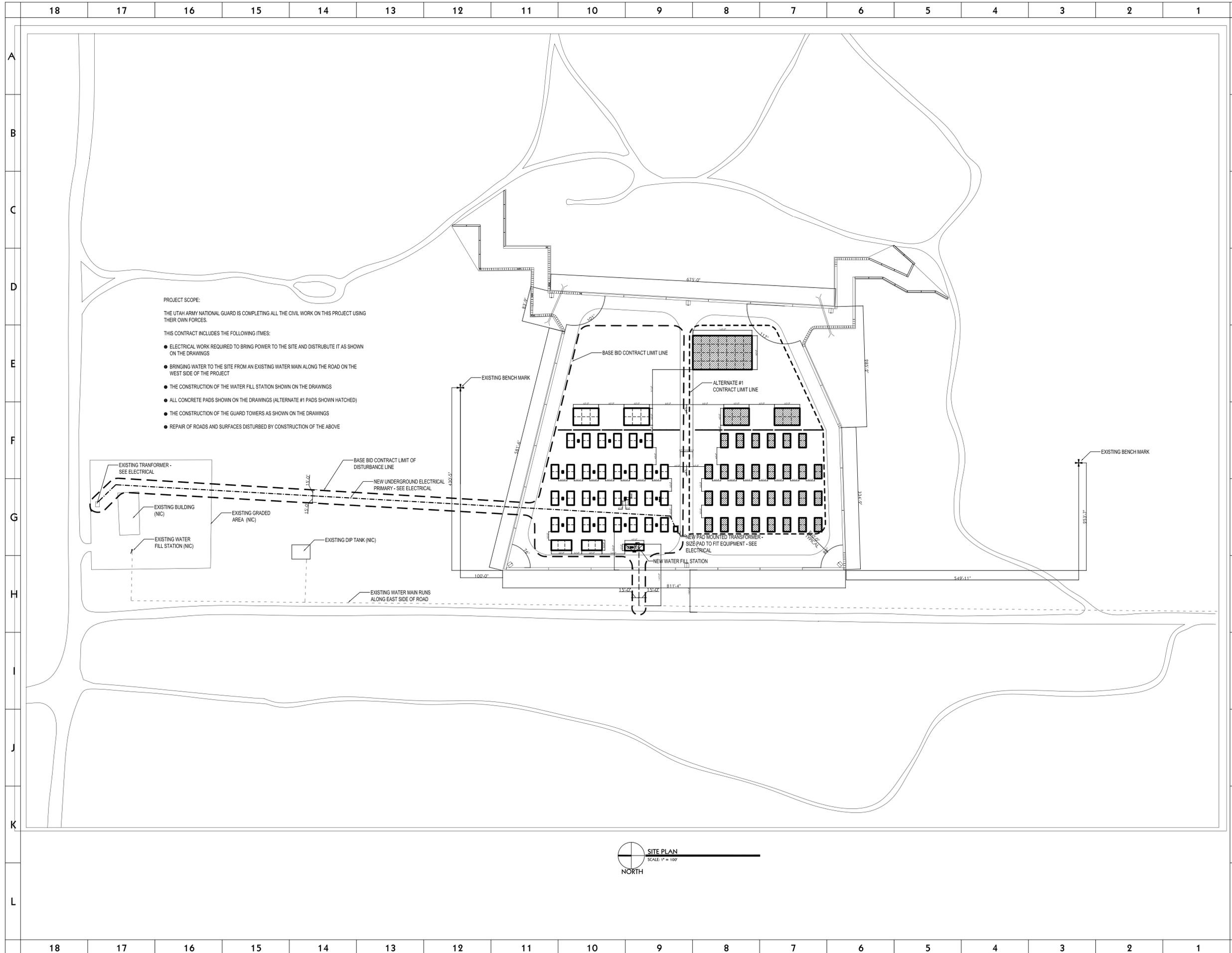
DRAWN BY: **JRA** CHECKED BY: **ERT**

PROJECT NO: **07326480** DRAWING NO: **GL001**

DATE: **JUN 5, 2008**

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CONSULTANT INFORMATION

KEYED NOTES

01



GENERAL NOTES

01



**SCOPING PLAN**

REVISIONS	DATE	BY	DESCRIPTION
△			
△			
△			
△			

DRAWN BY	JRA	CHECKED BY	ERT
PROJECT NO.	07326480	DRAWING NO.	GLOO2
DATE	JUN 5, 2008		

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GENERAL NOTES

01 ALL FASTENERS SHALL COMPLY WITH MANUFACTURE SPECIFICATIONS  
02 USE OF MANUFACTURED CONNECTIONS SHALL NOT BE MODIFIED  
03 ALL FASTENERS AND CONNECTORS SHALL BE HOT DIPPED GALVANIZED

DESIGN CRITERIA

- Governing Building Code: 2006 International Building Code (IBC)
- Floor Live Loading:
  - 1. Platform: 40 psf
  - 2. Roof Live Loading: 30 psf
- Wind:
  - 1. Basic Wind Speed (3-second gust): 90 mph
  - 2. Importance Factor,  $I_w$ : 1.0
  - 3. Exposure: C
  - 4. Internal Pressure Coefficient,  $C_{pi}$ : 0 (assumed open-structure)
  - 5. Topographic Factor,  $K_z$ : 1.0
- Foundation:
  - 1. Soil Bearing Pressure: 1500 psf (assumed)

WOOD

- Materials:
  - 1. Framing Lumber: Number 2 Douglas Fir-Larch or better or as noted otherwise
  - 2. Wood Structural Panel Sheathing: All panels shall be rated by the American Plywood Association (APA). Panels shall be exterior grade with exterior glue and the following panel span rating, unless noted otherwise,
 

Nail Size	Shank Diameter	Min. Penetration into Support Member
6d	0.113"	1.25"
8d	0.131"	1.50"
10d	0.148"	1.63"
12d	0.165"	1.83"
16d	0.162"	1.75"
  - 3. Nails: Standard Common (hot-dipped galvanized) with the following properties:
 

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  - 4. Bolts for connections: ASTM A307 with ASTM A563 heavy hex nuts and hardened washers, Grade A, unless noted otherwise. All bolts, nuts, and washers shall be hot-dipped galvanized.
- Special Treatments (American Wood Preservers Institute Standards):
  - 1. All wood in contact with concrete, masonry or soil: Pressure treated with Wolman CCA preservative or equal as approved by the Architect.
  - 2. Fire Retardant: Pressure treated with Dricol or equal as approved by the Architect.
- Minimum Nailing Requirements (See drawings for areas with greater requirements):
  - 1. Roof: Nail all sheathing panels with 8d common nails at 6" o.c. at all supported edges and at 12" o.c. at all intermediate supports. Use two pliclips between each support for spans of 48" o.c. and one pliclip between each support for lesser spans at all unsupported panel edges.
  - 2. Floor: Nail all sheathing panels with 8d common nails at 6" o.c. at all supported edges and 8d at 10" o.c. at all intermediate supports.
  - 3. Walls: Nail all sheathing panels with 8d common nails at 6" o.c. at all edges and at 12" o.c. at all intermediate supports (2x6" or 7/16" panels on studs spaced at 24" o.c. requires 6" spacing at all intermediate supports). Solid block all panel edges.
  - 4. General Framing and Carpentry: Connect all items as per IBC Table 2304.9.1, "Fastening Schedule", unless noted otherwise.
  - 5. All nails shall be hot-dipped galvanized.

CONCRETE

- Materials shall comply with the Standards specified in American Concrete Institute (ACI) 318-05, "Building Code Requirements for Structural Concrete".
  - 1. Compressive strengths of concrete at 28 days shall be as follows:
    - a. Footings: 3000 psi
    - b. All other Site Cast Concrete: 4000 psi
  - 2. Concrete Density (Maximum Air Dry Weight):
    - a. Normal weight concrete shall be approximately 145 to 155 pounds per cubic foot.
    - b. Lightweight concrete shall not exceed 110 pounds per cubic foot and shall be made of lightweight coarse aggregates and a blend of lightweight and normal weight fines.
  - 3. Reinforcing steel:
    - a. Admixtures:
      - 1. Air-entraining admixtures, comply with ASTM C 260 (when used).
      - 2. If any air content of a trowel finished floor slab exceeds 3%, there is an increased risk for delaminations and blistering to occur. When this situation is present, the contractor shall pay special attention to the finishing procedures to help minimize such risks. Refer to ACI 302.1R-96 "Guide for Concrete Floor and Slab Construction" for proper finishing guidelines.
    - b. Calcium chloride shall not be added to the concrete mix.
    - c. Only one grade or type of concrete shall be poured on the site at any given time.
- Concrete cure requirements for deformed bar reinforcing steel shall comply with ACI 318, "Building Code Requirements for Structural Concrete".
  - 1. Cast-in-place Concrete:
    - a. Cast against and permanently exposed to earth: Clear Cover
    - b. Formed concrete exposed to earth or weather:
      - 1. #3 thru #18 bars: 2"
      - 2. #5 and smaller bars: 1.12"
  - 2. No aluminum conduit or product containing aluminum or any other material injurious to concrete shall be embedded in concrete.
  - 3. Unless otherwise noted, all slabs on grade shall be 4" thick.

SPECIAL INSTRUCTIONS

- The project specifications are not superseded by the General Structural Notes but are intended to be complementary to them. Consult the specifications for additional requirements in each section. Notes and specific details on the drawings shall take precedence over General Structural Notes and typical details.
- The architectural drawings are the prime contract drawings. Consultant drawings by other disciplines are supplementary to the architectural drawings. All omissions or conflicts, including dimensions, between the various elements of the consultants' drawings and/or specifications shall be brought to the attention of the Architect before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the Architect without additional cost to the owner. Any work done by the contractor after discovery of such discrepancy shall be done at the contractor's risk.
- The structural drawings shall be used in conjunction with the architectural drawings. Primary structural elements and overall structural layout are indicated within the structural plans and details. Some secondary elements, architectural layouts, alcoves, elevations, slopes, depressions, curbs, mechanical equipment and electrical equipment, are not indicated within the structural drawings. Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings.
- Shoring and Bracing Requirements:
  - 1. Floor and Roof Structures - The General Contractor is responsible for the method and sequence of all structural erection. He shall provide temporary shoring and bracing as his method of erection requires to provide adequate vertical and lateral support. Shoring and bracing shall remain in place as the chosen method requires until all permanent members are in place and all final connections are completed, including all roof and floor attachments. The building shall not be considered stable until all connections are complete.
  - 2. Foundation walls must be braced until the complete floor or roof systems is completed. Do not backfill until floor or roof systems are in place.
  - 3. Walls above grade shall be braced until the structural system is complete. Walls shall not be considered to be self supporting.
- Submittals: A copy of all shop drawings that have been submitted for review must be kept at the construction site for reference. These drawings must bear the appropriate review stamps. The shop drawing review shall not relieve the contractor of the responsibility of completing the project according to the contract documents. The general contractor shall review and mark all shop drawings prior to submitting them to the Architect for his review. Shop Drawings made from reproductions of (these) contract drawings will be rejected.
- Project Coordination: It shall be the responsibility of the general contractor to coordinate with all trades and all items that are to be integrated into the structural system. Openings or penetrations through, or attachments to the structural system that are not indicated on these drawings shall be the responsibility of the general contractor and shall be coordinated with the Architect/Engineers. The order of construction is the responsibility of the general contractor. It is the contractor's obligation to provide all items necessary for his chosen procedure.
- Contractor shall field verify all dimensions, and conditions. If the contract drawings do not represent actual conditions, contractor shall notify architect/engineer prior to fabrication or construction within that area.

QUALITY ASSURANCE

- Quality Assurance Agency Requirements:
  - 1. The owner shall engage a qualified Quality Assurance Agency (QAA) to provide all special inspection and quality assurance testing for the project. All quality assurance personnel assigned to the project shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection.
  - 2. Prior to construction, the QAA shall prepare a written Quality Assurance Implementation Plan (QAIP) for the project. The QAIP shall include a list of personnel assigned to the project including management personnel, inspection procedures and frequency, proposed testing methods and frequency of testing, and reporting procedures. The QAIP shall also outline methods of documenting deficiencies and reporting corrections. A copy of the QAIP shall be given to the contractor for review and coordination with subcontractors.
  - 3. Prior to construction, the QAA shall submit the following information to the Architect and Engineer of Record for approval:
    - a. A copy of the Quality Assurance Implementation Plan for the project.
    - b. A copy of the appropriate certification and training records for each individual performing inspections or testing.
    - c. A list of the testing equipment designated for the project and recent calibration records for the equipment.
  - 4. The special inspector shall inspect per work Chapter 17 of the IBC for conformance with the contract documents. The special inspector shall send reports to the owner, building official, architect, engineer, and contractor. All discrepancies shall be brought to the immediate attention of the contractor for correction. The QAA shall submit a final signed report stating that the special inspection work was, to the best of their knowledge, in conformance with the plans, specifications and applicable workmanship provisions of the IBC.
- Special Inspection: Special inspection shall be provided for the following elements per IBC sections 1704 and 1707:
  - 1. Concrete and elements embedded in concrete shall be special inspected prior to and during placement of concrete. Special inspection of concrete shall include the following:
    - a. Reinforcing steel size and placement.
    - b. Bolt and embed size, configuration and placement.
    - c. Concrete shall receive continuous special inspection during placement, and periodic inspection after placement to ensure proper curing and weather protection procedures.
  - 2. Wood: Nailing of wood floor and roof diaphragms, nailing of wood sheenwalls and installation of anchor bolts, hold-down anchors, seismic straps and other elements of the main seismic force resisting system shall receive special inspection per IBC 1707.3.
- Structural Testing: The following materials shall be tested per IBC sections 1704 and 1708. The owner reserves the right to test any and all materials using any appropriate non-destructive procedure. Any items found to be deficient shall be corrected and retested at no additional cost to the owner.
  - 1. Concrete Strength Verification and Testing: All concrete shall be tested to verify strength, slump, unit weight, air content, and temperature. See the specifications for testing criteria, testing frequency and acceptability criteria.
- Structural Observations by the Engineer of Record:
  - 1. The Engineer of Record may perform structural observations at critical phases of the project. Copies of the engineer's report will be distributed to the architect, contractor, owner, and QAA.
  - 2. Acknowledgement of receipt of the Engineer's field representative shall not be construed as inspection or approval of construction.
  - 3. Notification of Engineer: The contractor shall notify the engineer twenty-four hours prior to:
    - a. Placing concrete in any footing.
    - b. Closing any wall forms.
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  - 2. Fire Retardant: Pressure treated with Dricol or equal as approved by the Architect.
- Minimum Nailing Requirements (See drawings for areas with greater requirements):
  - 1. Roof: Nail all sheathing panels with 8d common nails at 6" o.c. at all supported edges and at 12" o.c. at all intermediate supports. Use two pliclips between each support for spans of 48" o.c. and one pliclip between each support for lesser spans at all unsupported panel edges.
  - 2. Floor: Nail all sheathing panels with 8d common nails at 6" o.c. at all supported edges and 8d at 10" o.c. at all intermediate supports.
  - 3. Walls: Nail all sheathing panels with 8d common nails at 6" o.c. at all edges and at 12" o.c. at all intermediate supports (2x6" or 7/16" panels on studs spaced at 24" o.c. requires 6" spacing at all intermediate supports). Solid block all panel edges.
  - 4. General Framing and Carpentry: Connect all items as per IBC Table 2304.9.1, "Fastening Schedule", unless noted otherwise.
  - 5. All nails shall be hot-dipped galvanized.

CONCRETE

- Materials shall comply with the Standards specified in American Concrete Institute (ACI) 318-05, "Building Code Requirements for Structural Concrete".
  - 1. Compressive strengths of concrete at 28 days shall be as follows:
    - a. Footings: 3000 psi
    - b. All other Site Cast Concrete: 4000 psi
  - 2. Concrete Density (Maximum Air Dry Weight):
    - a. Normal weight concrete shall be approximately 145 to 155 pounds per cubic foot.
    - b. Lightweight concrete shall not exceed 110 pounds per cubic foot and shall be made of lightweight coarse aggregates and a blend of lightweight and normal weight fines.
  - 3. Reinforcing steel:
    - a. Admixtures:
      - 1. Air-entraining admixtures, comply with ASTM C 260 (when used).
      - 2. If any air content of a trowel finished floor slab exceeds 3%, there is an increased risk for delaminations and blistering to occur. When this situation is present, the contractor shall pay special attention to the finishing procedures to help minimize such risks. Refer to ACI 302.1R-96 "Guide for Concrete Floor and Slab Construction" for proper finishing guidelines.
    - b. Calcium chloride shall not be added to the concrete mix.
    - c. Only one grade or type of concrete shall be poured on the site at any given time.
- Concrete cure requirements for deformed bar reinforcing steel shall comply with ACI 318, "Building Code Requirements for Structural Concrete".
  - 1. Cast-in-place Concrete:
    - a. Cast against and permanently exposed to earth: Clear Cover
    - b. Formed concrete exposed to earth or weather:
      - 1. #3 thru #18 bars: 2"
      - 2. #5 and smaller bars: 1.12"
  - 2. No aluminum conduit or product containing aluminum or any other material injurious to concrete shall be embedded in concrete.
  - 3. Unless otherwise noted, all slabs on grade shall be 4" thick.

SPECIAL INSTRUCTIONS

- The project specifications are not superseded by the General Structural Notes but are intended to be complementary to them. Consult the specifications for additional requirements in each section. Notes and specific details on the drawings shall take precedence over General Structural Notes and typical details.
- The architectural drawings are the prime contract drawings. Consultant drawings by other disciplines are supplementary to the architectural drawings. All omissions or conflicts, including dimensions, between the various elements of the consultants' drawings and/or specifications shall be brought to the attention of the Architect before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the Architect without additional cost to the owner. Any work done by the contractor after discovery of such discrepancy shall be done at the contractor's risk.
- The structural drawings shall be used in conjunction with the architectural drawings. Primary structural elements and overall structural layout are indicated within the structural plans and details. Some secondary elements, architectural layouts, alcoves, elevations, slopes, depressions, curbs, mechanical equipment and electrical equipment, are not indicated within the structural drawings. Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings.
- Shoring and Bracing Requirements:
  - 1. Floor and Roof Structures - The General Contractor is responsible for the method and sequence of all structural erection. He shall provide temporary shoring and bracing as his method of erection requires to provide adequate vertical and lateral support. Shoring and bracing shall remain in place as the chosen method requires until all permanent members are in place and all final connections are completed, including all roof and floor attachments. The building shall not be considered stable until all connections are complete.
  - 2. Foundation walls must be braced until the complete floor or roof systems is completed. Do not backfill until floor or roof systems are in place.
  - 3. Walls above grade shall be braced until the structural system is complete. Walls shall not be considered to be self supporting.
- Submittals: A copy of all shop drawings that have been submitted for review must be kept at the construction site for reference. These drawings must bear the appropriate review stamps. The shop drawing review shall not relieve the contractor of the responsibility of completing the project according to the contract documents. The general contractor shall review and mark all shop drawings prior to submitting them to the Architect for his review. Shop Drawings made from reproductions of (these) contract drawings will be rejected.
- Project Coordination: It shall be the responsibility of the general contractor to coordinate with all trades and all items that are to be integrated into the structural system. Openings or penetrations through, or attachments to the structural system that are not indicated on these drawings shall be the responsibility of the general contractor and shall be coordinated with the Architect/Engineers. The order of construction is the responsibility of the general contractor. It is the contractor's obligation to provide all items necessary for his chosen procedure.
- Contractor shall field verify all dimensions, and conditions. If the contract drawings do not represent actual conditions, contractor shall notify architect/engineer prior to fabrication or construction within that area.

QUALITY ASSURANCE

- Quality Assurance Agency Requirements:
  - 1. The owner shall engage a qualified Quality Assurance Agency (QAA) to provide all special inspection and quality assurance testing for the project. All quality assurance personnel assigned to the project shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection.
  - 2. Prior to construction, the QAA shall prepare a written Quality Assurance Implementation Plan (QAIP) for the project. The QAIP shall include a list of personnel assigned to the project including management personnel, inspection procedures and frequency, proposed testing methods and frequency of testing, and reporting procedures. The QAIP shall also outline methods of documenting deficiencies and reporting corrections. A copy of the QAIP shall be given to the contractor for review and coordination with subcontractors.
  - 3. Prior to construction, the QAA shall submit the following information to the Architect and Engineer of Record for approval:
    - a. A copy of the Quality Assurance Implementation Plan for the project.
    - b. A copy of the appropriate certification and training records for each individual performing inspections or testing.
    - c. A list of the testing equipment designated for the project and recent calibration records for the equipment.
  - 4. The special inspector shall inspect per work Chapter 17 of the IBC for conformance with the contract documents. The special inspector shall send reports to the owner, building official, architect, engineer, and contractor. All discrepancies shall be brought to the immediate attention of the contractor for correction. The QAA shall submit a final signed report stating that the special inspection work was, to the best of their knowledge, in conformance with the plans, specifications and applicable workmanship provisions of the IBC.
- Special Inspection: Special inspection shall be provided for the following elements per IBC sections 1704 and 1707:
  - 1. Concrete and elements embedded in concrete shall be special inspected prior to and during placement of concrete. Special inspection of concrete shall include the following:
    - a. Reinforcing steel size and placement.
    - b. Bolt and embed size, configuration and placement.
    - c. Concrete shall receive continuous special inspection during placement, and periodic inspection after placement to ensure proper curing and weather protection procedures.
  - 2. Wood: Nailing of wood floor and roof diaphragms, nailing of wood sheenwalls and installation of anchor bolts, hold-down anchors, seismic straps and other elements of the main seismic force resisting system shall receive special inspection per IBC 1707.3.
- Structural Testing: The following materials shall be tested per IBC sections 1704 and 1708. The owner reserves the right to test any and all materials using any appropriate non-destructive procedure. Any items found to be deficient shall be corrected and retested at no additional cost to the owner.
  - 1. Concrete Strength Verification and Testing: All concrete shall be tested to verify strength, slump, unit weight, air content, and temperature. See the specifications for testing criteria, testing frequency and acceptability criteria.
- Structural Observations by the Engineer of Record:
  - 1. The Engineer of Record may perform structural observations at critical phases of the project. Copies of the engineer's report will be distributed to the architect, contractor, owner, and QAA.
  - 2. Acknowledgement of receipt of the Engineer's field representative shall not be construed as inspection or approval of construction.
  - 3. Notification of Engineer: The contractor shall notify the engineer twenty-four hours prior to:
    - a. Placing concrete in any footing.
    - b. Closing any wall forms.
    - c. Completing the nailing of any plywood wall or deck.
- Contractor Responsibility:

CONSULTANT INFORMATION

KEYED NOTES



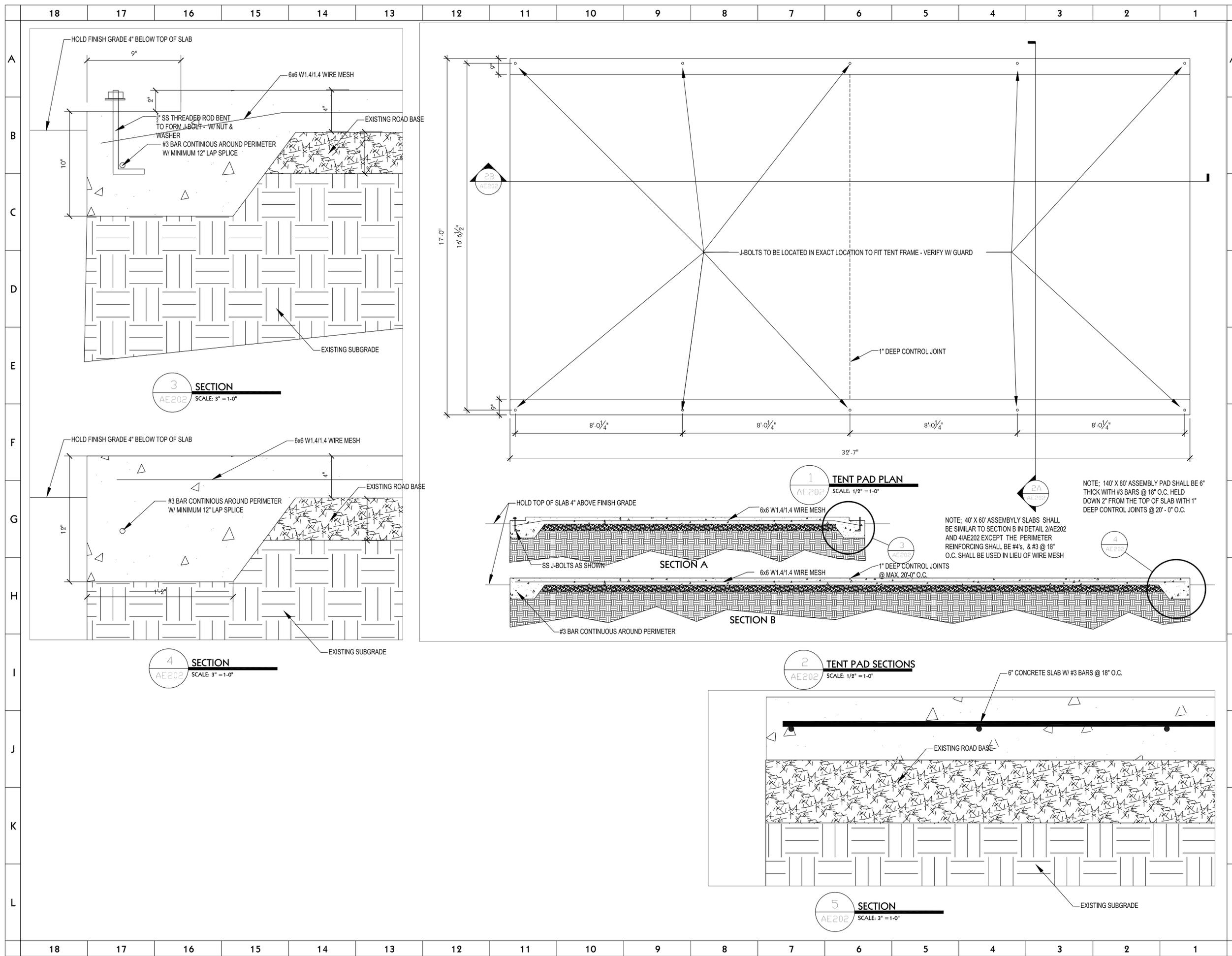
GENERAL NOTES



SHEET TITLE  
**TENT SLAB LAYOUT**

REVISIONS	DATE	BY	DESCRIPTION
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DRAWN BY	JRA	CHECKED BY	ERT
PROJECT NO.	07326480	DRAWING NO.	AE202
DATE	JUN 5, 2008		



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SYMBOL LEGEND	
SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501 INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ROOM OR SPACE NUMBER.
	KEYNOTE INDICATOR.
	REVISION INDICATOR.
	EQUIPMENT INDICATOR.
	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING.
	BREAK, ROUND.
	NEW LINE: MEDIUM LINE.
	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
	PROPERTY LINE: DASHED, WIDE LINE.
	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
WIRING METHODS	
	WIRING.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN SECTION 16120.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. NUMBER IN BOX REFERS TO THE CONDUCTOR AND CONDUIT SCHEDULE. FOR BRANCH WIRING USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN SECTION 16120.
	WIRING AND/OR RACEWAY: THIN LINE. WHERE "X" = : CATV = CABLE TELEVISION      NC = NURSE CALL CCTV = CLOSED CIRCUIT      P = POWER TELEVISION                      RC = RIGID CONDUIT FA = FIRE ALARM                S = SOUND FO = FIBER OPTICS              T = TELEPHONE I = INTERCOM                    TV = TELEVISION
	OTHERS AS NOTED IN OTHER SCHEDULES. RACEWAYS AND WIRING SHALL BE SIZED AS SHOWN AND/OR SPECIFIED.
	CONDUIT STUB. DIMENSION RECORD DRAWINGS AND MARK.
	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
	JUNCTION BOX.
	PULL BOX.
	EARTH GROUND (ONE-LINE DIAGRAM).
	JUNCTION BOX, CEILING.
LIGHTING (REFER TO FIXTURE SCHEDULE FOR SYMBOLS)	
	FIXTURE IDENTIFICATION: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.
	FIXTURE IDENTIFICATION, EMERGENCY WITH BATTERY PACK, CONNECTED TO GENERATOR AS INDICATED: (W-3) INDICATES FIXTURE TYPE AS SCHEDULED.

ABBREVIATIONS			
NOTE: ALL ABBREVIATIONS MAY NOT BE USED.			
1P	SINGLE POLE	KV	KILOVOLT
1PH	SINGLE-PHASE	KVA	KILOVOLT AMPERE
1WAY	ONE-WAY	KVAR	KILOVOLT AMPERE REACTIVE
2/C	TWO-CONDUCTOR	KW	KILOWATT
2WAY	TWO-WAY	KWH	KILOWATT HOUR
3/C	THREE-CONDUCTOR	LED	LIGHT EMITTING DIODE
3PH	THREE-PHASE	LFCM	LIQUID TIGHT FLEXIBLE METAL CONDUIT
3WAY	THREE-WAY	LFNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
4OUT	QUADRUPLE RECEPTACLE OUTLET	LPS	LOW PRESSURE SODIUM
4PDT	FOUR-POLE DOUBLE THROW	LRA	LOCKED ROTOR AMPS
4PST	FOUR-POLE SINGLE THROW	LTG	LIGHTING
4W	FOUR-WIRE	LV	LOW VOLTAGE
4WAY	FOUR-WAY	MATV	MASTER ANTENNA TELEVISION SYSTEM
A	ABOVE COUNTER	MAX	MAXIMUM
AC	ARMORED CABLE	MC	METAL CLAD
ADA	AMERICANS WITH DISABILITIES ACT	MCA	MINIMUM CIRCUIT AMPS
ADJ	ADJACENT	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	MCP	MOTOR CIRCUIT PROTECTION
AIC	AMPERE INTERRUPTING CAPACITY	MDP	MAIN DISTRIBUTION PANEL
ALUM	ALUMINUM	MG	MOTOR GENERATOR
AMP	AMPERE	MH	MANHOLE
ANN	ANNUNCIATOR	MIN	MINIMUM
AP	ACCESS POINT (WIRELESS DATA)	MLO	MAIN LUGS ONLY
AR	AS REQUIRED	MOCOP	MAXIMUM OVERCURRENT PROTECTION
ASC	AMPS SHORT CIRCUIT	NA	NOT APPLICABLE
ATS	AUTOMATIC TRANSFER SWITCH	NC	NORMALLY CLOSED
AV	AUDIO VISUAL	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAGE	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BB XFMR	BUCK-BOOST TRANSFORMER	NFC	NATIONAL FIRE CODE
C	CEILING MOUNTED	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CATV	COMMUNITY ANTENNA TELEVISION	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NL	NIGHT LIGHT
CCBA	CUSTOM COLOR AS SELECTED BY ARCHITECT	NO	NORMALLY OPEN
CCTV	CLOSED CIRCUIT TELEVISION	NTS	NOT TO SCALE
CFBA	CUSTOM FINISH AS SELECTED BY ARCHITECT	OC	OVER CURRENT PROTECTION
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED	OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
CF/OI	CONTRACTOR FURNISHED/OWNER INSTALLED	OF/OI	OWNER FURNISHED/OWNER INSTALLED
CKT	CIRCUIT	OFF	OBTAIN FROM PLANS
CM	CONSTRUCTION MANAGER	OH DR	OVERHEAD (COILING) DOOR
CND	CONDUIT	OL	OVERLOAD
CO	CONVENIENCE OUTLET	PB	PUSHBUTTON
COR	CONTRACTING OFFICER'S REPRESENTATIVE	PF	POWER FACTOR
CP	CONTROL PANEL	PH	PHASE
CT	CURRENT TRANSFORMER	PNL	PANEL
CTV	CABLE TELEVISION	PT	POTENTIAL TRANSFORMER
CU	COPPER	PTZ	PAN/TILT/ZOOM
dB	UNIT OF SOUND LEVEL	QTY	QUANTITY
DPDT	DOUBLE POLE DOUBLE THROW	R	REMOVE
DS	DISCONNECT SWITCH	RCP	REFLECTED CEILING PLAN
EA	EACH	RMC	RIGID METAL CONDUIT
EM	EMERGENCY	RNC	RIGID NONMETALLIC CONDUIT
EMT	ELECTRICAL METALLIC TUBING	RPM	REVOLUTIONS PER MINUTE
ENT	ELECTRICAL NONMETALLIC TUBING	RR	REMOVE AND RELOCATE
EPO	EMERGENCY POWER OFF	SCA	SHORT CIRCUIT AMPS
EQUIP	EQUIPMENT	SCBA	STANDARD COLOR AS SELECTED BY ARCHITECT
EX	EXISTING	SF	SQUARE FOOT (FEET)
F	FURNITURE MOUNTED	SFBA	STANDARD FINISH AS SELECTED BY ARCHITECT
FA	FIRE ALARM	SPDT	SINGLE POLE, DOUBLE THROW
FCP	FIRE ALARM CONTROL PANEL	SPEC	SPECIFICATION
FLA	FULL LOAD AMPS	SPST	SINGLE POLE, SINGLE THROW
FMC	FLEXIBLE METALCONDUIT	S/S	START/STOP
FOB	FREIGHT ON BOARD	ST	SINGLE THROW
FVNR	FULL VOLTAGE NON-REVERSING	SWBD	SWITCHBOARD
FVR	FULL VOLTAGE REVERSING	SWGR	SWITCHGEAR
G	GROUND	TL	TWIST LOCK
GEN	GENERATOR	TP	TELEPHONE POLE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TP	TWISTED PAIR
GFP	GROUND FAULT PROTECTION	TTB	TELEPHONE TERMINAL BOARD
HD	HEAVY DUTY	TV	TELEVISION
HID	HIGH INTENSITY DISCHARGE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
HOA	HAND-OFF-AUTOMATIC	TYP	TYPICAL
HP	HORSE POWER	UF	UNDERFLOOR
HPF	HIGH POWER FACTOR	UGND	UNDERGROUND
HPS	HIGH PRESSURE SODIUM	UPS	UNINTERRUPTIBLE POWER SUPPLY
HV	HIGH VOLTAGE	V	VOLTS
HZ	HERTZ	VA	VOLT AMPERE
IG	ISOLATED GROUND	VFC/VFD	VARIABLE FREQUENCY MOTOR CONTROLLER
IMC	INTERMEDIATE METAL CONDUIT	W/	WITH
IN/IS	INSULATED/ISOLATED	W/O	WITHOUT
I/O	INPUT/OUTPUT	WP	WEATHERPROOF
IR	INFRARED	XFMR	TRANSFORMER
J-BOX	JUNCTION BOX		

### GENERAL ELECTRICAL NOTES

- CLARIFICATION METHODS: AT THE TIME OF BIDDING, BIDDERS SHALL FAMILIARIZE THEMSELVES WITH THE DRAWINGS AND SPECIFICATIONS. ANY QUESTIONS, MISUNDERSTANDINGS, CONFLICTS, DELETIONS, DISCONTINUED PRODUCTS, CATALOG NUMBER DISCREPANCIES, DISCREPANCIES BETWEEN THE EQUIPMENT SUPPLIED AND THE INTENT OR FUNCTION OF THE EQUIPMENT, ETC, SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER IN WRITING FOR CLARIFICATION PRIOR TO ISSUANCE OF THE FINAL ADDENDUM AND BIDDING OF THE PROJECT. WHERE DISCREPANCIES OR MULTIPLE INTERPRETATIONS OCCUR, THE MOST STRINGENT (WHICH IS GENERALLY RECOGNIZED AS THE MOST COSTLY) THAT MEETS THE INTENT OF THE DOCUMENTS SHALL BE ENFORCED.
- OWNER FURNISHED ITEMS: THE OWNER WILL FURNISH MATERIAL AND EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS TO BE INCORPORATED INTO THE WORK. THESE ITEMS ARE ASSIGNED TO THE INSTALLER AND COSTS FOR RECEIVING, HANDLING, STORAGE, IF REQUIRED, AND INSTALLATION ARE INCLUDED IN THE CONTRACT SUM.
  - THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.
  - THE OWNER WILL ARRANGE AND PAY FOR DELIVERY OF OWNER FURNISHED ITEMS FREIGHT ON BOARD JOB SITE AND THE INSTALLER WILL INSPECT DELIVERIES FOR DAMAGE. IF OWNER FURNISHED ITEMS ARE DAMAGED, DEFECTIVE OR MISSING, DOCUMENT DAMAGED ITEMS WITH THE TRANSPORT COMPANY AND THE OWNER WILL ARRANGE FOR REPLACEMENT. THE OWNER WILL ALSO ARRANGE FOR MANUFACTURER'S FIELD SERVICES, AND THE DELIVERY OF MANUFACTURER'S WARRANTIES AND BONDS TO THE INSTALLER.
  - THE INSTALLER IS RESPONSIBLE FOR DESIGNATING THE DELIVERY DATES OF OWNER FURNISHED ITEMS AND FOR RECEIVING, UNLOADING AND HANDLING OWNER FURNISHED ITEMS AT THE SITE. THE INSTALLER IS RESPONSIBLE FOR PROTECTING OWNER FURNISHED ITEMS FROM DAMAGE, INCLUDING DAMAGE FROM EXPOSURE TO THE ELEMENTS, AND TO REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF HIS OPERATIONS.
- EXPOSED STRUCTURE AREAS (EXCLUDING MECHANICAL, ELECTRICAL, AND COMMUNICATION SPACES): INSTALL RACEWAYS BETWEEN DECK AND STRUCTURE WHEREVER POSSIBLE IN EXPOSED STRUCTURE CEILING AREAS. ROUTE RACEWAYS IN CONCEALED AREAS WHEREVER POSSIBLE. REFER ALL CONDITIONS WHERE RACEWAYS MUST BE INSTALLED WHICH CANNOT COMPLY WITH THESE REQUIREMENTS TO THE ARCHITECT.
- SUBMITTALS: PROVIDE SUBMITTALS IN THREE RING BINDERS WITH JOB NAME, SUBCONTRACTOR, AND VOLUME ON THE BINDING. PREPARE TABS FOR EACH SPECIFICATION SECTION REQUIRING SUBMITTALS. PREPARE INDEX OF EQUIPMENT SUBMITTED IN EACH TAB.
- REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.

### DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", "AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

TECHNOLOGY SYSTEMS: THE TERM "TECHNOLOGY SYSTEMS" IS USED TO DESCRIBE ALL LOW VOLTAGE SYSTEMS GENERALLY REFERRED TO AS "SPECIAL SYSTEMS". THESE SYSTEMS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO ALL SYSTEMS WHICH UTILIZE VOLTAGES OF LESS THAN 71 VOLTS SUCH AS SOUND SYSTEMS, VIDEO SYSTEMS, TV SYSTEMS, SECURITY SYSTEMS, VOICE AND DATA CABLING SYSTEMS, ETC...

### ELECTRICAL SHEET INDEX

SHEET NO	SHEET TITLE
EE001	SYMBOL LEGEND & SHEET INDEX
EE501	DETAILS
EE601	SCHEDULES
ES101	ELECTRICAL SITE PLAN
ES401	ENLARGED ELECTRICAL SITE PLAN - AREA "A"
ES402	ENLARGED ELECTRICAL SITE PLAN - AREA "B"
ES403	ENLARGED ELECTRICAL SITE PLAN - AREA "C"

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SHEET TITLE

## Symbol Legend/Sheet Index

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DRAWN BY: **PSS** CHECKED BY: **David L Affleck**

PROJECT NO: **06296480** DRAWING NO: **EE001**

DATE: **JUNE 5, 2008**

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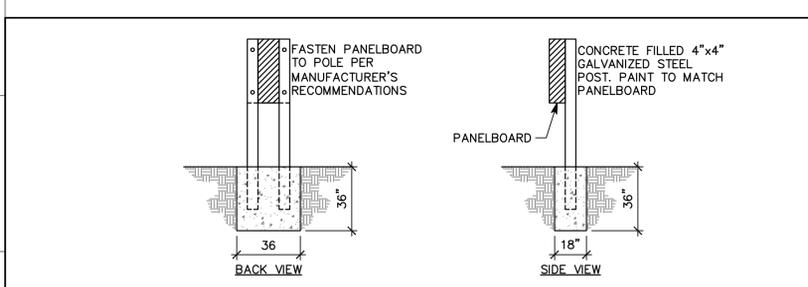
**GENERAL SHEET NOTES**

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.

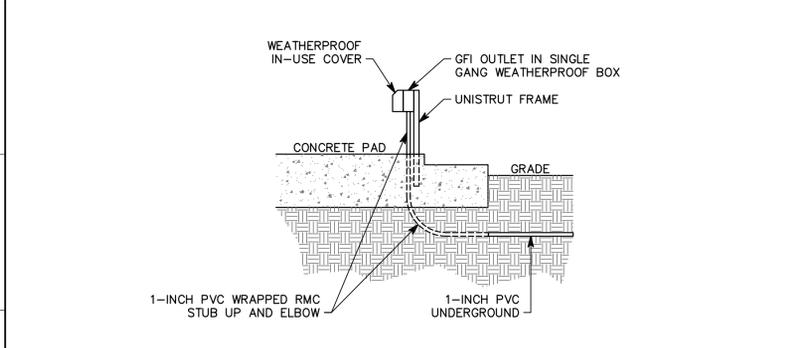
**12.5 KV EQUIPMENT LIST**

EQUIP NO	QTY.	DESCRIPTION	MANUFACTURER	CATALOG NO.
100	3	SURGE ARRESTER / TYPE 'L' FUSED CUTOFF COMBINATION 15 KV, 110 KV BIL, 10,600 ASIC, EXPENDABLE GAP, FUSED CUTOFF WITH 100 A FUSE HOLDER, & ULTRASIL NORMAL-DUTY VARIGAP, 9 KV SURGE ARRESTER	COOPER	L4BAP1A002COA
105	3	15 KV SHIELDED POWER CABLE TERMINATION DEAD BREAK KIT	TBD	TBD
115	AS REQ'D	BRONZE PARALLEL CONNECTOR - SPLIT BOLT TYPE C, FOR #2 SOLID COPPER	ANDERSON	C-2
120	AS REQ'D	# 2 AWG, SOLID, HARD DRAWN COPPER CONDUCTOR	TBD	TBD
125	AS REQ'D	15 KV SHIELDED ARMORED POWER CABLE, TYPE MV-105, #2 AWG, 133% INSULATION, EP-INSULATION W/PVC JACKET OVER ALUMINUM ARMOR.	OKONITE	115-23-3111

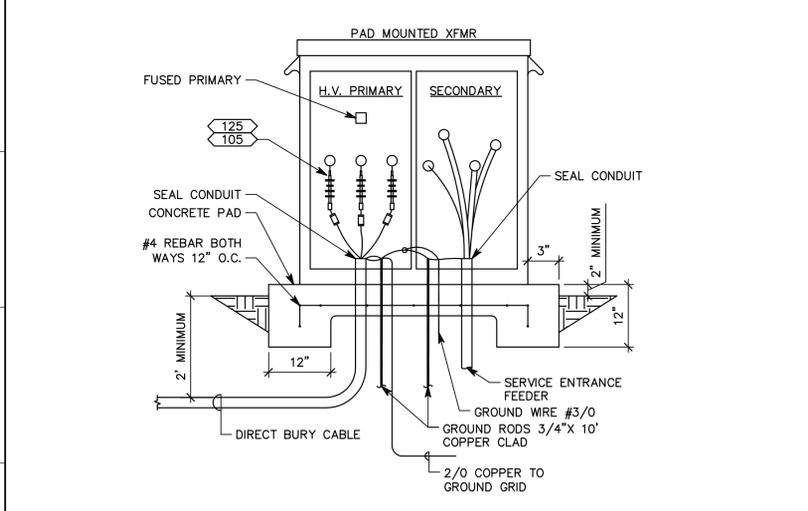
NOTES:  
TBD = TO BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT REQUIREMENTS AND AS PER THE SPECIFICATIONS.



**E18 PANELBOARD MOUNTING DETAIL**  
NTS

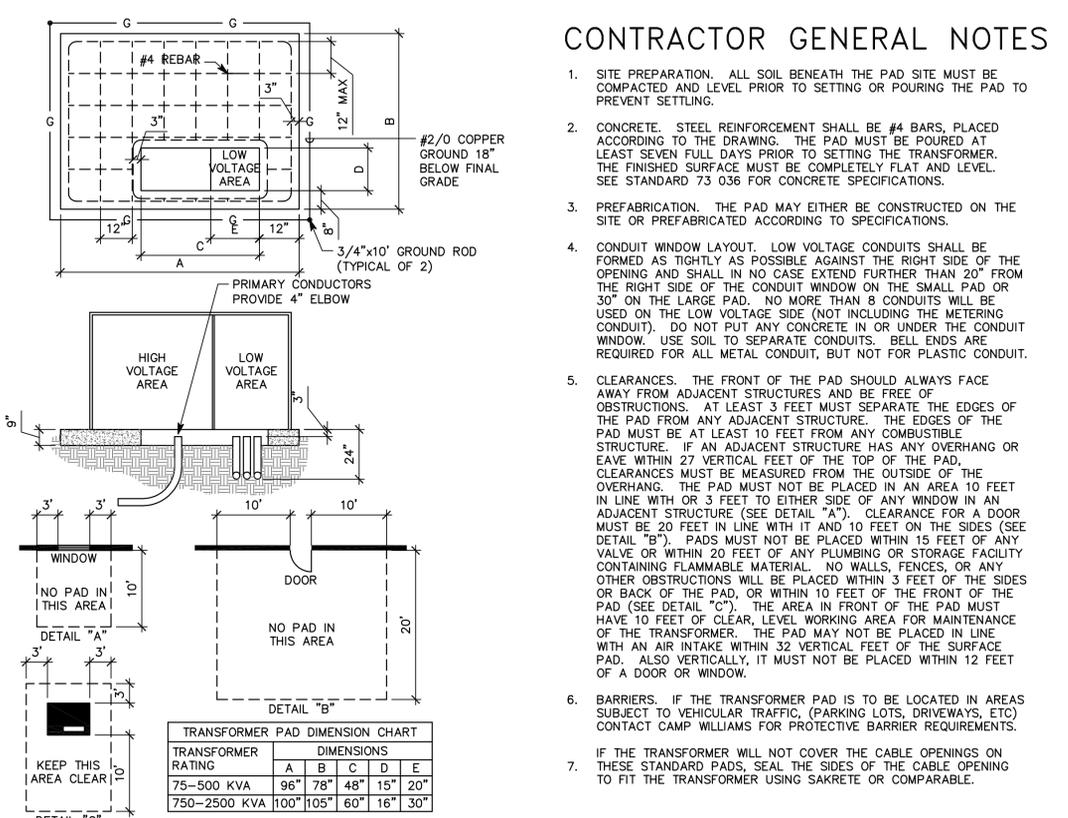


**H18 OUTLET INSTALLATION DETAIL**  
NTS

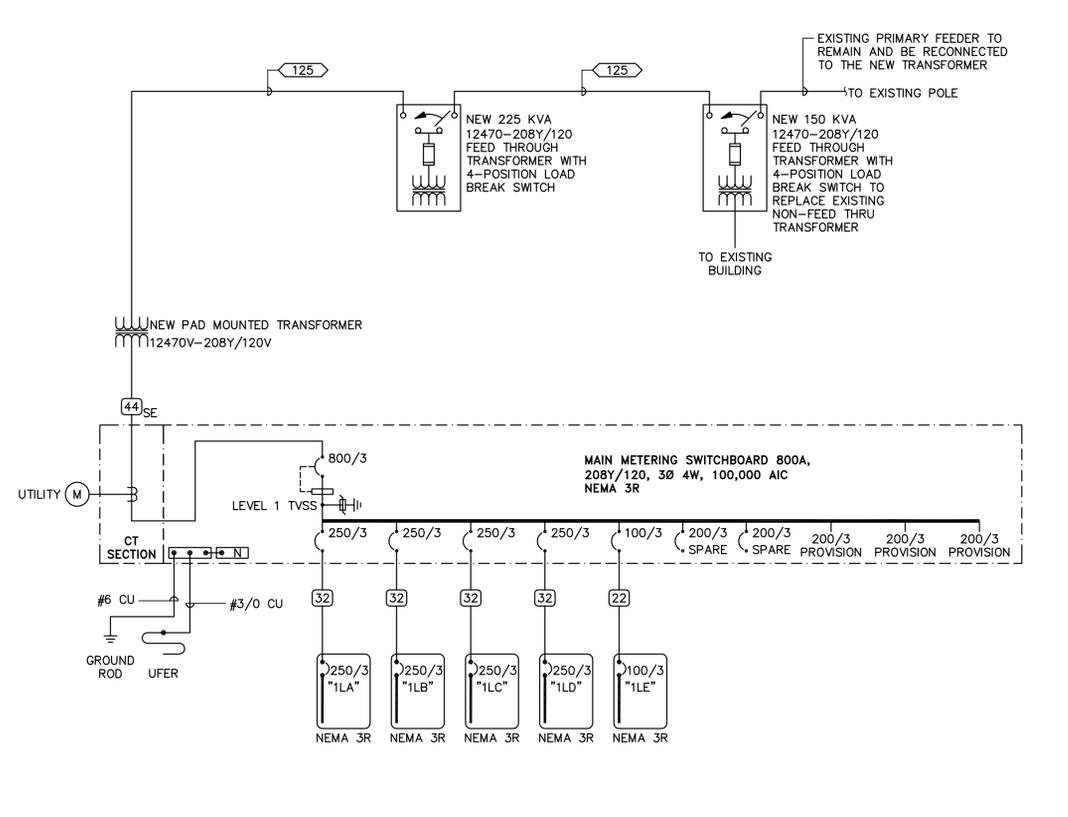


**L18 TRANSFORMER DETAIL**  
NTS

**CONTRACTOR GENERAL NOTES**



**F12 TRANSFORMER PAD DETAIL**  
NTS



**I12 ONE-LINE DIAGRAM**  
NO SCALE

**CONDUCTOR AND CONDUIT SCHEDULE**

SCHEDULE NUMBER: (E.G.) 5<sub>IG</sub>

SUBSCRIPT (NOTE 5)

SYM	AMP	CONDUIT SIZE	CONDUCTOR (NOTE 1) QTY	SIZE	G	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4					6	
59		5					6	
60		10 EA 4					6	

- CONDUCTOR AND CONDUIT SCHEDULE NOTES
1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
  2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
  3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
  4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
  5. WHEN SYMBOL SUBSCRIPT INDICATES "IG", INCLUDE "IG" OR INSULATED GROUND CONDUCTOR SCHEDULED ALONG WITH GROUND OR EQUIPMENT GROUND CONDUCTOR. WHEN SYMBOL SUBSCRIPT INDICATES "SE", SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEMS.
  6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

Utah National Guard

F.O.B.  
UTAH NATIONAL GUARD  
CAMP W.G. WILLIAMS, UTAH

SHEET TITLE: **Details**

REVISIONS	DATE	BY	DESCRIPTION
△			
△			
△			
△			

DRAWN BY: PSS  
PROJECT NO: 06296480  
DATE: JUNE 5, 2008

CHECKED BY: David L Affleck  
DRAWING NO: EE501

CONSULTANT INFORMATION

175 South Main Street, Suite 300  
Salt Lake City, Utah 84111  
801-328-5151  
800-678-7077  
FAX 801-328-5155  
www.spectrum-engineers.com





Utah National Guard  
F.O.B.  
UTAH NATIONAL GUARD  
CAMP W.G. WILLIAMS, UTAH

SHEET TITLE  
**Schedules**

REVISIONS	DATE	BY	DESCRIPTION
△			
△			
△			
△			

DRAWN BY: PSS CHECKED BY: David L. Affleck

PROJECT NO: 06296480 DRAWING NO: EE601

DATE: JUNE 5, 2008

PANEL "1LC"																				
VOLTS/PHASE/WIRE:			PANEL SIZE & TYPE:			MAIN SIZE & TYPE:			LOCATION:			CABINET:			NOTES:					
120/208 V, 3 PH 4 WIRE			22" W x 6" D, BOLT-ON			250 AMPERE MAIN BKR			SURFACE			NEMA 3R								
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, SUBFEED LUGS, HINGED COVER																				
CKT NO	OCP	LOAD (kVA)			DESCRIPTION	PHASE LOAD			LCL kVA	LOAD (kVA)			OCP	CKT NO						
		AMP	POLE	PWR		A	B	C		LTG	CO	PWR			AMP	POLE				
1	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2	3.0	3.0	3.0	50	2	2							
3	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			4							
5	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	6							
7	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			8							
9	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	10							
11	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			12							
13	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	14							
15	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			16							
17	20	1			SPARE	0.0		3.0	3.0	3.0	50	2	18							
19	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			20							
21	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	22							
23	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			24							
25	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	26							
27	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			28							
29	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	30							
31	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			32							
33	20	1	0.4	0.8	TENT POWER & LTG	1.3		1.2	0.0	0.0	50	2	34							
35	20	1			SPARE	0.0		0.0	0.0	0.0			36							
37	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	38							
39	20	1			SPARE	0.0	0.0	0.0	0.0	0.0	20	1	40							
41	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	42							
TOTALS:			CONNECTED kVA PER PHASE 25 22 20			CONNECTED TOTAL kVA 67			CONNECTED AMPERS PER PHASE 210 185 165			CONNECTED AVERAGE AMPS PER PHASE 187								
NEC DIVERSIFIED LOAD CALCULATIONS			LIGHTING 6kVA @125% = 8 kVA			ALL OTHER LOADS @100% = 48 kVA			DIVERSIFIED TOTAL kVA = 67			RECEPTACLES 10kVA @100% = 10 kVA			25% OF LARGEST MOTOR = 0 kVA			AVERAGE AMPS PER PHASE = 187		
			REMAINDER 3kVA @ 50% = 1 kVA																	

PANEL "1LD"																				
VOLTS/PHASE/WIRE:			PANEL SIZE & TYPE:			MAIN SIZE & TYPE:			LOCATION:			CABINET:			NOTES:					
120/208 V, 3 PH 4 WIRE			22" W x 6" D, BOLT-ON			250 AMPERE MAIN BKR			SURFACE			NEMA 3R								
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, SUBFEED LUGS, HINGED COVER																				
CKT NO	OCP	LOAD (kVA)			DESCRIPTION	PHASE LOAD			LCL kVA	LOAD (kVA)			OCP	CKT NO						
		AMP	POLE	PWR		A	B	C		LTG	CO	PWR			AMP	POLE				
1	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2	3.0	3.0	3.0	50	2	2							
3	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			4							
5	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	6							
7	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			8							
9	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	10							
11	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			12							
13	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	14							
15	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			16							
17	20	1			SPARE	0.0		3.0	3.0	3.0	50	2	18							
19	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			20							
21	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	22							
23	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			24							
25	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	26							
27	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			28							
29	20	1	0.4	0.8	TENT POWER & LTG	1.3		1.2	0.0	0.0	50	2	30							
31	20	1	1.0		CANOPY POWER	1.0	1.0		0.0	0.0			32							
33	20	1	1.0		CANOPY POWER	1.0		1.0	0.0	0.0	50	2	34							
35	20	1	1.2		CANOPY LIGHTING	1.5		1.2	0.0	0.0			36							
37	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	38							
39	20	1			SPARE	0.0	0.0	0.0	0.0	0.0	20	1	40							
41	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	42							
TOTALS:			CONNECTED kVA PER PHASE 22 22 18			CONNECTED TOTAL kVA 62			CONNECTED AMPERS PER PHASE 183 183 150			CONNECTED AVERAGE AMPS PER PHASE 172								
NEC DIVERSIFIED LOAD CALCULATIONS			LIGHTING 7kVA @125% = 9 kVA			ALL OTHER LOADS @100% = 42 kVA			DIVERSIFIED TOTAL kVA = 62			RECEPTACLES 10kVA @100% = 10 kVA			25% OF LARGEST MOTOR = 0 kVA			AVERAGE AMPS PER PHASE = 172		
			REMAINDER 3kVA @ 50% = 2 kVA																	

PANEL "1LE"																				
VOLTS/PHASE/WIRE:			PANEL SIZE & TYPE:			MAIN SIZE & TYPE:			LOCATION:			CABINET:			NOTES:					
120/208 V, 3 PH 4 WIRE			22" W x 6" D, BOLT-ON			100 AMPERE MAIN BKR			SURFACE			NEMA 3R								
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, SUBFEED LUGS, HINGED COVER																				
CKT NO	OCP	LOAD (kVA)			DESCRIPTION	PHASE LOAD			LCL kVA	LOAD (kVA)			OCP	CKT NO						
		AMP	POLE	PWR		A	B	C		LTG	CO	PWR			AMP	POLE				
1	20	1	0.8		ASSEMBLY PAD	0.8	0.8		0.0	0.0	20	2	2							
3	20	1	0.8		ASSEMBLY PAD	0.8		0.8	0.0	0.0			4							
5	20	1	0.8		ASSEMBLY PAD	0.8		0.8	0.0	0.0	20	2	6							
7	20	1	0.8		ASSEMBLY PAD	0.8	0.8		0.0	0.0			8							
9	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	10							
11	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	12							
13	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	14							
15	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	16							
17	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	18							
19	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	20							
21	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	22							
23	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	24							
25	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	26							
27	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	28							
29	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	30							
TOTALS:			CONNECTED kVA PER PHASE 2 1 1			CONNECTED TOTAL kVA 3			CONNECTED AMPERS PER PHASE 13 7 7			CONNECTED AVERAGE AMPS PER PHASE 9								
NEC DIVERSIFIED LOAD CALCULATIONS			LIGHTING 0kVA @125% = 0 kVA			ALL OTHER LOADS @100% = 0 kVA			DIVERSIFIED TOTAL kVA = 3			RECEPTACLES 3kVA @100% = 3 kVA			25% OF LARGEST MOTOR = 0 kVA			AVERAGE AMPS PER PHASE = 9		
			REMAINDER 0kVA @ 50% = 0 kVA																	

\*--PROVIDE GFI BREAKER

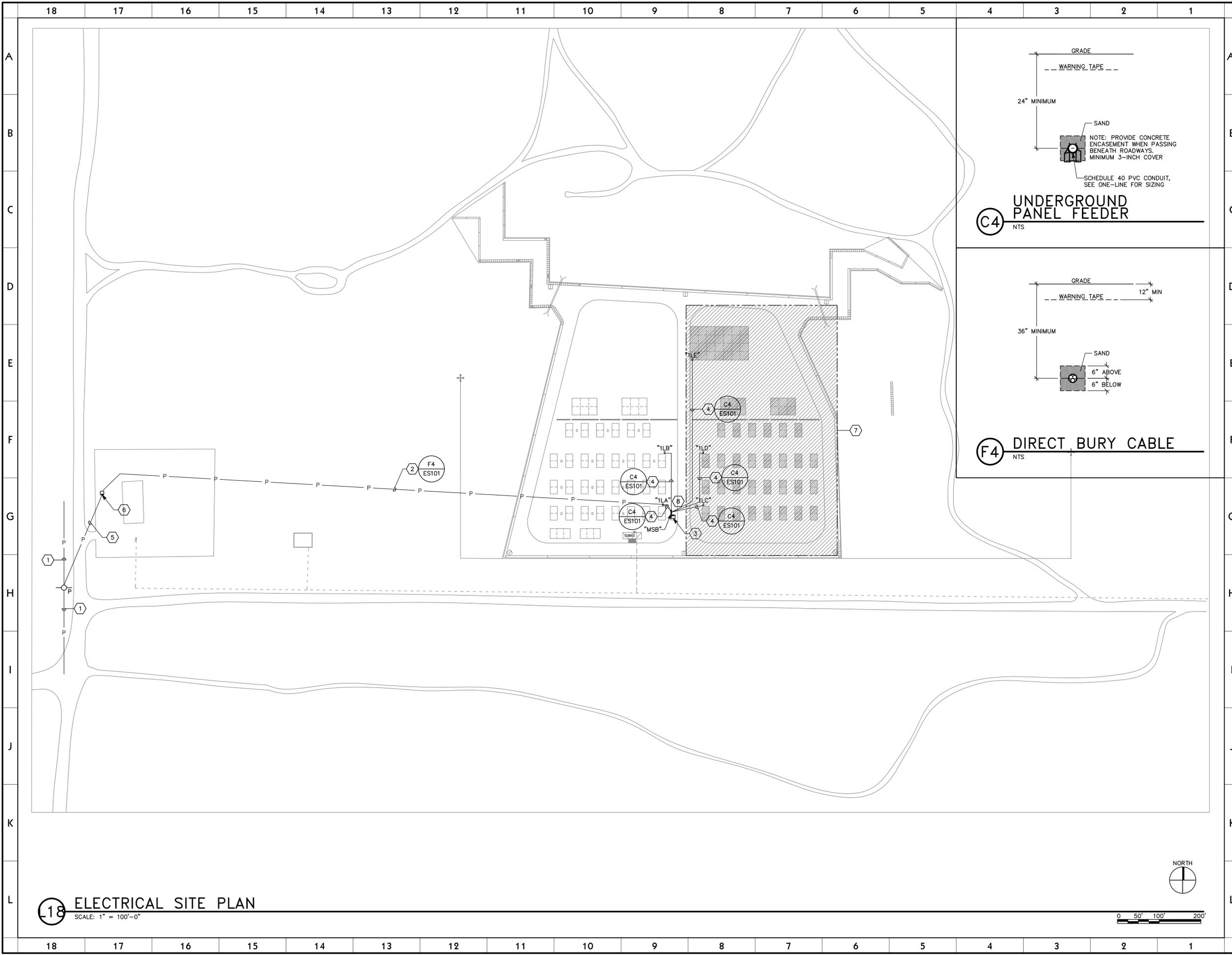
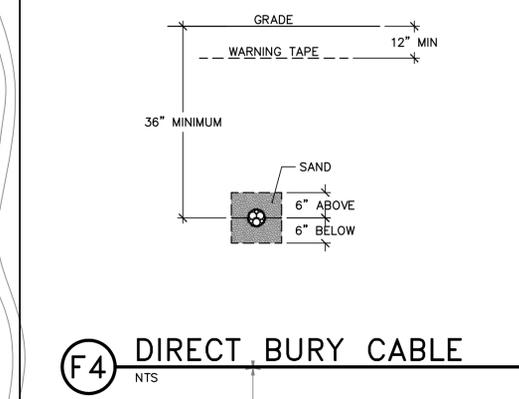
PANEL "1LA"																				
VOLTS/PHASE/WIRE:			PANEL SIZE & TYPE:			MAIN SIZE & TYPE:			LOCATION:			CABINET:			NOTES:					
120/208 V, 3 PH 4 WIRE			22" W x 6" D, BOLT-ON			250 AMPERE MAIN BKR			SURFACE			NEMA 3R								
ACCESSORIES: PANEL DIRECTORY, IDENTIFICATION, GROUNDING BAR, SUBFEED LUGS, HINGED COVER																				
CKT NO	OCP	LOAD (kVA)			DESCRIPTION	PHASE LOAD			LCL kVA	LOAD (kVA)			OCP	CKT NO						
		AMP	POLE	PWR		A	B	C		LTG	CO	PWR			AMP	POLE				
1	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2	3.0	3.0	3.0	50	2	2							
3	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			4							
5	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	6							
7	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			8							
9	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	10							
11	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			12							
13	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	14							
15	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			16							
17	20	1			SPARE	0.0		3.0	3.0	3.0	50	2	18							
19	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			20							
21	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	22							
23	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			24							
25	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0	50	2	26							
27	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0			28							
29	20	1	0.4	0.8	TENT POWER & LTG	1.3		4.2	3.0	3.0	50	2	30							
31	20	1	0.4	0.8	TENT POWER & LTG	1.3	4.2		3.0	3.0			32							
33	20	1	0.4	0.8	TENT POWER & LTG	1.3		1.2	0.0	0.0	50	2	34							
35	20	1			SPARE	0.0		0.0	0.0	0.0			36							
37	20	1			SPARE	0.0	0.0		0.0	0.0	20	1	38							
39	20	1			SPARE	0.0	0.0	0.0	0.0	0.0	20	1	40							
41	20	1			SPARE	0.0		0.0	0.0	0.0	20	1	42							
TOTALS:			CONNECTED kVA PER PHASE 25 22 20			CONNECTED TOTAL kVA 67			CONNECTED AMPERS PER PHASE 210 185 165			CONNECTED AVERAGE AMPS PER PHASE 187								
NEC DIVERSIFIED LOAD CALCULATIONS			LIGHTING 6kVA @125% = 8 kVA			ALL OTHER LOADS @100% = 48 kVA			DIVERSIFIED TOTAL kVA = 67			RECEPTACLES 10kVA @100% = 10 kVA			25% OF LARGEST MOTOR = 0 kVA			AVERAGE AMPS PER PHASE = 187		
			REMAINDER 3kVA @ 50% = 1 kVA																	

PANEL "1LB"																
VOLTS/PHASE/WIRE:			PANEL SIZE & TYPE:			MAIN SIZE & TYPE:			LOCATION:			CABINET:			NOTES:	
120/208 V, 3 PH 4 WIRE			22" W x 6" D, BOLT													

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**SHEET KEYNOTES**

- EXISTING OVERHEAD PRIMARY TO REMAIN.
- NEW UNDERGROUND PRIMARY. DIRECT BURY CABLE.
- NEW PAD MOUNTED TRANSFORMER. SEE ONE-LINE DIAGRAM.
- NEW UNDERGROUND FEEDER. SEE ONE-LINE DIAGRAM.
- EXISTING UNDERGROUND PRIMARY TO REMAIN. RECONNECT TO NEW TRANSFORMER.
- SALVAGE EXISTING TRANSFORMER TO UTAH NATIONAL GUARD. PROVIDE NEW FEED THROUGH SWITCHED TRANSFORMER. SEE ONE-LINE DIAGRAM.
- ALL WORK IN THIS AREA TO BE BID SEPARATELY AS ADD. ALTERNATE #1.
- UNDER BASE BID, PROVIDE UNDERGROUND CONDUIT STUBS TO 10- FEET FROM THE MAIN SWITCHBOARD FOR CONNECTION TO PANELBOARDS IN ADD. ALTERNATE #1 AREA. CAP, LABEL AND MARK CONDUIT STUBS.



**18** ELECTRICAL SITE PLAN  
SCALE: 1" = 100'-0"

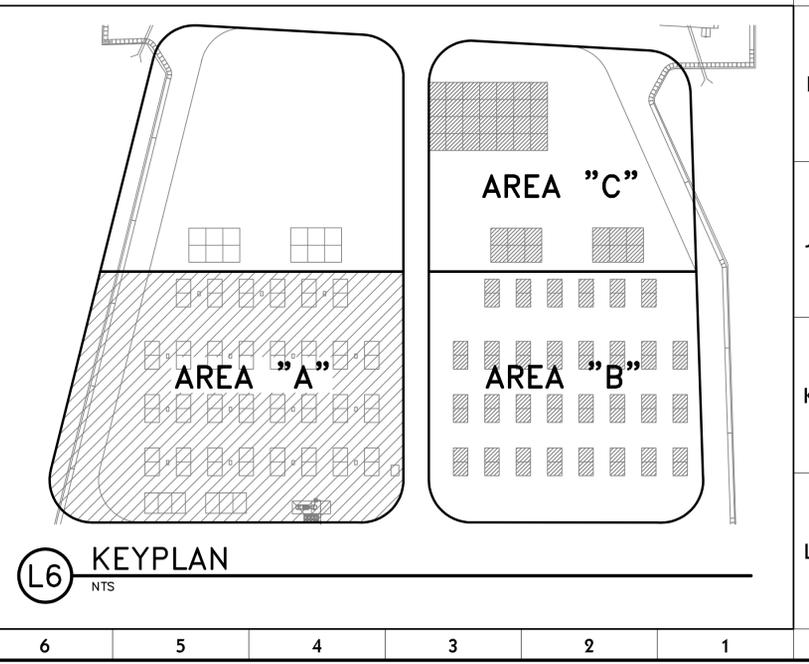
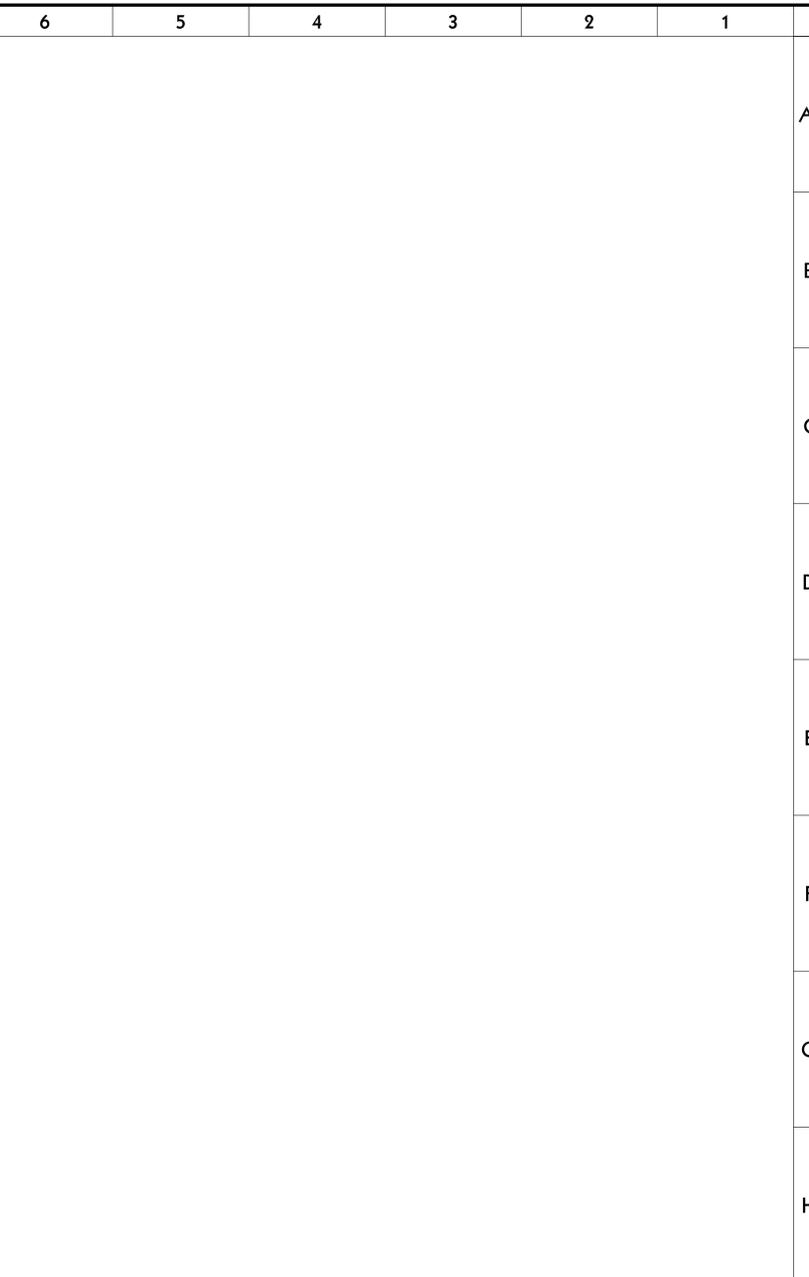
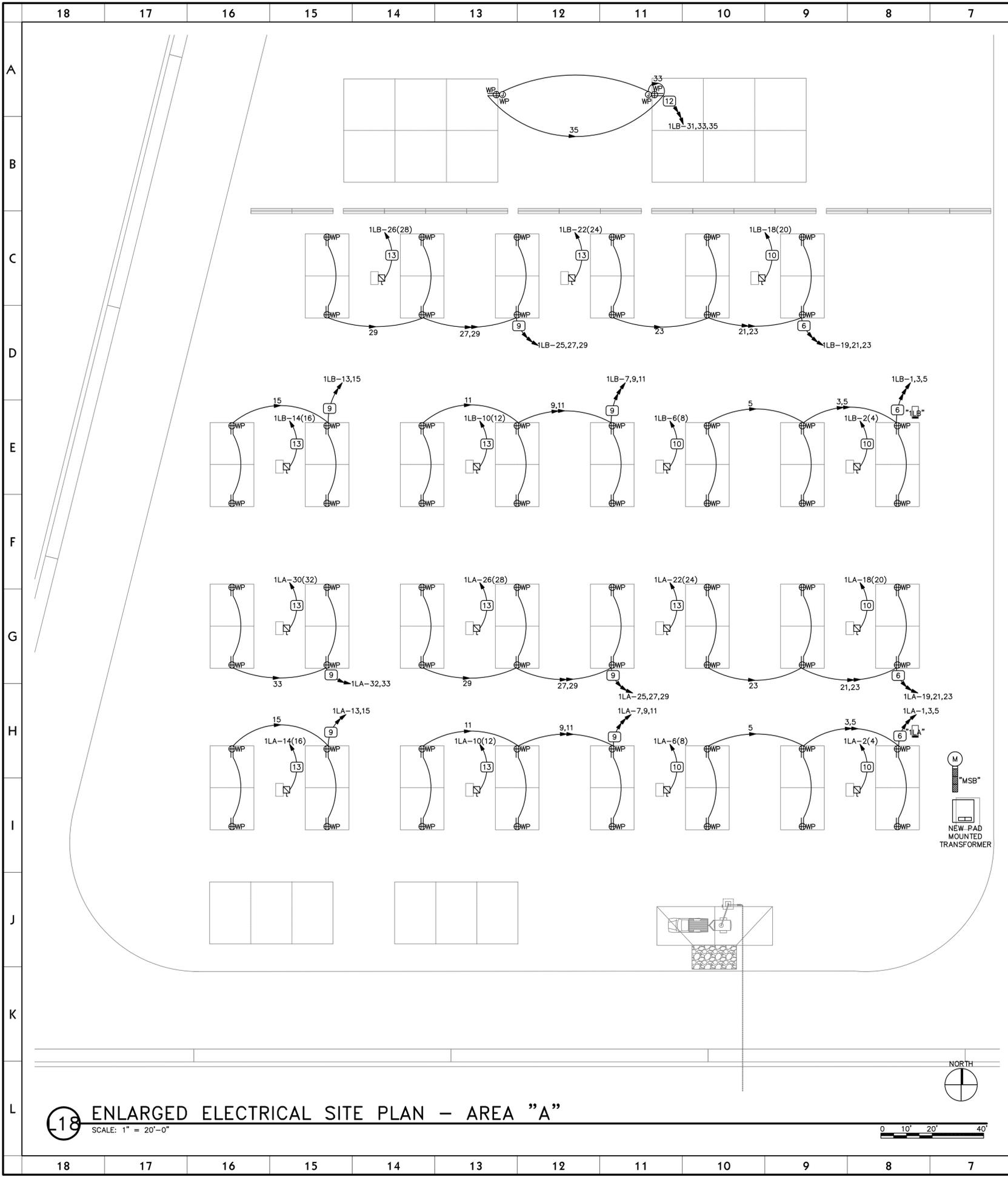


SHEET TITLE			
Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
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DRAWN BY	PSS	CHECKED BY	David L. Affleck
PROJECT NO.	06296480	DRAWING NO.	ES101
DATE	JUNE 5, 2008		

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File Name: P:\2008\20080019\Drawings\Sheet\19ES-401.dwg Last Plotted: 2008/06/06 @ 4:10 PM By: pss



**18 ENLARGED ELECTRICAL SITE PLAN - AREA "A"**  
 SCALE: 1" = 20'-0"

**6 KEYPLAN**  
 NTS

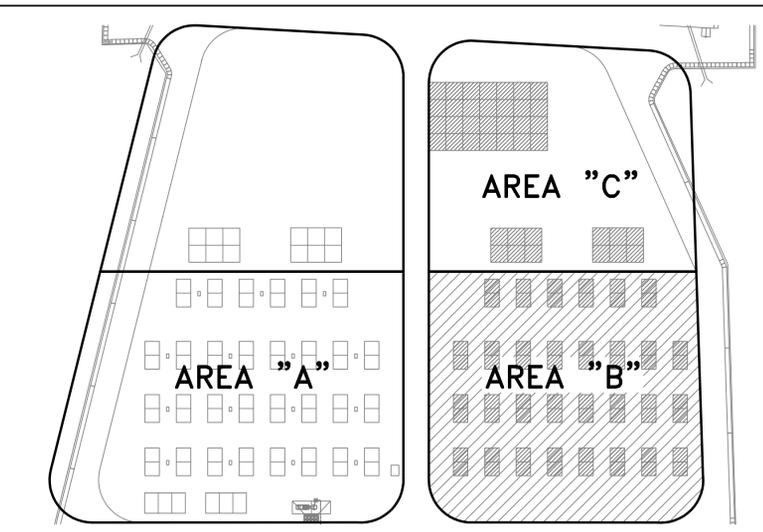
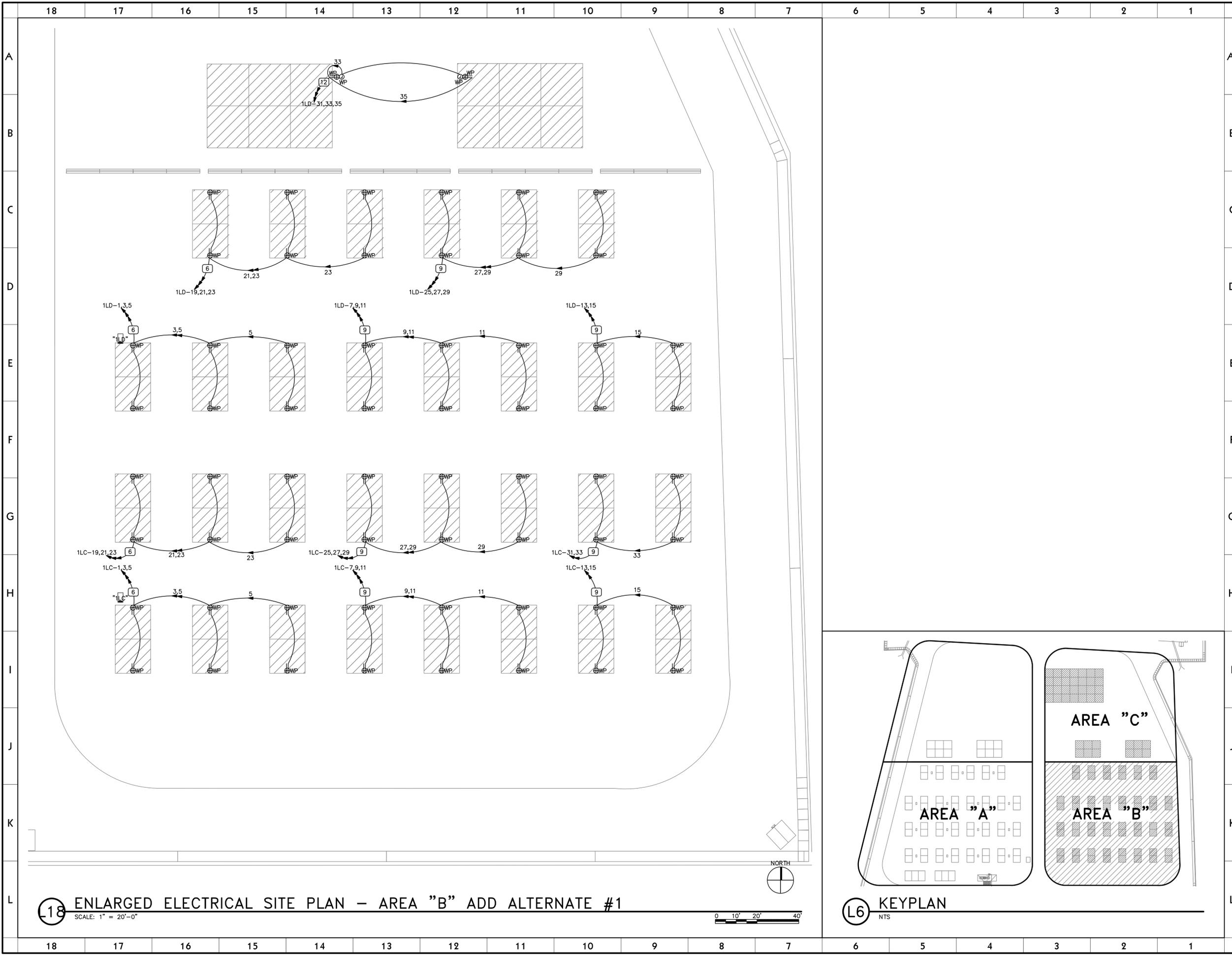
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Utah National Guard  
 F.O.B.  
 UTAH NATIONAL GUARD  
 CAMP W.G.WILLIAMS, UTAH

**LICENSED PROFESSIONAL ENGINEER**  
 No. 191471  
 TERRY L. TIPPETS  
 STATE OF UTAH

SHEET TITLE			
Enlarged Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
△			
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DRAWN BY	PSS	CHECKED BY	David L. Affleck
PROJECT NO.	06296480	DRAWING NO.	ES401
DATE	JUNE 5, 2008		

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**L18** ENLARGED ELECTRICAL SITE PLAN - AREA "B" ADD ALTERNATE #1  
 SCALE: 1" = 20'-0"

**L6** KEYPLAN  
 NTS



SHEET TITLE			
Enlarged Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
△			
△			
△			
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DATE	JUNE 5, 2008		

**ES402**

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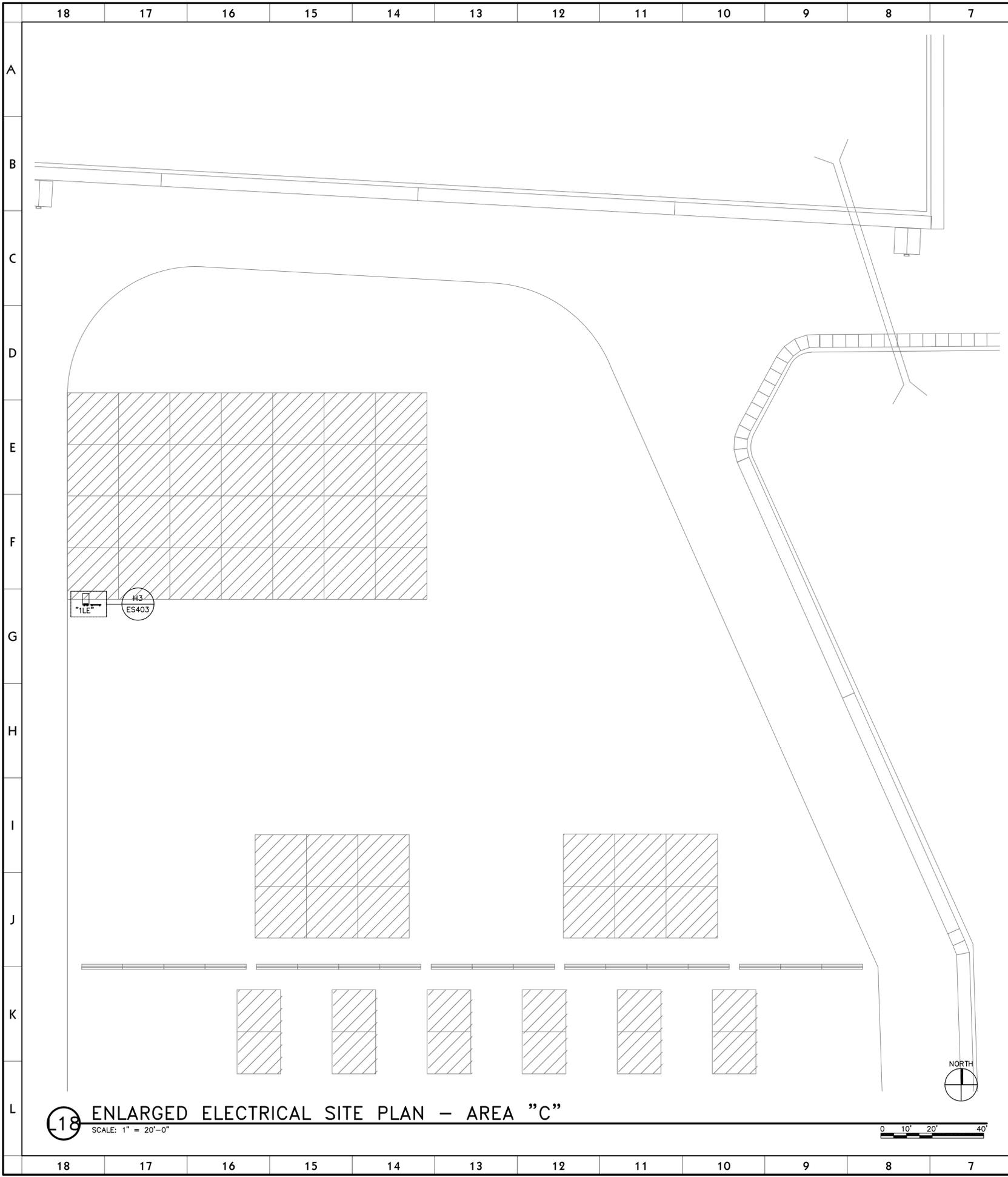
CONSULTANT INFORMATION

175 South Main Street, Suite 300  
 Salt Lake City, Utah 84111  
 801-328-5151  
 800-678-7077  
 FAX 801-328-5155  
 www.spectrum-engineers.com

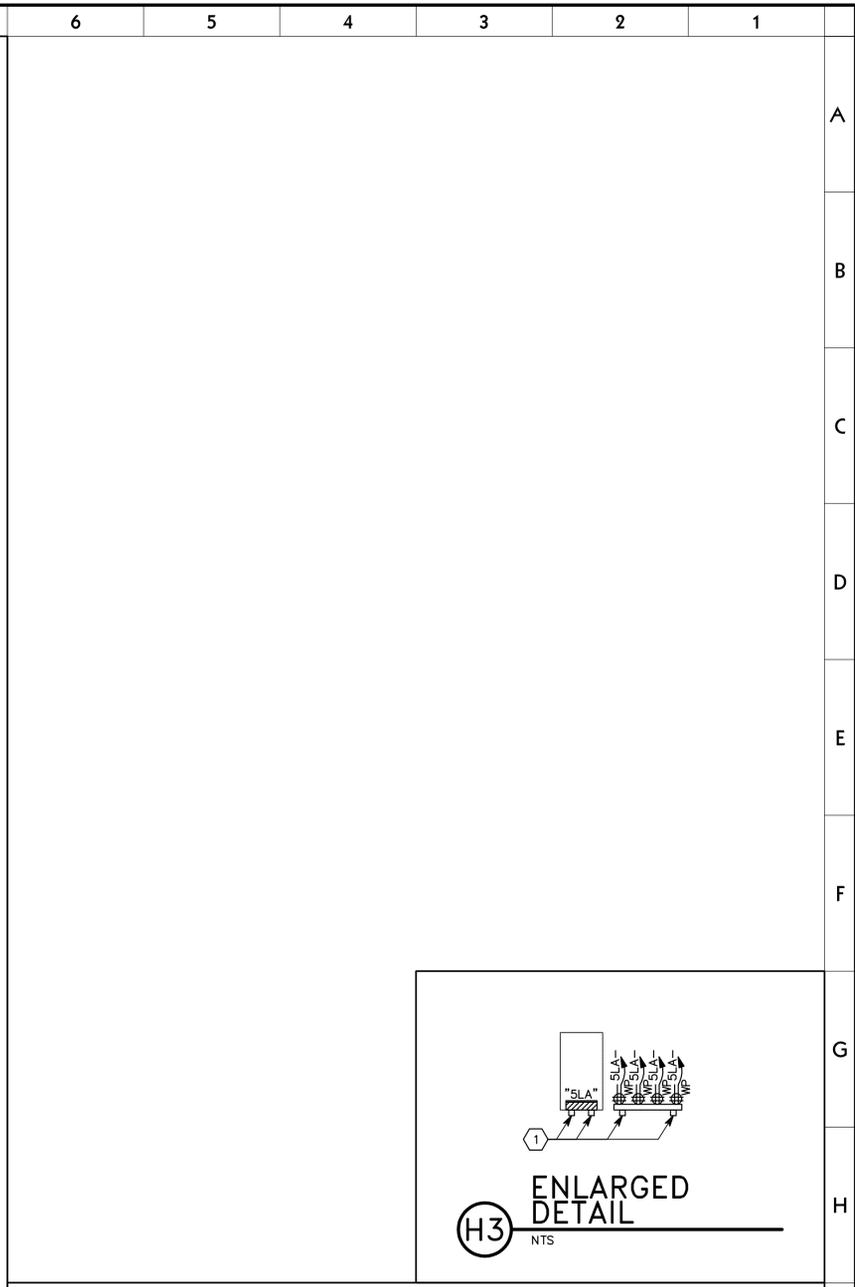


**SHEET KEYNOTES**

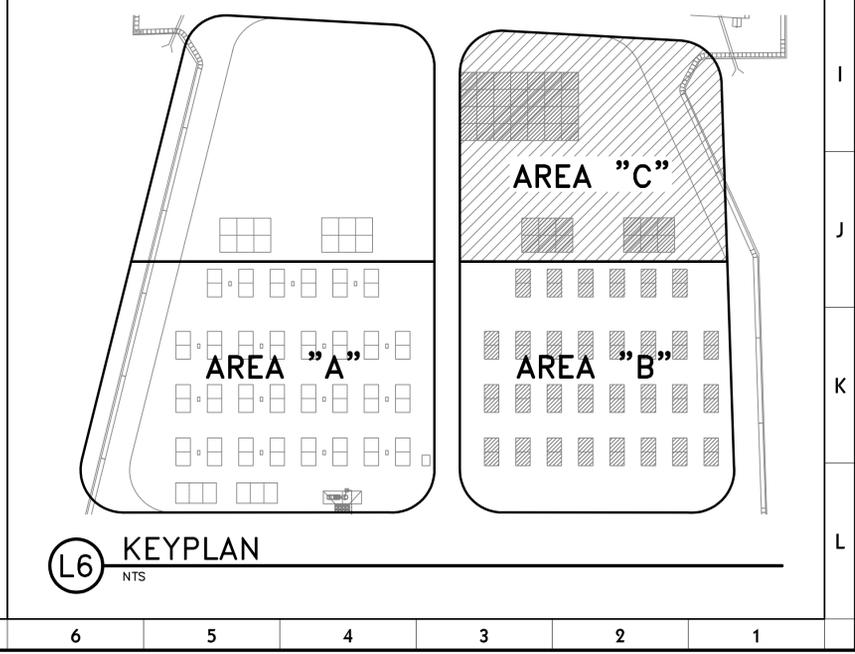
1. PROVIDE CONCRETE FILLED STEEL MOUNTING POSTS FOR MOUNTING OF PANELBOARD AND UNISTRUT OUTLET MOUNTING FRAME.



**L18** ENLARGED ELECTRICAL SITE PLAN – AREA "C"  
 SCALE: 1" = 20'-0"



**H3** ENLARGED DETAIL  
 NTS



**L6** KEYPLAN  
 NTS



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SHEET TITLE			
Enlarged Electrical Site Plan			
REVISIONS	DATE	BY	DESCRIPTION
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PROJECT NO.	06296480	DRAWING NO.	ES403
DATE	JUNE 5, 2008		

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