



COVER PAGE

Bid #2133

Pre-Wired Relay Panels

Sealed bids and electronic submitted bids for the above will be received until **10:00 AM CST or CDT, Tuesday, June 27, 2017**, and publicly opened in the City of Alexandria Council Chambers or Council Committee Room.

Please file bid by one of the following means:

Hand-Delivered or Express Delivery:

**Attention: Donna Jones, City Clerk
City of Alexandria - City Hall
915 Third Street, First Floor
Alexandria, LA 71301
Phone: 318-449-5090**

Mailed via USPS:

**Attention: Donna Jones, City Clerk
City of Alexandria - City Hall
PO Box 71
Alexandria, LA 71309-0071**

Electronic Bid Submission: Central Bidding

Pursuant to Louisiana R.S. 38:2212 B.(6)(a) through E. (1-7) and R.S. 38:2212.1 B.(4)(a), vendors/contractors have the option to submit their bids and bid bonds electronically. Bids and bonds to be filed electronically shall be posted with **Central Bidding** at www.centrauctionhouse.com (phone 1-225-810-4814). Registration will need to be completed prior to posting of bid.

Complete bid specifications are available for viewing and downloading at the City of Alexandria's website www.cityofalexandriala.com ; on the left hand side of the opening page, go to the heading "*Business*" then drop down to "*RFP/RFQ/Bids*"; the current bids will be listed for your convenience.

City of Alexandria Buyer Name:	<u>Christine Sims, Buyer</u>
Phone Number:	<u>(318) 441-6182</u>
Fax Number:	<u>(318) 619-3412</u>
E-Mail Address:	<u>Christine.sims@cityofalex.com</u>



Joe C. Despino
Purchasing Manager

City of Alexandria

Purchasing Department
P.O. Box 71
Alexandria, Louisiana
71309-0071



Office: (318) 441-6180
Fax: (318) 441-6185

Sealed bids will be received until **10:00 AM, Tuesday, June 27, 2017**, and publicly opened in the Council Chambers or Council Committee Room.

City of Alexandria Bid #**2133**
Page: 1 of
Date Specifications Prepared: May 14, 2017

Bid Bond Requirements: A bid bond or check for N/A% of the total amount of bid.

Performance Bond Requirements: In the event bid is accepted, a performance bond shall be required in the amount of N/A%.

Please file bid with the following:

Donna Jones, City Clerk
City of Alexandria - City Hall
915 Third Street
P.O. Box 71
Alexandria, LA 71309-0071
Phone: 318-449-5090

INTRODUCTION

PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT

It is the intent of the City of Alexandria to secure pricing on PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT, for use by the City of Alexandria Electric Distribution Department for the Downtown, Willow Glen and Sterkx Road Substations.

All products shall be new and of current year manufacture. Quoted prices shall be for pre-wired relay panels and associated equipment/materials only, NO installation is to be included in bid price.

Each unit shall be equipped with the manufacturer's equipment and accessories which are included as "standard" in the advertised and published literature for the unit. No such item of equipment shall be removed or omitted for the reason that it was not specified in the bid documents.

All bid prices shall include any and all freight charges. All products are to be shipped F.O.B., freight pre-paid, to the City of Alexandria Electric Distribution Department, to the attention of Robert Normand, 1015 North Third Street, Alexandria, LA 71303.

Questions and/or clarifications of bid specifications are to be in written form only, either mailed, faxed, or e-mailed to the attention of Robert Normand, City of Alexandria - Purchasing Department, P.O. Box 71, Alexandria, LA 71309-0071; Fax #318-473-1325; e-mail Robert.normand@cityofalex.com; and must be received by close of business (5:00 P.M.) on Monday, June 12, 2017.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

GENERAL CONDITIONS FOR BIDDERS - PLEASE READ CAREFULLY

1. Pursuant to LA R.S 38:2212.1. C.(1)(2), any manufacturer's preference in this proposal is descriptive, but non-restrictive, and is used only to indicate minimum requirement for type, grade and quality unless otherwise specified.
2. Pursuant to LA R.S. 38:2212 B.(1), the provisions and requirement of this bid shall not be considered as informalities and shall not be waived by the City of Alexandria. Therefore, conditions and specifications on this bid form shall be strictly enforced and any and all alterations, deviations, and non-compliance to said conditions and specifications, either on the bid form or by separate attachment, shall be grounds for immediate disqualification.
3. Preference shall be given to bidders quoting F.O.B. Destination (the City of Alexandria using department), FREIGHT PREPAID, unless otherwise requested.
4. Each bidder shall submit his proposal on the proposal form furnished by the City of Alexandria Purchasing Department. The complete bid package must be returned as issued by the City with all pages intact and all specification response columns filled in. Incomplete columns or missing pages, to include addendum pages, shall result in the vendor's entire bid package being rejected.
5. Literature, brochures, and other related paperwork attached to the bid should be identified with the name of the bidder and bid item number.
6. In case of a mathematical discrepancy between unit price and extensions, the unit price shall prevail.
7. Pursuant to LA R.S. 38:2212 F., the bid specifications may contemplate a fixed escalation or de-escalation in accordance with the United States Bureau of Labor Statistic's Consumer Price Index or the Producer Price Index. Bids based on specifications which are subject to a recognized escalation index shall be legal and valid for any item of a public work, at the discretion of the City.
8. Pursuant to LA R.S. 38:2212.1. F., any public procurement unit may participate in a cooperative purchasing agreement with the City of Alexandria to acquire quantities of the above listed items under a contract with the City of Alexandria for items awarded by public bid, pursuant to the cooperative purchasing provisions of Part VII of Chapter 17 of Subtitle III of Title 39 of the Louisiana Revised Statutes of 1950, R.S. 39:1701 et seq.
9. The City of Alexandria reserves the right to award by item or by total bid, unless otherwise specified in the bid specifications. (Price(s) should be itemized.)
10. All erasures or corrections on the bid form must be initialed and the City of Alexandria may rely on the apparent authority represented by the initials.
11. The City of Alexandria reserves the right to reject for cause any and all bids or parts of bids, or accept bids most beneficial to the City.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

General Conditions for Bidders - Please Read Carefully (Continued)

12. Any bid submitted which contains additions, conditional or alternate bids, or irregularities which may make the proposal incomplete, indefinite, or ambiguous as to its meaning, thus requiring clarification after the specified date and time of bid opening shall be rejected.
13. Bids shall be opened publicly in the City Council Chambers or Council Committee Room.
14. Cash discounts may be accepted, but SHALL NOT be considered in making award.
15. Regarding a bid for purchase of materials, supplies or services, not to include construction of any public works, a written notice of acceptance mailed or otherwise furnished to the successful bidder shall result in a binding contract without further action by either party.
16. When any bid is accepted for the construction or doing of any public works, a written contract shall be executed by and between the City of Alexandria and the Contractor. No contract shall be binding upon the City until it has been executed by the City and delivered to the successful bidder. Should the bidder to whom the contract is awarded fail to execute the contract, the award shall then be made to the next lowest responsible bidder, or re-advertised for public bid, said decision to be in the sole judgment of the City of Alexandria. This action may result in the loss of bidding privileges for a period of one (1) year.
17. The City of Alexandria shall schedule for payment the invoices for articles or services purchased under this bid within thirty (30) days after due and proper delivery accompanied by invoice.
18. The City of Alexandria is exempt from all sales taxes. A sales tax exempt form shall be furnished by the City of Alexandria Purchasing Department, if requested.
19. Bidder(s) awarded item(s) by the City of Alexandria shall be responsible for supplying all products at the awarded price(s). Failure may result in the City's cancellation of the remaining items awarded.
20. Regarding Service Contracts and Procurement Contracts, the terms of the contract shall be binding upon any and all parties involved until goods and supplies are delivered, services have been rendered, and/or work has been completed and accepted by the Mayor on behalf of the City of Alexandria and all payments required to be made to the Contractor have been made. However, a contract may be terminated under any and all of the following conditions:
 - (a) By mutual agreement and consent of either party upon thirty (30) days written notice to the other party;
 - (b) By the Mayor, on behalf of the City of Alexandria, as a consequence of the failure of the Contractor to comply with the terms and conditions of the contract or the progress or quality of work to be performed in a satisfactory manner, proper allowance being made for circumstances beyond the control of the Contractor; or
 - (c) By satisfactory completion of all services and obligations described in the contract.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

General Conditions for Bidders - Please Read Carefully (Continued)

If the contract is terminated for any of the terms and conditions authorized in sub-paragraph (b) above, Contractor shall be formally notified in writing by the City of Alexandria Purchasing Department by means of certified mail informing him of cancellation of the contract, giving specific reasons for said cancellation. Contractor shall have the right to appeal to the City Council within ten (10) days from the date that said notification is placed in the U.S. Mail. Contractor's appeal shall be accomplished by means of a letter addressed to the City Council and delivered to the City Clerk, stating that an appeal to the decision of cancellation is desired. The City Council shall thereafter hold a hearing on the appeal, giving all parties the opportunity to present any and all evidence concerning the decision of cancellation. After hearing the appeal, the city Council may, by a majority vote, sustain, modify, or reverse the findings for said decision and shall provide, if requested by Contractor, a written determination of its findings.

21. Contractors submitting bids for Public Works construction projects in excess of \$1.00 must show his Contractor's License Number on the front of the bid envelope, except for certain projects for which a Contractor's License Number is not required by the State Contractor's Licensing Board. Failure to comply with this directive shall result in automatic bid rejection, furthermore, any Contractor who submits a bid for a type of construction for which he is not properly licensed shall be acting in violation of LA R.S. 37:2163, and shall be subject to all provisions for violation and penalties thereof. Contractors who are owned by, and are submitting a bid as a subsidiary of a parent company, whose name is listed in the State of Louisiana's Roster of Licensed Contractors, may do so by including a letter of proof of ownership from the parent company with the submitted bid package. The letter must be signed as per LA R.S. 38:2212 B.(5)(a)(b)(c) (see Item #22 below).

22. All bids submitted via USPS (registered or certified), overnight courier or hand delivered, shall be signed by hand and in ink by an authorized company representative per LA R.S. 38:2212 B.(5)(a)(b)(c), which states:

(c)(i) Evidence of agency, corporate, or partnership authority shall be required for submission of a bid to the division of administration or the State of Louisiana. The authority of the signature of the person submitting the bid shall be deemed sufficient and acceptable if any of the following conditions are met:

(aa) The signature on the bid is that of any corporate officer listed on the most current annual report on file with the Secretary of State, or the signature on the bid is that of any member of a partnership or partnership in commendam listed in the most current partnership records on file with the Secretary of State.

(bb) The signature on the bid is that of an authorized representative of the corporation, partnership, or other legal entity and the bid is accompanied by a corporate resolution, certification as to the corporate principle, or other documents indicating authority which are acceptable to the public entity.

(cc) The corporation, partnership, or other legal entity has filed in the appropriate records of the Secretary of State in which the public entity is located, an affidavit, resolution, or other acknowledged or authentic document indicating the names of all parties authorized to submit bids for public contracts. Such document on file with the Secretary of State shall remain in effect and shall be binding upon the principal until specifically rescinded and canceled from the records of the office.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

General Conditions for Bidders - Please Read Carefully (Continued)

23. In-State preferences shall not apply to procurements involving federal funds.
24. Pursuant to LA R.S. 38:2212 O.(2)(a)(b), any modifications of plans and specifications will be made through an addendum. No addendum shall be issued within seventy-two (72) hours of the bid opening, excluding weekends and legal holidays, without the extension of the bid opening date. An extension of at least seven (7) but no more than thirty (30) working days is required but, re-advertising is not required. The addendum shall be transmitted by any one of the following methods: (1) facsimile transmission; (2) e-mail; (3) by hand; or (4) posted on the City of Alexandria's website (www.cityofalexandriala.com) and posted on Central Bidding's website (www.centralauctionhouse.com) if applicable.
25. All Federal Transit Administration (FTA) funded procurements, including operating assistance funding contracts, are to follow the *Master Agreement*, to include all applicable federal clauses.
- a. Any bidder that is found listed on the Federal Government's *System for Award Management* (SAM) website, at www.sam.gov/portal/sam , under the advanced search feature for *Excluded Parties List System* (EPLS), shall automatically be rejected for the award of this bid, by Category and/or in its entirety. This applies to any portion of the bid that is a procurement funded by FTA.
26. Under the City's *AFEAT (Alexandria Fairness, Equality, Accessibility, and Teamwork Program)*, participation by minority and/or disadvantaged business enterprise firms is encouraged. The *AFEAT* Program should be inquired about through the Division of Finance.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

Alexandria Fairness, Equality, Accessibility, and Teamwork Program (AFEAT)

Dear Vendor:

Under the City's *AFEAT (Alexandria Fairness, Equality, Accessibility, and Teamwork Program)*, participation by minority and/or disadvantaged business enterprise firms is encouraged. The AFEAT Program should be inquired about through the Division of Finance. The goals for qualifying disadvantaged, minority and female owned business in the use of professional service agreements with prime contractors will help effectuate the goals of increasing: the competitive viability of small business, minority, and women business enterprise by providing contract, technical, educational, and management assistance; business ownership by small business persons, minority persons, and women (including professional service opportunities); and the procurement by the City of professional services, articles, equipment, supplies, and materials from business concerns owned by small business concerns, minority persons, and women.

Prime contractors offering subcontracting should take specific action to ensure that a bona fide effort is made to achieve maximum results towards meeting the established goals. Primes shall document efforts and shall implement steps at least as extensive as the following in a good faith effort to reach or exceed the established goals:

- A. *Establish and maintain a current list of minority and female owned businesses in Alexandria, in Rapides Parish, and in the State of Louisiana.*
- B. *Document and maintain a record of all solicitations of offers for subcontracts from minority or female construction contractor and suppliers in Alexandria, in Rapides Parish, and in the State of Louisiana.*
- C. *Secure listing of minority and women owned businesses from the City of Alexandria Purchasing Department, the Central Louisiana Business Incubator, and the State of Louisiana Department of Minority Affairs.*
- D. *Participate in associations which assist in promoting minority and women owned businesses such as the Central Louisiana Business League, the Central Louisiana Business Incubator, and the Entrepreneurial League System.*
- E. *Designate a responsible official to monitor all activity made in the effort to achieve or exceed the established goals; record contacts made, subcontracts entered into with dollar amounts, and other relevant information.*

For more information on AFEAT and the City of Alexandria's Diversity in Action Initiative, and to explore a local and statewide directory of minority businesses, please visit www.diversityinaction.org.

Should you have any questions or comments, please do not hesitate to contact our Finance Department at 318-449-5091 or our Purchasing Department at 318-441-6180.

Sincerely,

City of Alexandria

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

City of Alexandria, Louisiana
Pre-Wired Relay Panels and Equipment
Bid # 2133

1.0 Introduction

1.1 Scope

These specifications cover the requirements for furnishing the completely assembled panelboards described herein with all material designed, manufactured, and tested in compliance with the latest applicable standards of the American National Standards Institute (ANSI), the Institute of Electrical and Electronic Engineers (IEEE), and the National Electrical Manufacturers Association (NEMA).

1.2 Equipment

1.2.1 The intent of these specifications is to purchase three (3) completely engineered panel front assemblies, for ultimate installation at the Downtown, Willow Glen, and Sterkx Road substations.

1.2.2 Bills of Material are included for each panel as part of this specification.

2.0 General Specifications

2.1 All mounted equipment will be readily accessible and interchangeable for replacement, if necessary. Control and instrument switches will be located at such a height that the operator may use them conveniently.

2.2 The equipment will operate satisfactorily within the ambient temperature range of -30° to 55°C and a relative humidity as high as 100%.

2.0 Downtown Substation

2.1 One panel front assembly shall be provided for installation at the Downtown substation.

2.2 The Downtown panel assembly shall include relay/controls for the following:

2.2.1 Differential protection of the 138 kV transmission line that extends from the Downtown substation to the Willow Glen substation.

2.2.2 Breaker fail protection for Circuit Breakers 1 and 2.

2.2.3 Synchronize supervision of Circuit Breakers 1 and 2

2.2.4 Reclose supervision of Circuit Breakers 1 and 2.

2.2.5 Direct Transfer Trip of the Willow Glen terminal in the event either Circuit Breaker 1 or Circuit Breaker 2 fail to trip.

2.3 Panel assembly shall include wiring with pigtails for field termination by others. Length of pigtails shall be as indicated on the internal wiring diagram.

3.0 Willow Glen Substation

3.1 One panel front assembly shall be provided for installation at the Willow Glen substation.

3.2 The Willow Glen panel assembly shall include relay/control equipment for the following:

3.2.1 Differential protection of the 138 kV transmission line that extends from the Willow Glen substation to the Downtown substation.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

- 3.2.2 Differential protection of the 138 kV transmission line that extends from the Willow Glen substation to the Sterkx Road substation.
- 3.2.3 Breaker fail protection for Circuit Breakers 1, 2, and 3.
- 3.2.4 Breaker fail protection for Circuit Switchers 1 and 2.
- 3.2.5 Synchronize supervision of Circuit Breakers 1, 2, and 3.
- 3.2.6 Reclose supervision of Circuit Breakers 1 and 1.
- 3.2.7 Direct Transfer Trip of the Downtown terminal in the event Circuit Breaker 1 fails to trip.
- 3.2.8 Direct Transfer Trip of the Sterkx Road terminal in the event Circuit Breaker 3 fails to trip.
- 3.3 Panel assembly shall include wiring with pigtails for field termination by others. Length of pigtails shall be as indicated on the internal wiring diagram.

4.0 Sterkx Road Substation

- 4.1 One panel front assembly shall be provided for installation at the Sterkx substation.
- 4.2 The Willow Glen panel assembly shall include relay/control equipment for the following:
 - 4.2.1 Differential protection of the 138 kV transmission line that extends from the Sterkx substation to the Willow Glen substation.
 - 4.2.2 Differential protection of the 138 kV transmission line that extends from the Sterkx substation to the Prescott substation.
 - 4.2.3 Breaker fail protection for Circuit Breakers 1, 2, and 3.
 - 4.2.4 Breaker fail protection for Circuit Switchers 1 and 2.
 - 4.2.5 Synchronize supervision of Circuit Breakers 1, 2, and 3.
 - 4.2.6 Reclose supervision of Circuit Breakers 1 and 1.
 - 4.2.7 Direct Transfer Trip of the Willow Glen terminal in the event Circuit Breaker 1 fails to trip.
 - 4.2.8 Direct Transfer Trip of the Prescott terminal in the event Circuit Breaker 3 fails to trip.
- 4.3 Panel assembly shall include wiring with pigtails for field termination by others. Length of pigtails shall be as indicated on the internal wiring diagram.

5.0 Spare Equipment

- 5.1 One spare of each of the following items shall be provided:
 - a) SEL 421 model 04214415XXXX4H21XXXXX
 - b) SEL 421 model 04214415XXXX2H21XXXXX
 - c) SEL 387L model 0387L03D03X54X1
 - d) SEL 387L model 0387L03D03X52X1

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

6.0 References

The Design, manufacture, and test in accordance with this section and applicable sections of the following standards:

- a) ANSI C37 Series, Protective Relays and Proposed Standard C37.21 for Control Switchboards
- b) ANSI C39.1, Switchboard Instruments
- c) ICEA, Specifications for Wire and Cable
- d) NEC, Current Rating of Control Wiring
- e) ASCE 7, Minimum Design Loads for Buildings and Other Structures

7.0 Project/Site Conditions

- 7.1 Seismic loading per ASCE 7, 0.2 sec spectral response of 0.13g, Importance Factor 1.5, Site Class D.
- 7.2 Each panel front assembly will be installed in an existing control building and mounted in an existing panel frame that is directly mounted to a concrete floor.

4.0 Construction

- 4.1 The panels shall be the Vertical Switchboard type. Panel dimensions and equipment layout will conform to the appropriate panel face arrangement diagram.
- 4.4 The panels shall be formed of No. 11 gauge, stretcher leveled or cold finished steel with all front edges and back edges formed in a 1/4-inch radius. All corners shall be welded for rigidity and ground smooth to present a neat appearance. All required interior support attachments shall be welded.
- 4.6 The panels shall be properly cleaned prior to painting per the paint manufacturer's recommendations. The panels shall be primed with zinc chromate primer followed by two coats of ANSI 61 Gray industrial grade paint. One small can of touch-up paint shall be provided as part of each panel.
- 4.7 There will be no butt joints or welds visible from the front of the panels.
- 4.9 All primary and auxiliary devices and all wiring to such devices will be completely accessible for operation, maintenance, removal and replacement. Panel wiring will not pass behind pieces that are not removable.
- 4.11 Cutouts and cover plates will be supplied where specified on approval prints. Cover plates will be fabricated of steel and painted to match the panel.
- 4.13 Power sources will be provided with fuses located within the panel. Fuse blocks will have molded phenolic barriers and will be rated at 250 volts. Fuses will be rated as indicated on the drawings. Fuse blocks will be G.E. Type 8421-3, or approved equal.
- 4.14 A copper 1/4" x 1" ground bus will be mounted near the bottom of each panel with provisions for connecting to adjacent panels. Four spare #10 screw connections will be provided on the ground bus.
- 4.16 Nameplates
 - 4.16.1 Nameplates will be furnished and mounted by the supplier. Nameplates will be mounted with stainless steel screws in accordance with the panel face arrangement drawings.
 - 4.16.2 Nameplates will be made of laminated black and white plastic with the black layer on the outside. Lettering will be engraved through the black outer layer such that the letters appear white. Nameplates shall be engraved in accordance with the appropriate label schedule as indicated on the nameplate schedule.
 - 4.16.3 Nameplates or stencils giving the NEMA device function number and wiring diagram designation letter will be placed on the back of or adjacent to the connection side of each device.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

5.0. Wiring

- 5.1 All control wiring shall be no smaller than No. 14 AWG, 41 strand copper wire which is insulated with SIS insulation rated 600 volts or higher, except wire for current transformer secondary circuits shall be no smaller than No. 12 AWG, 65 strand copper.
- 5.2 Multi-strand Class K hinge wire shall be used where door openings require bending in service.
- 5.3 There will be no splices in the wiring and all connections will be made at device studs or terminal blocks.
- 5.3 All wiring where necessary will be terminated with T&B Stakon Type No. 10RC-10, or approved equal, insulated ring tongue connectors. All compression terminals shall be crimped with hand or power tools approved by the terminal manufacturer. If hand tools are used, they must be "ratchet" type tools that require full compression of the terminal barrel.
- 5.4 Fuse wiring will be arranged such that the source will be at the top and the load at the bottom of the fuse block.
- 5.6 No more than two (2) wires will terminate on each screw terminal.
- 5.7 All wires shall be marked with vinyl printed labels to show local end terminal number-remote end device code and terminal number.
- 5.8 Exposed wiring shall be orderly, square, and neatly tied together with cable ties.
- 5.9 Wiring harnesses shall be provided for internal wiring terminations removed for shipment.

6.0 Equipment

Bills of Material that list the equipment to be installed on each panel are included on the respective panel layout drawings.

7.0 Drawings & Instruction Manuals

7.1 Drawings

7.1.1 The following drawings are included with this specification for each panel for bidding purposes:

- a. Relay Panel Layout Drawing with Nametag Schedule and Bill of Material.
- c. Internal Wiring Diagram.

7.1.2 Owner will supply the following drawings for each panel to the successful bidder for its use in fabricating the panels:

- a. One-line Diagram
- b. A.C. Schematics
- c. D.C. Schematics
- d. Panel wiring diagram and layout as viewed from the rear of the panel
- e. Panel layout as viewed from the front of the panel

7.1.3 In the event that there are any conflicts between the drawings and this specification, or between individual drawings, vendors are to bring such conflicts to the attention of Owner. Any lack of description or omission of required information shall be resolved at the earliest opportunity.

7.2 Instruction Manuals

7.2.1 Copies of instruction books for each panel mounted device will be provided as follows:

- a. One copy of each shall be shipped with the relay panels.
- b. Two copies of each shall be sent to the Owner.
- c. One electronic copy of each shall be sent to the Engineer.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

7.2. Included with each instruction book set will be a parts breakdown with ordering information on obtaining spare or replacement components.

8.0 Testing

8.1 Complete tests will be made to insure wiring correctness and proper function of all relay components before shipment from factory.

8.2 Factory tests shall simulate inputs to all current and potential circuits (A.C. Load Test) and verify output of all control, trip, and alarm circuits. All wiring shall be hi-pot tested within restrictions of protective relay specifications.

9.0 Warranty

9.1 The panel fabricator shall warrant the panel and all accessories to be free from defects in material and workmanship for a period of one year from the date of receipt of the panel by Owner. After receipt, the Owner shall inspect the panels for shipping damage and inform the panel fabricator if such damage exists. All parts found to be damaged shall be replaced or repaired to the complete satisfaction of the Owner. During the warranty period, the warranty shall cover the cost of removal from site, transportation to and from the repair facility, and reinstallation after repairs.

End of Specifications

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

BID FORM

**Relay Panels and Equipment
Downtown, Willow Glen, and Sterkx Road Substations**

BIDDER'S REPRESENTATIONS

In submitting this Bid, Bidder represents that Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

<u>ADDENDUM NUMBER</u>	<u>DATE</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

BASIS OF BID

Bidder will furnish the Goods in accordance with the specifications and drawings for the following prices:

ITEM DESCRIPTION

A. Downtown Substation Relay Panel
 _____ and ____/100 (\$_____))
 (Use Words) (Use figures)

B. Willow Glen Substation Relay Panel
 _____ and ____/100 (\$_____))
 (Use Words) (Use figures)

C. Sterkx Road Substation Relay Panel
 _____ and ____/100 (\$_____))
 (Use Words) (Use figures)

DELIVERY OF GOODS

BIDDER agrees that the Goods will be delivered to the point of delivery within _____ days.

**CITY OF ALEXANDRIA BID SPECIFICATIONS FOR:
PRE-WIRED RELAY PANELS & ASSOCIATED EQUIPMENT**

BIDDER INFORMATION:

Company Name: _____

Address: _____

City/State/Zip: _____

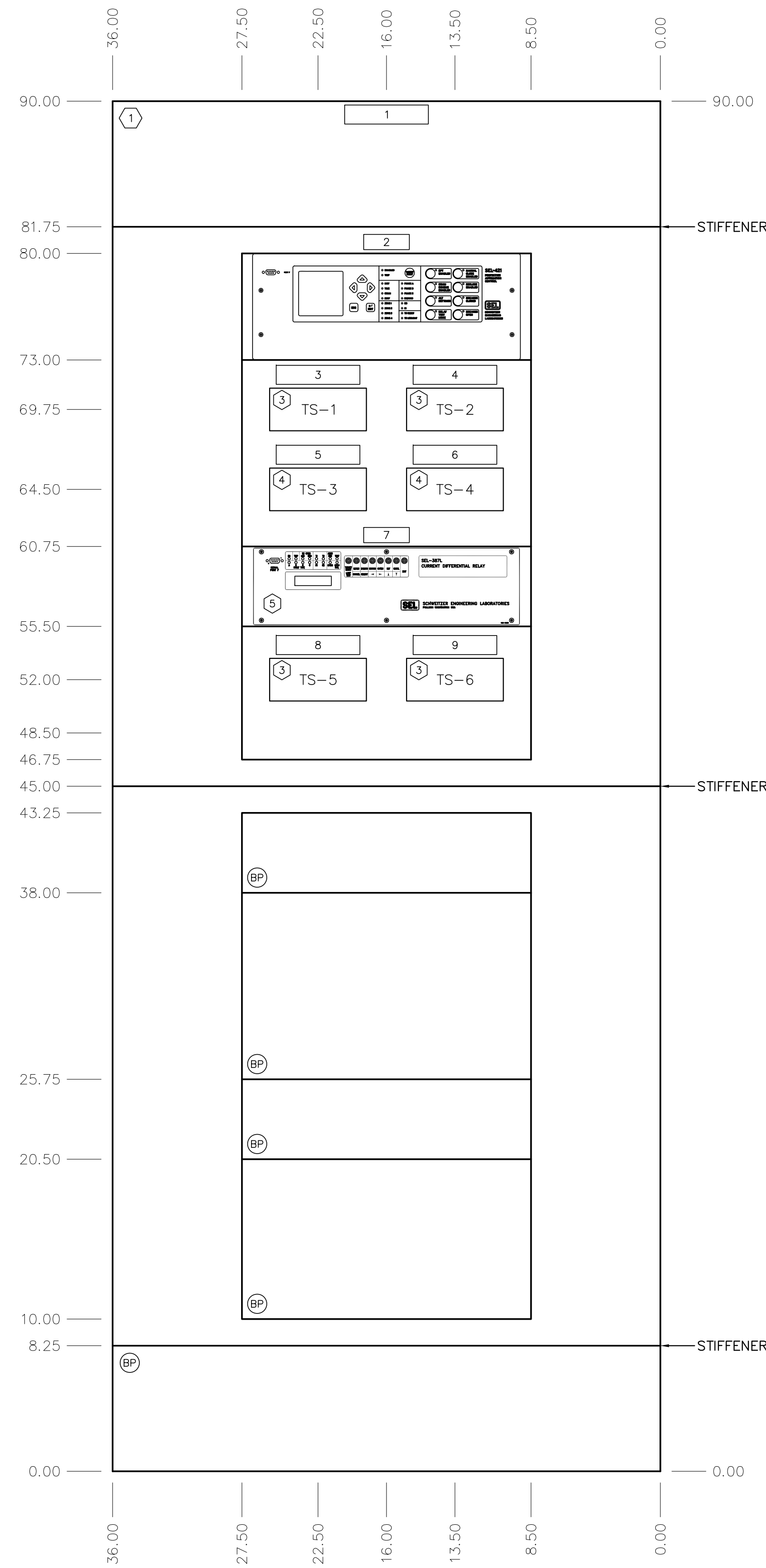
Telephone #: (_____) _____ Fax #: (_____) _____

Email (optional) _____

Authorized Printed Name and Title: _____

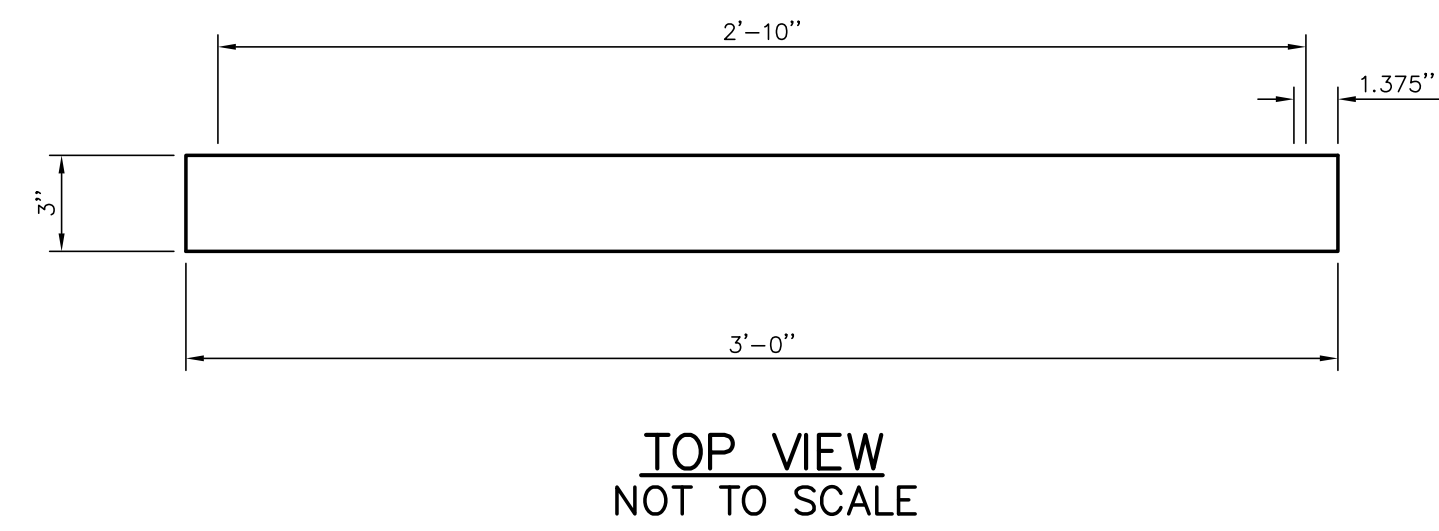
Authorized
Signature: _____

(Per LA R.S. 38.2212(A)(c)(i) – See General Conditions Item #22, Page 4 of these bid specifications.)

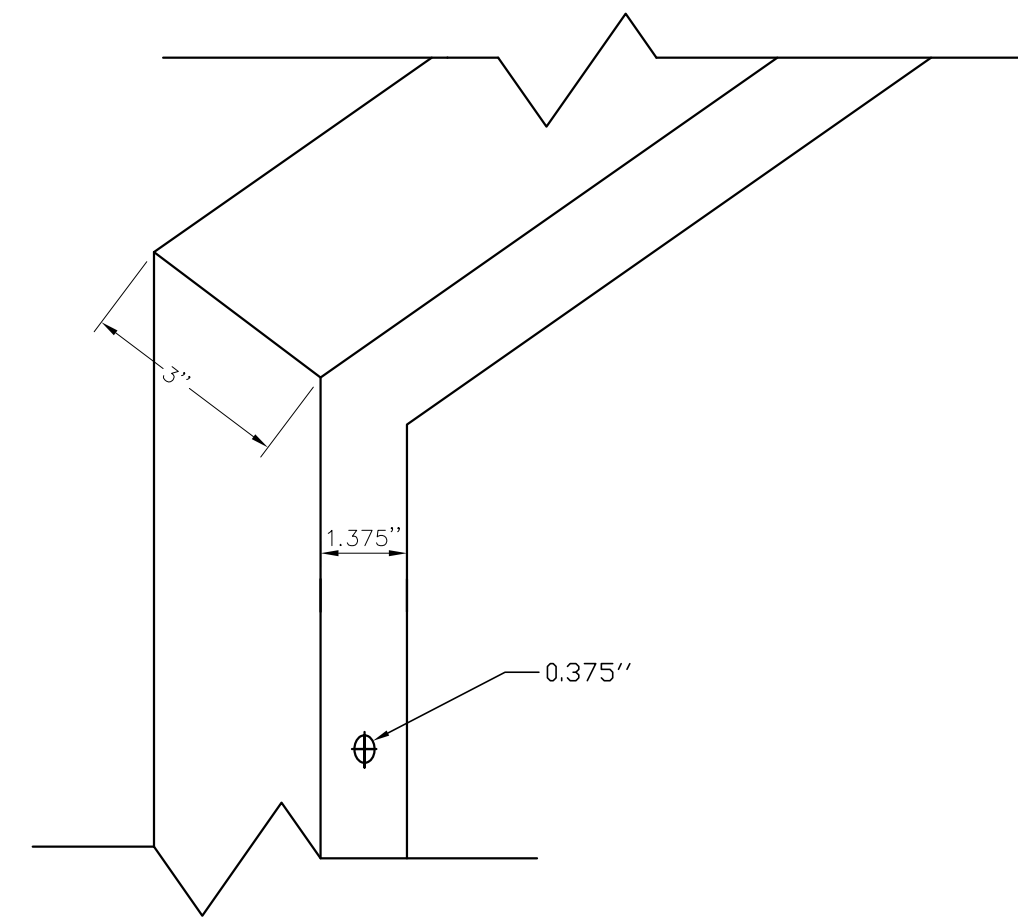


FRONT ELEVATION
LINE PROTECTION PANEL

- ① EQUIPMENT REFERENCE NUMBER - SEE BILL OF MATERIALS (THIS DWG.)
- ② NAMETAG REFERENCE NUMBER - SEE NAMETAG SCHEDULE (THIS DWG.)
- Ⓟ BLANK PLATE - SIZED AS SHOWN



TOP VIEW
NOT TO SCALE



DETAIL
NOT TO SCALE

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	PART NO.	QTY.
1	STEEL PANEL PER SPECIFICATION	N/A	N/A	1
2	SEL-421 LINE DISTANCE RELAY, 125V DC	SEL	04214415XXXX4H21XXXX	1
3	TEST SWITCH	STATES	FMS-10D	4
4	TEST SWITCH	STATES	FMS-10A	2
5	SEL-387L LINE CURRENT DIFFERENTIAL RELAY, 125V DC	SEL	0387L03D03X54X1	1
6	FUSE BLOCK 2 POLES, 30A, 600V	BUSSMAN	H25030-25	4
7	FUSE CARTRIDGE 6A, 250V V NR	BUSSMAN	NON-6	4
8	FUSE CARTRIDGE 3A, 250V V NR	BUSSMAN	NON-3	4

NAMEPLATE ENGRAVING SCHEDULE					
N.P. NO.	SIZE	TEXT HEIGHT	FIRST LINE	SECOND LINE	THIRD LINE
1	1.25" x 5.5"	3/16"	PANEL 3R	DOWNTOWN LINE AND	STERKX LINE
2	1" x 3"	3/16"	WILLOW GLEN LINE 21	BACKUP DISTANCE	RELAY
3	1.25" x 5.5"	1/4"	See Detail #1		
4	1.25" x 5.5"	1/4"	See Detail #2		
5	1.25" x 5.5"	3/16"	See Detail #3		
6	1.25" x 5.5"	1/4"	See Detail #4		
7	1" x 3"	1/4"	WILLOW GLEN LINE 87L	CURRENT DIFF	RELAY
8	1.25" x 5.5"	3/16"	See Detail #5		
9	1.25" x 5.5"	1/4"	See Detail #6		

TS1 - WILLOW GLEN 21 BACKUP RELAY											
LINE VOLTS				CB1 CURRENT							
VA	VB	VC	VN	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	IC IN	IC IN
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

DETAIL 1
N.T.S.

TS5 - WILLOW GLEN 87L LINE DIFF RELAY														
TRIP			CB1		CB2		ALARM		IA		IB		IC	
CB1	CB1&2	87F	CB1	87F	CB1	87F	CB1	87F	CB1	87F	CB1	87F	CB1	87F
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

DETAIL 5
N.T.S.

TS2 - WILLOW GLEN 21 BACKUP RELAY											
LINE VOLTS		BUS VOLTS		CB2 CURRENT							
V	N	V	N	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	IC IN	IC IN
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

DETAIL 2
N.T.S.

TS6 - WILLOW GLEN 87L LINE DIFF RELAY													
TRIP		CB2		CLOSE		R1		IA		IB		IC	
CB2	79I	CB2	79I	CLOSE	R1	CB2	79I	CB2	79I	CB2	79I	CB2	79I
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

DETAIL 6
N.T.S.

TS3 - WILLOW GLEN 21 BACKUP RELAY									
CB1		CB1		CB1		OUT		ALARM	
TRIP	GLOBE	87F	87F	87F	87F	OUT	106	OUT	107
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

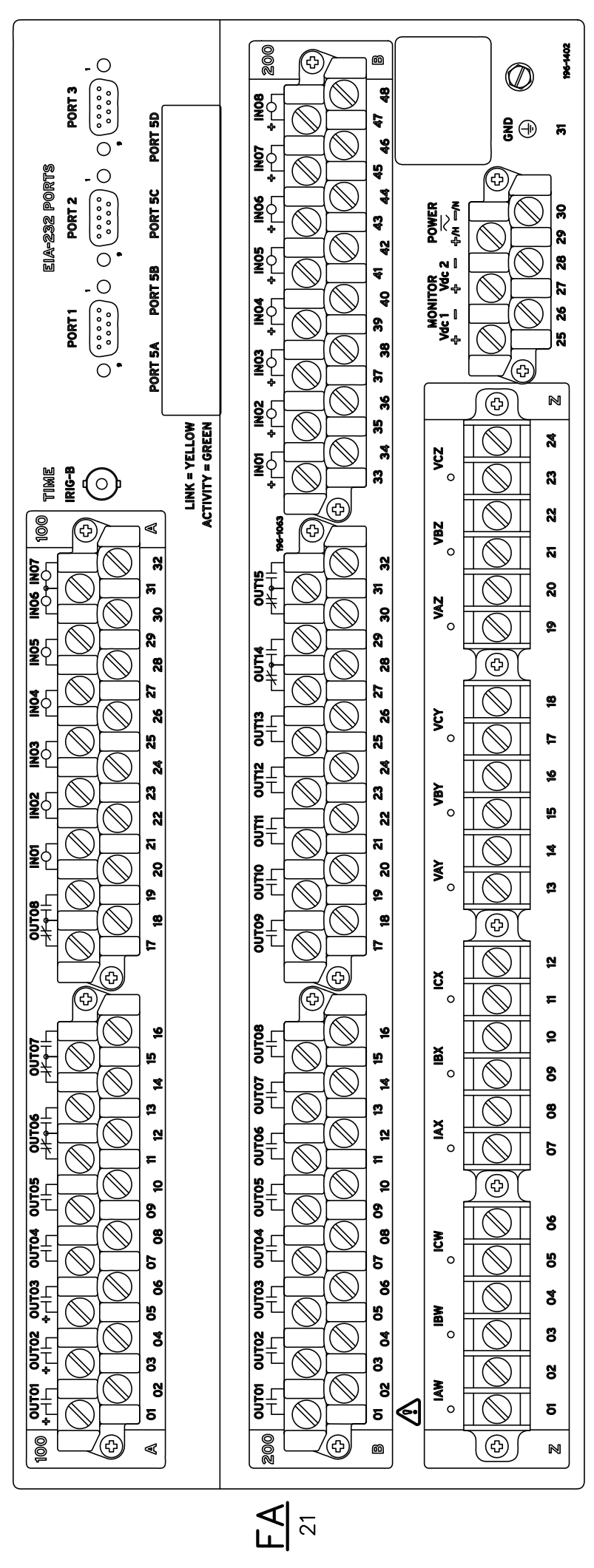
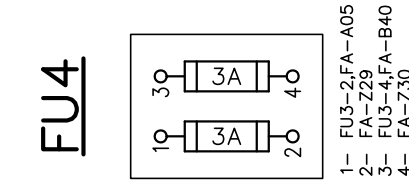
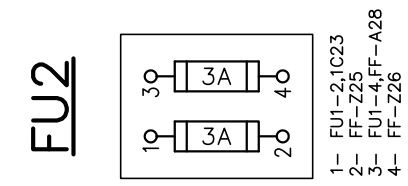
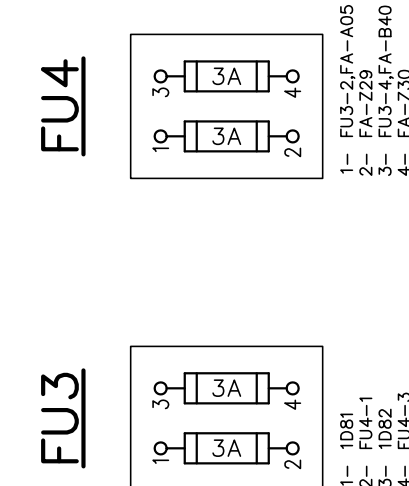
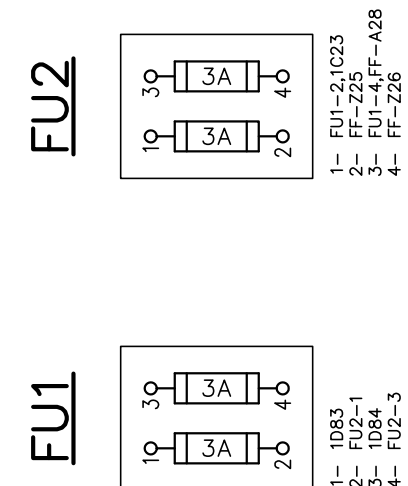
DETAIL 3
N.T.S.

TS4 - WILLOW GLEN 21 BACKUP RELAY									
CB2		CB2		CB2		OUT		OUT	
TRIP	GLOBE	87F	87F	87F	87F	OUT	206	OUT	207
0.428'	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428'

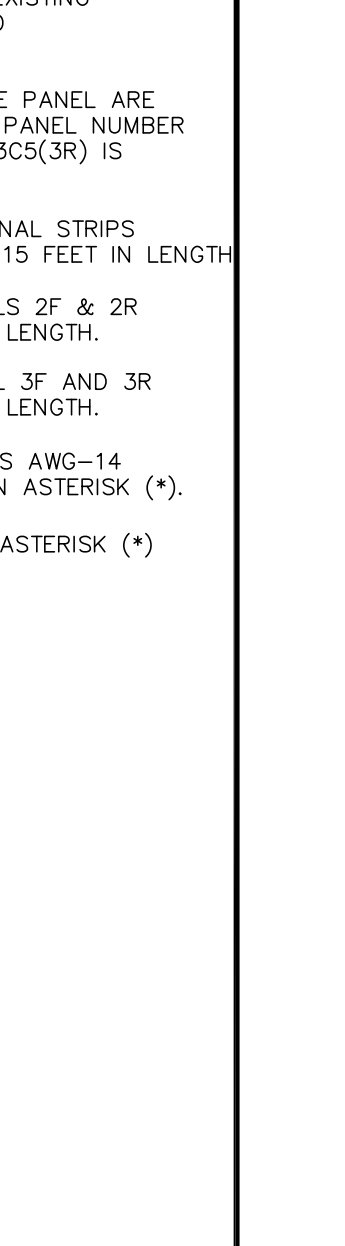
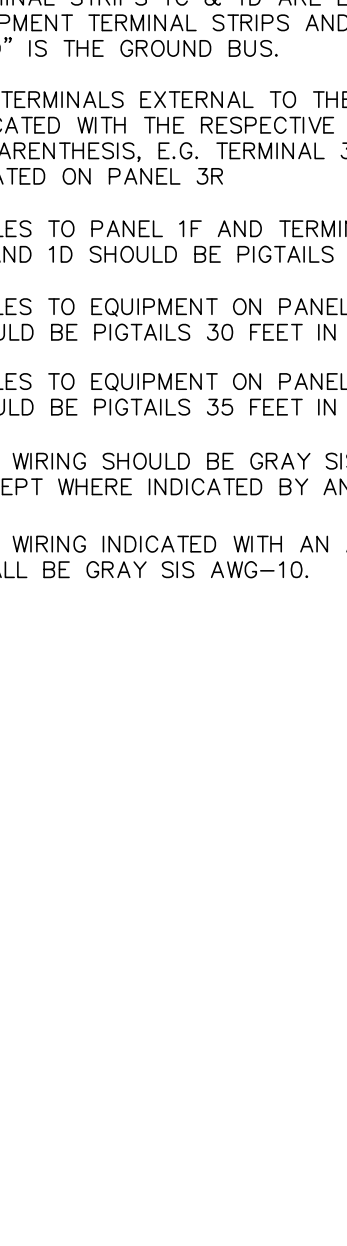
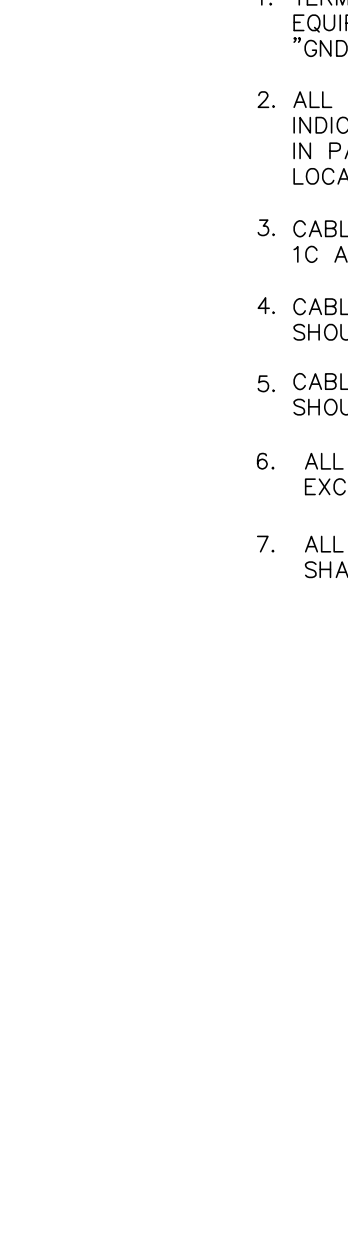
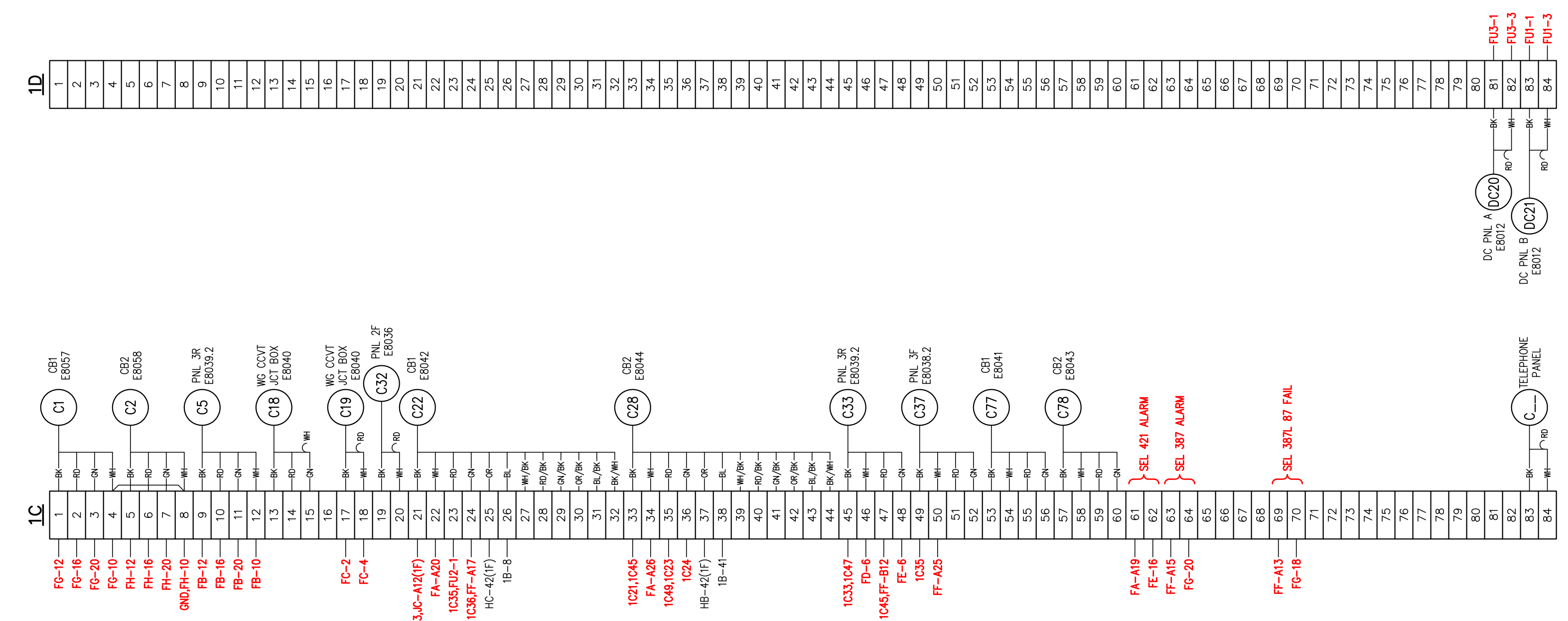
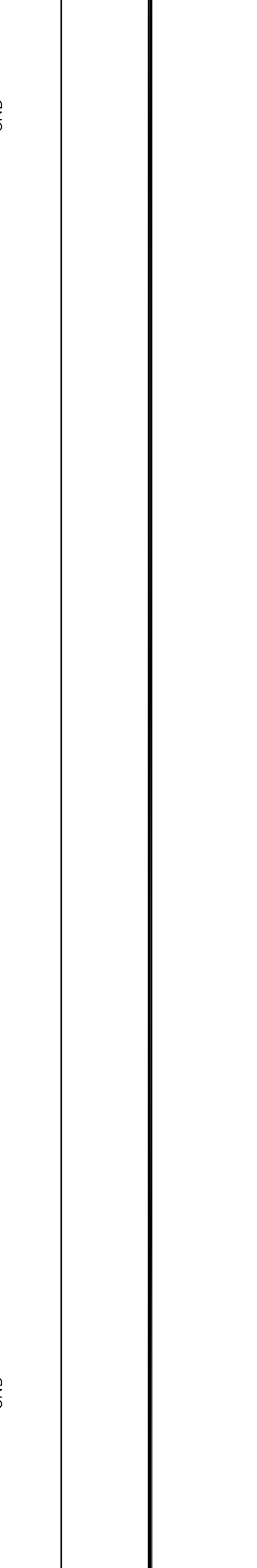
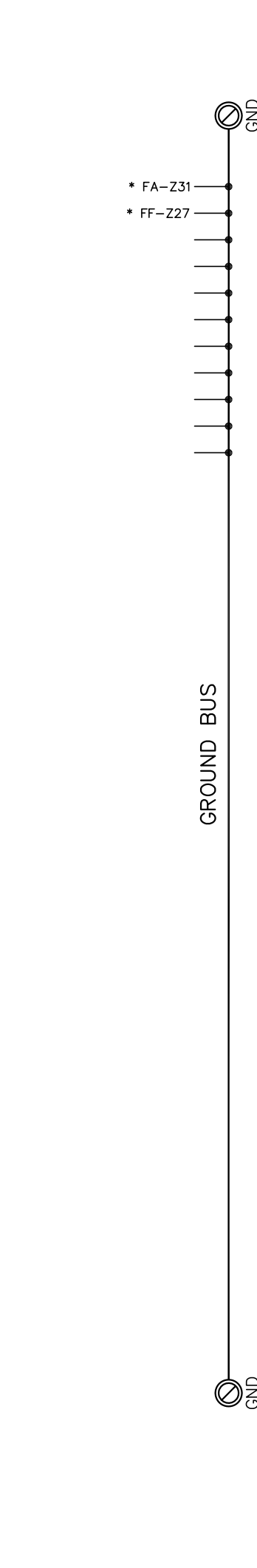
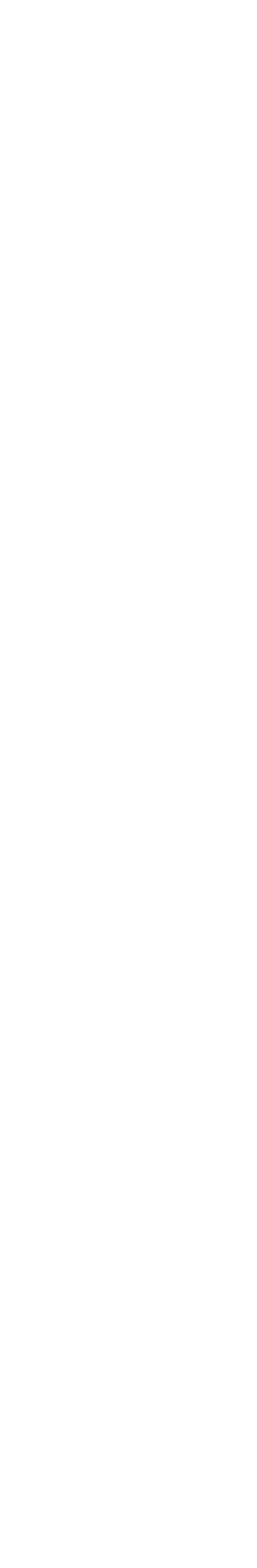
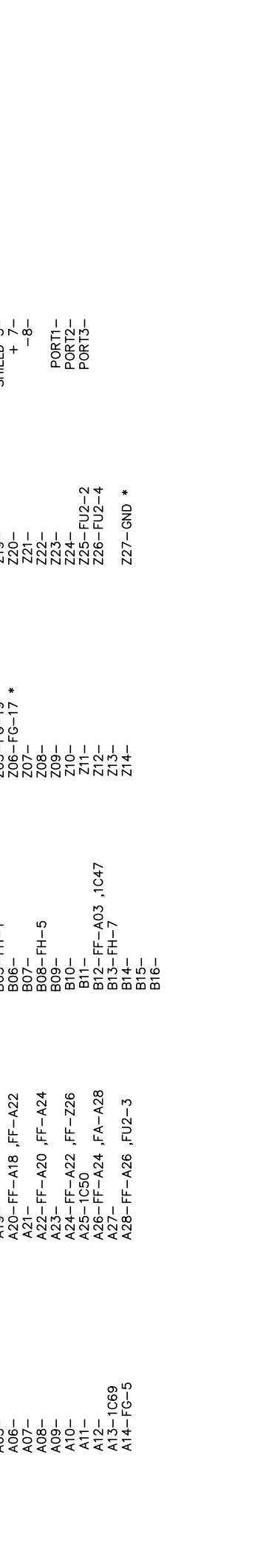
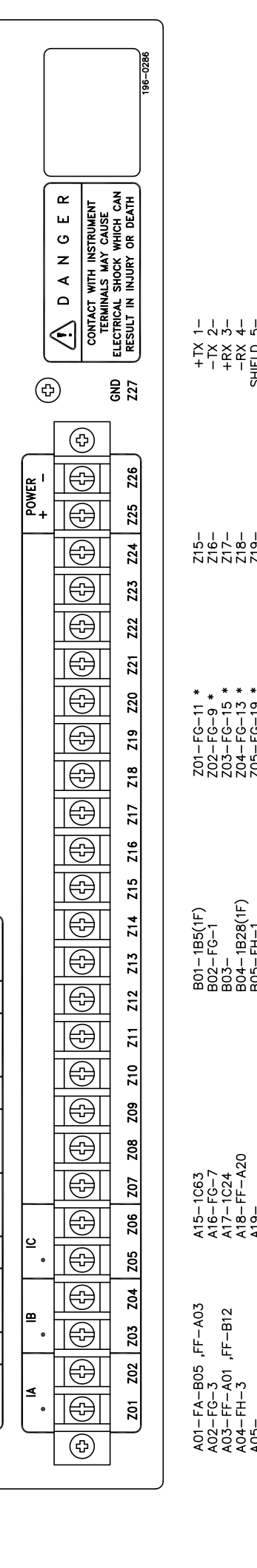
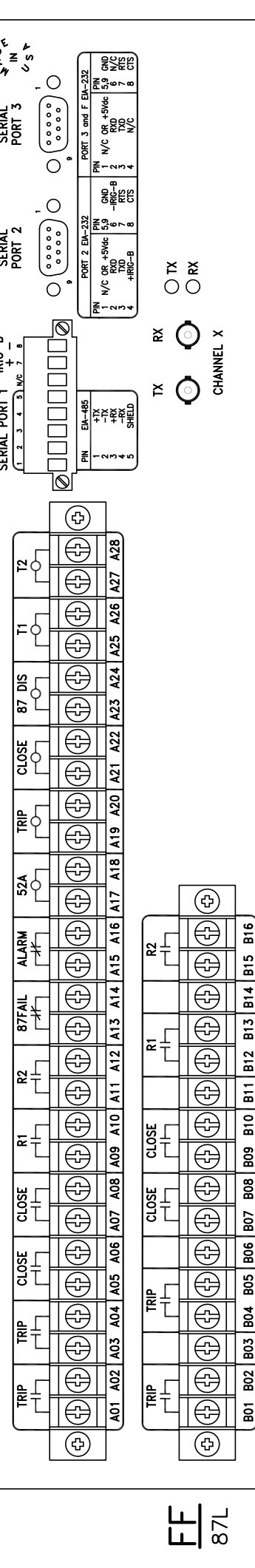
DETAIL 4
N.T.S.

FOR BIDDING
PURPOSES ONLY

				DOWNTOWN SUBSTATION 138kV WILLOW GLEN LINE PROTECTION PANEL			
				CITY OF ALEXANDRIA ALEXANDRIA, LOUISIANA			
SCALE: N.T.S.		DATE: 4/28/16		DRAWN: JHD		APPROVED:	
				BHA, INC. BATON ROUGE, LOUISIANA			
				PROJECT NO.: 2019-E-14D			
				DRAWING NO.: DT-E8031-P2			
				REV.: A			
NO.	DATE	BY	REVISIONS				
A	1/25/17	BHA	FOR BIDDING PURPOSES ONLY				



- 1- FA-213
- 2- 1481(U)
- 3- FA-214
- 4- 1482(U)
- 5- FA-215
- 6- 1483(U)
- 7- FA-216
- 8- 1484(U)
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- 83- 1553(U)
- 84- 1554(U)



- NOTES:**
1. TERMINAL STRIPS 1C & 1D ARE EXISTING EQUIPMENT TERMINAL STRIPS AND "GND" IS THE GROUND BUS.
 2. ALL TERMINALS EXTERNAL TO THE PANEL ARE INDICATED WITH THE RESPECTIVE PANEL NUMBER IN PARENTHESIS, E.G. RESPECTIVE PANEL 3C5(3R) IS LOCATED ON PANEL 3R.
 3. CABLES TO PANEL 1F AND TERMINAL STRIPS 1C AND 1D SHOULD BE PIGTAILS 15 FEET IN LENGTH.
 4. CABLES TO EQUIPMENT ON PANELS 2F & 2R SHOULD BE PIGTAILS 30 FEET IN LENGTH.
 5. CABLES TO EQUIPMENT ON PANEL 3F AND 3R SHOULD BE PIGTAILS 35 FEET IN LENGTH.
 6. ALL WIRING SHOULD BE GRAY SIS AWG-14 EXCEPT WHERE INDICATED BY AN ASTERISK (*).
 7. ALL WIRING INDICATED WITH AN ASTERISK (*) SHALL BE GRAY SIS AWG-10.

NOTE: ADD JUMPERS 1C47-1C45-1C33-1C21.

ADD FOR BIDDING PURPOSES ONLY

NO.	DATE	BY	REVISIONS
A	1/25/17	BHA	FOR BIDDING PURPOSES ONLY

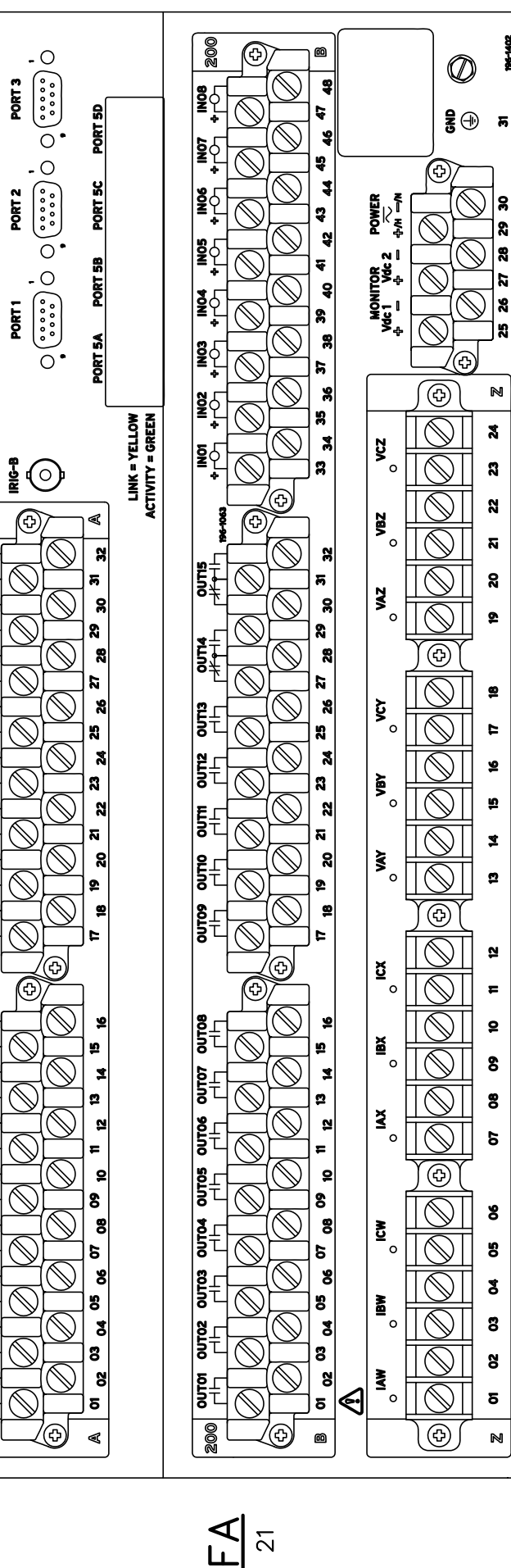
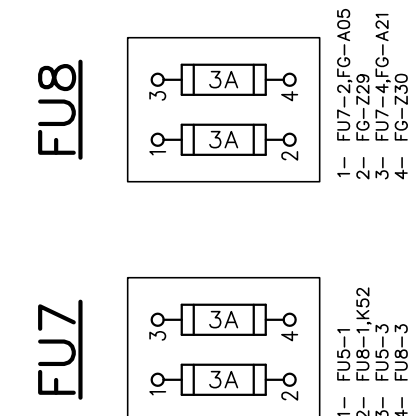
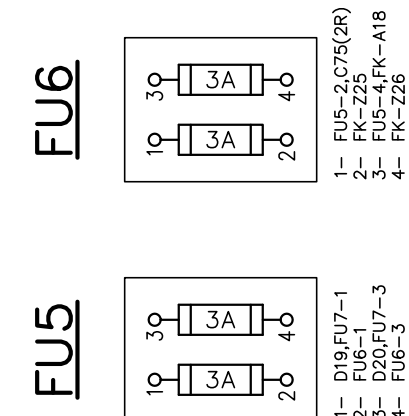
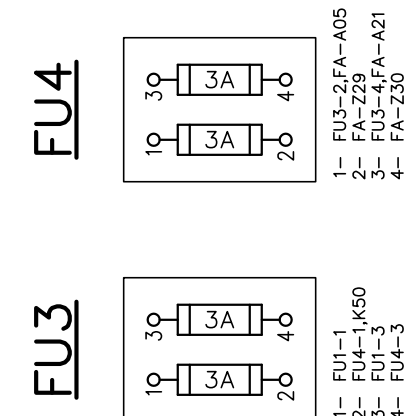
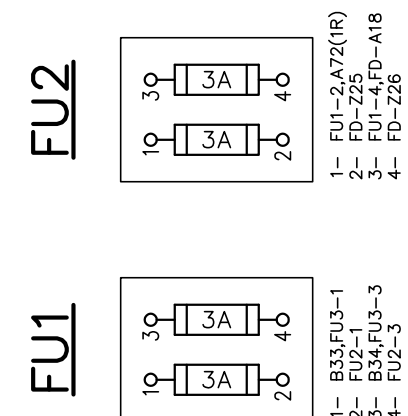
**DOWNTOWN SUBSTATION
PANEL WIRING - PANEL 1R**

CITY OF ALEXANDRIA
ALEXANDRIA, LOUISIANA

SCALE: NONE DATE: 6/2016 DRAWN: JHD APPROVED: PROJECT NO.: 2019-E-14D

BHA, INC.
BATON ROUGE, LOUISIANA

DRAWING NO.: DT-E8035.1 REV: A



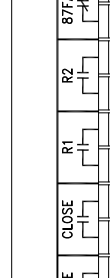
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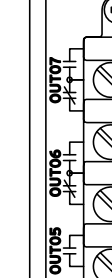
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- A100-FC-3

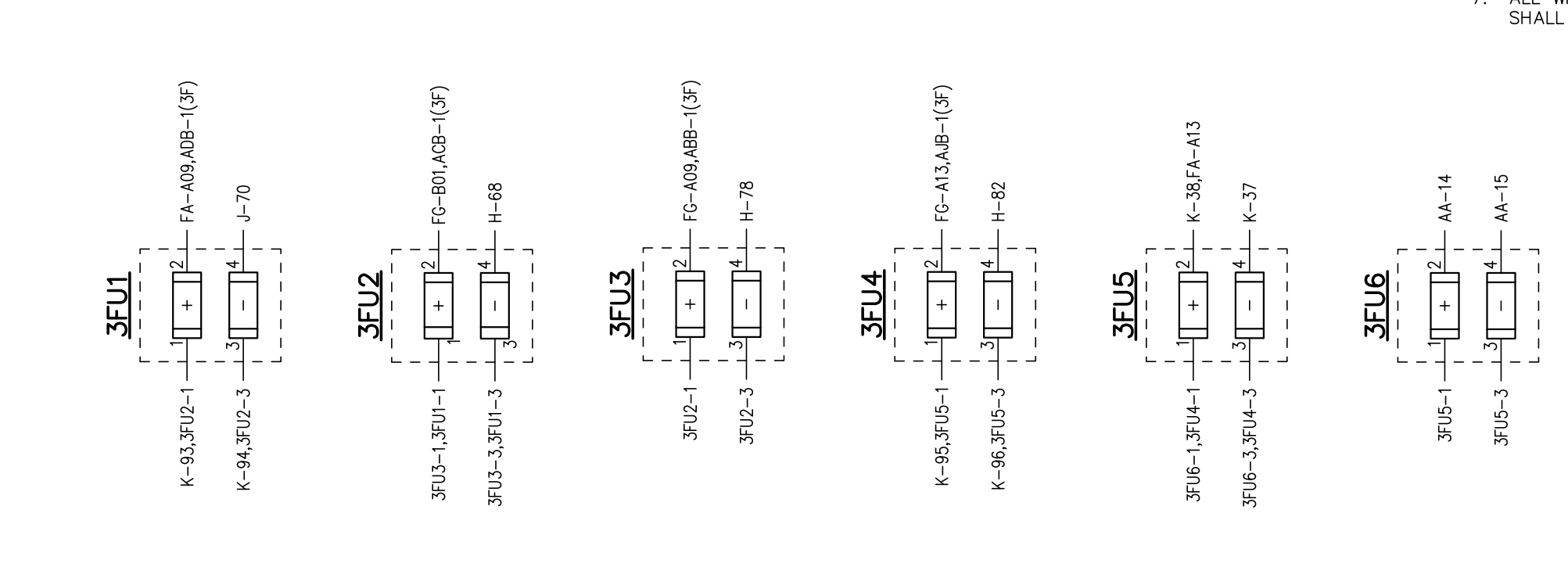
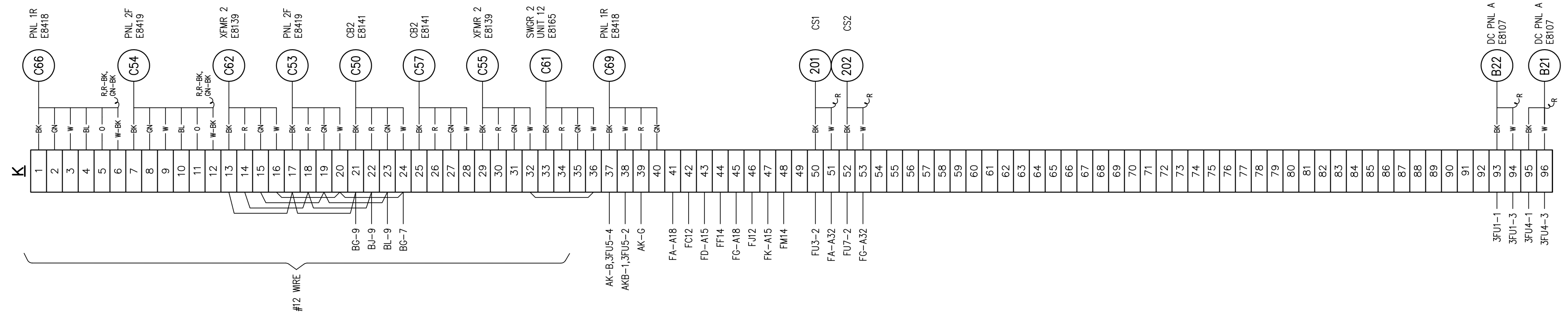
NO.	DATE	BY	REVISIONS
A	1/25/17	BHA	FOR BIDDING PURPOSES ONLY

FOR BIDDING PURPOSES ONLY

STERKX SUBSTATION
138KV WILLOW GLEN & PRESCOTT LINES
WIRING DIAGRAM-PANEL 3R
CITY OF ALEXANDRIA
ALEXANDRIA, LOUISIANA

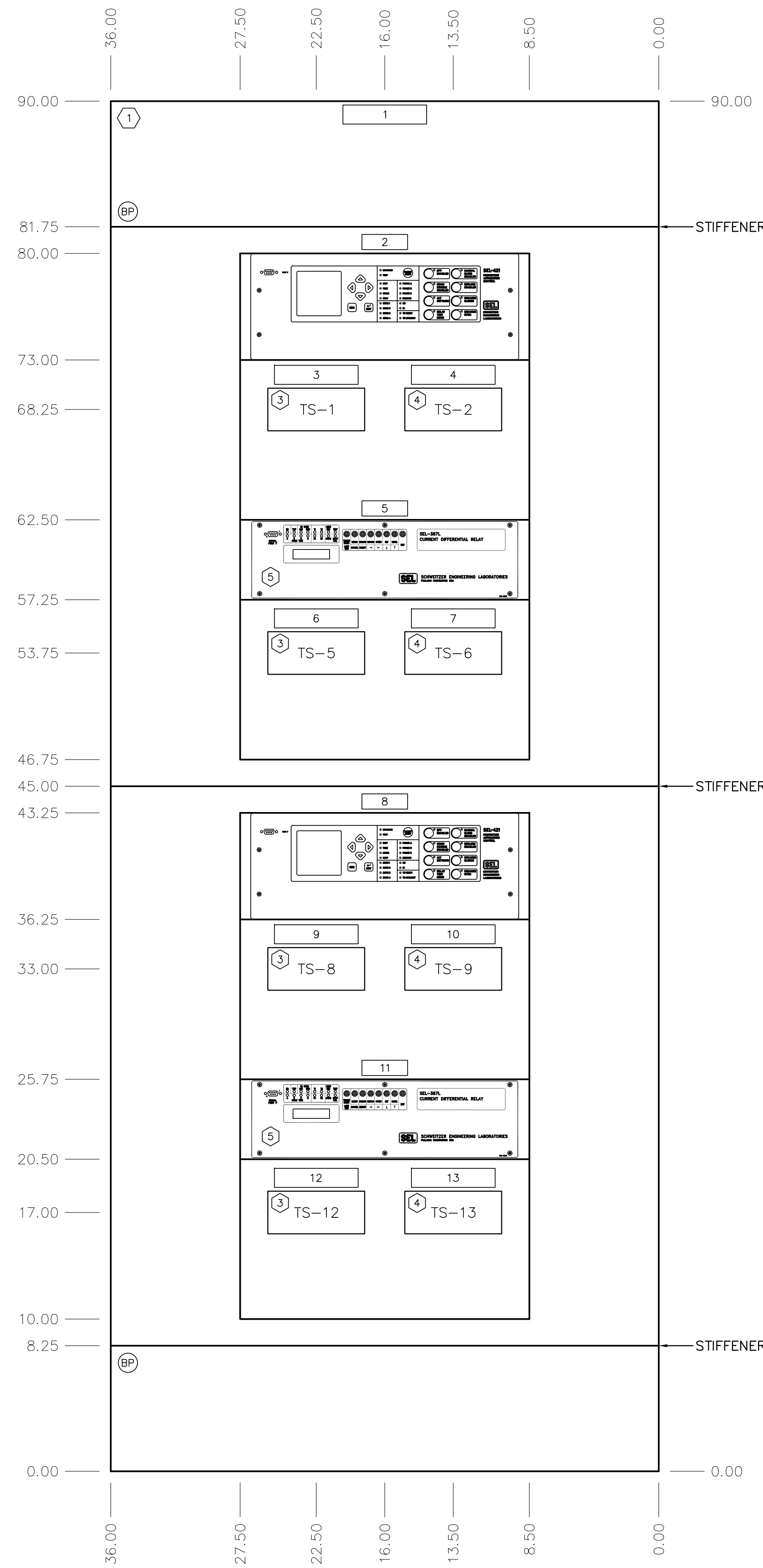
SCALE: NONE DATE: 6/2016 DRAWN: JHD APPROVED: PROJECT NO.: 2019-E-14D
DRAWING NO.: SR-E8424.1 REV: A

BHA, INC.
BATON ROUGE, LOUISIANA



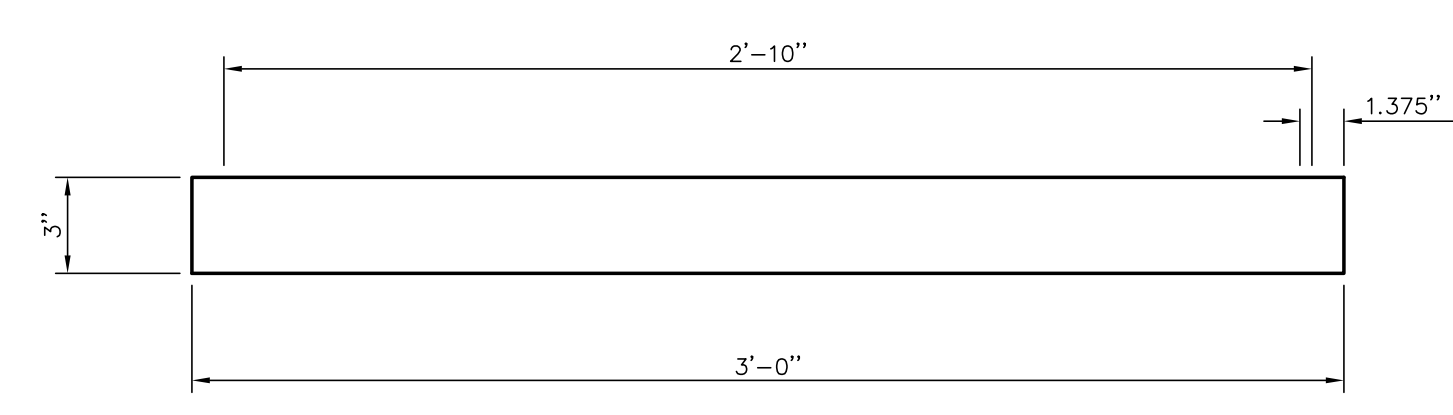
- NOTES:**
- TERMINAL STRIP K IS AN EXISTING EQUIPMENT TERMINAL STRIP AND "GND" IS THE GROUND BUS.
 - ALL TERMINALS EXTERNAL TO THE PANEL ARE INDICATED WITH THE RESPECTIVE PANEL NUMBER IN PARENTHESES, E.G. TERMINAL A59(1R) IS LOCATED ON PANEL 1R.
 - CABLES TO PANEL 3 (TERMINAL STRIP K AND PANEL 3F) SHOULD BE PITTAILS 15 FEET IN LENGTH.
 - ALL CABLES TO EQUIPMENT ON PANELS 1F & 1R SHOULD BE PITTAILS 35 FEET IN LENGTH.
 - ALL CABLES TO EQUIPMENT ON PANELS 2F & 2R SHOULD BE PITTAILS 30 FEET IN LENGTH.
 - ALL WIRING SHOULD BE GRAY SIS AWG-14 EXCEPT WHERE INDICATED BY AN ASTERISK (*).
 - ALL WIRING INDICATED WITH AN ASTERISK (*) SHALL BE GRAY SIS AWG-10.

BHA2426.DWG -07/14/18
Prepared by Brooke-Henrich & Associates, Inc. CAD SERVICES

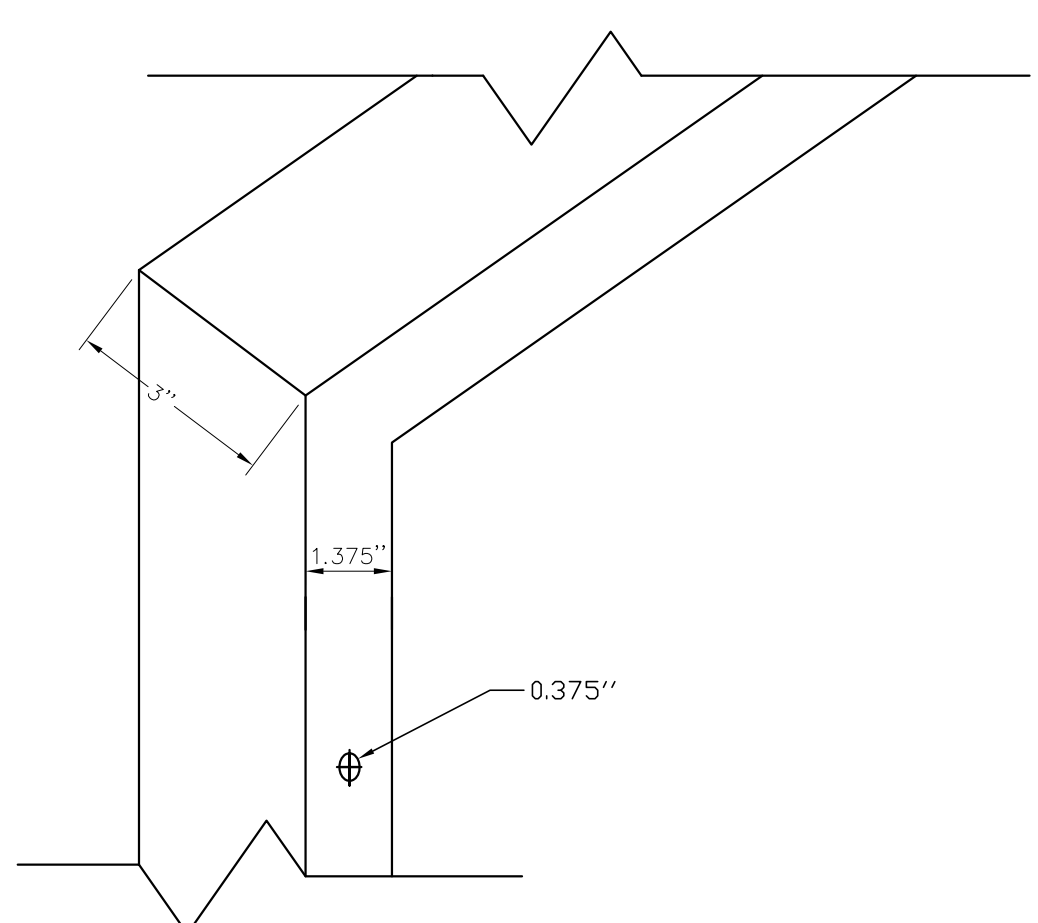


FRONT ELEVATION
LINE PROTECTION PANEL

- ① EQUIPMENT REFERENCE NUMBER - SEE BILL OF MATERIALS (THIS DWG.)
- 1 NAMETAG REFERENCE NUMBER - SEE NAMETAG SCHEDULE (THIS DWG.)
- BP BLANK PLATE - SIZED AS SHOWN



TOP VIEW
NOT TO SCALE



DETAIL
NOT TO SCALE

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	PART NO.	QTY.
1	STEEL PANEL PER SPECIFICATION	N/A	N/A	1
2	SEL-421 LINE DISTANCE RELAY, 48V DC	SEL	04214415XXX2H2XXXXX	2
3	TEST SWITCH	STATES	FMS-10D	4
4	TEST SWITCH	STATES	FMS-10A	4
5	SEL-387L LINE CURRENT DIFFERENTIAL RELAY, 48V DC	SEL	0387L03D03X52X1	2
6	FUSE BLOCK 2 POLES, 30A, 600V	BUSSMAN	H25030-25	8
7	FUSE CARTRIDGE 6A, 250V V NR	BUSSMAN	NON-6	8
8	FUSE CARTRIDGE 3A, 250V V NR	BUSSMAN	NON-3	8

NAMEPLATE ENGRAVING SCHEDULE					
N.P. NO.	SIZE	TEXT HEIGHT	FIRST LINE	SECOND LINE	THIRD LINE
1	1.25" x 5.5"	3/16"	PANEL 3R	WILLOW GLEN LINE AND	PRESCOTT LINE
2	1" x 3"	3/16"	WILLOW GLEN LINE 21	BACKUP DISTANCE	RELAY
3	1.25" x 5.5"	1/4"	See Detail #1		
4	1.25" x 5.5"	1/4"	See Detail #2		
5	1" x 3"	3/16"	WILLOW GLEN LINE 87L	CURRENT DIFF	RELAY
6	1.25" x 5.5"	1/4"	See Detail #3		
7	1.25" x 5.5"	1/4"	See Detail #4		
8	1" x 3"	3/16"	PRESCOTT LINE 21	BACKUP DISTANCE	RELAY
9	1.25" x 5.5"	1/4"	See Detail #5		
10	1.25" x 5.5"	1/4"	See Detail #6		
11	1" x 3"	3/16"	PRESCOTT LINE 87L	CURRENT DIFF	RELAY
12	1.25" x 5.5"	1/4"	See Detail #7		
13	1.25" x 5.5"	1/4"	See Detail #8		

TS1 - WILLOW GLEN 21 BACKUP RELAY										
LINE VOLTS				CB1 CURRENT						
VA	VB	VC	VN	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 1
N.T.S. THIS DWG.

TS5 - PRESCOTT 21 BACKUP RELAY										
LINE VOLTS				CB3 CURRENT						
VA	VB	VC	VN	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 5
N.T.S. THIS DWG.

TS2 - WILLOW GLEN 21 BACKUP RELAY										
CB1 TRIP							BUS VOLTS			
CB1 TRIP	CB1 DTT	CB1 BFI	CB1 BFT	CS1 BFT	ALARM		V	N		
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 2
N.T.S. THIS DWG.

TS6 - PRESCOTT 21 BACKUP RELAY										
CB3 TRIP							BUS VOLTS			
CB3 TRIP	CB3 DTT	CB3 BFI	CB3 BFT	CS2 BFT	ALARM	CB2 BFT	V	N		
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 6
N.T.S. THIS DWG.

TS3 - WILLOW GLEN 87L LINE DIFF RELAY											
				CB1 CURRENT							
				IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN		
				0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 3
N.T.S. THIS DWG.

TS7 - PRESCOTT 87L LINE DIFF RELAY											
				CB3 CURRENT							
				IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN		
				0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 7
N.T.S. THIS DWG.

TS4 - WILLOW GLEN 87L LINE DIFF RELAY											
CB1 TRIP		CB1 BFI		CB1 79I		CLOSE		R1		87 FAIL ALARM	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

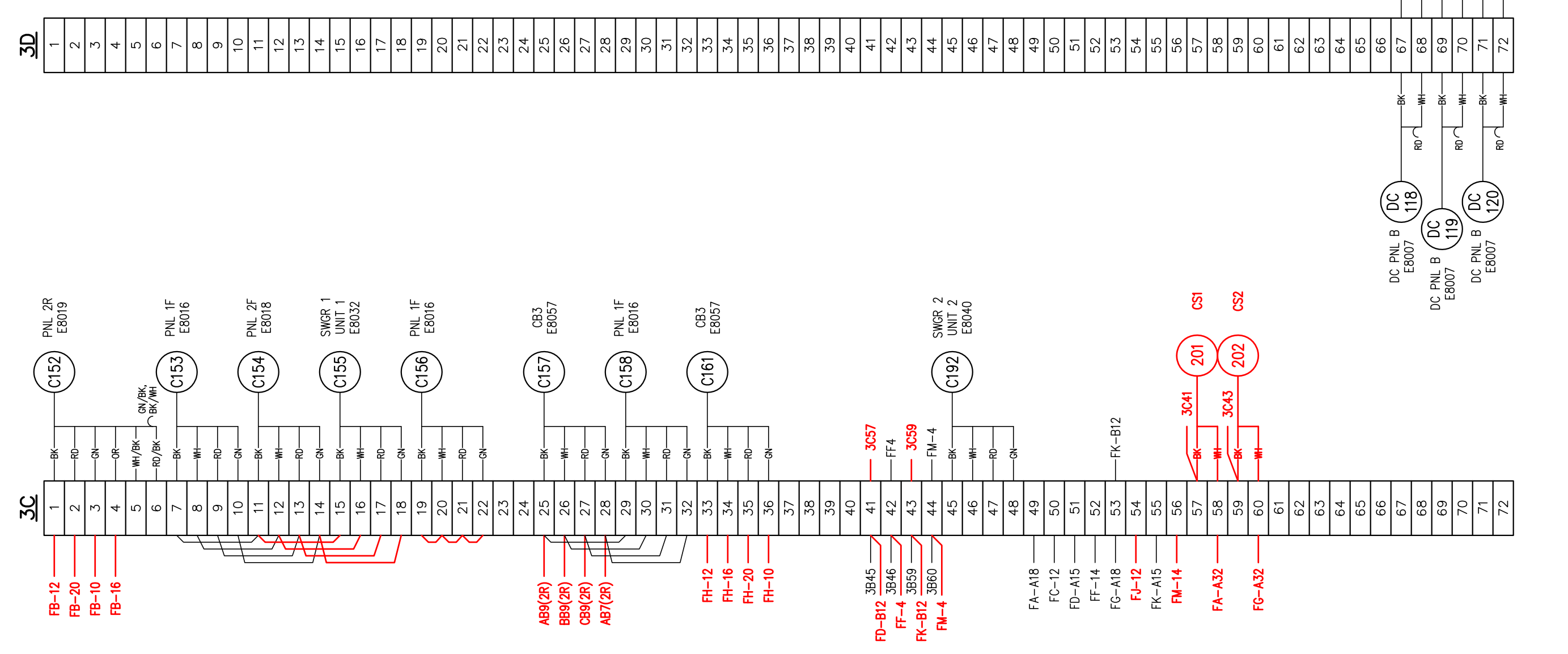
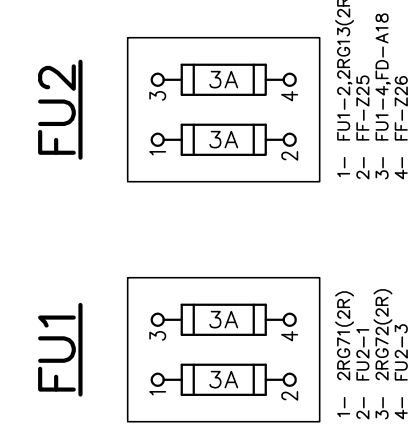
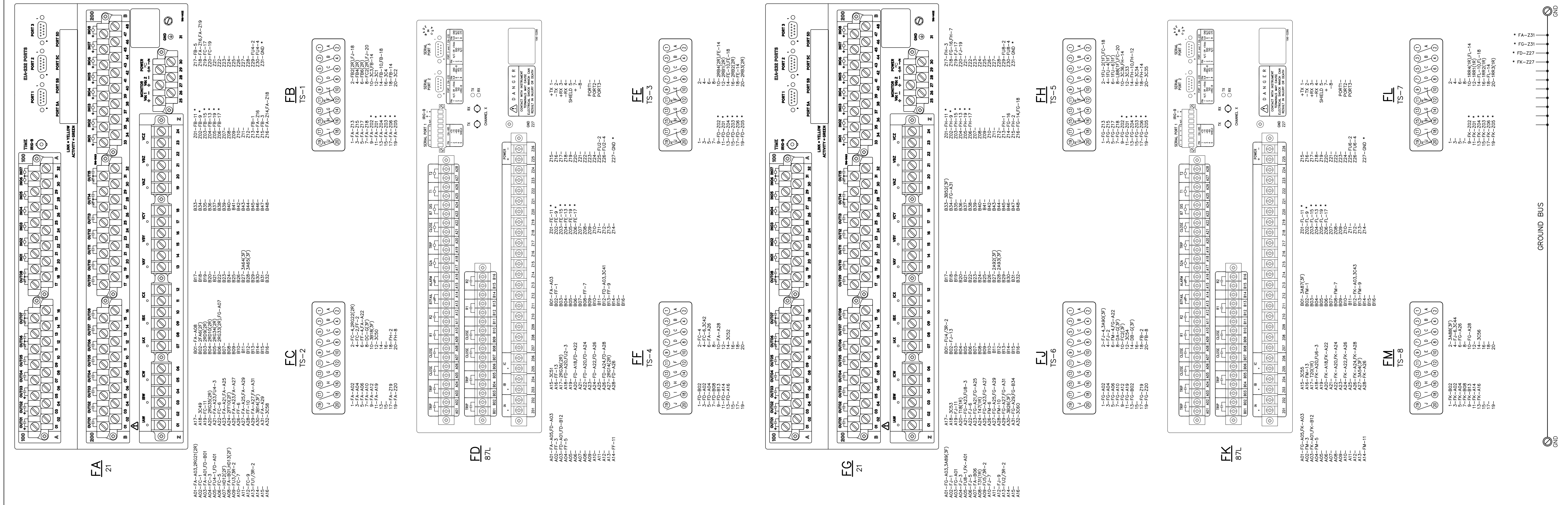
DETAIL 4
N.T.S. THIS DWG.

TS8 - PRESCOTT 87L LINE DIFF RELAY											
CB3 TRIP		CB3 BFI		CB3 79I		CLOSE		R1		87 FAIL ALARM	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 8
N.T.S. THIS DWG.

FOR BIDDING PURPOSES ONLY

STERKX ROAD SUBSTATION LINE PROTECTION PANEL			
CITY OF ALEXANDRIA ALEXANDRIA, LOUISIANA			
SCALE: N.T.S.	DATE: 3/17/16	DRAWN: JHD	APPROVED:
PROJECT NO.: 2019-E-14D		REV: A	
DRAWING NO.: SR-E8501		BHA, INC. BATON ROUGE, LOUISIANA	
NO.	DATE	BY	REVISIONS
A	1/25/17	BHA	FOR BIDDING PURPOSES ONLY



- NOTES:**
- TERMINAL STRIPS 3C AND 3D ARE EXISTING EQUIPMENT TERMINAL STRIPS AND "GND" IS THE GROUND BUS.
 - ALL TERMINALS EXTERNAL TO THE PANEL ARE INDICATED WITH THE RESPECTIVE PANEL NUMBER IN PARENTHESES, E.G. TERMINAL 2RG33(2R) IS LOCATED ON PANEL 2R.
 - CABLES TO PANEL 3 (TERMINAL STRIPS 3C, 3D & PANEL 3F) SHOULD BE PIGTAILS 15 FEET IN LENGTH.
 - ALL CABLES TO EQUIPMENT ON PANELS 1F & 1R SHOULD BE PIGTAILS 30 FEET IN LENGTH.
 - ALL CABLES TO EQUIPMENT ON PANELS 2F & 2R SHOULD BE PIGTAILS 35 FEET IN LENGTH.
 - ALL WIRING SHOULD BE GRAY SIS AWG-14 EXCEPT WHERE INDICATED BY AN ASTERISK (*).
 - ALL WIRING INDICATED WITH AN ASTERISK (*) SHALL BE GRAY SIS AWG-10.

FOR BIDDING PURPOSES ONLY

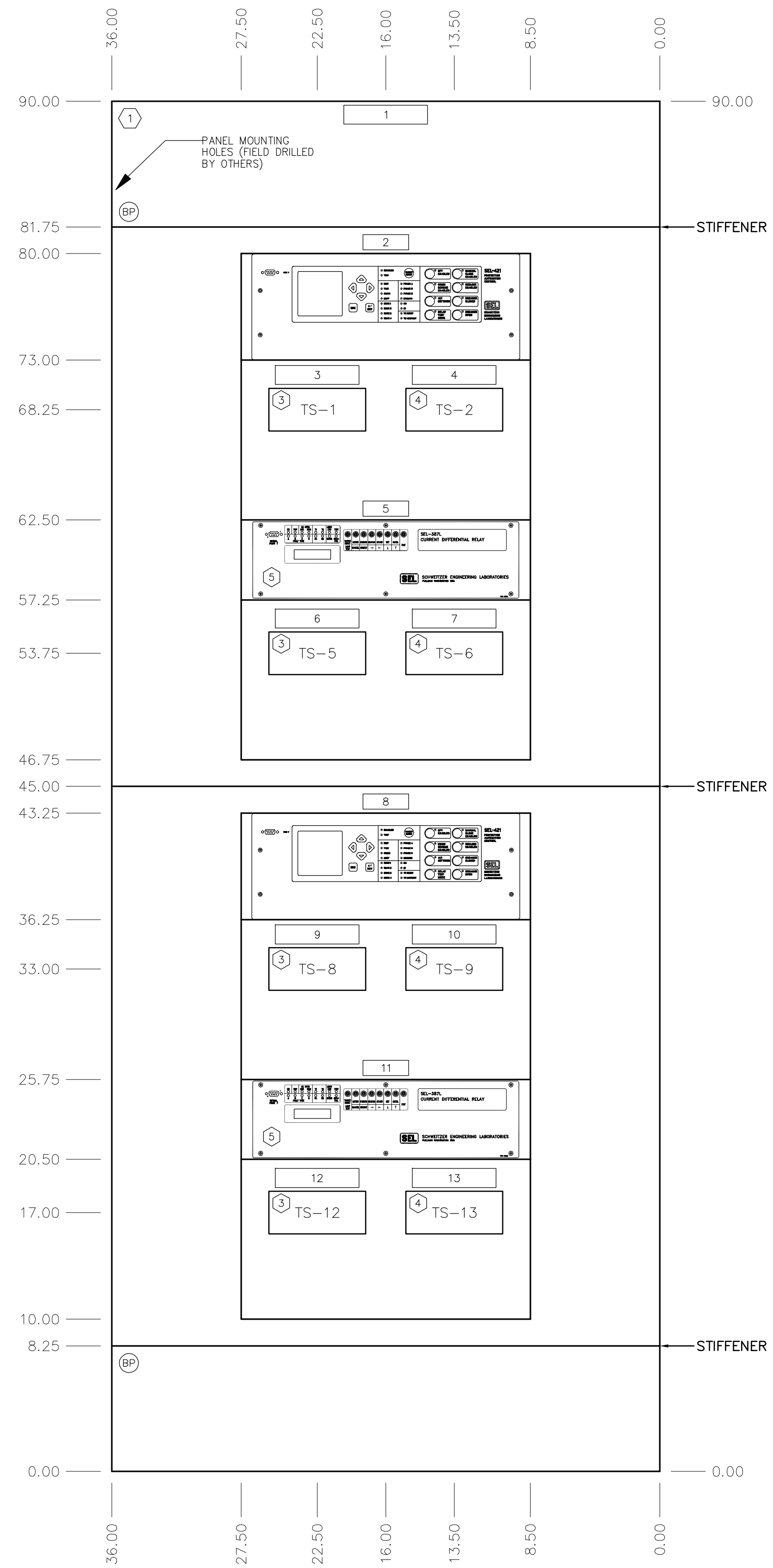
NO.	DATE	BY	REVISIONS
A	1/25/17	BHA	FOR BIDDING PURPOSES ONLY

WILLOW GLEN SUBSTATION
138KV DOWNTOWN & STERKX LINES
WIRING DIAGRAM PANEL 3R
CITY OF ALEXANDRIA
ALEXANDRIA, LOUISIANA

SCALE : NONE DATE : 6/2016 DRAWN : jHD APPROVED : PROJECT NO. : 2019-E-140
DRAWING NO. : WG-E8021.1 REV. : A

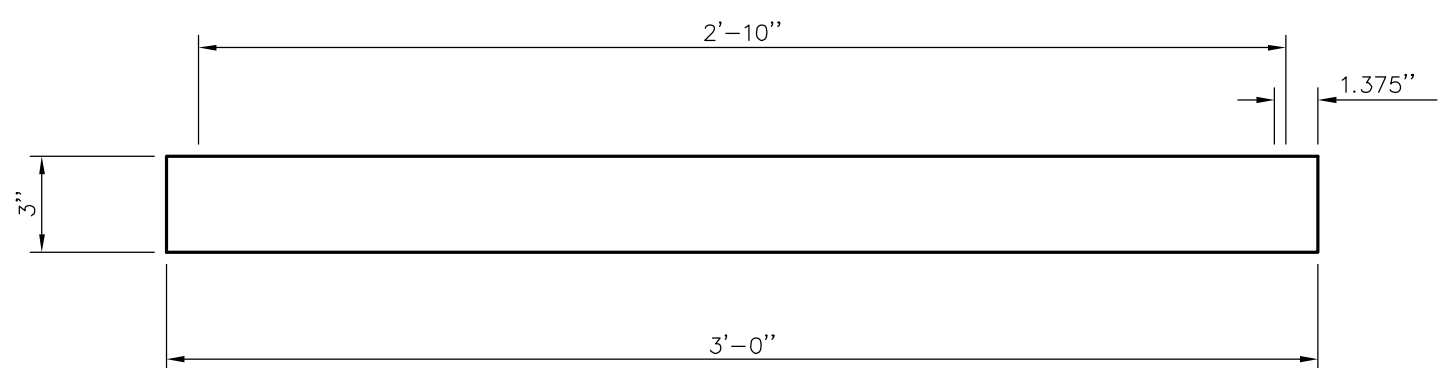
BHA, INC.
BATON ROUGE, LOUISIANA

BHA-24-0000-001-1488

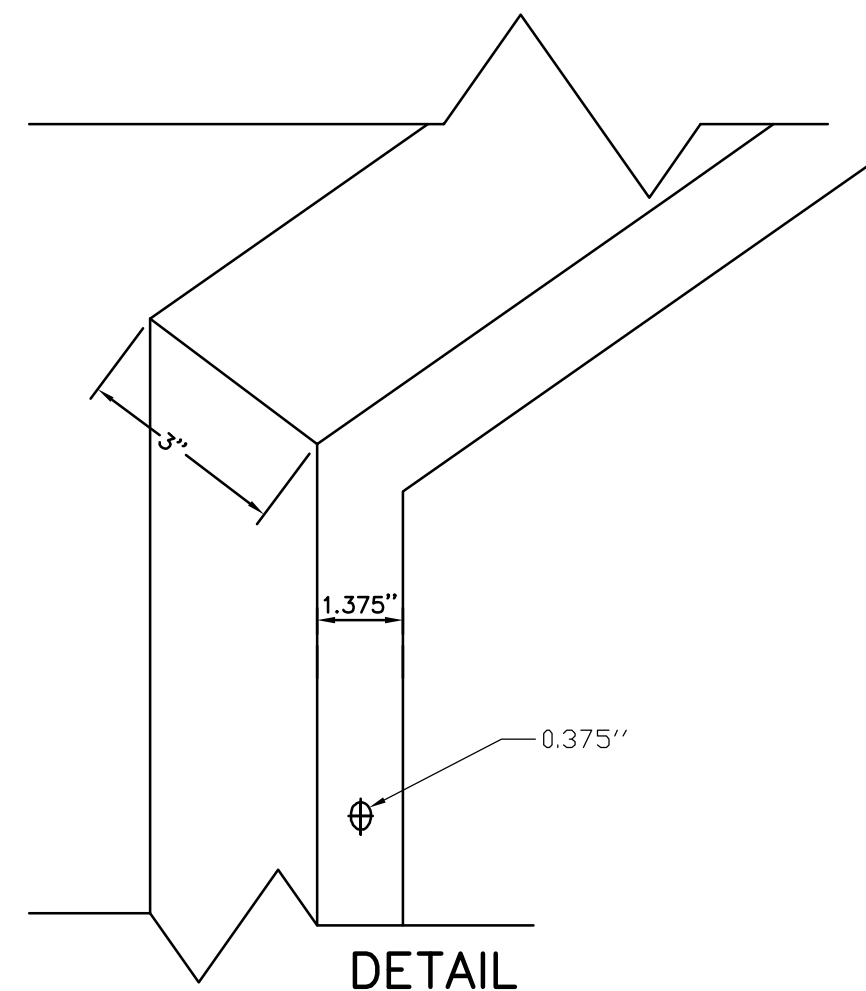


FRONT ELEVATION
LINE PROTECTION PANEL

- ① EQUIPMENT REFERENCE NUMBER - SEE BILL OF MATERIALS (THIS DWG.)
- 1 NAMETAG REFERENCE NUMBER - SEE NAMETAG SCHEDULE (THIS DWG.)
- BP BLANK PLATE - SIZED AS SHOWN



TOP VIEW
NOT TO SCALE



DETAIL
NOT TO SCALE

BILL OF MATERIAL				
ITEM	DESCRIPTION	MANUFACTURER	PART NO.	QTY.
1	STEEL PANEL PER SPECIFICATION	N/A	N/A	1
2	SEL-421 LINE DISTANCE RELAY, 48V DC	SEL	04214415XXXX2HXXXXXX	2
3	TEST SWITCH	STATES	FMS-100	4
4	TEST SWITCH	STATES	FMS-10A	4
5	SEL-387L LINE CURRENT DIFFERENTIAL RELAY, 48V DC	SEL	0387L03003X52X1	2
6	FUSE BLOCK 2 POLES, 30A, 600V	BUSSMAN	H25030-25	8
7	FUSE CARTRIDGE 6A, 250V V NR	BUSSMAN	NON-6	8
8	FUSE CARTRIDGE 3A, 250V V NR	BUSSMAN	NON-3	8

NAMEPLATE ENGRAVING SCHEDULE					
N.P. NO.	SIZE	TEXT HEIGHT	FIRST LINE	SECOND LINE	THIRD LINE
1	1.25" x 5.5"	3/16"	PANEL 3R	DOWNTOWN LINE AND	STERKX LINE
2	1" x 3"	3/16"	DOWNTOWN LINE 21	BACKUP DISTANCE	RELAY
3	1.25" x 5.5"	1/4"	See Detail #1		
4	1.25" x 5.5"	1/4"	See Detail #2		
5	1" x 3"	3/16"	DOWNTOWN LINE 87L	CURRENT DIFF	RELAY
6	1.25" x 5.5"	1/4"	See Detail #3		
7	1.25" x 5.5"	1/4"	See Detail #4		
8	1" x 3"	3/16"	STERKX LINE 21	BACKUP DISTANCE	RELAY
9	1.25" x 5.5"	1/4"	See Detail #5		
10	1.25" x 5.5"	1/4"	See Detail #6		
11	1" x 3"	3/16"	STERKX LINE 87L	CURRENT DIFF	RELAY
12	1.25" x 5.5"	1/4"	See Detail #7		
13	1.25" x 5.5"	1/4"	See Detail #8		

TS1 - DOWNTOWN 21 BACKUP RELAY									
LINE VOLTS					CB1 CURRENT				
VA	VB	VC	VN	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 1
THIS DWG.
N.T.S.

TS5 - STERKX RD 21 BACKUP RELAY									
LINE VOLTS					CB3 CURRENT				
VA	VB	VC	VN	IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 5
THIS DWG.
N.T.S.

TS2 - DOWNTOWN 21 BACKUP RELAY									
CB1 TRIP							BUS VOLTS		
CB1 TRIP	CB1 DTT	CB1 BFI	CB1 BFT	CS1 BFT	ALARM		V	N	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 2
THIS DWG.
N.T.S.

TS6 - STERKX RD 21 BACKUP RELAY									
CB3 TRIP							BUS VOLTS		
CB3 TRIP	CB3 DTT	CB3 BFI	CB3 BFT	CS2 BFT	ALARM	CB2 BFT	V	N	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 6
THIS DWG.
N.T.S.

TS3 - DOWNTOWN 87L LINE DIFF RELAY						
CB1 CURRENT						
IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 3
THIS DWG.
N.T.S.

TS7 - STERKX RD 87L LINE DIFF RELAY						
CB3 CURRENT						
IA OUT	IA IN	IB OUT	IB IN	IC OUT	IC IN	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 7
THIS DWG.
N.T.S.

TS4 - DOWNTOWN 87L LINE DIFF RELAY							
CB1 TRIP				87 FAIL ALARM			
CB1 TRIP	CB1 BFI	CB1 79I	CLOSE	R1	87 FAIL	ALARM	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 4
THIS DWG.
N.T.S.

TS8 - STERKX RD 87L LINE DIFF RELAY							
CB3 TRIP				87 FAIL ALARM			
CB3 TRIP	CB3 BFI	CB3 79I	CLOSE	R1	87 FAIL	ALARM	
0.428"	0.516"	0.516"	0.516"	0.516"	0.516"	0.516"	0.428"

DETAIL 8
THIS DWG.
N.T.S.

FOR BIDDING PURPOSES ONLY

WILLOW GLEN SUBSTATION LINE PROTECTION PANEL			
CITY OF ALEXANDRIA ALEXANDRIA, LOUISIANA			
SCALE: N.T.S.	DATE: 3/17/16	DRAWN: JHD	APPROVED:
PROJECT NO.: 2019-E-14D		REV. A	
BHA, INC. BATON ROUGE, LOUISIANA			
NO.	DATE	BY	REVISIONS
A	10/3/16	BHA	FOR BIDDING PURPOSES ONLY