

<b>SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS</b> OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30				1. REQUISITION NUMBER 91110 41836663		PAGE 1 OF 26	
2. CONTRACT NO.		3. AWARD/EFFECTIVE DATE		4. ORDER NUMBER		5. SOLICITATION NUMBER N65540-04-Q-0341	
7. FOR SOLICITATION INFORMATION CALL:		a. NAME DAVID DENNISON		b. TELEPHONE NUMBER (No Collect Calls) 215-897-1494 215-897-7059 (FAX)		6. SOLICITATION ISSUE DATE 04-JUL-13 8. OFFER DUE DATE/LOCAL TIME 04-JUL-30/ 0400 PM	
9. ISSUED BY CONTRACTING OFFICER NSWC CARDEROCK DIVISION 5001 S. BROAD STREET PHILADELPHIA PA 19112-1403 ATTN: DAVID DENNISON 215-897-1494				10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED <input type="checkbox"/> SET ASIDE: % FOR <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> SMALL DISADV. BUSINESS <input type="checkbox"/> 8(A) SIC: 3357 SIZE STANDARD: 1000		11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) 13b. RATING 14. METHOD OF SOLICITATION <input checked="" type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP	
15. DELIVER TO RECEIVING OFFICER, FISC, NSWC CARDEROCK DIVISION 1601 LANGLEY AVENUE PHILA. PA 19112-5051 ATTN: NAVAL BUSINESS CENTER				16. ADMINISTERED BY		12. DISCOUNT TERMS NET 30 DAY	
17a. CONTRACTOR/OFFEROR				18a. PAYMENT WILL BE MADE BY		17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER <input type="checkbox"/>	
18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED <input checked="" type="checkbox"/> SEE ADDENDUM				19. ITEM NO.		20. SCHEDULE OF SUPPLIES/SERVICES	
21. QUANTITY				22. UNIT		23. UNIT PRICE	
24. AMOUNT				25. ACCOUNTING AND APPROPRIATION DATA		26. TOTAL AWARD AMOUNT (For Govt. Use Only)	
27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3, AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input checked="" type="checkbox"/> ARE NOT ATTACHED.				27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.			
28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN. <input type="checkbox"/>				29. AWARD OF CONTRACT: REFERENCE OFFER DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS: <input type="checkbox"/>			
30a. SIGNATURE OF OFFEROR/CONTRACTOR				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)			
30b. NAME AND TITLE OF SIGNER (TYPE OR PRINT)		30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)		31c. DATE SIGNED	
32a. QUANTITY IN COLUMN 21 HAS BEEN <input type="checkbox"/> RECEIVED <input type="checkbox"/> INSPECTED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED				33. SHIP NUMBER <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		34. VOUCHER NUMBER	
32b. SIGNATURE OF AUTHORIZED GOVT. REPRESENTATIVE				32c. DATE		35. AMOUNT VERIFIED CORRECT FOR	
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT				36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		37. CHECK NUMBER	
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER				41c. DATE		38. S/R ACCOUNT NUMBER	
				42a. RECEIVED BY (Print)		39. S/R VOUCHER NUMBER	
				42b. RECEIVED AT (Location)		40. PAID BY	
				42c. DATE REC'D (YY/MM/DD)		42d. TOTAL CONTAINERS	

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## SECTION B SUPPLIES/SERVICES

ITEM	SUPPLIES/SERVICES	QUANTITY	UI	U-PRICE	AMOUNT
0002	REQN. NO. 91110 /41836667 ITEM NAME: CABLE BUS SYSTEM IN ACCORDANCE WITH THE ATTACHED SPECIFICATION	1	EA		
0003	REQN. NO. 91110 /41836668 ITEM NAME: CABLE BUS TECHNICAL MANUAL IN ACCORDANCE WITH THE ATTACHED SPECIFICATIONS	1	EA		
0004	REQN. NO. 91110 /41836669 ITEM NAME: CABLE TRAY SYSTEM IN ACCORDANCE WITH THE ATTACHED SPECIFICATIONS	1	EA		
0005	REQN. NO. 91110 /41836670 ITEM NAME: CABLE TRAY TECHNICAL MANUAL IN ACCORDANCE WITH THE ATTACHED SPECIFICATIONS	1	EA		

1. This Request for Quotations (RFQ) covers the establishment of a firm-fixed price purchase order for the furnishing of a Cable Bus and Cable Tray System and Associated Technical Data. This RFQ is issued using Simplified Acquisition Procedures pursuant to the Test Program for Certain Commercial Items in accordance with Subpart 13.5 of the Federal Acquisition Regulation (FAR).
2. The Cable Bus and Cable Tray System to be furnished shall be in accordance with the Medium Voltage Cable Bus and Cable Tray System Purchase Specification TS050-18 dated 25 June 2004, which is provided as Attachments 1 to this RFQ.
3. The Government intends to make a single award to the low price technically acceptable offeror. Technical acceptability shall be determined based on Technical Compliance and Corporate Experience. In order to evaluate technical acceptability, offerors are required to submit information as part of their quotation addressing these two factors, as discussed below. A rating of Acceptable or Unacceptable shall be assigned under each of these factors, and on an overall basis. In order to be assigned an overall rating of Acceptable, an offeror must receive a rating of Acceptable in both Technical Compliance and Corporate Experience. Failure to submit adequate information will result in a quotation being rated as Unacceptable. The Government intends on making an award based on the initial quotations received. Therefore, an offeror's initial quotation should contain its best offer from both a price and a technical standpoint.
4. As indicated above, offerors must furnish the following information as part of their quotations:

#### TECHNICAL COMPLIANCE

In this factor offerors shall furnish information demonstrating that the Cable Bus and Cable Tray System it intends to furnish will meet all the requirements set forth in the Purchase Specification. As a minimum, offerors must provide the following:

- a. A proposed Bill of Materials for each cable bus run with sufficient detail for comparison with Figures 1A through 15H contained in the Purchase Specification.
- b. Information on the Inductive and Capacitive values for each bus cable run,
- c. The part number and manufacturer of the proposed Cable, together with information that shows the Cable will comply with the specification requirements,
- d. The part number and manufacturer of the proposed Medium Voltage Terminations, together with information that the Terminations will comply with the specification requirements, and

- e. Information demonstrating how the Cable Bus and Cable Tray System being offered will comply with the requirements of Paragraphs 4.1.1.A.1, 4.1.1.B.1 through 4.1.1.B.6, 4.1.1.B.8, 4.1.1.B.9, 4.1.1.C.1 through 4.1.1.C.7, 4.2.1.1 and 4.2.1.B.1 through 4.2.1.B.6 of the Purchase Specification.

#### CORPORATE EXPERIENCE

In this factor offerors shall furnish information on its experience with the design, fabrication and manufacture of Cable Bus and Cable Tray Systems or similar equipment. Offerors shall also supply information on their resources, such as facilities, equipment, personnel, quality assurance/control system, that demonstrates it possesses the resources and capability to furnish a Cable Bus and Cable Tray System that will meet all the specification requirements.

#### 5. List of Attachments:

1. Medium Voltage Cable Bus and Cable Tray System Purchase Specification TS050-18 dated 1 July 2004 with Drawings.

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## SECTION F TIME OF DELIVERY

DELIVERIES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS

ITEM	QUANTITY	DELIVERY REQUIRED
0001	1 EA	SEE SECTION 8.3 OF SPECIFICATIONS
0002	1 EA	SEE SECTION 8.3 OF SPECIFICATIONS
0003	1 EA	SEE SECTION 8.3 OF SPECIFICATIONS
0004	1 EA	SEE SECTION 8.3 OF SPECIFICATIONS
0005	1 EA	SEE SECTION 8.3 OF SPECIFICATIONS

52.247-34 F.O.B. DESTINATION (NOV 1991)

52.212-4 CONTRACT TERMS AND CONDITIONS--COMMERCIAL ITEMS  
(OCT 2003)

(a) Inspection/Acceptance. The Contractor shall only tender for acceptance those items that conform to the requirements of this contract. The Government reserves the right to inspect or test any supplies or services that have been tendered for acceptance. The Government may require repair or replacement of nonconforming supplies or reperformance of nonconforming services at no increase in contract price. The Government must exercise its post-acceptance rights--(1) Within a reasonable time after the defect was discovered or should have been discovered; and (2) Before any substantial change occurs in the condition of the item, unless the change is due to the defect in the item.

(b) Assignment. The Contractor or its assignee may assign its rights to receive payment due as a result of performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency in accordance with the Assignment of Claims Act (31 U.S.C. 3727). However, when a third party makes payment (e.g., use of the Governmentwide commercial purchase card), the Contractor may not assign its rights to receive payment under this contract.

(c) Changes. Changes in the terms and conditions of this contract may be made only by written agreement of the parties.

(d) Disputes. This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613). Failure of the parties to this contract to reach agreement on any request for equitable adjustment, claim, appeal or action arising under or relating to this contract shall be a dispute to be resolved in accordance with the clause at FAR 52.233-1, Disputes, which is incorporated herein by reference. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any dispute arising under the contract.

(e) Definitions. The clause at FAR 52.202-1, Definitions, is incorporated herein by reference.

(f) Excusable delays. The Contractor shall be liable for default unless nonperformance is caused by an occurrence Beyond the reasonable control of the Contractor and without

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its fault or negligence such as, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, unusually severe weather, and delays of common carriers. The Contractor shall notify the Contracting Officer in writing as soon as it is reasonably possible after the commencement of any excusable delay, setting forth the full particulars in connection therewith, shall remedy such occurrence with all reasonable dispatch, and shall promptly give written notice to the Contracting Officer of the cessation of such occurrence.

(g) Invoice. (1) The Contractor shall submit an original invoice and three copies (or electronic invoice, if authorized,) to the address designated in the contract to receive invoices. An invoice must include--

- (i) Name and address of the Contractor;
- (ii) Invoice date and number;
- (iii) Contract number, contract line item number and, if applicable, the order number;
- (iv) Description, quantity, unit of measure, unit price and extended price of the items delivered;
- (v) Shipping number and date of shipment including the bill of lading number and weight of shipment if shipped on Government bill of lading;
- (vi) Terms of any discount for prompt payment offered;
- (vii) Name and address of official to whom payment is to be sent;
- (viii) Name, title, and phone number of person to notify in event of defective invoice; and
- (ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision, contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(2) Invoices will be handled in accordance with the Prompt Payment Act (31 U.S.C. 3903) and Office of Management and Budget (OMB) prompt payment regulations at 5 CFR part 1315.

(h) Patent indemnity. The Contractor shall indemnify the Government and its officers, employees and agents against liability, including costs, for actual or alleged direct or contributory infringement of, or inducement to infringe, any United States or foreign patent, trademark or copyright, arising out of the performance of this contract, provided the Contractor is reasonably notified of such claims and proceedings.

(i) Payment. (1) Items accepted. Payment shall be made for items accepted by the Government that have been delivered to the delivery destinations set forth in this contract.

(2) Prompt payment. The Government will make payment in accordance with the Prompt Payment Act (31 U.S.C. 3903) and prompt payment regulations at 5 CFR part 1315.

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(3) Electronic Funds Transfer (EFT). If the Government makes payment by EFT, see 52.212-5(b) for the appropriate EFT clause.

(4) Discount. In connection with any discount offered for early payment, time shall be computed from the date of the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the specified payment date if an electronic funds transfer payment is made.

(5) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(j) Risk of loss. Unless the contract specifically provides otherwise, risk of loss or damage to the supplies provided under this contract shall remain with the Contractor until, and shall pass to the Government upon:

(1) Delivery of the supplies to a carrier, if transportation is f.o.b. origin; or

(2) Delivery of the supplies to the Government at the destination specified in the contract, if transportation is f.o.b. destination.

(k) Taxes. The contract price includes all applicable Federal, State, and local taxes and duties.

(l) Termination for the Government's convenience. The Government reserves the right to terminate this contract, or any part hereof, for its sole convenience. In the event of such termination, the Contractor shall immediately stop all work hereunder and shall immediately cause any and all of its suppliers and subcontractors to cease work. Subject to the terms of this contract, the Contractor shall be paid a percentage of the contract price reflecting the percentage of the work performed prior to the notice of termination, plus reasonable charges the Contractor can demonstrate to the satisfaction of the Government using its standard record keeping system, have resulted from the termination. The Contractor shall not be required to comply with the cost accounting standards or contract cost principles for this purpose. This paragraph does not give the Government any right to audit the Contractor's records. The Contractor shall not be paid for any work performed or costs incurred which reasonably could have been avoided.

(m) Termination for cause. The Government may terminate this contract, or any part hereof, for cause in the event of any default by the Contractor, or if the Contractor fails to comply with any contract terms and conditions, or fails to provide the Government, upon request, with adequate assurances of future performance. In the event of termination for cause, the Government shall not be liable to the Contractor for any amount for supplies or services not accepted, and the Contractor shall be liable to the Government for any and all rights and remedies provided by law. If it is determined that the Government improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

(n) Title. Unless specified elsewhere in this contract, title to items furnished under this contract shall pass to the Government upon acceptance, regardless of when or where the Government takes physical possession.

(o) Warranty. The Contractor warrants and implies that the items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract.

(p) Limitation of liability. Except as otherwise provided by

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an express warranty, the Contractor will not be liable to the Government for consequential damages resulting from any defect or deficiencies in accepted items.

(q) Other compliances. The Contractor shall comply with all applicable Federal, State and local laws, executive orders, rules and regulations applicable to its performance under this contract.

(r) Compliance with laws unique to Government contracts. The Contractor agrees to comply with 31 U.S.C. 1352 relating to limitations on the use of appropriated funds to influence certain Federal contracts; 18 U.S.C. 431 relating to officials not to benefit; 40 U.S.C. 327, et seq., Contract Work Hours and Safety Standards Act; 41 U.S.C. 51-58, Anti-Kickback Act of 1986; 41 U.S.C. 265 and 10 U.S.C. 2409 relating to whistleblower protections; 49 U.S.C. 40118, Fly American; and 41 U.S.C. 423 relating to procurement integrity.

(s) Order of precedence. Any inconsistencies in this solicitation or contract shall be resolved by giving precedence in the following order:

- (1) The schedule of supplies/services.
- (2) The Assignments, Disputes, Payments, Invoice, Other Compliances, and Compliance with Laws Unique to Government Contracts paragraphs of this clause.
- (3) The clause at 52.212-5.
- (4) Addenda to this solicitation or contract, including any license agreements for computer software.
- (5) Solicitation provisions if this is a solicitation.
- (6) Other paragraphs of this clause.
- (7) The Standard Form 1449.
- (8) Other documents, exhibits, and attachments.
- (9) The specification.

(t) Central Contractor Registration (CCR). (1) Unless exempted by an addendum to this contract, the Contractor is responsible during performance and through final payment of any contract for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(2) (i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in FAR subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of subpart 42.12; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (t) (2) (i) of this clause, or fails to perform the agreement at paragraph (t) (2) (i) (C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the

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"Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(3) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(4) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at <http://www.ccr.gov> or by calling 1-888-227-2423 or 269-961-5757.

## 52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (MAY 2004)

(a) The Contractor shall comply with the following Federal Acquisition Regulation (FAR) clause, which is incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items: 52.233-3, Protest after Award (AUG 1996) (31 U.S.C. 3553).

(b) The Contractor shall comply with the FAR clauses in this paragraph (b) that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items: [Contracting Officer check as appropriate.]

- \_\_\_ (1) 52.203-6, Restrictions on Subcontractor Sales to the Government (JUL 1995), with Alternate I (OCT 1995) (41 U.S.C. 253g and 10 U.S.C. 2402).
- \_\_\_ (2) 52.219-3, Notice of Total HUBZone Set-Aside (JAN 1999) (15 U.S.C. 657a).
- \_\_\_ (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (JAN 1999) (if the offeror elects to waive the preference, it shall so indicate in its offer) (15 U.S.C. 657a).
- \_\_\_ (4) (i) 52.219-5, Very Small Business Set-Aside (JUNE 2003) (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994).  
 \_\_\_ (ii) Alternate I (MAR 1999) of 52.219-5.  
 \_\_\_ (iii) Alternate II (JUNE 2003) of 52.219-5.
- \_\_\_ (5) (i) 52.219-6, Notice of Total Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).  
 \_\_\_ (ii) Alternate I (OCT 1995) of 52.219-6.  
 \_\_\_ (iii) Alternate II (MAR 2004) of 52.219-6.
- \_\_\_ (6) (i) 52.219-7, Notice of Partial Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).  
 \_\_\_ (ii) Alternate I (OCT 1995) of 52.219-7.  
 \_\_\_ (iii) Alternate II (MAR 2004) of 52.219-7.
- \_\_\_ (7) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637 (d) (2) and (3)).
- \_\_\_ (8) (i) 52.219-9, Small Business Subcontracting Plan (JAN 2002) (15 U.S.C. 637(d)(4)).  
 \_\_\_ (ii) Alternate I (OCT 2001) of 52.219-9.  
 \_\_\_ (iii) Alternate II (OCT 2001) of 52.219-9.
- \_\_\_ (9) 52.219-14, Limitations on Subcontracting (DEC 1996) (15 U.S.C. 637(a)(14)).
- \_\_\_ (10) (i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (JUNE 2003) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall

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so indicate in its offer).

- (ii) Alternate I (JUNE 2003) of 52.219-23.
- (11) 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
- (12) 52.219-26, Small Disadvantaged Business Participation Program--Incentive Subcontracting (OCT 2000) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
- (13) 52.219-27, Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside (MAY 2004)
- (14) 52.222-3, Convict Labor (JUNE 2003) (E.O. 11755).
- (15) 52.222-19, Child Labor--Cooperation with Authorities and Remedies (JAN 2004) (E.O. 13126).
- X (16) 52.222-21, Prohibition of Segregated Facilities (FEB 1999).
- X (17) 52.222-26, Equal Opportunity (APR 2002) (E.O. 11246).
- X (18) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).
- X (19) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).
- X (20) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).
- (21) (i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (AUG 2000) (42 U.S.C. 6962(c)(3)(A)(ii)).  
(ii) Alternate I (AUG 2000) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).
- (22) 52.225-1, Buy American Act--Supplies (JUNE 2003) (41 U.S.C. 10a-10d).
- (23) (i) 52.225-3, Buy American Act--Free Trade Agreements--Israeli Trade Act (JAN 2004) (41 U.S.C. 10a-10d, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note), Pub. L. 108-77, 108-78).  
(ii) Alternate I (JAN 2004) of 52.225-3.  
(iii) Alternate II (JAN 2004) of 52.225-3.
- (24) 52.225-5, Trade Agreements (JAN 2004) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).
- (25) 52.225-13, Restrictions on Certain Foreign Purchases (DEC 2003) (E.o.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of the Treasury).
- (26) 52.225-15, Sanctioned European Union Country End Products (FEB 2000) (E.O. 12849).
- (27) 52.225-16, Sanctioned European Union Country Services (FEB 2000) (E.O. 12849).
- (28) 52.232-29, Terms for Financing of Purchases of Commercial Items (FEB 2002) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).
- (29) 52.232-30, Installment Payments for Commercial Items (OCT 1995) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).
- X (30) 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration (OCT 2003) (31 U.S.C. 3332).
- (31) 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration (MAY 1999) (31 U.S.C. 3332).
- (32) 52.232-36, Payment by Third Party (MAY 1999) (31 U.S.C. 3332).
- (33) 52.239-1, Privacy or Security Safeguards (AUG 1996) (5 U.S.C. 552a).
- (34) (i) 52.247-64, Preference for Privately Owned U.S.-Flag

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Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631).

(ii) Alternate I (APR 1984) of 52.247-64.

(c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

[Contracting Officer check as appropriate.]

- \_\_\_ (1) 52.222-41, Service Contract Act of 1965, as Amended (MAY 1989) (41 U.S.C. 351, et seq.).
- \_\_\_ (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- \_\_\_ (3) 52.222-43, Fair Labor Standards Act and Service Contract Act--Price Adjustment (Multiple Year and Option Contracts) (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- \_\_\_ (4) 52.222-44, Fair Labor Standards Act and Service Contract Act--Price Adjustment (February 2002) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- \_\_\_ (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to PreDecemberessor Contractor Collective Bargaining Agreements (CBA) (May 1989) (41 U.S.C. 351, et seq.).

(d) Comptroller General Examination of Record. The Contractor shall comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records--Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) (1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in paragraphs (i) through (vi) of this paragraph in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause--

(i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts

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that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (April 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (December 2001) (38 U.S.C. 4212).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793).

(v) 52.222-41, Service Contract Act of 1965, as Amended (May 1989), flow down required for all subcontracts subject to the Service Contract Act of 1965 (41 U.S.C. 351, et seq.).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (April 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.

(2) While not required, the contractor May include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

252.212-7001 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS APPLICABLE TO DEFENSE ACQUISITIONS OF COMMERCIAL ITEMS (JUN 2004)

(a) The contractor agrees to comply with the following Federal Acquisition Regulation (FAR) clause which, if checked, is included in this contract by reference to implement a provision of law applicable to acquisitions of commercial items or components.

52.203-3 Gratuities (APR 1984) (10 U.S.C. 2207)

(b) The Contractor agrees to comply with any clause that is checked on the following list of Defense FAR Supplement clauses which, if checked, is included in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items or components.

252.205-7000 Provision of Information to Cooperative Agreement Holders (DEC 1991) (10 U.S.C. 2416).

252.219-7003 Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DoD Contracts) (APR 1996) (15 U.S.C. 637).

252.219-7004 Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (Test Program) (JUN 1997) (15 U.S.C. 637 Note).

252.225-7001 Buy American Act and Balance of Payments Program (APR 2003) (41 U.S.C. 10a-10d, E.O. 10582).

252.225-7012 Preference for Certain Domestic Commodities (JUN 2004) (10 U.S.C. 2533a).

252.225-7014 Preference for Domestic Specialty Metals (APR 2003) (10 U.S.C. 2533a).

252.225-7015 Restriction on Acquisition of Hand or Measuring Tools (APR 2003) (10 U.S.C. 2533a).

252.225-7016 Restriction on Acquisition of Ball and Roller Bearings (MAY 2004) (Alternate I) (APR 2003) (10 U.S.C. 2534 and Section 8099 of Pub. L. 104-61) and similar sections in subsequent DoD appropriations acts).

252.225-7021 Trade Agreements (JAN 2004) (19 U.S.C. 2501-2518 and 19 U.S.C. 3301 note).

252.225-7027 Restriction on Contingent Fees for Foreign Military Sales (APR 2003) (22 U.S.C. 2779).

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- \_\_\_ 252.225-7028 Exclusionary Policies and Practices of Foreign Governments (APR 2003) (22 U.S.C. 2755).
- \_\_\_ 252.225-7036 Buy American Act--Free Trade Agreements--Balance of Payments Program (JAN 2004) (\_\_\_ Alternate I) (JAN 2004) (41 U.S.C. 10a-10d and 19 U.S.C. 3301 note).
- \_\_\_ 252.225-7038 Restriction on Acquisition of Air Circuit Breakers (APR 2003) (10 U.S.C. 2534(a)(3)).
- \_\_\_ 252.226-7001 Utilization of Indian Organizations, Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns (OCT 2003) (Section 8021 of Pub. L. 107-248).
- \_\_\_ 252.227-7015 Technical Data--Commercial Items (NOV 1995) (10 U.S.C. 2320).
- \_\_\_ 252.227-7037 Validation of Restrictive Markings on Technical Data (SEP 1999) (10 U.S.C. 2321).
- \_\_\_ 252.232-7003 Electronic Submission of Payment Requests (JAN 2004) (10 U.S.C. 2227)
- \_\_\_ 252.243-7002 Requests for Equitable Adjustment (MAR 1998) (10 U.S.C. 2410).
- \_\_\_ 252.247-7023 Transportation of Supplies by Sea (MAY 2002) (\_\_\_ Alternate I) (MAR 2000) (\_\_\_ Alternate II) (MAR 2000) (Alternate III) (MAY 2002) (10 U.S.C. 2631).
- \_\_\_ 252.247-7024 Notification of Transportation of Supplies by Sea (MAR 2000) (10 U.S.C. 2631).

(c) In addition to the clauses listed in paragraph (e) of the Contract Terms and Conditions Required to Implement Statutes or Executive Orders--Commercial Items clause of this contract (FAR 52.212-5), the Contractor shall include the terms of the following clauses, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

- 252.225-7014 Preference for Domestic Specialty Metals, Alternate I (APR 2003) (10 U.S.C. 2533a).
- 252.247-7023 Transportation of Supplies by Sea (MAY 2002) (10 U.S.C. 2631)
- 252.247-7024 Notification of Transportation of Supplies by Sea (MAR 2000) (10 U.S.C. 2631).

## 52.212-1 INSTRUCTIONS TO OFFERORS--COMMERCIAL ITEMS (JAN 2004)

(a) North American Industry Classification System (NAICS) code and small business size standard. The NAICS code and small business size standard for this acquisition appear in Block 10 of the solicitation cover sheet (SF 1449). However, the small business size standard for a concern which submits an offer in its own name, but which proposes to furnish an item which it did not itself manufacture, is 500 employees.

(b) Submission of offers. Submit signed and dated offers to the office specified in this solicitation at or before the exact time specified in this solicitation. Offers may be submitted on the SF 1449, letterhead stationery, or as otherwise specified in the solicitation. As a minimum, offers must show--

- (1) The solicitation number;
- (2) The time specified in the solicitation for receipt of offers;
- (3) The name, address, and telephone number of the offeror;
- (4) A technical description of the items being offered in sufficient detail to evaluate compliance with the requirements in the solicitation. This may include product literature, or other documents, if necessary;
- (5) Terms of any express warranty;

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- (6) Price and any discount terms;
  - (7) "Remit to" address, if different than mailing address;
  - (8) A completed copy of the representations and certifications at FAR 52.212-3;
  - (9) Acknowledgment of Solicitation Amendments;
  - (10) Past performance information, when included as an evaluation factor, to include recent and relevant contracts for the same or similar items and other references (including contract numbers, points of contact with telephone numbers and other relevant information); and
  - (11) If the offer is not submitted on the SF 1449, include a statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation. Offers that fail to furnish required representations or information, or reject the terms and conditions of the solicitation may be excluded from consideration.
- (c) Period for acceptance of offers. The offeror agrees to hold the prices in its offer firm for 30 calendar days from the date specified for receipt of offers, unless another time period is specified in an addendum to the solicitation.
- (d) Product samples. When required by the solicitation, product samples shall be submitted at or prior to the time specified for receipt of offers. Unless otherwise specified in this solicitation, these samples shall be submitted at no expense to the Government, and returned at the sender's request and expense, unless they are destroyed during preaward testing.
- (e) Multiple offers. Offerors are encouraged to submit multiple offers presenting alternative terms and conditions or commercial items for satisfying the requirements of this solicitation. Each offer submitted will be evaluated separately.
- (f) Late submissions, modifications, revisions, and withdrawals of offers. (1) Offerors are responsible for submitting offers, and any modifications, revisions, or withdrawals, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that offers or revisions are due.
- (2) (i) Any offer, modification, revision, or withdrawal of an offer received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--
- (A) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of offers; or
- (B) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or
- (C) If this solicitation is a request for proposals, it was the only proposal received.
- (ii) However, a late modification of an otherwise successful offer, that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

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(3) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the offer wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(4) If an emergency or unanticipated event interrupts normal Government processes so that offers cannot be received at the Government office designated for receipt of offers by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation or other notice of an extension of the closing date, the time specified for receipt of offers will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(5) Offers may be withdrawn by written notice received at any time before the exact time set for receipt of offers. Oral offers in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile offers, offers may be withdrawn via facsimile received at any time before the exact time set for receipt of offers, subject to the conditions specified in the solicitation concerning facsimile offers. An offer may be withdrawn in person by an offeror or its authorized representative if, before the exact time set for receipt of offers, the identity of the person requesting withdrawal is established and the person signs a receipt for the offer.

(g) Contract award (not applicable to Invitation for Bids). The Government intends to evaluate offers and award a contract without discussions with offerors. Therefore, the offeror's initial offer should contain the offeror's best terms from a price and technical standpoint. However, the Government reserves the right to conduct discussions if later determined by the Contracting Officer to be necessary. The Government may reject any or all offers if such action is in the public interest; accept other than the lowest offer; and waive informalities and minor irregularities in offers received.

(h) Multiple awards. The Government may accept any item or group of items of an offer, unless the offeror qualifies the offer by specific limitations. Unless otherwise provided in the Schedule, offers may not be submitted for quantities less than those specified. The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit prices offered, unless the offeror specifies otherwise in the offer.

(i) Availability of requirements documents cited in the solicitation. (1)(i) The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29, and copies of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained for a fee by submitting a request to--

GSA Federal Supply Service Specifications Section  
Suite 8100  
470 East L'Enfant Plaza, SW  
Washington, DC 20407

Telephone (202) 619-8925  
Facsimile (202) 619-8978.

(ii) If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be

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obtained free of charge by submitting a request to the addressee in paragraph (i) (1) (i) of this provision. Additional copies will be issued for a fee.

(2) The DoD Index of Specifications and Standards (DoDISS) and documents listed in it may be obtained from the--

Department of Defense Single Stock Point (DoDSSP)  
Building 4, Section D  
700 Robbins Avenue  
Philadelphia, PA 19111-5094

Telephone (215) 697-2667/2179  
Facsimile (215) 697-1462.

(i) Automatic distribution may be obtained on a subscription basis.

(ii) Order forms, pricing information, and customer support information may be obtained--

(A) By telephone at (215) 697-2667/2179; or

(B) Through the DoDSSP Internet site at

<http://dodssp.daps.mil>.

(3) Nongovernment (voluntary) standards must be obtained from the organization responsible for their preparation, publication, or maintenance.

(j) Data Universal Numbering System (DUNS) Number. (Applies to all offers exceeding \$25,000, and offers of \$25,000 or less if the solicitation requires the Contractor to be registered in the Central Contractor Registration (CCR) database. The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address. The DUNS +4 is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the offeror to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see FAR Subpart 32.11) for the same parent concern. If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. An offeror within the United States may contact Dun and Bradstreet by calling 1-866-705-5711 or via the internet at <http://www.dnb.com>. An offeror located outside the United States must contact the local Dun and Bradstreet office for a DUNS number.

(k) Central Contractor Registration. Unless exempted by an addendum to this solicitation, by submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance and through final payment of any contract resulting from this solicitation. If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror. Offerors may obtain information on registration and annual confirmation requirements via the Internet at <http://www.ccr.gov> or by calling 1-888-227-2423 or 269-961-5757.

(l) Debriefing. If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(1) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(2) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(3) The overall ranking of all offerors, when any ranking

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was developed by the agency during source selection.

(4) A summary of the rationale for award;

(5) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(6) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

52.212-3 OFFEROR REPRESENTATIONS AND CERTIFICATIONS-COMMERCIAL ITEMS (MAY 2004)--ALTERNATE I (APR 2002)

(a) Definitions. As used in this provision:

"Emerging small business" means a small business concern whose size is no greater than 50 percent of the numerical size standard for the NAICS code designated.

"Forced or indentured child labor" means all work or service--

(1) Exacted from any person under the age of 18 under the menace of any penalty for its nonperformance and for which the worker does not offer himself voluntarily; or

(2) Performed by any person under the age of 18 pursuant to a contract the enforcement of which can be accomplished by process or penalties.

"Service-disabled veteran-owned small business concern"--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service--disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern" means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR part 121 and size standards in this solicitation.

"Veteran-owned small business concern" means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern" means a small business concern--

(1) That is at least 51 percent owned by one or more women; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

"Women-owned business concern" means a concern which is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock

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is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Taxpayer Identification Number (TIN) (26 U.S.C. 6109, 31 U.S.C. 7701). (Not applicable if the offeror is required to provide this information to a central contractor registration database to be eligible for award.)

(1) All offerors must submit the information required in paragraphs (b) (3) through (b) (5) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the Internal Revenue Service (IRS).

(2) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c) (3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(3) Taxpayer Identification Number (TIN).

- TIN: \_\_\_\_\_
- TIN has been applied for.
- TIN is not required because:

Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

Offeror is an agency or instrumentality of a foreign government;

Offeror is an agency or instrumentality of the Federal Government.

(4) Type of organization.

- Sole proprietorship;
- Partnership;
- Corporate entity (not tax-exempt);
- Corporate entity (tax-exempt);
- Government entity (Federal, State, or local);
- Foreign government;
- International organization per 26 CFR 1.6049-4;
- Other \_\_\_\_\_

(5) Common parent.

- Offeror is not owned or controlled by a common parent;
- Name and TIN of common parent:  
Name \_\_\_\_\_  
TIN \_\_\_\_\_

(c) Offerors must complete the following representations when the resulting contract will be performed in the United States or its outlying areas. Check all that apply.

(1) Small business concern. The offeror represents as part of its offer that it  is,  is not a small business concern.

(2) Veteran-owned small business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c) (1) of this provision.] The offeror represents as part of its offer that it  is,  is not a veteran-owned small business concern.

(3) Service-disabled veteran-owned small business concern. [Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (c) (2) of this provision.] The offeror represents as part of its offer that it  is,  is not a service-disabled veteran-owned small

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business concern.

(4) Small disadvantaged business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents, for general statistical purposes, that it  is,  is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(5) Women-owned small business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents that it  is,  is not a women-owned small business concern. Note: Complete paragraphs (c)(6) and (c)(7) only if this solicitation is expected to exceed the simplified acquisition threshold.

(6) Women-owned business concern (other than small business concern). [Complete only if the offeror is a women-owned business concern and did not represent itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents that it  is a women-owned business concern.

(7) Tie bid priority for labor surplus area concerns. If this is an invitation for bid, small business offerors may identify the labor surplus areas in which costs to be incurred on account of manufacturing or production (by offeror or first-tier subcontractors) amount to more than 50 percent of the contract price:

(8) Small Business Size for the Small Business Competitiveness Demonstration Program and for the Targeted Industry Categories under the Small Business Competitiveness Demonstration Program. [Complete only if the offeror has represented itself to be a small business concern under the size standards for this solicitation.]

(i) (Complete only for solicitations indicated in an addendum as being set-aside for emerging small businesses in one of the four designated industry groups (DIGs).) The offeror represents as part of its offer that it  is,  is not an emerging small business.

(ii) (Complete only for solicitations indicated in an addendum as being for one of the targeted industry categories (TICs) or four designated industry groups (DIGs).) Offeror represents as follows:

(A) Offeror's number of employees for the past 12 months (check the Employees column if size standard stated in the solicitation is expressed in terms of number of employees); or

(B) Offeror's average annual gross revenue for the last 3 fiscal years (check the Average Annual Gross Number of Revenues column if size standard stated in the solicitation is expressed in terms of annual receipts).

(Check one of the following):

Number of Employees	Average Annual Gross Revenues
<input type="checkbox"/> 50 or fewer	<input type="checkbox"/> \$1 million or less
<input type="checkbox"/> 51--100	<input type="checkbox"/> \$1,000,001--\$2 million
<input type="checkbox"/> 101--250	<input type="checkbox"/> \$2,000,001--\$3.5 million
<input type="checkbox"/> 251--500	<input type="checkbox"/> \$3,500,001--\$5 million
<input type="checkbox"/> 501--750	<input type="checkbox"/> \$5,000,001--\$10 million
<input type="checkbox"/> 751--1,000	<input type="checkbox"/> \$10,000,001--\$17 million
<input type="checkbox"/> Over 1,000	<input type="checkbox"/> Over \$17 million

(9) (Complete only if the solicitation contains the clause

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at FAR 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns, or FAR 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting, and the offeror desires a benefit based on its disadvantaged status.)

(i) General. The offeror represents that either--

(A) It  is,  is not certified by the Small Business Administration as a small disadvantaged business concern and identified, on the date of this representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration (PRO-Net), and that no material change in disadvantaged ownership and control has occurred since its certification, and, where the concern is owned by one or more individuals claiming disadvantaged status, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); or

(B) It  has,  has not submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted.

(ii)  Joint Ventures under the Price Evaluation Adjustment for Small Disadvantaged Business Concerns. The offeror represents, as part of its offer, that it is a joint venture that complies with the requirements in 13 CFR 124.1002(f) and that the representation in paragraph (c)(9)(i) of this provision is accurate for the small disadvantaged business concern that is participating in the joint venture. [The offeror shall enter the name of the small disadvantaged business concern that is participating in the joint venture: \_\_\_\_\_.]

(10) HUBZone small business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents, as part of its offer, that--

(i) It  is,  is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It  is,  is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (c)(10)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. [The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture: \_\_\_\_\_.] Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(11) (Complete if the offeror has represented itself as disadvantaged in paragraph (c)(4) or (c)(9) of this provision.) The offeror shall check the category in which its ownership falls:

- Black American.
- Hispanic American.
- Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians).
- Asian-Pacific American (persons with origins from

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## VENDOR:

Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China, Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory or the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Hong Kong, Fiji, Tonga, Kiribati, Tuvalu, or Nauru).

Subcontinent Asian (Asian-Indian) American (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands, or Nepal).

Individual/concern, other than one of the preceding.

(11) HUBZone small business concern. [Complete only if the offeror represented itself as a small business concern in paragraph (c) (1) of this provision.] The offeror represents as part of its offer that-

(i) It [ ] is, [ ] is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns Maintained by the Small Business Administration, and no material change in ownership and control, principal place of ownership, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It [ ] is, [ ] is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (c) (11) (i) of this provision is accurate for the HUBZone small business concern or concerns that are participating on the joint venture. [The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture: \_\_\_\_\_.] Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(d) Representations required to implement provisions of Executive Order 11246--

(1) Previous contracts and compliance. The offeror represents that--

(i) It [ ] has, [ ] has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation; and

(ii) It [ ] has, [ ] has not filed all required compliance reports.

(2) Affirmative Action Compliance. The offeror represents that--

(i) It [ ] has developed and has on file, [ ] has not developed and does not have on file, at each establishment, affirmative action programs required by rules and regulations of the Secretary of Labor (41 CFR parts 60-1 and 60-2), or

(ii) It [ ] has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

(e) Certification Regarding Payments to Influence Federal Transactions (31 U.S.C. 1352). (Applies only if the contract is expected to exceed \$100,000.) By submission of its offer, the offeror certifies to the best of its knowledge and belief that no Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with the award of any resultant contract.

(f) Buy American Act Certificate. (Applies only if the clause at Federal Acquisition Regulation (FAR) 52.225-1, Buy American

CONTINUATION SHEET

VENDOR:

Act--Supplies, is included in this solicitation.)

(1) The offeror certifies that each end product, except those listed in paragraph (f) (2) of this provision, is a domestic end product and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States. The offeror shall list as foreign end products those end products manufactured in the United States that do not qualify as domestic end products. The terms "component," "domestic end product," "end product," "foreign end product," and "United States" are defined in the clause of this solicitation entitled "Buy American Act--Supplies."

(2) Foreign End Products:

Line Item No	Country of Origin
_____	_____
_____	_____
_____	_____

(List as necessary)

(3) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25.

(g) (1) Buy American Act--Free Trade Agreements--Israeli Trade Act Program Certificate. (Applies only if the clause at FAR 52.225-3, Buy American Act--Free Trade Agreements--Israeli Trade Act, is included in this solicitation.)

(i) The offeror certifies that each end product, except those listed in paragraph (g) (1) (ii) or (g) (1) (iii) of this provision, is a domestic end product and that the offeror has considered components of unknown origin to have been mined, produced, or manufactured outside the United States. The terms "component," "domestic end product," "end product," "foreign end product," and "United States" are defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act."

(ii) The offeror certifies that the following supplies are FTA country end products or Israeli end products as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act":

FTA Country or Israeli End Products:

Line Item No	Country of Origin
_____	_____
_____	_____
_____	_____

(List as necessary)

(iii) The offeror shall list those supplies that are foreign end products (other than those listed in paragraph (g) (1) (ii) of this provision) as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act." The offeror shall list as other foreign end products those end products manufactured in the United States that do not qualify as domestic end products.

Other Foreign End Products:

Line Item No	Country of Origin
_____	_____
_____	_____
_____	_____

(List as necessary)

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VENDOR:

(iv) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25.

(2) Buy American Act--Free Trade Agreements--Israeli Trade Act Certificate, Alternate I (Jan 2004). If Alternate I to the clause at FAR 52.225-3 is included in this solicitation, substitute the following paragraph (g) (1) (ii) for paragraph (g) (1) (ii) of the basic provision:

(g) (1) (ii) The offeror certifies that the following supplies are Canadian end products as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act":

Canadian End Products:

Line Item No.

\_\_\_\_\_  
\_\_\_\_\_

(List as necessary)

(3) Buy American Act--Free Trade Agreements--Israeli Trade Act Certificate, Alternate II (Jan 2004). If Alternate II to the clause at FAR 52.225-3 is included in this solicitation, substitute the following paragraph (g) (1) (ii) for paragraph (g) (1) (ii) of the basic provision:

(g) (1) (ii) The offeror certifies that the following supplies are Canadian end products or Israeli end products as defined in the clause of this solicitation entitled "Buy American Act--Free Trade Agreements--Israeli Trade Act":

Canadian or Israeli End Products:

Line Item No	Country of Origin
_____	_____
_____	_____

(List as necessary)

(4) Trade Agreements Certificate. (Applies only if the clause at FAR 52.225-5, Trade Agreements, is included in this solicitation.)

(i) The offeror certifies that each end product, except those listed in paragraph (g) (4) (ii) of this provision, is a U.S.-made, designated country, Caribbean Basin country, or FTA country end product, as defined in the clause of this solicitation entitled "Trade Agreements."

(ii) The offeror shall list as other end products those end products that are not U.S.-made, designated country, Caribbean Basin country, or FTA country end products.

Other End Products:

Line Item No	Country of Origin
_____	_____
_____	_____

(List as necessary)

(iii) The Government will evaluate offers in accordance with the policies and procedures of FAR Part 25. For line items subject to the Trade Agreements Act, the Government will evaluate offers of U.S.-made, designated country, Caribbean Basin country, or FTA country end products without regard to the restrictions

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VENDOR:

of the Buy American Act. The Government will consider for award only offers of U.S.-made, designated country, Caribbean Basin country, or FTA country end products unless the Contracting Officer determines that there are no offers for such products or that the offers for such products are insufficient to fulfill the requirements of the solicitation.

(h) Certification Regarding Debarment, Suspension or Ineligibility for Award (Executive Order 12549). (Applies only if the contract value is expected to exceed the simplified acquisition threshold.) The offeror certifies, to the best of its knowledge and belief, that the offeror and/or any of its principals--

(1)  Are,  are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(2)  Have,  have not, within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, state or local government contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(3)  Are,  are not presently indicted for, or otherwise criminally or civilly charged by a Government entity with, commission of any of these offenses.

(i) Certification Regarding Knowledge of Child Labor for Listed End Products (Executive Order 13126). [The Contracting Officer must list in paragraph (i)(1) any end products being acquired under this solicitation that are included in the List of Products Requiring Contractor Certification as to Forced or Indentured Child Labor, unless excluded at 22.1503(b).]

(1) Listed end products.

Listed End Product

---

Listed Countries of Origin

---

(2) Certification. [If the Contracting Officer has identified end products and countries of origin in paragraph (i)(1) of this provision, then the offeror must certify to either (i)(2)(i) or (i)(2)(ii) by checking the appropriate block.]

(i) The offeror will not supply any end product listed in paragraph (i)(1) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product.

(ii) The offeror may supply an end product listed in paragraph (i)(1) of this provision that was mined, produced, or manufactured in the corresponding country as listed for that product. The offeror certifies that it has made a good faith effort to determine whether forced or indentured child labor was used to mine, produce, or manufacture any such end product furnished under this contract. On the basis of those efforts, the offeror certifies that it is not aware of any such use of child labor.

(End of provision)

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VENDOR:

Your quotation must include the following information:

Price list number and date

or

Cost breakdown by direct labor (list categories, hours and pay rates). In addition to the direct rates, provide the applicable indirect information (G&A), overhead, facilities capital cost of money (FCCM) and profit.

or

Applicable General Services Administration (GSA) contract number.

If unable to quote FOB, Destination, please complete the following:

FOB Point \_\_\_\_\_

Estimated Shipping Charge \_\_\_\_\_

Business size:

Large \_\_\_\_\_ Small \_\_\_\_\_ Nonprofit \_\_\_\_\_

Cage Code \_\_\_\_\_

Tax Identification Number (TIN) \_\_\_\_\_

DUNNS \_\_\_\_\_

ELIGIBILITY REQUIREMENTS

All contractors and individuals doing business with the Federal Government must be registered at the Contractor Central Registration Database located at:  
<http://ccr.dlsc.dla.mil/>.

ELECTRONIC DISTRIBUTION OF CONTRACT DOCUMENTS

All contract award and contract modification documents will be distributed electronically using the Navy Air Force Interface (NAFI) system. The contractor's copy will be provided in portable document format (pdf) as an attachment to an e-mail that will be sent to the contractor by the NAFI system. A pdf file may be accessed using Adobe Acrobat Reader software. This is a free software that may be downloaded at:  
<http://www.adobe.com/products/acrobat/readstep.html>

Provide the following information that will be used to make electronic distribution for any resultant contract:

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VENDOR:

Name of Point of Contact to Receive  
Distribution \_\_\_\_\_

Phone Number for Point of Contact \_\_\_\_\_

E-Mail Address for Receipt of Distribution \_\_\_\_\_

USE OF THE GOVERNMENTWIDE COMMERCIAL PURCHASE CARD

Will you accept the Governmentwide Commercial Purchase Card  
as a method of purchasing supplies and/or services.

\_\_\_\_\_ Yes

\_\_\_\_\_ No

Will you accept the Governmentwide Commercial Purchase Card  
as a method of payment for your invoice.

\_\_\_\_\_ Yes

\_\_\_\_\_ No

DUTY FREE ENTRY

Will any materials being shipped to the Government require a  
duty-free entry certificate for foreign supplies.

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If yes, please include dollar amount \$ \_\_\_\_\_

Purchase Specification  
For  
**Medium Voltage  
Cable Bus and Cable Tray**

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## **1.0 Introduction**

This purchase specification and all documents referenced herein contain the detailed requirements for the required cable bus, and cable tray systems to be utilized at the Naval Surface Warfare Center, Carderock Division, Ship Service Engineering Station (NSWCCD-SSES), Philadelphia Naval Base, Philadelphia, PA. These cableways shall be used in performing testing of an Integrated Power System.

## **2.0 Scope**

### **2.1 Equipment and Services to be Provided by the Supplier:**

The cable bus and cable tray shall be suitable for industrial installation and shall be constructed in accordance with the best commercial practices. It shall be the Supplier's responsibility to furnish material that is suitable and complete in details for the services intended. The cable bus and cable tray shall be designed, constructed and tested in accordance with the latest applicable industry standards including but not limited to those referenced in Section 3.0 of this specification. The Supplier shall be responsible for delivery of all cable bus and cable tray to NSWCCD-SSES in Philadelphia, PA. The cable buses required to be supplied are itemized in section 4.1.2. The cable bus manufacturer is required to supply all parts necessary to install the identified cable buses with the exception of cable lugs and support steel. The cable bus manufacturer must provide a complete parts list of the materials provided for each cable bus run identified in Section 4.1.2. The cable tray materials required to be supplied are itemized in Section 4.2.2.

### **2.2 Equipment and Services to be Provided by the Government:**

The Government shall install the cable bus and cable tray and shall be responsible for cable bus supports, cable tray supports and other support structures as well as installation of the cable bus and cable trays specified.

## **3.0 Applicable Documents**

1. NFPA 70, National Electric Code, 2002
2. NEMA VE-1, Metal Cable Tray Systems
3. NEMA VE-2, Metal Cable Tray Installation Guidelines
4. ANSI/IEEE C37.23, Guide for Metal Enclosed Bus and Calculating Losses in Isolated Phase Bus
5. UL 1072, Safety Standard for Medium Voltage Power Cables

6. IEEE 48, Standard Test Procedures and Requirements for Alternating Current Terminations 2.5KV Through 765KV
7. ICEA S-93-639 / NEMA WC74, Shielded Power Cable Rated 5 – 46KV
8. ICEA S-97-682, Utility Shielded Power Cable Rated 5 – 46KV
9. IEEE 383, Standard for Type Test of Class 1E Electric Field Splices and Connections for Nuclear Generating Stations (Vertical Tray Cable Flame Retardant Test)
10. AEIC CS6, Ethylene Propylene Insulated Shielded Power Cables Rated 5 through 69KV.

## 4.0 Technical Requirements

### 4.1 Cable Bus

#### 4.1.1 Cable Bus General Requirements:

<b>4.1.1.A. Installation Location:</b>	<ol style="list-style-type: none"> <li>1. The cable bus shall be suitable for indoor installation in an ambient temperature from 50°F - 104°F.</li> <li>2. A cable bus circuit listing is shown in Section 4.1.2 and cable bus arrangements are shown on figures 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B, 11A, 11B, 12A, 12B, 13A, 13B, 14A, 14B, 14C, 14D, 14E, 14F, 14G, 14H, 15A, 15B, 15C, 15D, 15E, 15F, 15G, 15H (attached). Note that the 4<sup>th</sup> column of section 4.1.2 (Cable Bus Figures &amp; Cable Bus Enclosure Length) refers to specific figures that are applicable to each subsection.</li> <li>3. The cable bus shall be able to be secured to site provided steel structure using cable bus clamp/ guide hardware provided.</li> </ol>
<b>4.1.1.B. Enclosure Construction:</b>	<ol style="list-style-type: none"> <li>1. The cable bus shall be made of non-magnetic heavy gauge, corrosion resistant aluminum alloy.</li> <li>2. The cable bus shall be provided in 12 foot lengths unless shorter lengths are required based on site arrangement details.</li> <li>3. The cable bus top and bottom covers shall be slotted for ventilation and be corrugated to provide mechanical strength. The bottom cover shall be factory welded and the top cover shall be bolted or screwed into the cable bus enclosure. The covers shall preclude personnel contact with the cable system.</li> <li>4. The cable bus shall be self cooled.</li> <li>5. The cable bus shall utilize high pressure bolted splice joints for maximum structural capability and minimum</li> </ol>

	<p>electrical resistance (50 micro ohms) across joint.</p> <ol style="list-style-type: none"><li>6. The conductor support blocks shall provide cable support at least every 36" in the horizontal direction and every 18" in the vertical direction and shall provide at least one cable diameter separation of the cables at their points of support.</li><li>7. The cable bus shall be designed to eliminate any sharp edges or projections that may injure personnel or damage cable.</li><li>8. The bus enclosure fittings shall provide a minimum bend radius for the cable of 24". Note that larger 36" bend radius fittings are shown in the arrangement sketches for most vertical inside bends to allow for cable rollers that will be utilized outside the inner cable bus edge during cable pulling. Cable bus fitting types provided must allow cable pulling using similar roller techniques that are utilized with cable tray.</li><li>9. The cable bus enclosure shall not require more than 12" vertical clearance above it to pull and install cables.</li><li>10. The cable bus shall not vertically deflect more than .125 inches for a straight 12' run supported at its ends with all of its cables, support blocks, covers, etc. installed.</li><li>11. The cable bus shall be able to withstand a 200LB concentrated load at mid-span in addition to the full load cable rating without permanent deformation of its side rails.</li><li>12. An aluminum seal plate shall be provided that can be bolted to the bottom of equipment openings and will provide a mechanism for attaching the cable bus to the bottom of the equipment and allow cable entry into the equipment. Seal blocks shall not be utilized at this location. The exact size of each seal plate will be provided to successful bidder during the drawing review process prior to obtaining a Release for Manufacture. Note: Seal plates will not be utilized where cables free air into equipment or where connection boxes are specified.</li><li>13. Where cable buses enter switchgear (SG-*) as indicated in the Cable Bus Runs found in Section 4.1.2, the last support block shall be 18 to 24 inches from the end of the cable bus enclosure so as to allow the cables to begin transposing for termination below the switchgear enclosure.</li></ol>
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<p><b>4.1.1.C.</b> <b>Electrical</b> <b>Properties:</b></p>	<ol style="list-style-type: none"><li>1. The 60 cycle cable buses shall have a minimum short circuit rating of 40 kA RMS symmetrical with a minimum asymmetrical short circuit rating of 69,200A RMS. The test duration shall be .167 seconds.</li><li>2. The DC cable buses shall have a minimum short circuit rating of 100,000A RMS symmetrical. The test duration shall be .167 seconds.</li><li>3. The conductors shall be phased to maintain low impedance and provide impedance balance between paralleled conductors. An impedance analysis of each cable bus run shall be provided as required by Section 5.1 and must document impedance balance between conductors and projected voltage drop. Impedance characteristics of Resistance (ohms/ft), Inductance (H/ft) and Capacitance (F/ft) shall be provided for each type of cable bus run.</li><li>4. The conductors shall not require transposing within a cable bus run to meet impedance requirements.</li><li>5. Conductor temperature rise calculations shall be provided to show that cables installed in a 40C environment will not exceed 90C conductor temperature for the various configurations requested.</li><li>6. Current carrying conductors shall be one of the following as directed in the details section of this specification:<ol style="list-style-type: none"><li>a. 15 kV Cable:<p>The 15 kV class cable shall be Okonite 115-23-2131 (for 500 MCM), 115-23-2127 (for 350 MCM) or equivalent and shall meet the minimum key requirements as specified below.</p><p>The cable shall conform to the requirements of NEMA-WC-74 and UL 1072, except as modified below. The cable shall have the following ratings, construction and parameters.</p><ol style="list-style-type: none"><li>1. The cable shall be rated 15 kV, 133% insulation level.</li><li>2. The conductor shall be class B (or finer) stranded copper conforming to ASTM B8 or equivalent.</li><li>3. The conductor size shall be in accordance with Section 4.1.2. The conductor shall be provided with a clean stripping extruded (preferred) or tape strand shield.</li><li>4. The cable minimum bend radius shall not exceed 19".</li><li>5. The insulation shall be EPR rated at 105 degrees Centigrade operating temperature and shall conform to</li></ol></li></ol></li></ol>
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	<p>NEMA-WC-74 in thickness.</p> <ol style="list-style-type: none"><li>6. An extruded insulation shield shall be applied (a non extruded insulation shield will be considered if the manufacturers standard).</li><li>7. A metallic shield of the manufacturers standard method is to be applied (copper tape preferred) over the insulation shield.</li><li>8. A jacket of hypalon (CSPE) shall be provided</li><li>9. Binders, fillers and other components to facilitate the manufacturing process or performance may be applied; however, any such materials shall be non-wicking and shall not support combustion.</li><li>10. Cable components shall be free stripping and otherwise facilitate termination.</li><li>11. Extruded materials shall be thermosetting.</li><li>12. PVC and asbestos materials are not permitted.</li><li>13. The completed cable shall pass the IEEE-383 or equivalent flame test.</li><li>14. The outer jacket shall be marked to show as a minimum, the manufacturers name, year of manufacture, conductor size, voltage rating and sequential footage. This information shall be repeated at 24 inch intervals.</li></ol> <p>b. 5 kV Cable:</p> <p>The 5 kV class cable shall be Okonite 114-23-2743 or equivalent and shall meet the minimum key requirements as specified below.</p> <p>The cable shall conform to the requirements of NEMA-WC-74 and UL 1072, except as modified below. The cable shall have the following ratings, construction and parameters.</p> <ol style="list-style-type: none"><li>1. The cable shall be rated 5 kV, 133% insulation level.</li><li>2. The conductor shall be class B (or finer) stranded copper conforming to ASTM B8 or equivalent.</li><li>3. The conductor shall be 500kcmil or as shown on the purchasers procurement document.</li><li>4. The cable minimum bend radius shall not exceed 16".</li><li>5. The conductor shall be provided with a clean stripping extruded (preferred) or tape strand shield.</li><li>6. The insulation shall be EPR rated at 105 degree Centigrade operating temperature and shall conform to NEMA-WC-74 in thickness.</li><li>7. An extruded insulation shield shall be applied (a non</li></ol>
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	<p>extruded insulation shield will be considered if the manufacturers standard).</p> <ol style="list-style-type: none"><li>8. A metallic shield of the manufacturers standard method is to be applied (copper tape preferred) over the insulation shield.</li><li>9. A jacket of hypalon (CSPE) shall be provided.</li><li>10. Binders, fillers and other components to facilitate the manufacturing process or performance may be applied; however, any such materials shall be non-wicking and shall not support combustion.</li><li>11. Cable components shall be free stripping and otherwise facilitate termination.</li><li>12. Extruded materials shall be thermosetting.</li><li>13. PVC and asbestos materials are not permitted.</li><li>14. The completed cable shall pass the IEEE-383 or equivalent flame test.</li><li>15. The outer jacket shall be marked to show as a minimum, the manufacturers name, year of manufacture, conductor size, voltage rating and sequential footage. This information shall be repeated at 24 inch intervals.</li></ol> <p>c. The following information shall be provided with the quotation:</p> <ol style="list-style-type: none"><li>1. A complete description of the cable construction including OD and weight</li><li>2. A list and explanation of any deviation from the requirements herein</li><li>3. A statement of conformance to the flame test listed above or an acceptable equivalent test</li><li>4. Installation, storage and handling instructions</li><li>5. Minimum bend radius</li><li>6. Maximum pulling tension for pulling by conductor and by basket grip</li><li>7. Acceptable pulling lubricants</li><li>8. Recommendations for field testing after installation</li><li>9. Conductor resistance, capacitance, and inductance</li></ol> <p>All cable bus runs shall be provided with Raychem single conductor heat shrinkable termination kits (type HVT-G or MHHT-G) or equivalent for indoor use as identified in Section 4.1.2. Note: MHHT kits are equivalent to Raychem HVT-Z termination kits. The part number distinguishes this termination kit from the standard kit to indicate certification to US Navy Test Requirements.</p>
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	<p>7. The grounding conductor shall be soft annealed tinned class B stranded 500MCM cable that is provided with fittings to allow bonding to the outside of the cable bus enclosure. The bonding shall be done at not greater than ten feet so as to provide the required mechanical support of the cable. The grounding conductor shall pass into the applicable equipment enclosure in proximity to the phase conductors and shall not be enclosed by steel unless the phase conductors are also enclosed within the same steel opening.</p>
<b>4.1.1.D. Nameplate:</b>	<p>1. Each cable bus circuit shall have a nameplate securely affixed to the enclosure exterior with screws or rivets. The nameplate shall include manufacturer name &amp; date, order number, and electrical ratings (max voltage, rated continuous current, Basic Impulse Level, Frequency, rated short circuit current, temperature rise of conductor &amp; enclosure)</p>

**4.1.2 Cable Bus Detail Requirements:**

<b>Cable Bus Run</b>	<b>Cable Details, Total Cable Length Including +10%, Cable Bus Rating (Total Cable length includes all phases and parallel runs of cable)</b>	<b>Termination Type</b>	<b>Cable Bus Figures &amp; Cable Bus Enclosure Length</b>	<b>Cable Bus Enclosure (Max Outside Flange Dimensions)</b>
<b>4.1.2.1 SG-1 to SG-2</b>	(12) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 2587 feet of cable (2000A, 13.8KV, 3 PH, 60HZ Cable Bus	Raychem MHHT-15K3-G (or equivalent)	1A, 1B 180 feet	8.25"H X 28"W

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DATE: 1 July 2004**

<p><b>4.1.2.2 SG-1 to SG-3</b></p>	<p>(12) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 765 feet of cable (2000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>2A, 2B 42 feet</p>	<p>8.25"H X 28"W</p>
<p><b>4.1.2.3 SG-2 to SG-4</b></p>	<p>(12) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 2165 feet of cable (2000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>3A, 3B 148 feet</p>	<p>8.25"H X 28"W</p>
<p><b>4.1.2.4 SG-3 to SG-4</b></p>	<p>(12) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables (4) per phase, 1900 feet of cable (2000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>4A, 4B 128 feet</p>	<p>8.25"H X 28"W</p>
<p><b>4.1.2.5 SG-3 to LCXFMR21</b></p>	<p>(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 422 feet of</p>	<p>Raychem MHHT-15K2-G (or equivalent)</p>	<p>5A, 5B 114 feet</p>	<p>6.25"H X 18"W</p>

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DATE: 1 July 2004**

	cable (500A, 13.8KV, 3PH, 60HZ Cable Bus)			
<b>4.1.2.6 SG-3 to LCXFMR31</b>	(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 512 feet of cable (500A, 13.8KV, 3PH, 60HZ Cable Bus)	Raychem MHHT-15K2-G (or equivalent)	6A, 6B 141 feet	6.25"H X 18"W
<b>4.1.2.7 SG-4 to LCXFMR22</b>	(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 207 feet of cable (500A, 13.8KV, 3PH, 60HZ Cable Bus)	Raychem MHHT-15K2-G (or equivalent)	7A, 7B 47 feet	6.25"H X 18"W
<b>4.1.2.8 SG-4 to LCXFMR32</b>	(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 198 feet of cable (500A, 13.8KV, 3PH, 60HZ Cable Bus)	Raychem MHHT-15K2-G (or equivalent)	8A, 8B 45 feet	6.25"H X 18"W

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**DATE: 1 July 2004**

<p><b>4.1.2.9 SG-1 to ATG1</b></p>	<p>(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 287 feet of cable (500A, 13.8KV, 3PH, 60HZ Cable Bus Note: Cable Bus can be derated to 395A due to conduit entry.)</p>	<p>Raychem MHHT-15K2-G (or equivalent)</p>	<p>9A, 9B 72 feet</p>	<p>6.25"H X 18"W</p>
<p><b>4.1.2.10 SG-3 to ATG2</b></p>	<p>(3) Okonite Okoguard- Okolon 115-23-2127 (or equivalent) EPR 15KV 133% insulation 350MCM single conductor cables, (1) per phase, 307 feet of cable (500A, 13.8KV, 3PH, 60HZ Cable Bus Note: Cable Bus can be derated to 395A due to conduit entry.)</p>	<p>Raychem MHHT-15K2-G (or equivalent)</p>	<p>10A, 10B 76 feet</p>	<p>6.25"H X 18"W</p>
<p><b>4.1.2.11 SG4 to MTG2</b></p>	<p>(12) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 805 feet of cable (2000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>11A, 11B 50 feet</p>	<p>8.25"H X 28"W</p>

**SPECIFICATION NUMBER: TS050-18 Rev -  
DATE: 1 July 2004**

<p><b>4.1.2.12 SG3 to MXFMR2B</b></p>	<p>(6) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 1492 feet of cable (1000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>12A, 12B 210 feet</p>	<p>8.25"H X 18"W</p>
<p><b>4.1.2.13 SG4 to MXFMR2A</b></p>	<p>(6) Okonite Okoguard- Okolon 115-23-2131 (or equivalent) EPR 15KV 133% insulation 500MCM single conductor cables, (4) per phase, 884 feet of cable (1000A, 13.8KV, 3PH, 60HZ Cable Bus)</p>	<p>Raychem MHHT-15K3-G (or equivalent)</p>	<p>13A, 13B 118 feet</p>	<p>8.25"H X 18"W</p>

<p><b>4.1.2.14 MR2AIB to PMMD2</b></p>	<p>(12) Okonite Okoguard- Okolon 114-23-2743 (or equivalent) EPR 5KV 133% insulation 500MCM single conductor cables per cable bus, (6) positive &amp; (6) negative cables per cable bus, 4 cable buses total, (1-3) 1043 ft cable (4-6) 964 ft cable (7-9) 950 ft cable (10-12)964 ft cable</p> <p>(3000A, 2.0KVDC per Cable Bus). Each 12 conductor cable bus shall be configured for (3) 4 conductor DC circuits arranged in an optimal arrangement.</p>	<p>Raychem HVT-82-G (or equivalent)</p>	<p>14A, 14B, 14C, 14D, 14E, 14F, 14G, 14H</p> <p>(1-3) 51ft (4-6) 45 ft (7-9) 45 ft (10-12) 46 ft</p>	<p>8.25"H X 28"W (4 enclosures are utilized for 4 cable buses)</p>
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<p><b>4.1.2.15 MR2BIB to PMMD2</b></p>	<p>(12) Okonite Okoguard- Okolon 114-23-2743 (or equivalent) EPR 5KV 133% insulation 500MCM single conductor cables per cable bus, (6) positive &amp; (6) negative cables per cable bus, 4 cable buses total, (1-3) 1029 ft cable (4-6) 845 ft cable (7-9) 1030 ft cable (10-12) 937 ft cable</p> <p>(3000A, 2.0KVDC per Cable Bus). Each 12 conductor cable bus shall be configured for (3) 4 conductor DC circuits arranged in an optimal arrangement.</p>	<p>Raychem HVT-82-G (or equivalent)</p>	<p>15A, 15B, 15C, 15D, 15E, 15F, 15G, 15H (1-3) 50 ft (4-6) 36 ft (7-9) 50 ft (10-12) 43 ft</p>	<p>8.25"H X 28"W (4 enclosures are utilized for 4 cable buses)</p>
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## 4.2 Cable Tray

### 4.2.1 Cable Tray General Requirements

<p><b>4.2.1.A. Installation Location:</b></p>	<ol style="list-style-type: none"> <li>1. The cable tray shall be suitable for indoor or outdoor installation in an ambient temperature from 0°F - 104°F.</li> <li>2. The cable tray shall be able to be secured to site provided steel structure using cable tray clamp/ guide hardware provided assuming tray installation in accordance with NEMA VE2 with supports on 10' centers.</li> </ol>
<p><b>4.2.1.B. Enclosure Construction:</b></p>	<ol style="list-style-type: none"> <li>1. The cable tray shall be made of non-magnetic heavy gauge, corrosion resistant aluminum alloy meeting NEMA 20C loading and deflection requirements.</li> <li>2. The cable tray shall be able to withstand a 200LB concentrated load at mid-span in addition to the full load cable rating without permanent deformation.</li> <li>3. The cable tray shall be UL classified and labeled.</li> <li>4. The cable tray shall be provided in 20 foot lengths.</li> </ol>

	<ol style="list-style-type: none"> <li>5. The cable tray shall have a 5 inch working depth and 6 inch deep rails or 6 inch working depth and 7 inch deep rails as specified in Section 4.2.2.</li> <li>6. The cable tray shall utilize high pressure bolted splice joints for maximum structural capability and minimum electrical resistance (330 micro ohms) across joint.</li> <li>7. Splice plate construction shall be such that a splice may be located anywhere within the support span without diminishing the load carrying capability of the cable tray.</li> <li>8. Splice plates shall be provided with straight sections and fittings.</li> <li>9. Splice plate bolting hardware shall be included with the splice plates.</li> <li>10. The cable tray shall be designed to eliminate any sharp edges or projections that may injure personnel or damage cable.</li> </ol>
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**4.2.2 Cable Tray Detail Requirements:**

Item	QTY	Description	Material	Specification	Remarks
4.2.2.1	6	Ladder cable tray, straight section. 20'L, 36"W, 7"D, 9" rung spacing	Aluminum	Commercial NEMA 20C	NEMA Standard VE1
4.2.2.2	1	Ladder cable tray, 90° inside vertical bend, 36"W, 7"D, 9" rung spacing. 36" bend radius	Aluminum	Commercial NEMA 20C	NEMA Standard VE1
4.2.2.3	1	Ladder cable tray, 90° outside vertical bend, 36"W, 7"D, 9" rung spacing. 36" bend radius	Aluminum	Commercial NEMA 20C	NEMA Standard VE1

### 4.3 Testing

<b>4.3.1. Cable Bus Tests:</b>	<ol style="list-style-type: none"> <li>1. The manufacturer shall supply test data documenting the short circuit rating of the cable buses provided exceeds the required rating as specified in Section 4.1.1.C.1 &amp; 4.1.1.C.2. If similar cable bus configurations were not previously tested using the same cable bus materials, new tests will be required to be conducted to show compliance.</li> <li>2. The manufacturer shall supply test data showing the maximum temperature of the cable will not exceed 90C in a 40C ambient with the cable shields grounded at both ends (conservative). The manufacturer can utilize data from similar designs to satisfy this requirement.</li> <li>3. The manufacturer shall supply test data showing the manufactured cables had the following factory tests performed in accordance with industry standards:             <ol style="list-style-type: none"> <li>a. Insulation Resistance Test</li> <li>b. DC Conductor Resistance Test</li> <li>c. AC Hi-Pot Test</li> <li>d. Corona Test</li> </ol> </li> <li>4. The test data shall be provided in the Technical Manual (Section 5.2).</li> </ol>
<b>4.3.2. Cable Tray Tests:</b>	<ol style="list-style-type: none"> <li>1. The manufacturer shall provide a test report showing that NEMA 20C cable loading criteria (100lbs/ foot with a 20 foot span) has been met and that the tray can also withstand an additional 200lb concentrated load at midspan without permanent deformation. (Section 4.2.1.B.1 &amp; 4.2.1.B.2)</li> <li>2. The test report shall be provided in the Technical Manual (Section 5.2).</li> </ol>

## 5.0 Technical Data

### 5.1 Drawings

Final Outline and Detail Drawings are required for each cable bus run. These drawings shall include a parts list, nameplate data, cable phasing configuration with calculated circuit impedance, inside & outside enclosure dimensions, and support requirements for each cable bus run. Assembly and Outline Drawings and technical data (including UL certification of cable bus side rail when utilized as a grounding conductor) for the cable bus materials specified. For the tray type supplied, all other accessory catalog data shall also be provided for future parts ordering.

The drawings shall be included in the Technical Manual (5.2). The Government will also approve the Suppliers Drawings to provide a Release for Manufacture for the cable bus system.

## **5.2 Technical Manuals**

Three sets of Technical Manuals shall be forwarded not later than the delivery date of the equipment. Technical Manuals shall consist of various technical data including: Installation instructions, Testing (4.3), Drawings (5.1), Special Tools / Equipment (5.3), Recommended Maintenance (5.4), and any other technical information required to install, operate, or maintain the cable bus and cable tray.

## **5.3 Special Tools / Equipment**

A list of special tools / equipment required to install the cable bus and cable tray shall be provided for Release to Manufacture and shall also be included in the Technical Manual (5.2).

## **5.4 Recommended Maintenance**

Recommendations shall be provided on the recommended cable insulation and Hi-Pot testing to be performed prior to energizing the cable bus and if any other future testing or maintenance of the cable bus system is recommended. This information shall consider the cable manufacturer's recommendations. This information shall be provided in the Technical Manual (5.2) not later than the delivery date of the equipment.

## **6.0 Release For Manufacture**

The Supplier shall submit the following to the Government, for approval, prior to obtaining a Release for Manufacture:

1. Outline & Detail Drawings (5.1) for each cable bus run. These drawings shall include a parts list, nameplate, cable phasing configuration with calculated circuit impedance (Inductive and Capacitive reactance, inside & outside enclosure dimensions, and support requirements for each cable bus run.
2. Assembly & Outline Drawings and technical data (5.1) (including UL certification of cable bus side rail when utilized as a grounding conductor) for the cable bus materials specified. For the tray type supplied, all other accessory catalog data shall also be provided for future parts ordering.
3. List of Special Tools / Equipment (5.3) required for cable bus enclosure assembly & cable installation in the cable bus.
4. Cable bus installation instructions (5.2).

## **7.0 Inspection and Testing**

Testing of the equipment shall be performed by the Supplier as specified in Section 4.3. The Government reserves the right to witness Supplier testing and to perform equipment inspections where such inspections are deemed necessary to assure supplies and services conform to the prescribed requirements. A Test Report, containing as a minimum, the data specified in Section 4.3 must be provided no later than the delivery date of the equipment and shall be included in the Technical Manual.

## **8.0 Shipping**

### **8.1 Packaging**

Equipment shall be packed for shipping in a manner which will ensure acceptance and safe delivery at destination. Supplier is responsible for damage during shipment.

### **8.2 Marking**

Each package shall be marked with the Contract Number, Contract Item Number and Purchase Specification Number TS050-18.

### **8.3 Delivery**

All equipment and technical data specified in this document shall be delivered to NSWCCD-SSES in accordance with the following schedule:

#### **Item 0001: Cable Bus Release for Manufacture Data**

Within 4 weeks after contract award.

Note: NSWC shall be given 2 weeks to review and provide Drawing Approval

#### **Item 0002: Cable Bus System**

Within 12 weeks after contract award or within 6 weeks after Drawing Approval, whichever is later.

#### **Item 0003: Cable Bus Technical Manual**

Within 12 weeks after contract award.

**Item 0004: Cable Tray System**

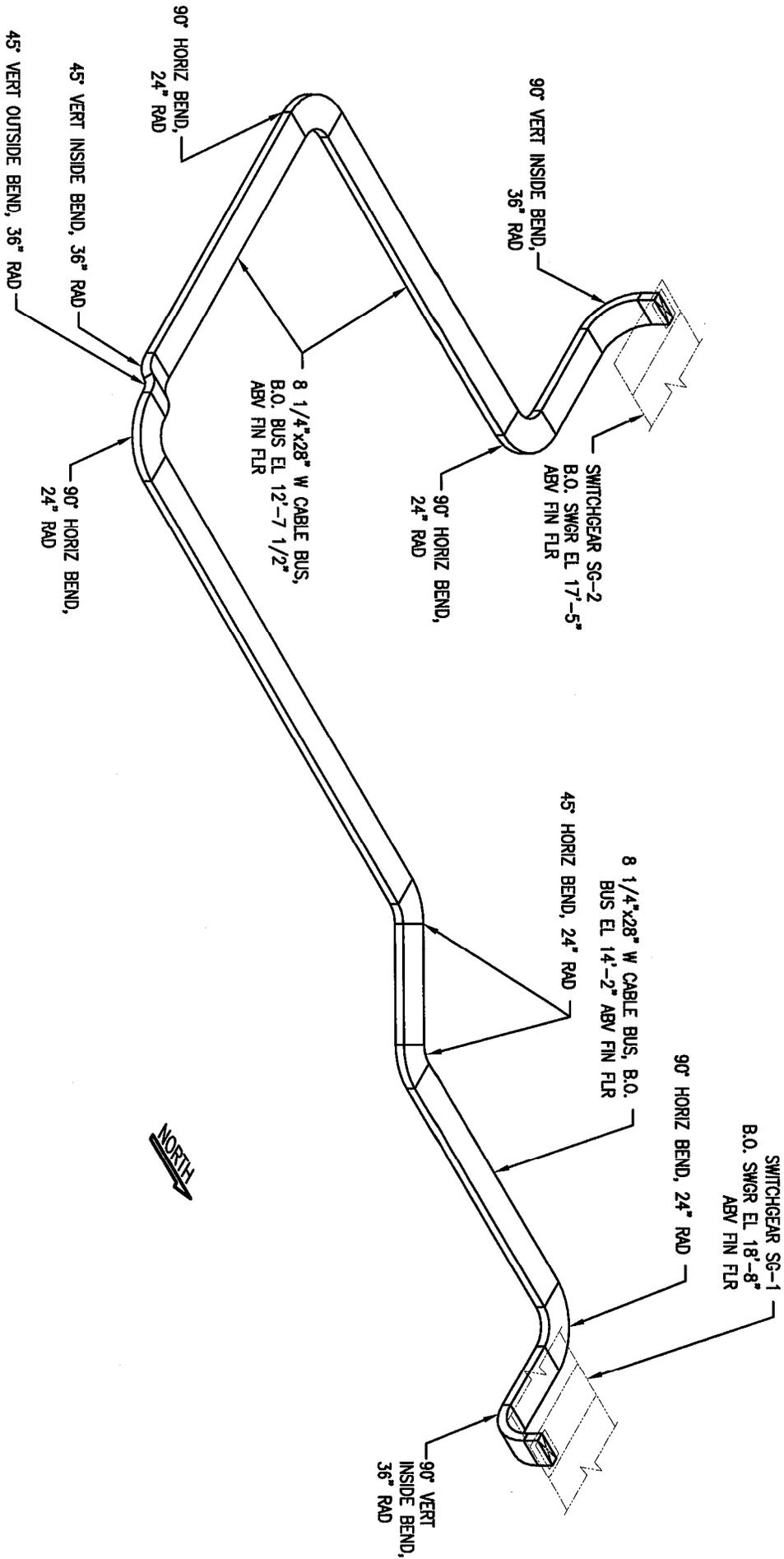
Within 10 weeks after contract award.

**Items 0005: Cable Tray Technical Manual**

Within 10 weeks after contract award.

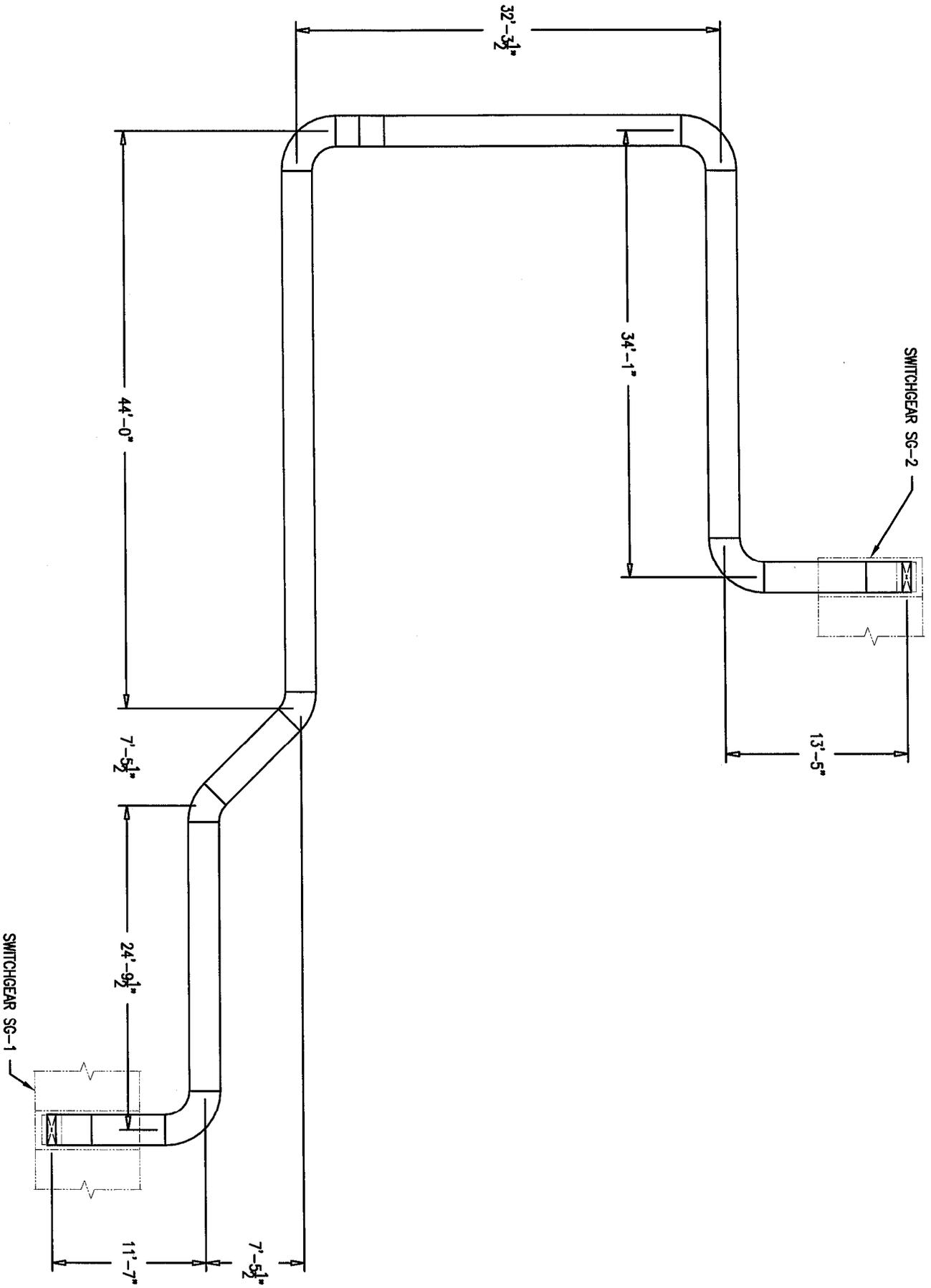
All deliverables shall be forwarded to the address given below:

Commander  
Naval Surface Warfare Center Carderock Division  
Naval Business Center, Bldg 542  
Philadelphia, PA 19112-5083  
Attn: Mr. Ed Harvey, Code 934



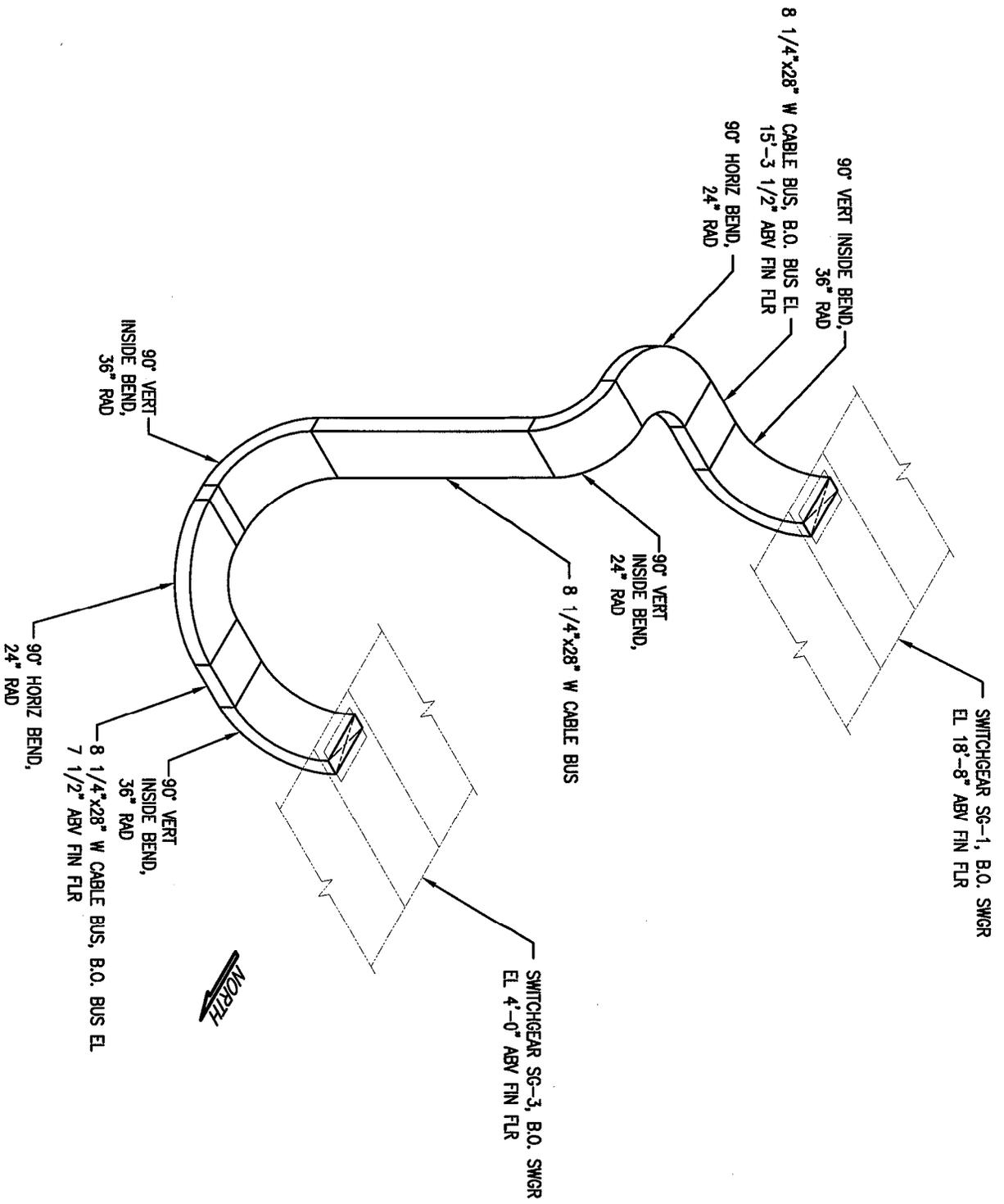
ISOMETRIC VIEW  
 SWGR SG-1 TO SWGR SG-2  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 1A



PLAN VIEW  
 SWGR SG-1 TO SWGR SG-2  
 CABLE BUS RUN  
 SCALE: 1"=10'-0"

FIGURE 1B



**ISOMETRIC VIEW**  
 SWGR SG-1 TO SWGR SG-3  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 2A

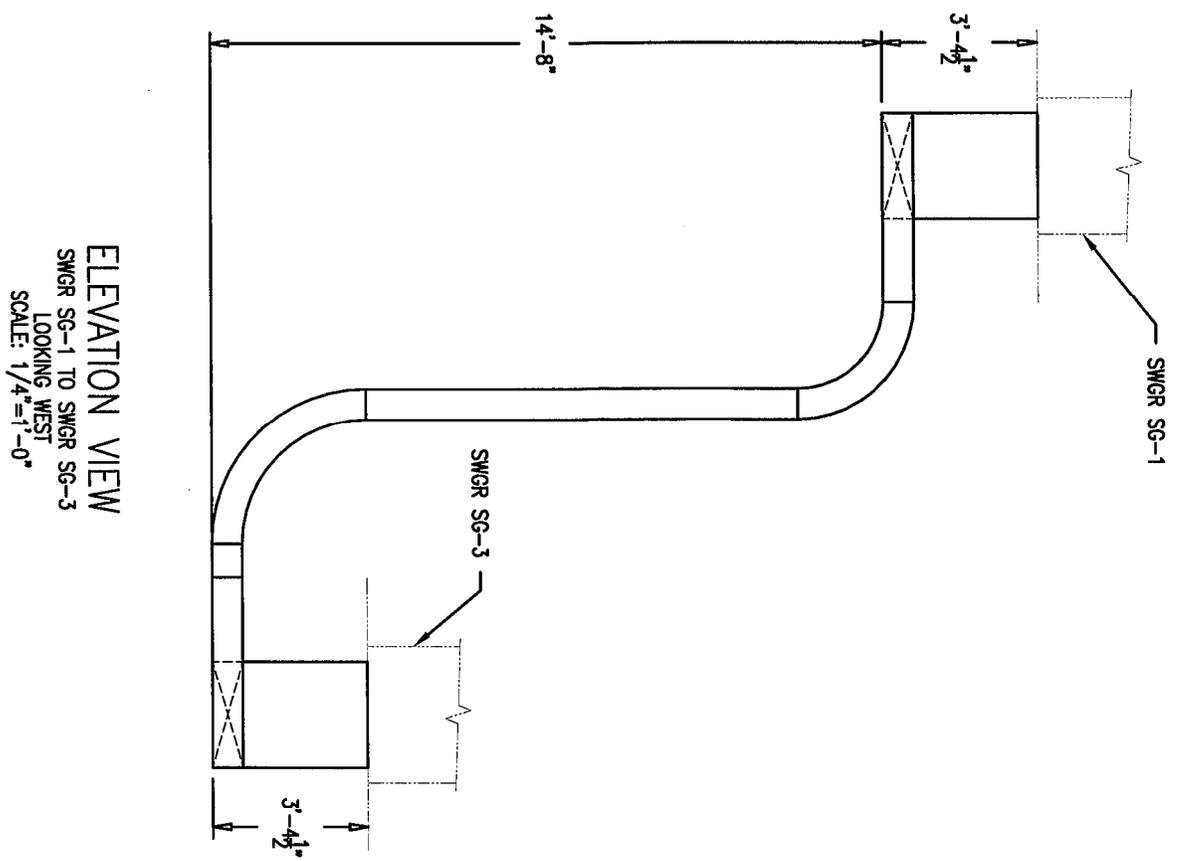
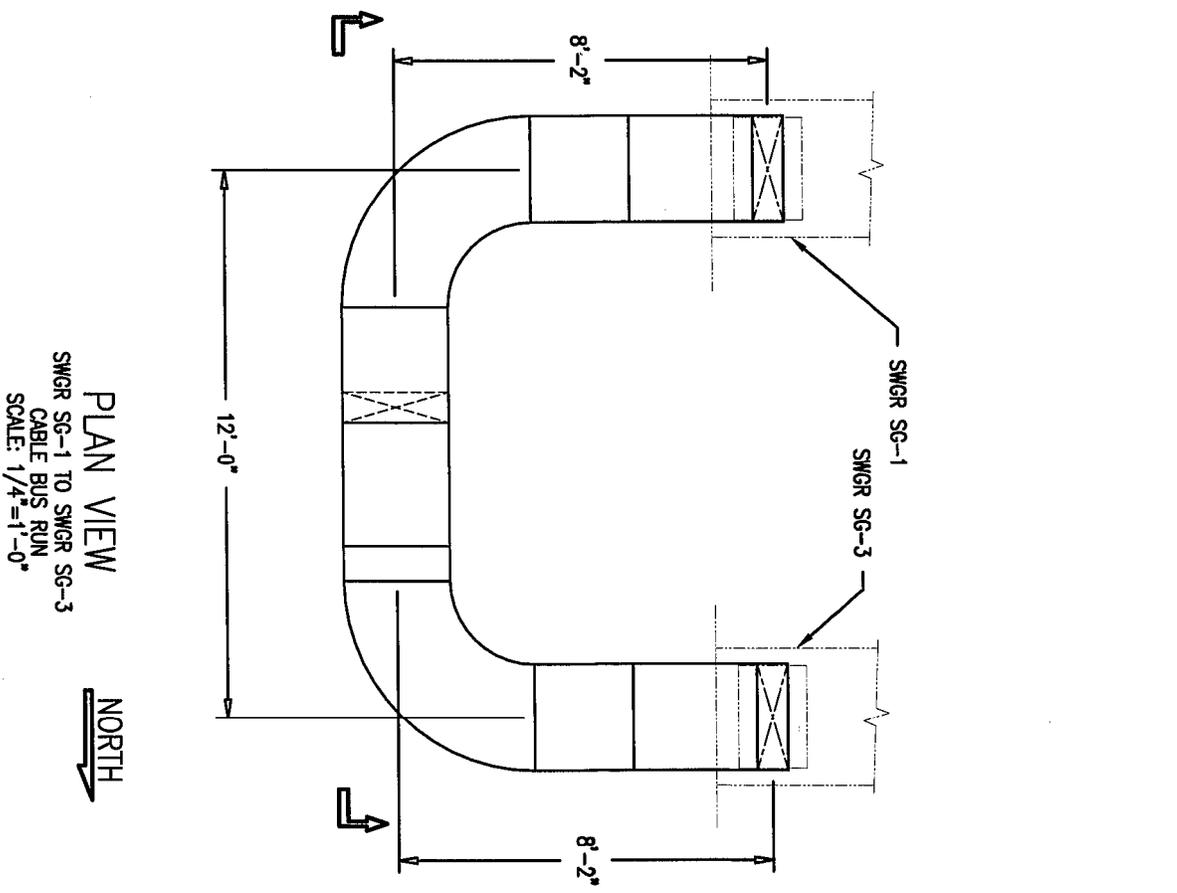
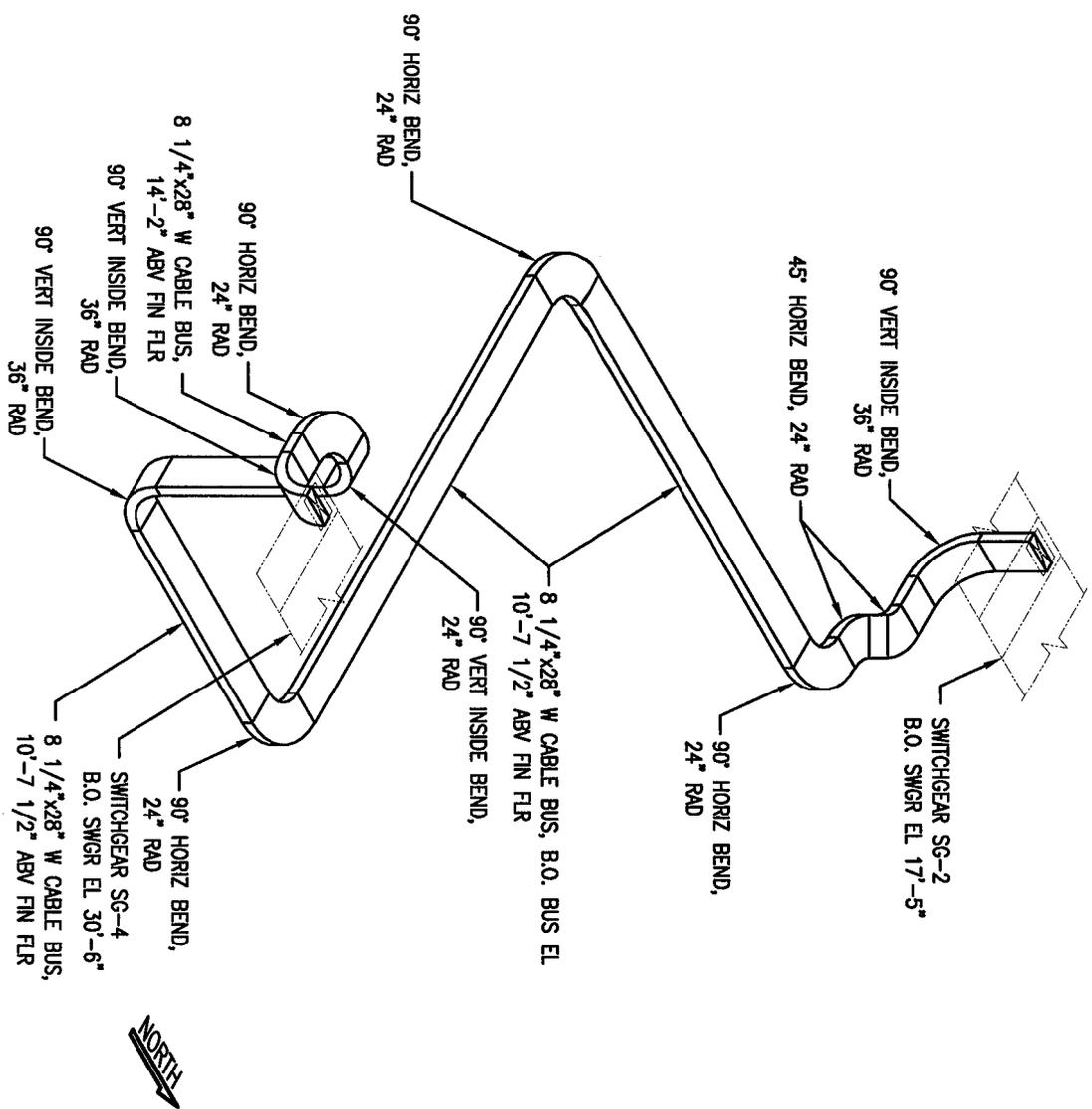
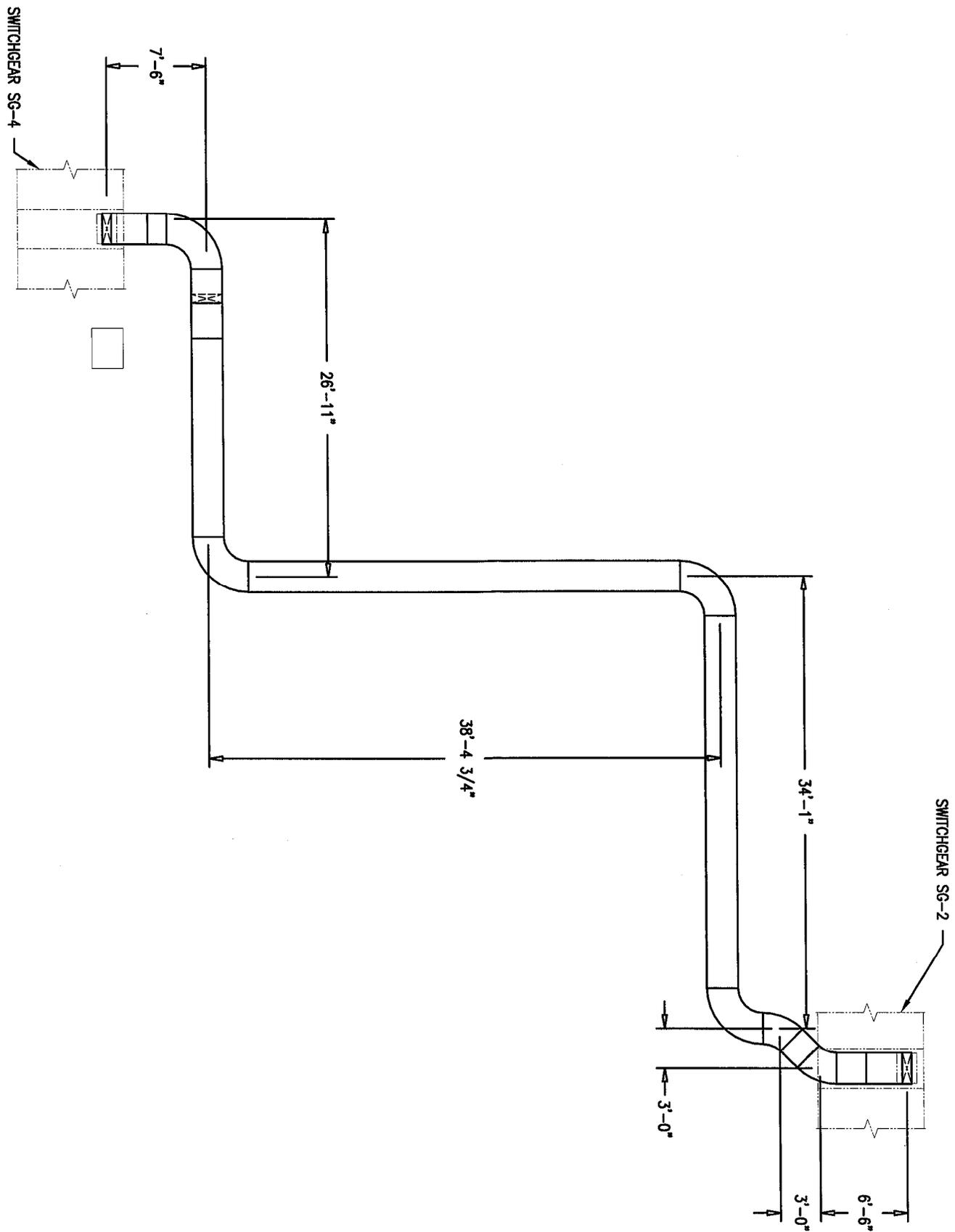


FIGURE 2B



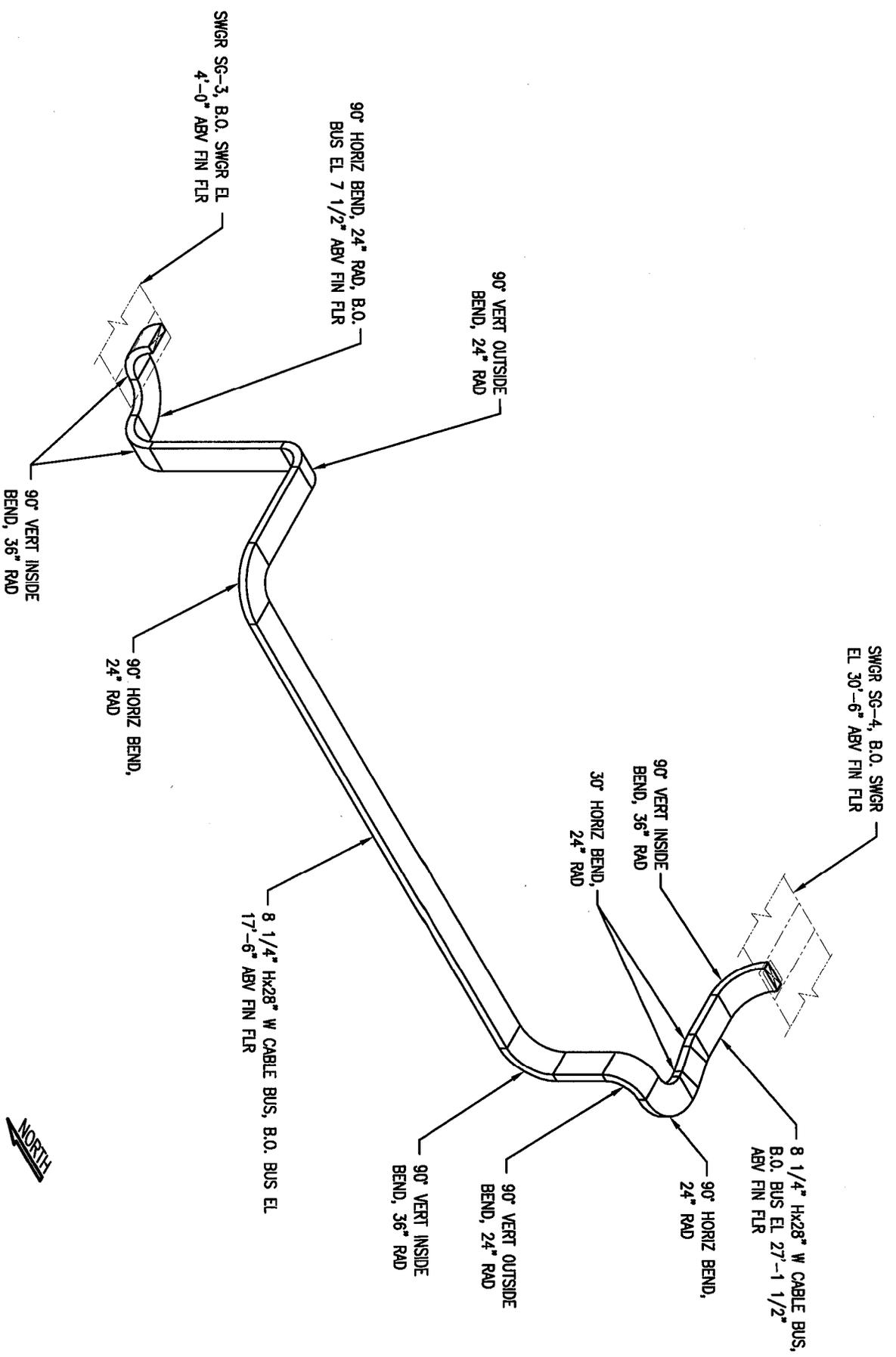
ISOMETRIC VIEW  
 SWGR SG-2 TO SWGR SG-4  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 3A



PLAN VIEW  
 SWGR SG-2 TO SWGR SG-4  
 CABLE BUS RUN  
 SCALE: 1"=10'-0"

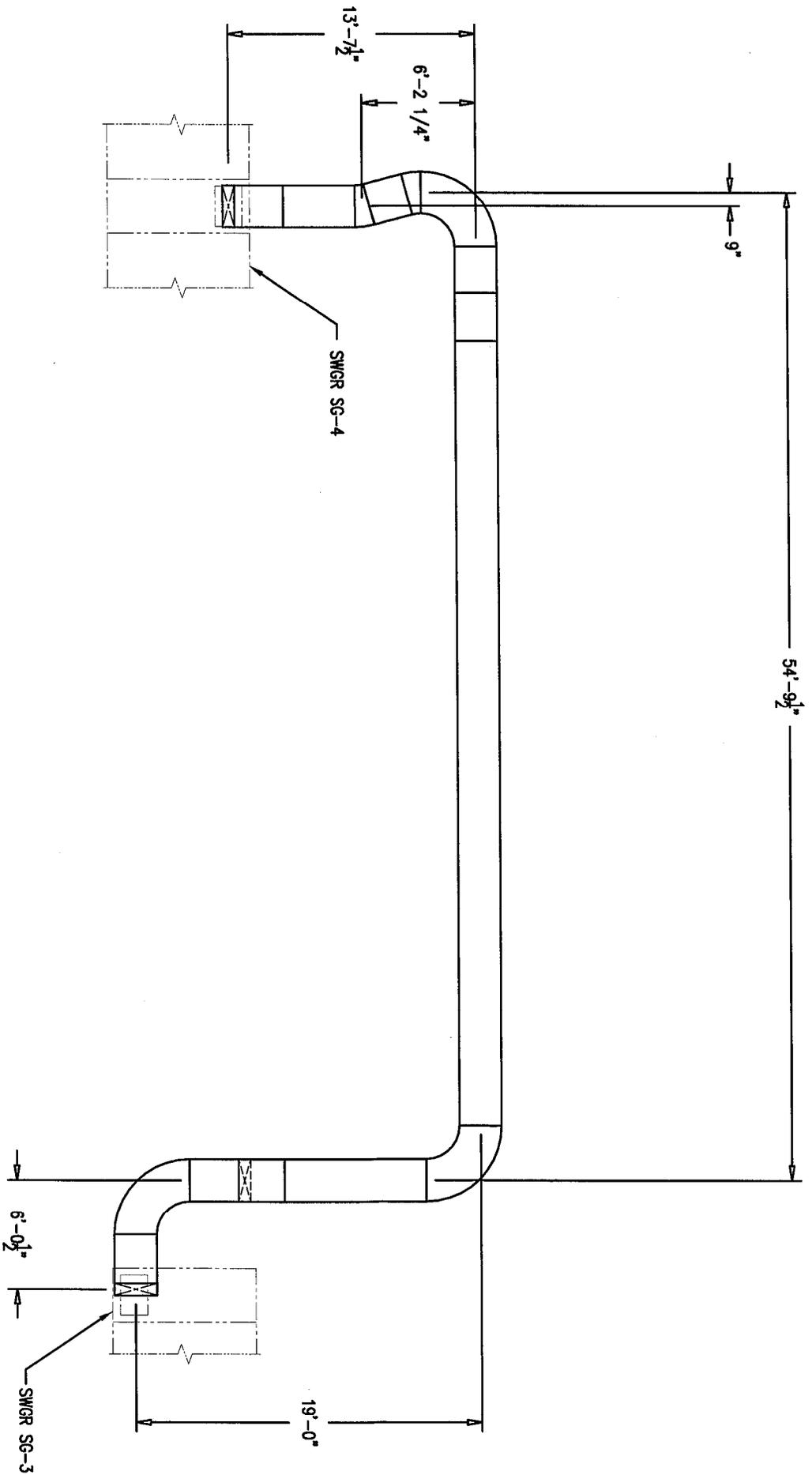
FIGURE 3B



ISOMETRIC VIEW  
 SWGR SG-3 TO SWGR SG-4  
 CABLE BUS RUN  
 SCALE: NONE

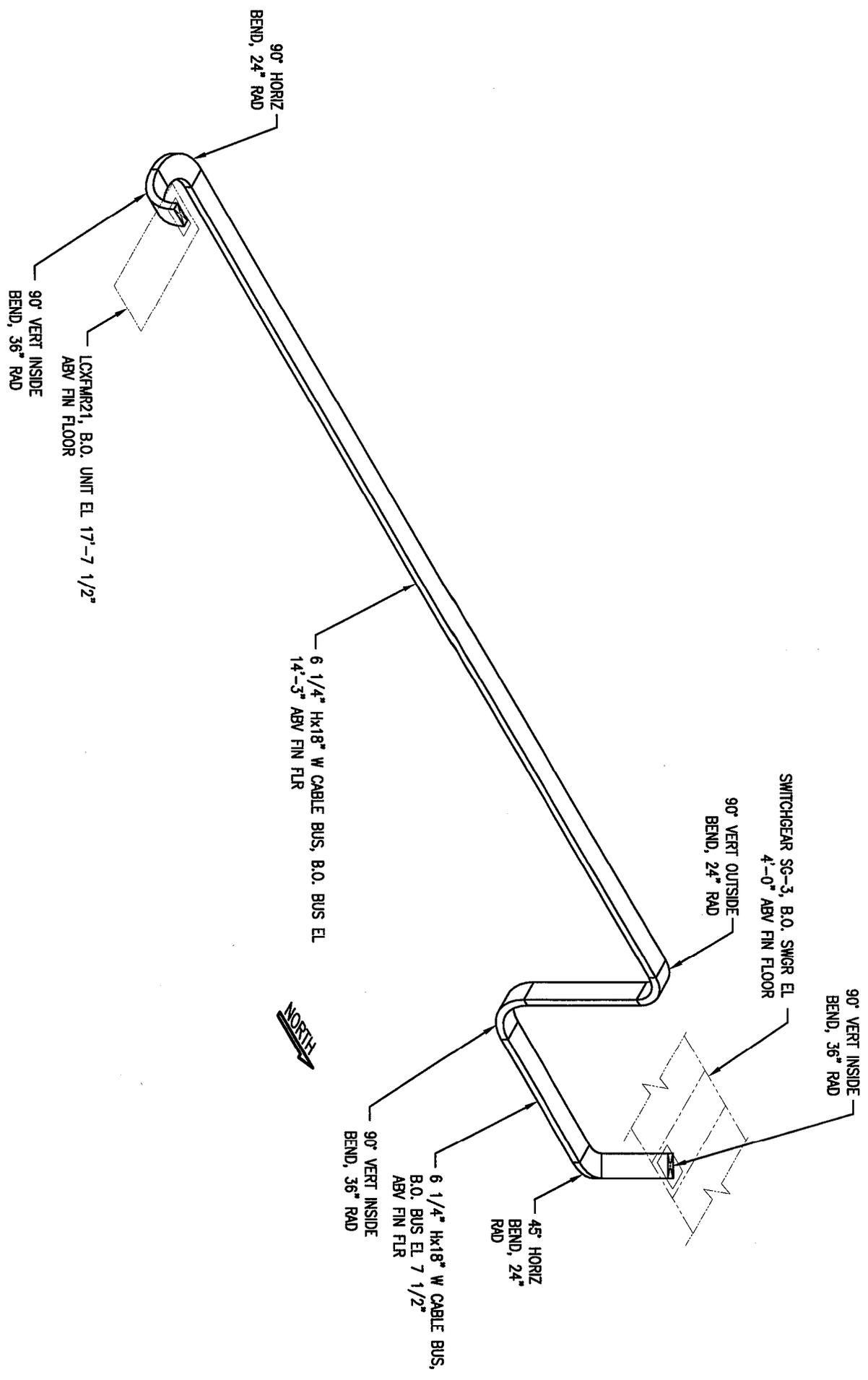


FIGURE 4A



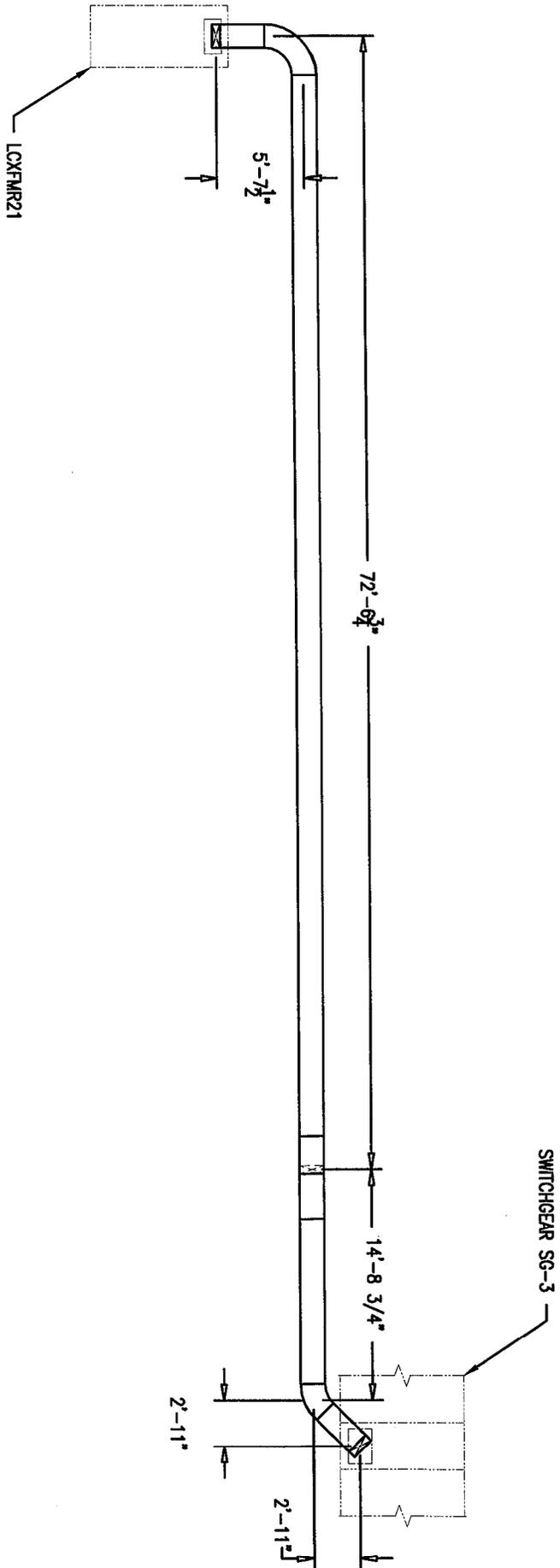
PLAN VIEW  
 SWGR SG-3 TO SWGR SG-4  
 CABLE BUS RUN  
 SCALE: 1/8"=1'-0"

FIGURE 4B



ISOMETRIC VIEW  
 SWGR SG-3 TO LCKXMR21  
 CABLE BUS RUN  
 SCALE: NONE

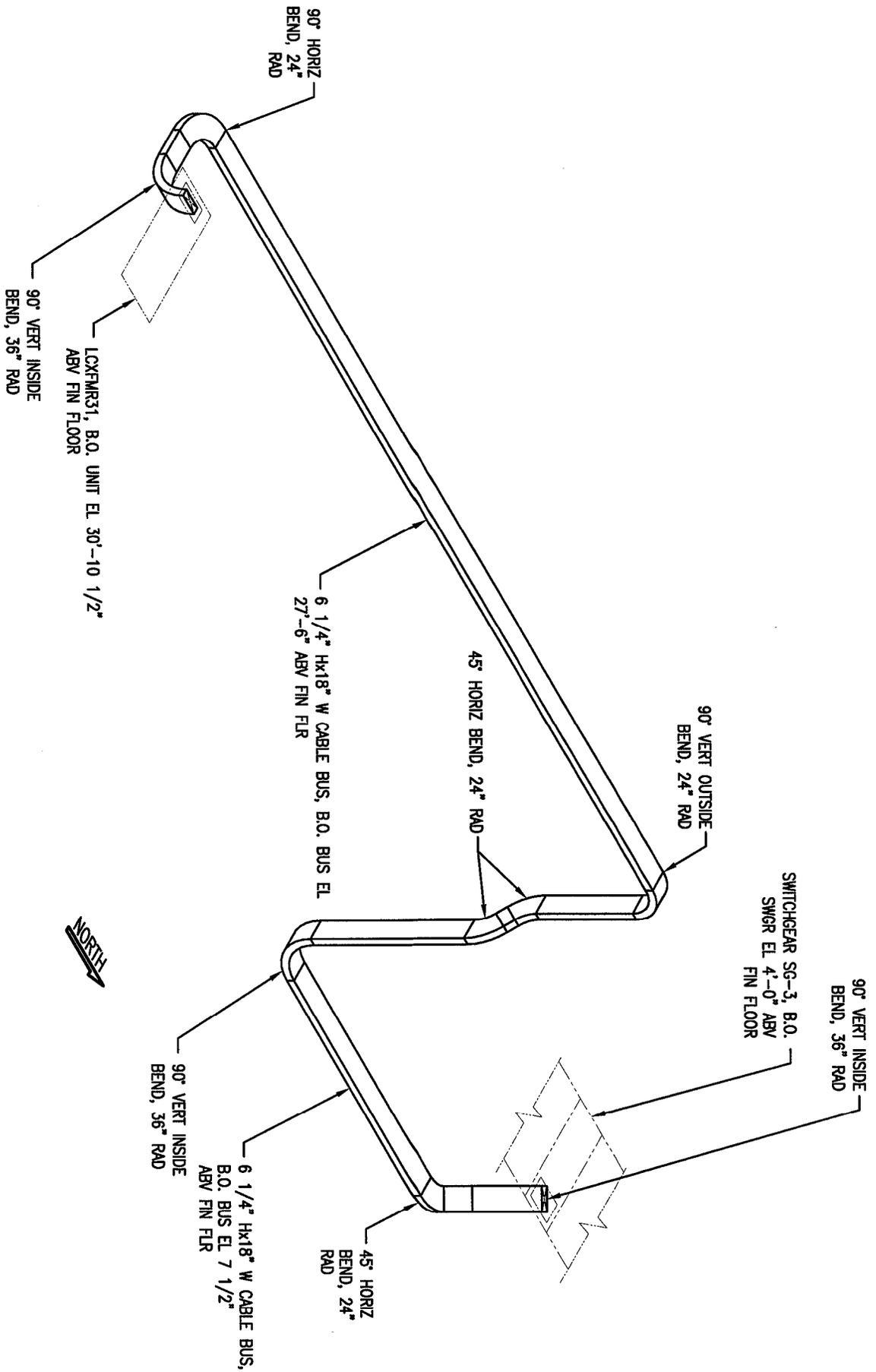
FIGURE 5A



PLAN VIEW  
 SWGR SG-3 TO LCKXFMR21  
 CABLE BUS RUN  
 SCALE: 1"=10'-0"



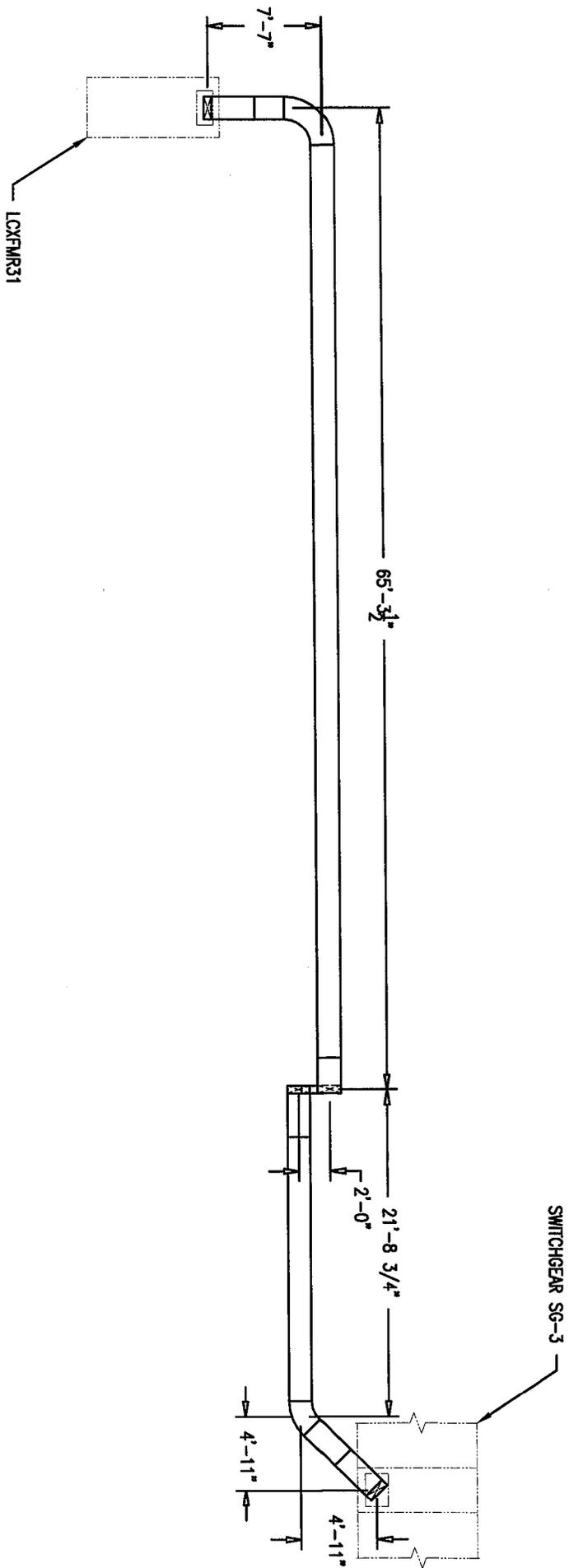
FIGURE 5B



ISOMETRIC VIEW  
 SWGR SG-3 TO LCKXMR31  
 CABLE BUS RUN  
 SCALE: NONE



FIGURE 6A



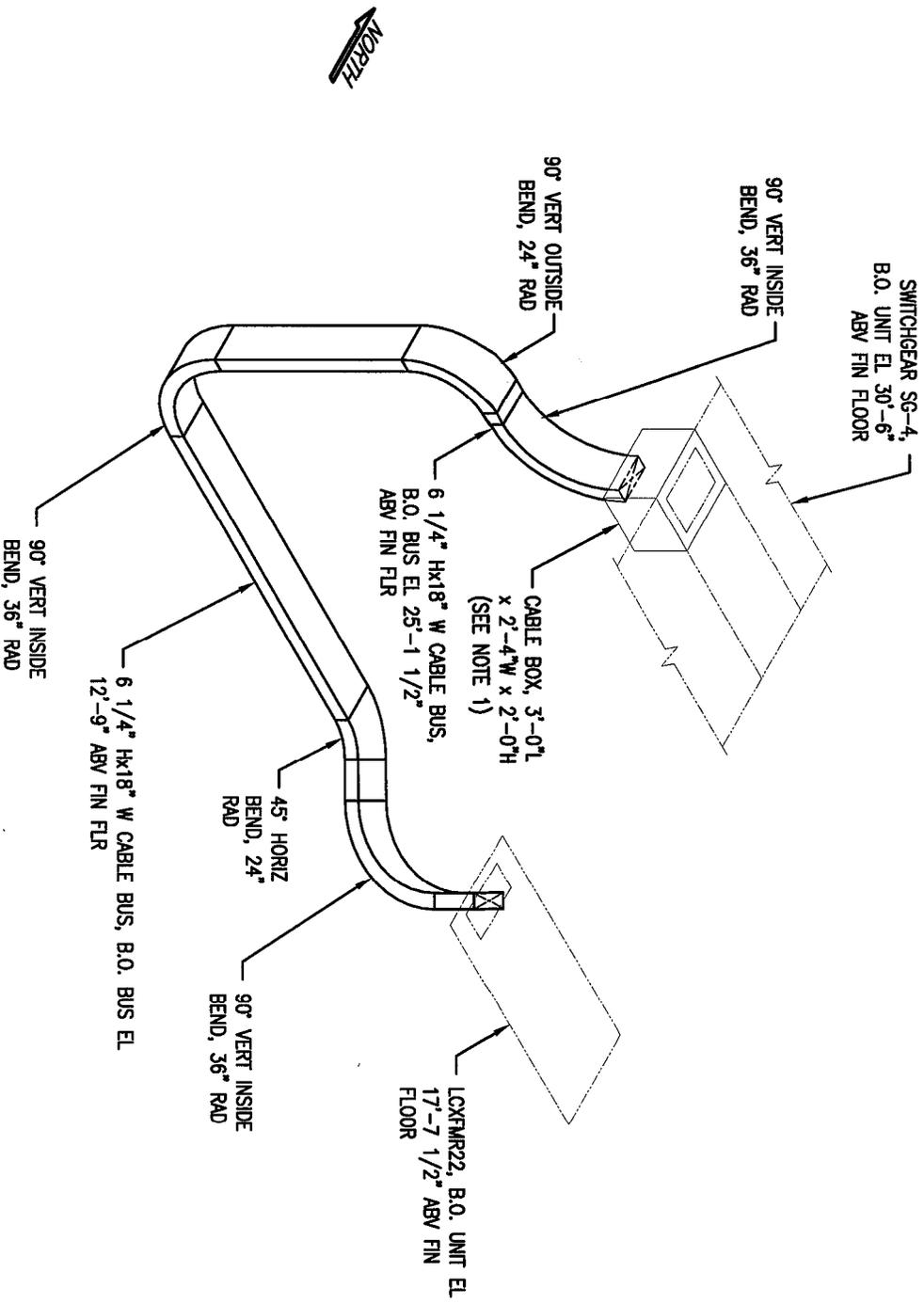
PLAN VIEW  
 SWGR SG-3 TO LCXFMR31  
 CABLE BUS RUN  
 SCALE: 1"=10'-0"



FIGURE 6B

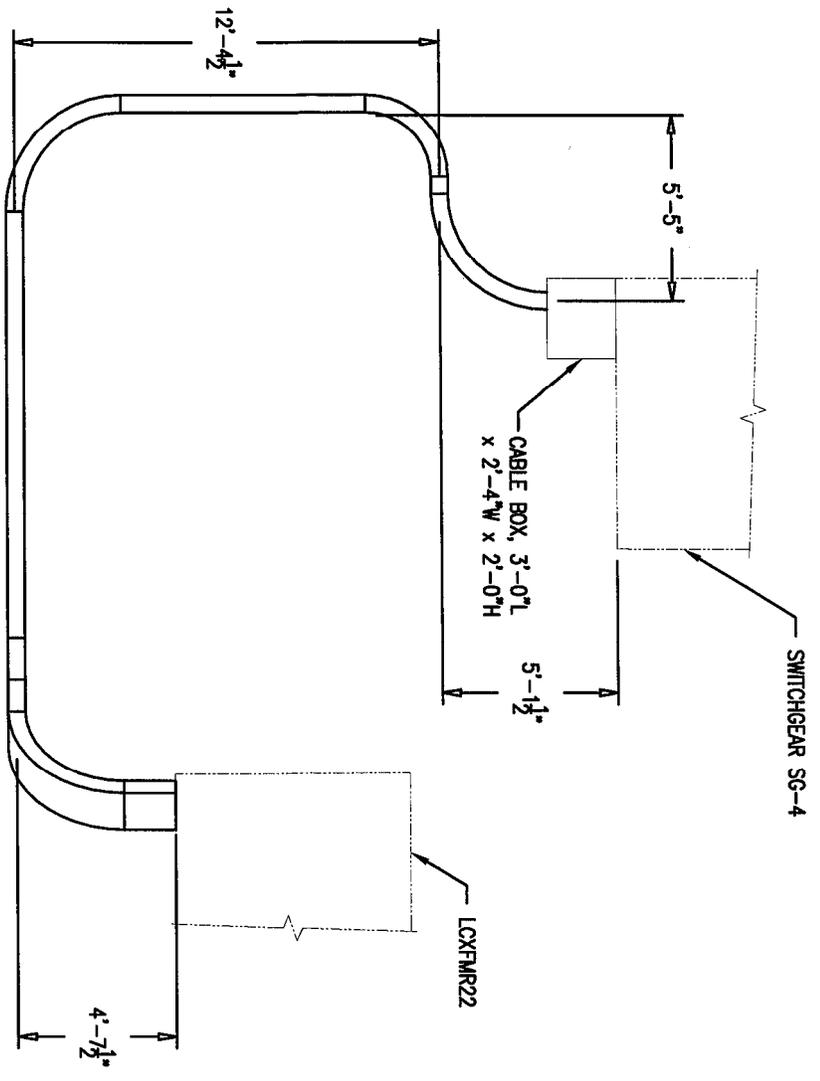
# NOTES

1. 3'-0" LONG x 2'-0" HIGH CABLE BOX COVERS SHALL BE REMOVABLE. THE SAME CABLE BOX IS UTILIZED FOR CONNECTION OF LCXFMR32 AND LCXFMR22 CABLE BUSES TO SG-4.

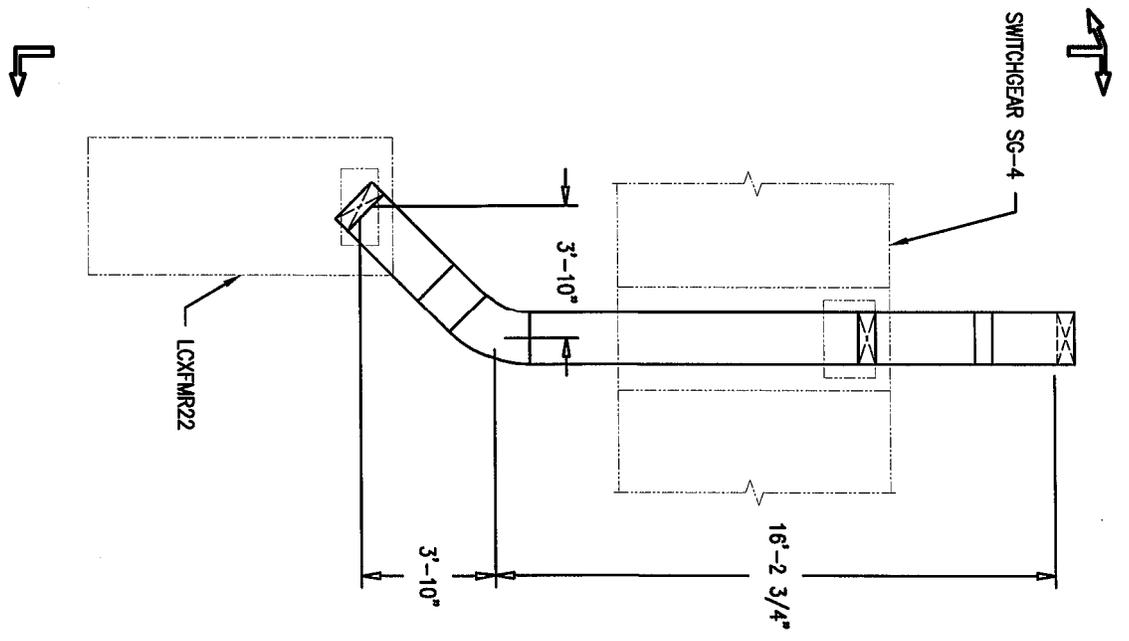


ISOMETRIC VIEW  
 SWGR SG-4 TO LCXFMR22  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 7A



**ELEVATION VIEW**  
 SWGR SG-4 TO LCXFMR22  
 LOOKING NORTH  
 SCALE: 3/16"=1'-0"

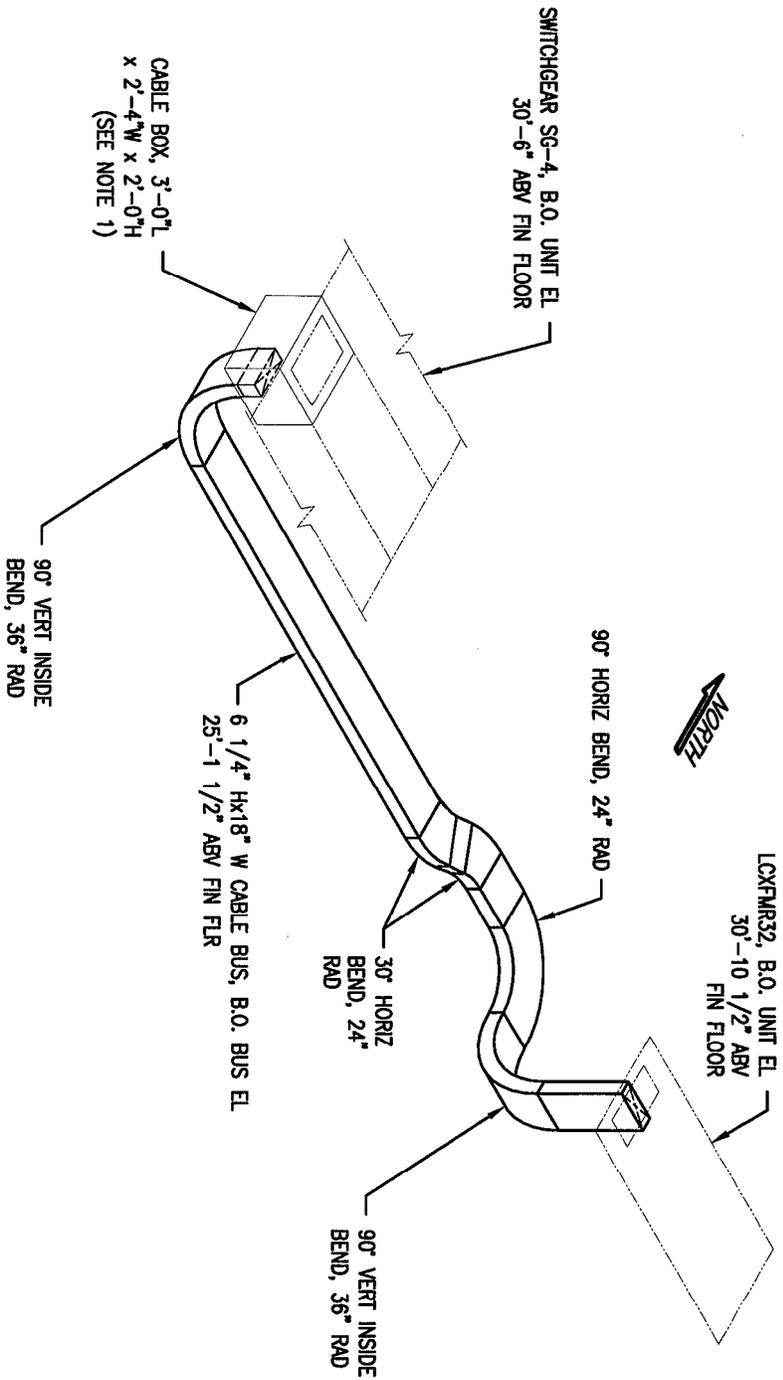


**PLAN VIEW**  
 SWGR SG-4 TO LCXFMR22  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"

FIGURE 7B

# NOTES

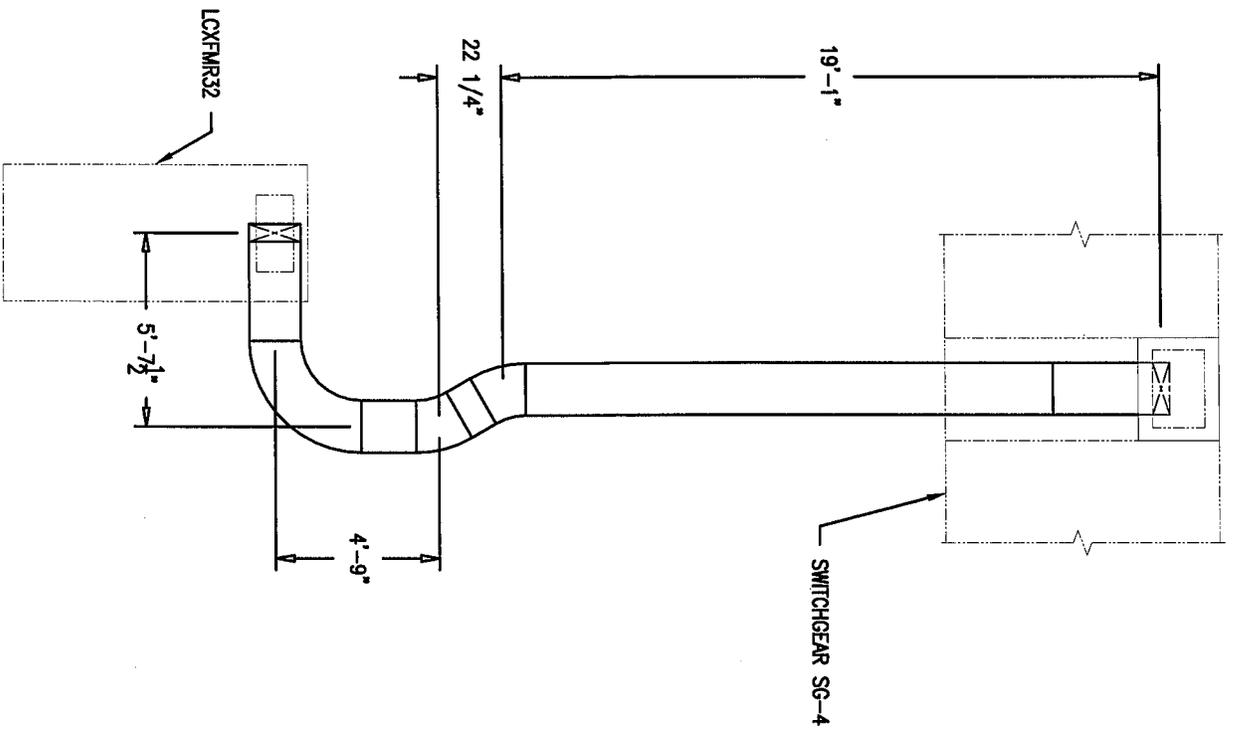
1. 3'-0" LONG x 2'-0" HIGH CABLE BOX COVERS SHALL BE REMOVABLE. THE SAME CABLE BOX IS UTILIZED FOR CONNECTION OF LCXFMR32 AND LCXFMR22 CABLE BUSES TO SG-4.



## ISOMETRIC VIEW

SWGR SG-4 TO LCXFMR32  
CABLE BUS RUN  
SCALE: NONE

FIGURE 8A

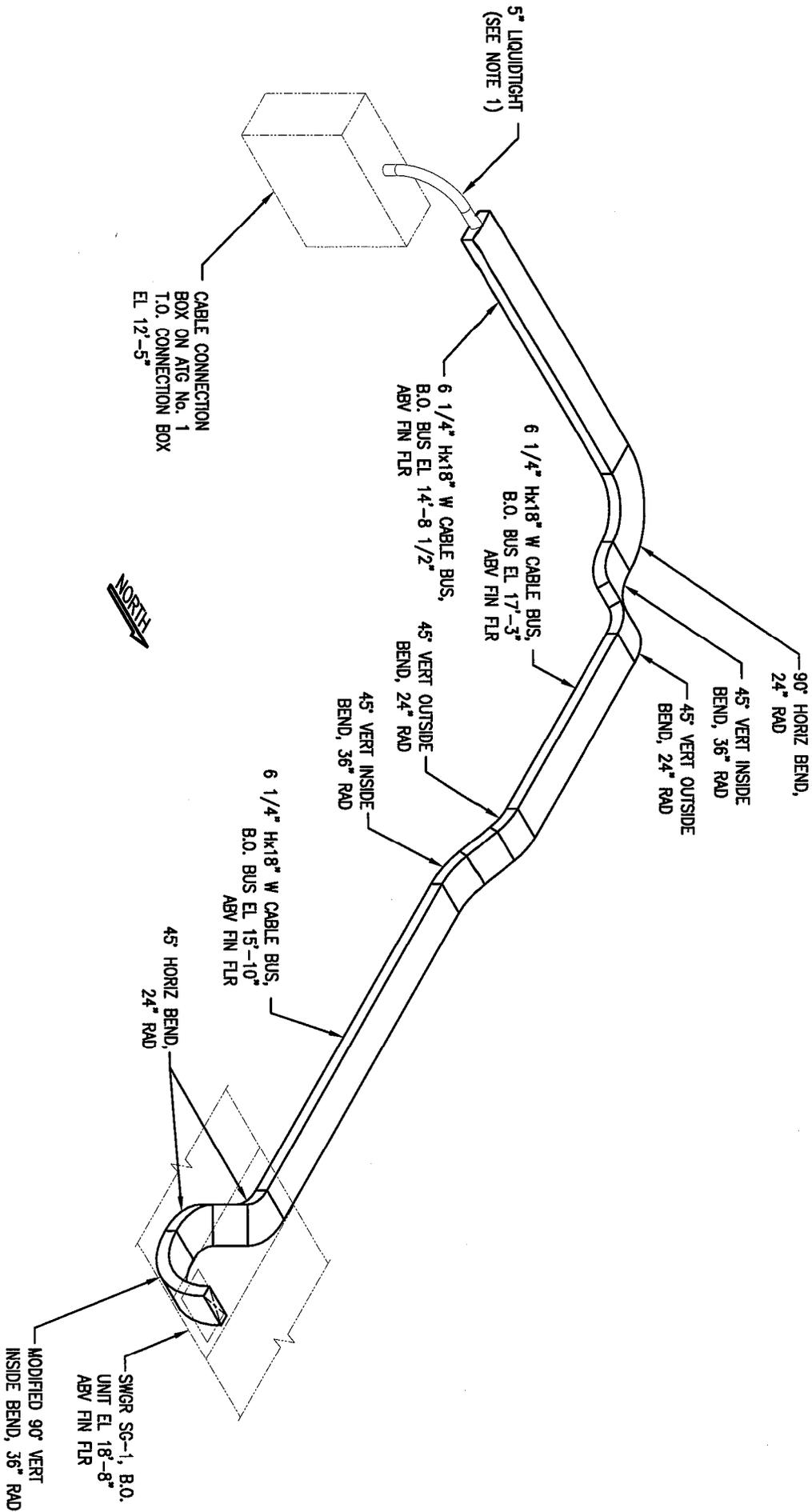


PLAN VIEW  
 SWGR SG-4 TO LCXFMR32  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"

FIGURE 8B

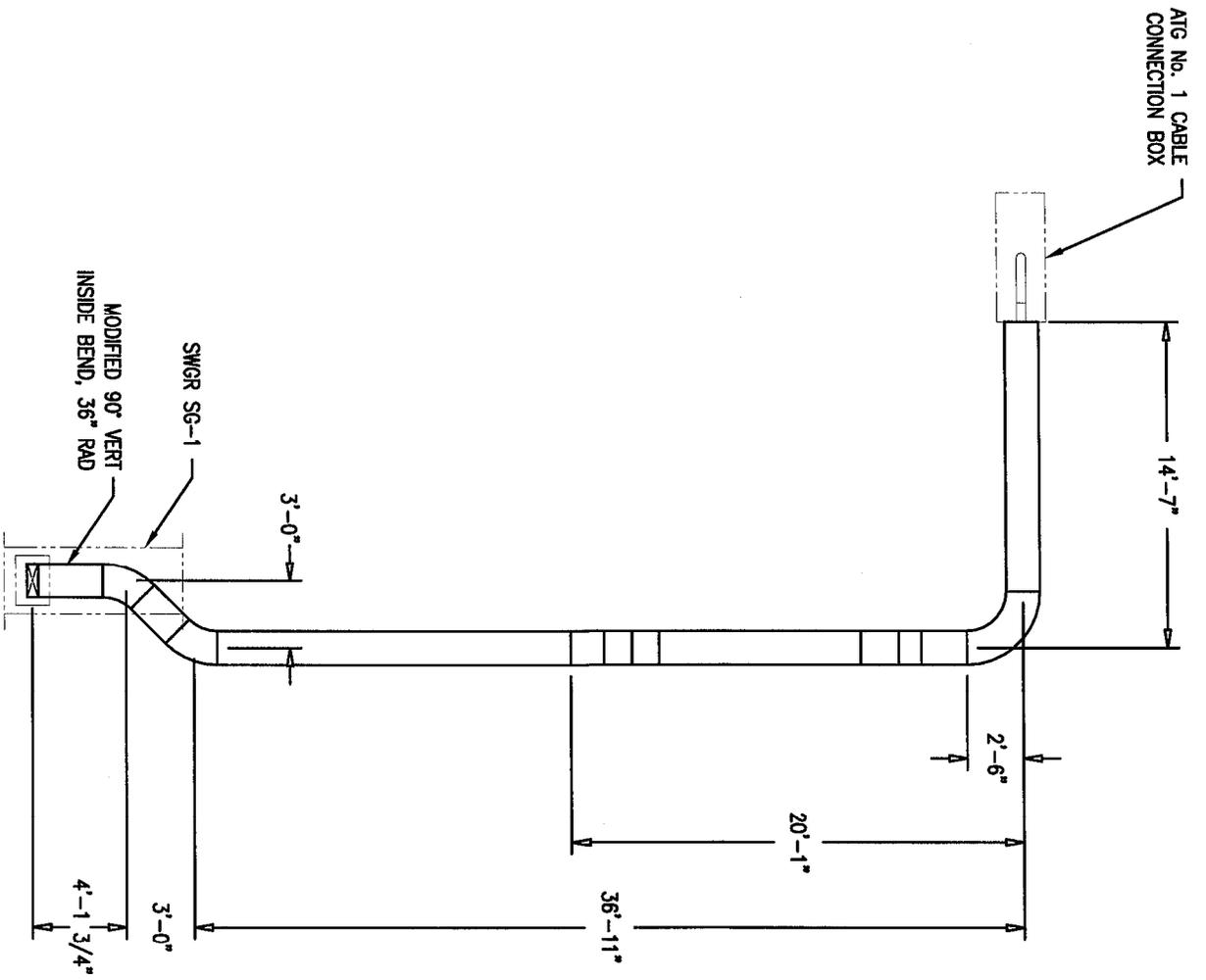
# NOTES

1. CABLES (INCLUDING GROUND CONDUCTOR) EXIT CABLE BUS END PLATE AND ENTER 5" DIAMETER LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT TO ENTER ATG No. 1 CONNECTION BOX WHICH IS GOVERNMENT PROVIDED. LIQUIDTIGHT SHALL BE PROVIDED WITH CONNECTION FITTINGS.



ISOMETRIC VIEW  
 SWGR SG-1 TO ATG No. 1  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 9A



PLAN VIEW

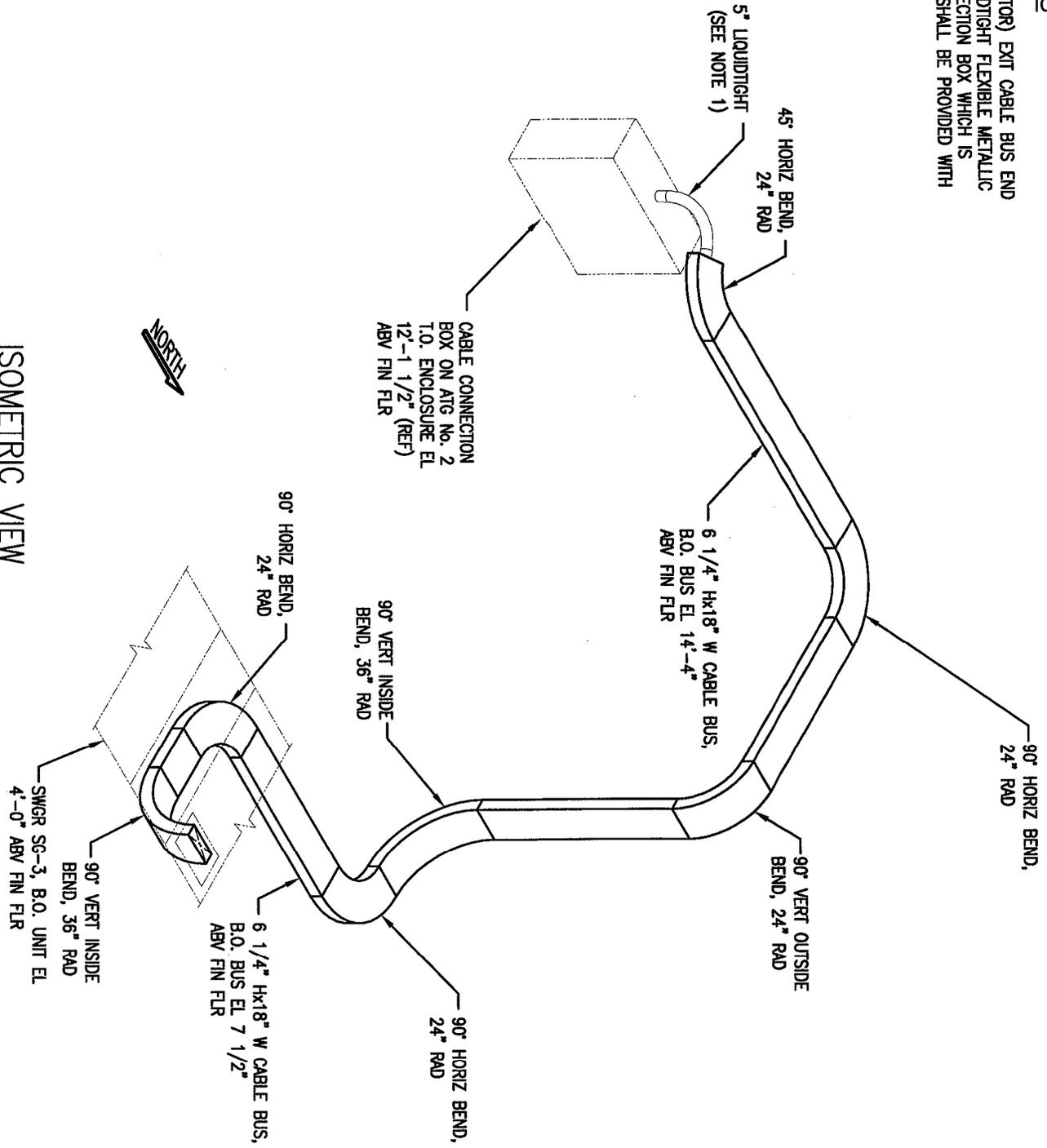


SWGR SG-1 TO ATG No. 1  
 CABLE BUS RUN  
 SCALE: 1/8"=1'-0"

FIGURE 9B

# NOTES

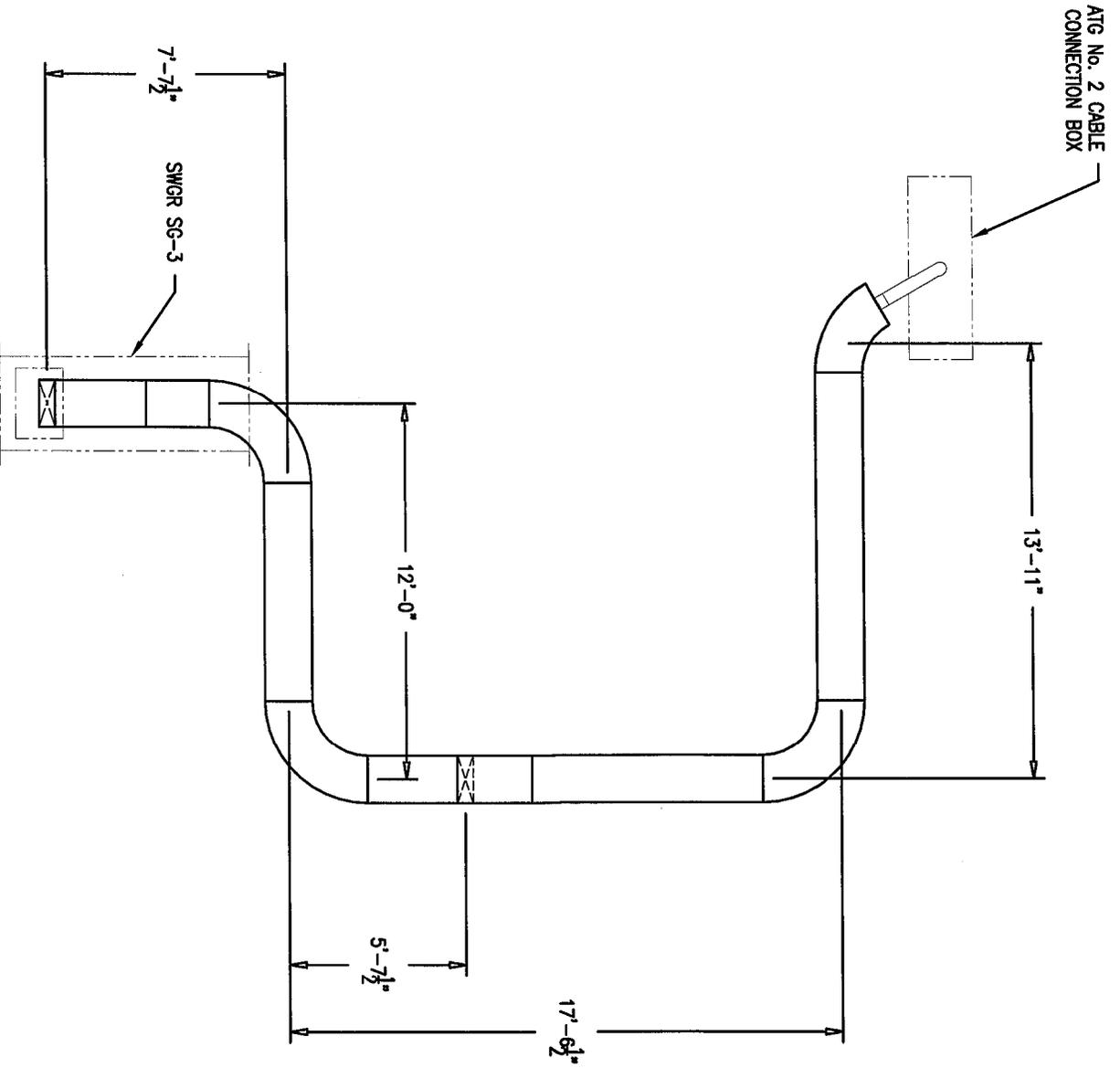
1. CABLES (INCLUDING GROUND CONDUCTOR) EXIT CABLE BUS END PLATE AND ENTER 5" DIAMETER LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT TO ENTER ATG No. 2 CONNECTION BOX WHICH IS GOVERNMENT PROVIDED. LIQUIDTIGHT SHALL BE PROVIDED WITH CONNECTION FITTINGS.



## ISOMETRIC VIEW

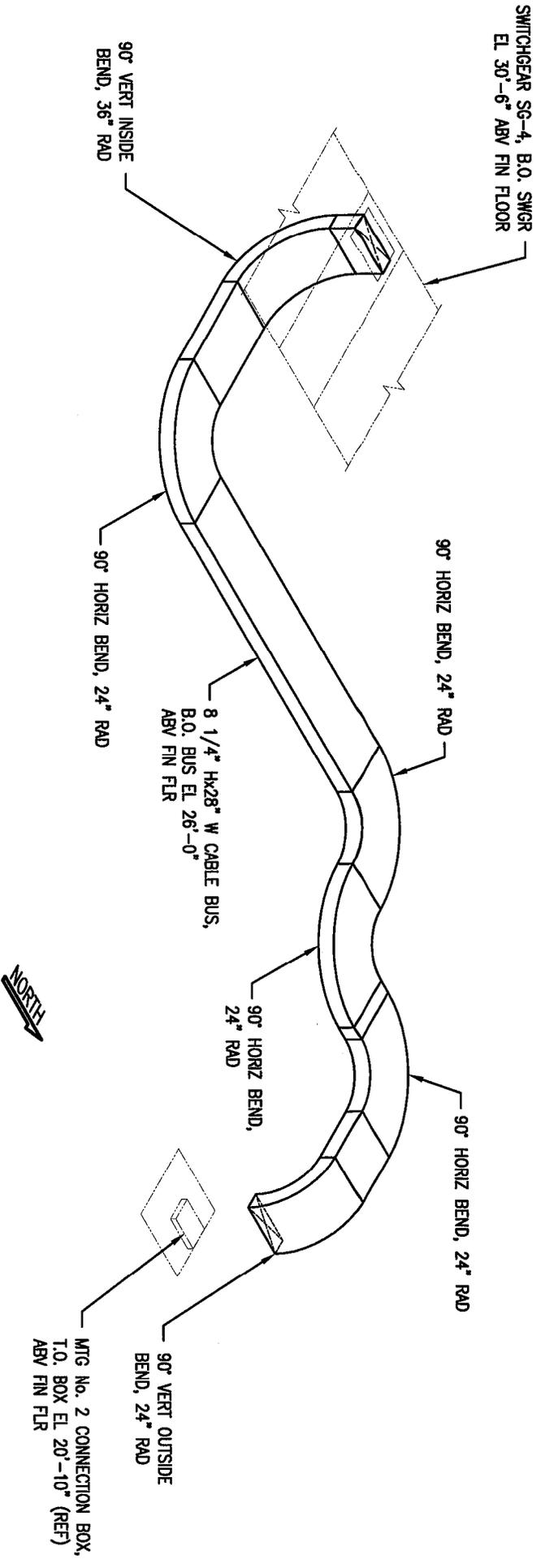
SWGR SG-3 TO ATG No. 2  
CABLE BUS RUN  
SCALE: NONE

FIGURE 10A



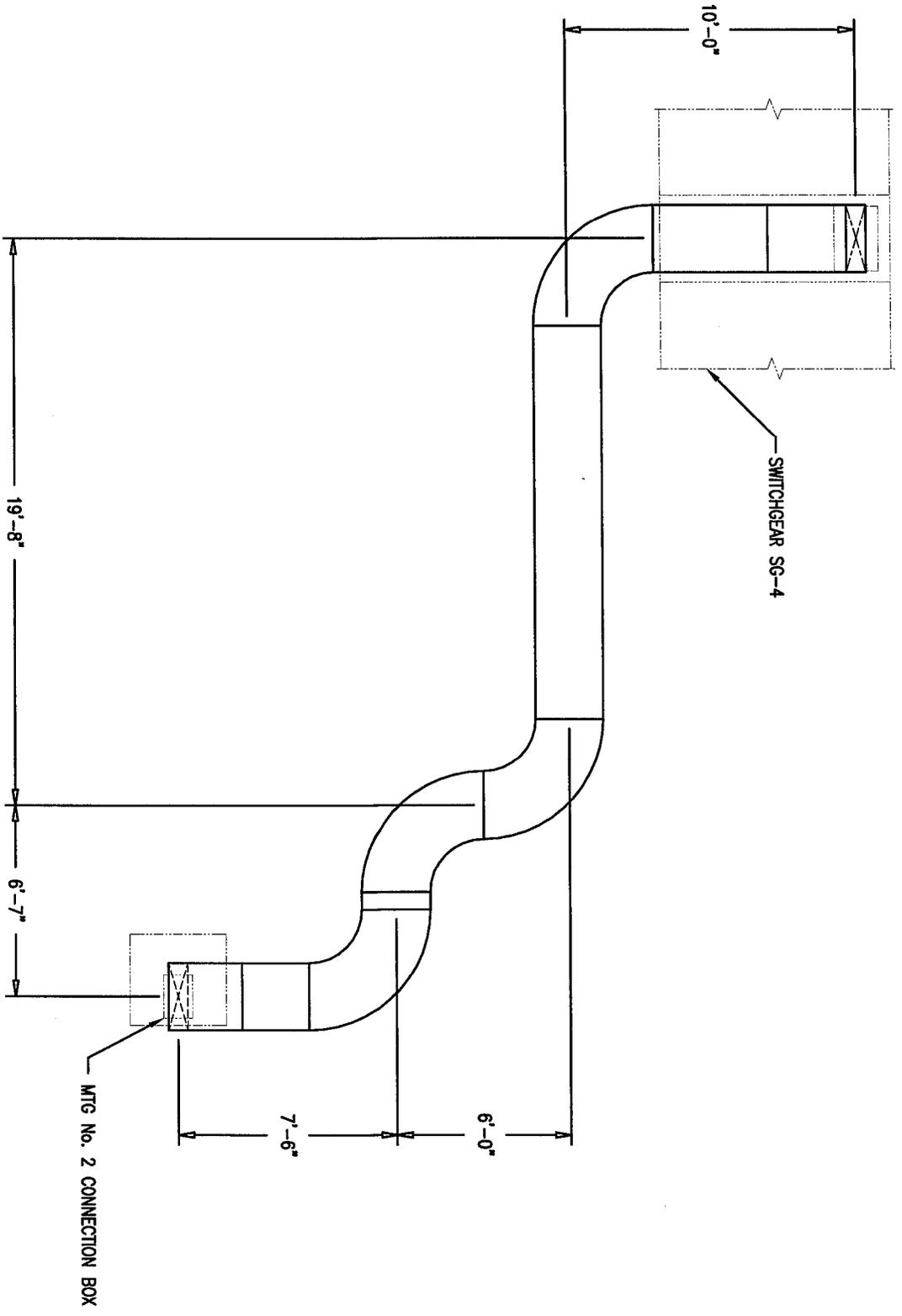
PLAN VIEW  
 SWGR SG-3 TO ATG No. 2  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"

FIGURE 10B



ISOMETRIC VIEW  
SWGR SG-4 TO MTG No. 2  
CABLE BUS RUN  
SCALE: NONE

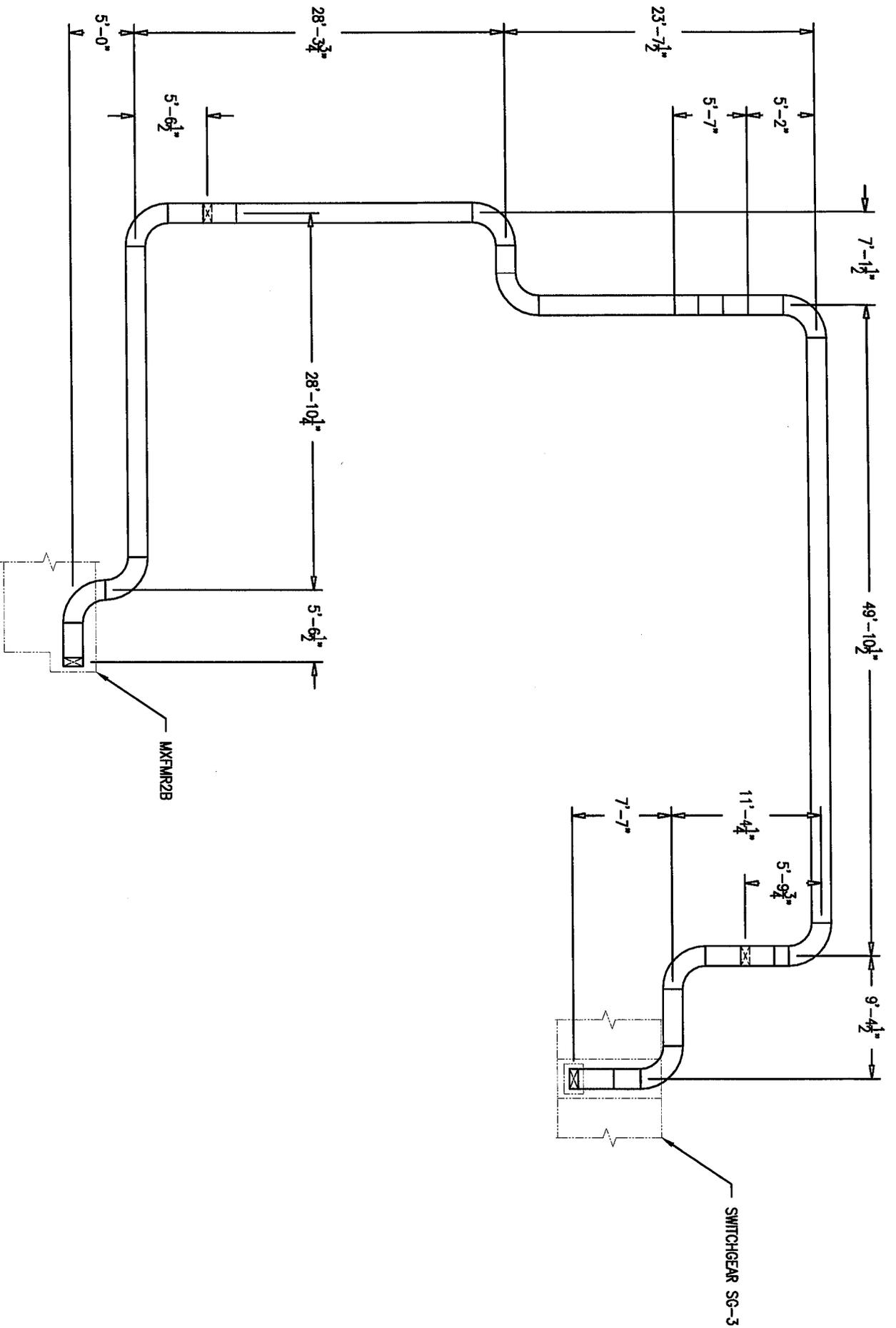
FIGURE 11A



PLAN VIEW  
 SWGR SG-4 TO MTG No. 2  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 11B

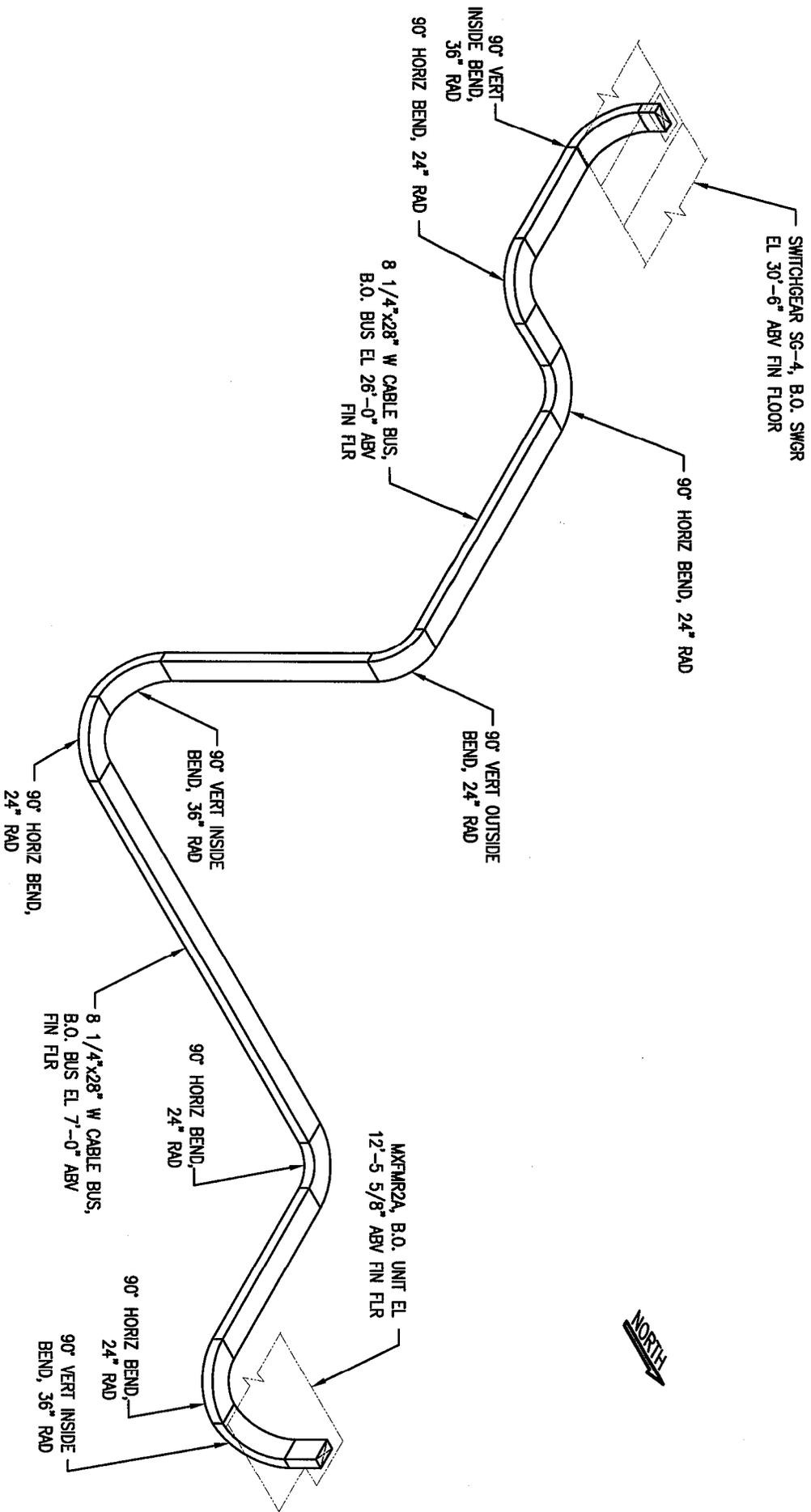




PLAN VIEW  
 SWGR SG-3 TO MXFMR2B  
 CABLE BUS RUN  
 SCALE: 1"=10'-0"



FIGURE 12B



ISOMETRIC VIEW  
SWGR SG-4 TO MYTMR2A  
CABLE BUS RUN  
SCALE: NONE

FIGURE 13A

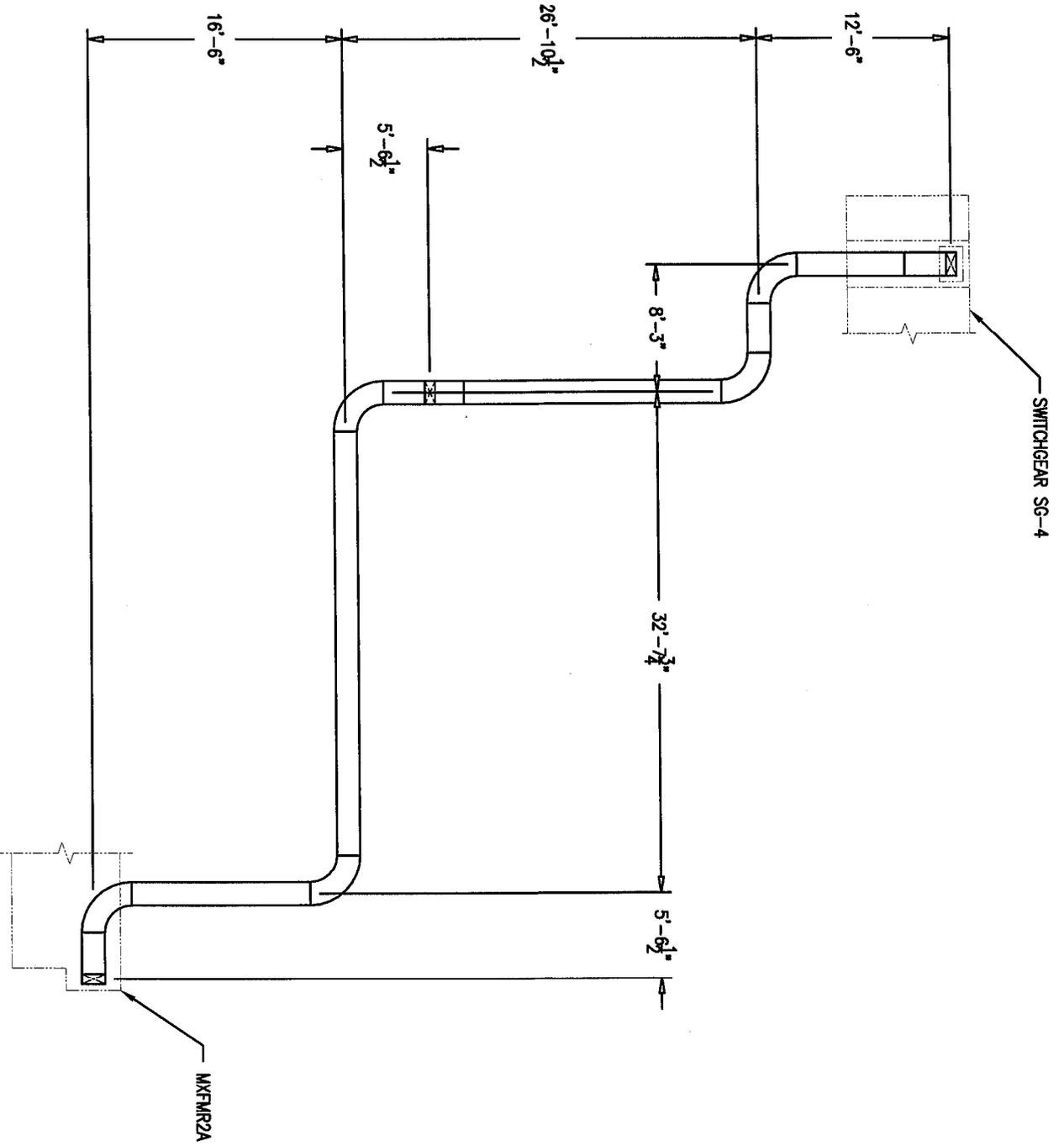
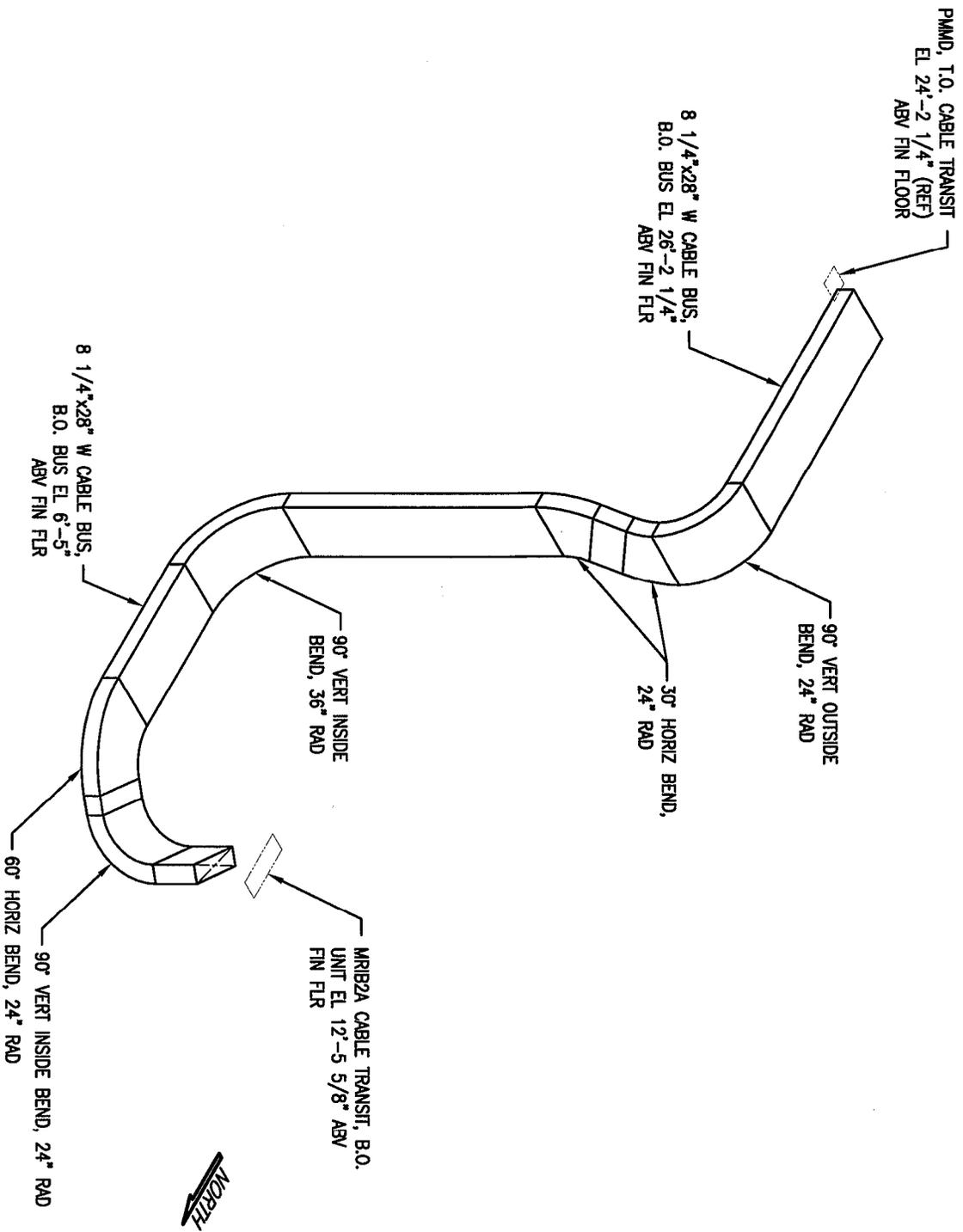
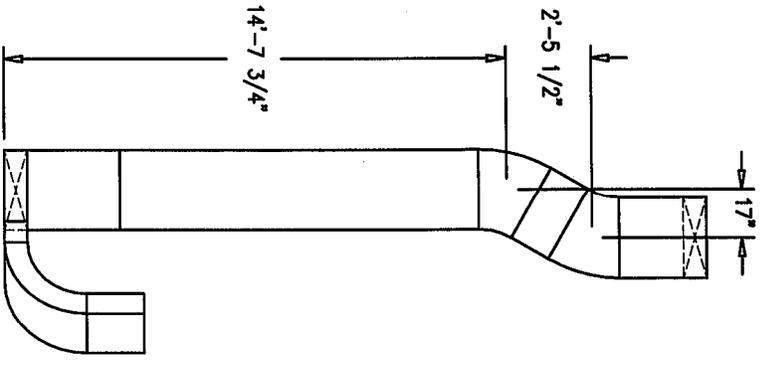


FIGURE 13B

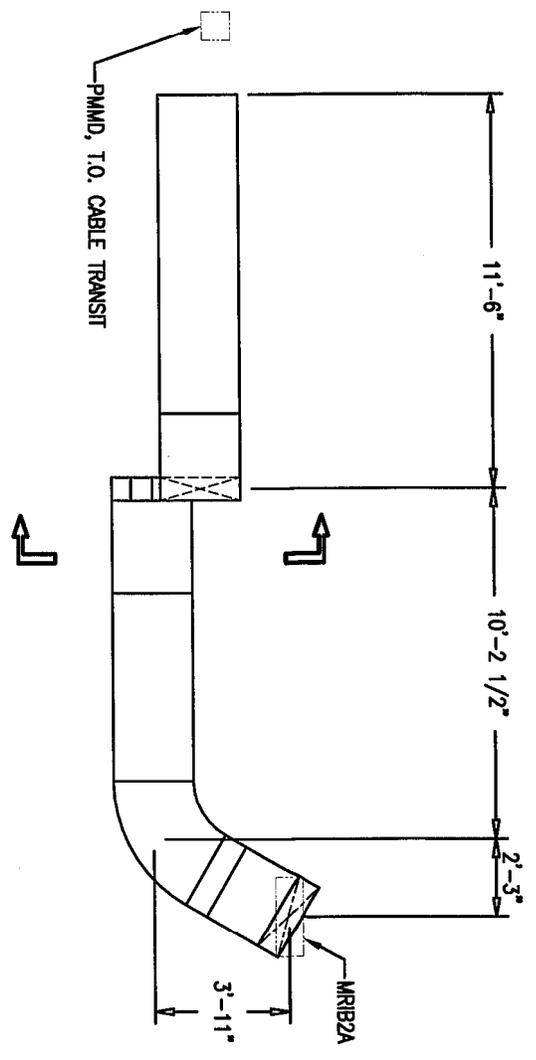


ISOMETRIC VIEW  
 MRIB-2A 1-3 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 14A

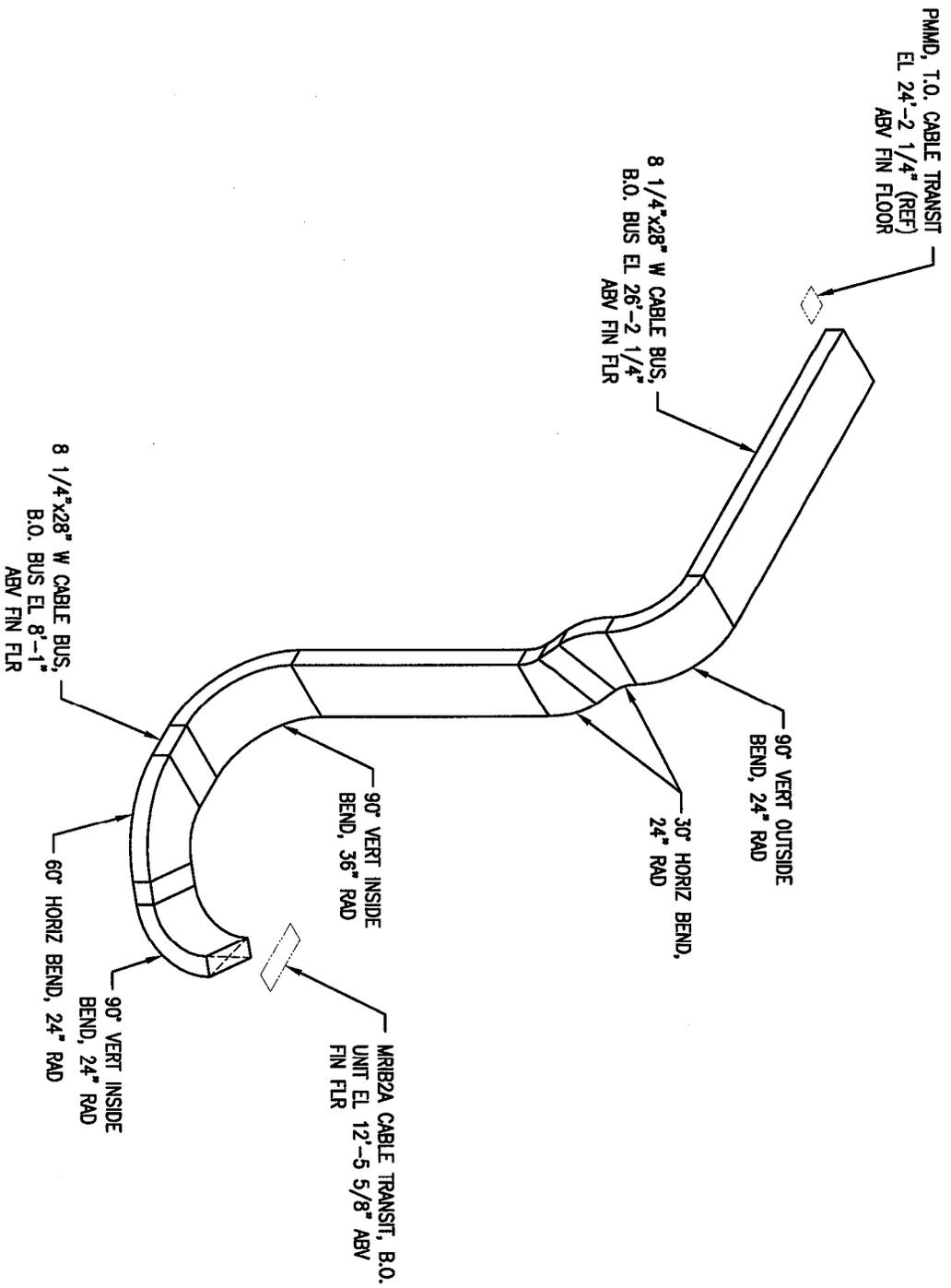


SECTION VIEW  
 MRIB-2A 1-3 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



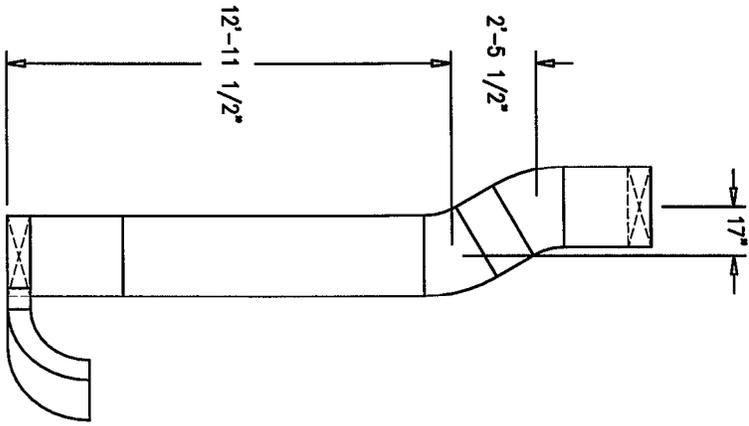
PLAN VIEW  
 MRIB-2A 1-3 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 14B

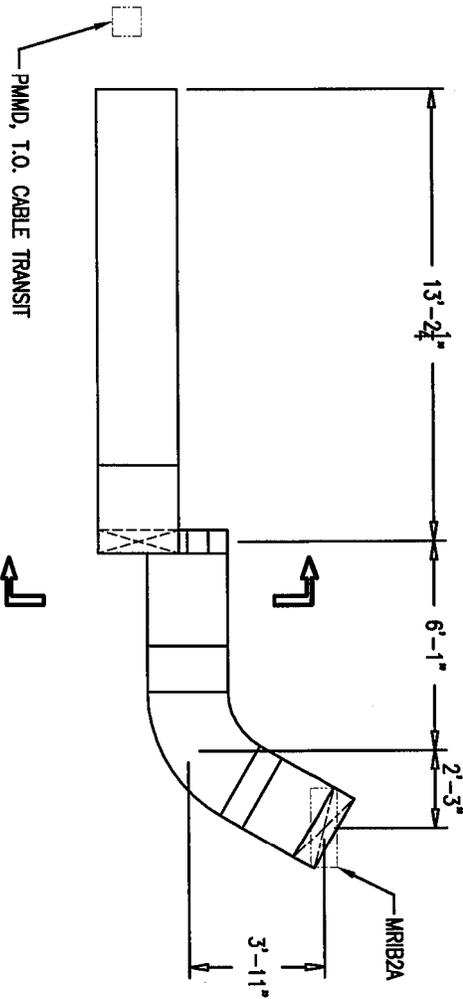


**ISOMETRIC VIEW**  
 MRIB-2A 4-6 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 14C



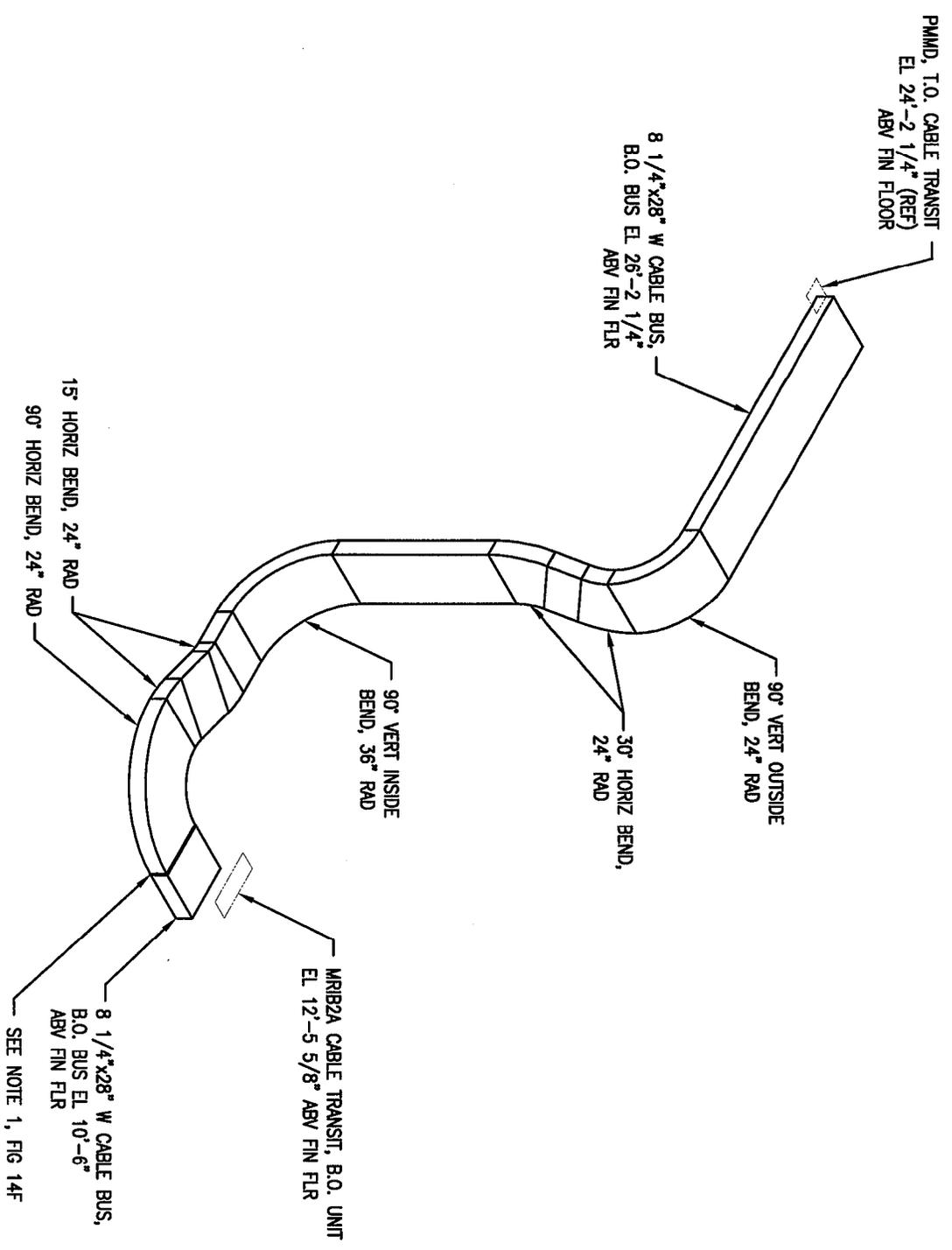
SECTION VIEW  
 MRIB-2A 4-6 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



PLAN VIEW  
 MRIB-2A 4-6 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"



FIGURE 14D

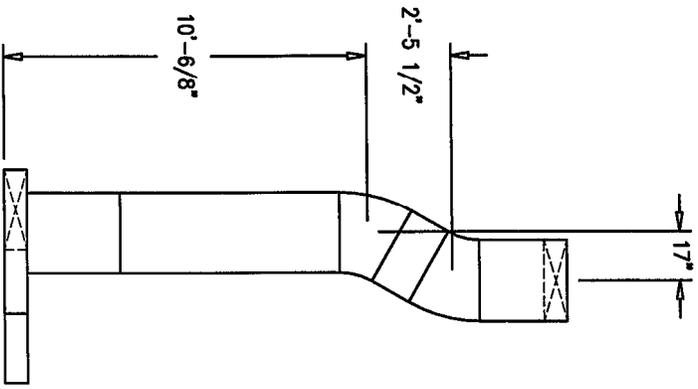


ISOMETRIC VIEW  
MRIB-2A 7-9 TO PMMD  
CABLE BUS RUN  
SCALE: NONE

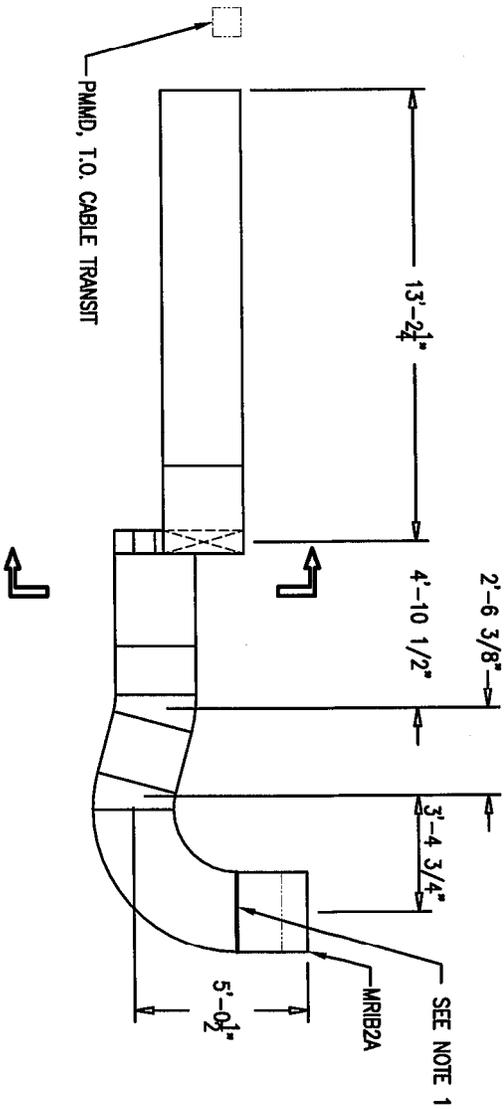
FIGURE 14E

NOTES

1. LAST CABLE BLOCK SUPPORT 18" FROM CABLE TRANSIT.

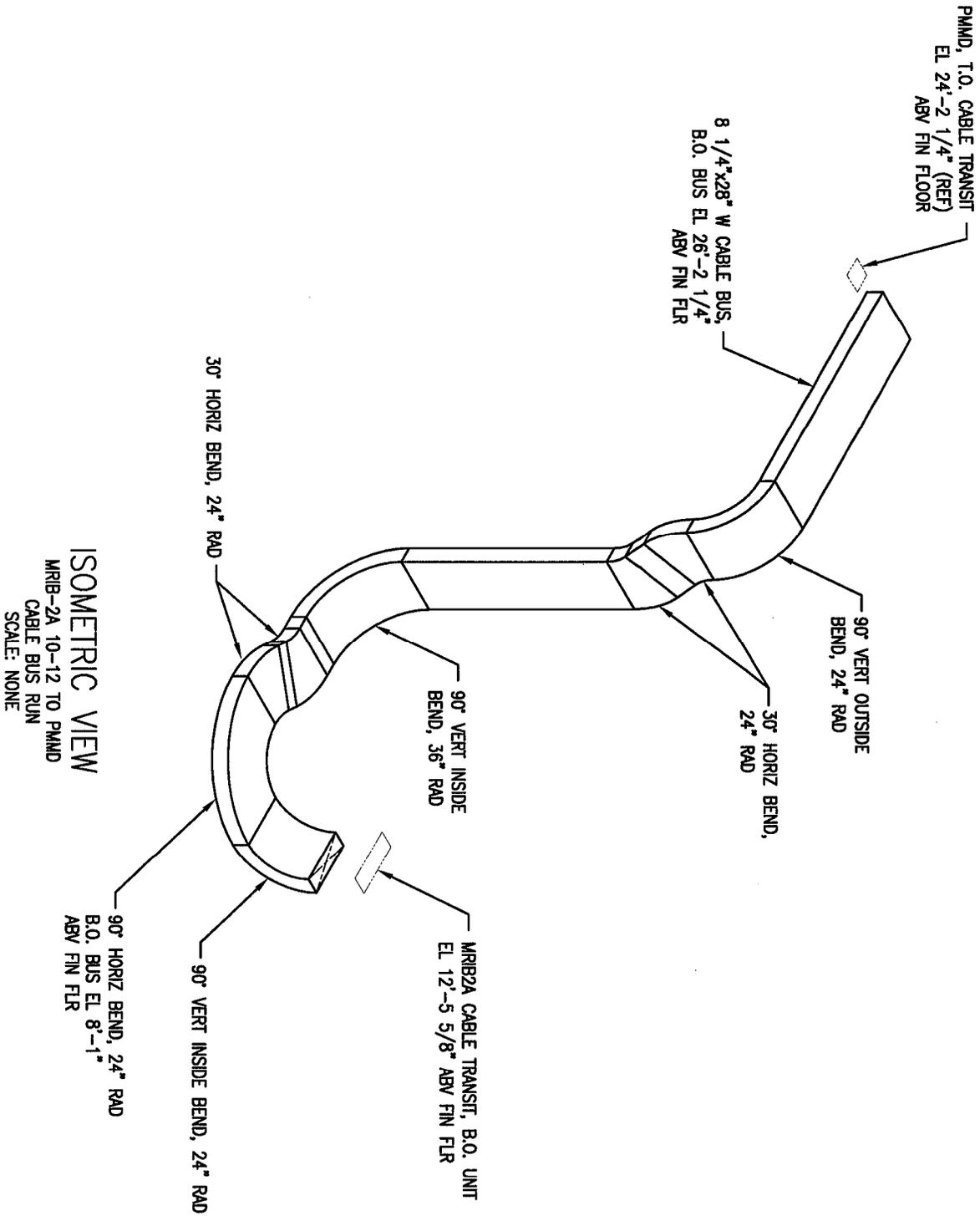


SECTION VIEW  
 MRIB-2A 7-9 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



PLAN VIEW  
 MRIB-2A 7-9 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 14F



**ISOMETRIC VIEW**  
 MRIB-2A, 10-12 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE



FIGURE 14G

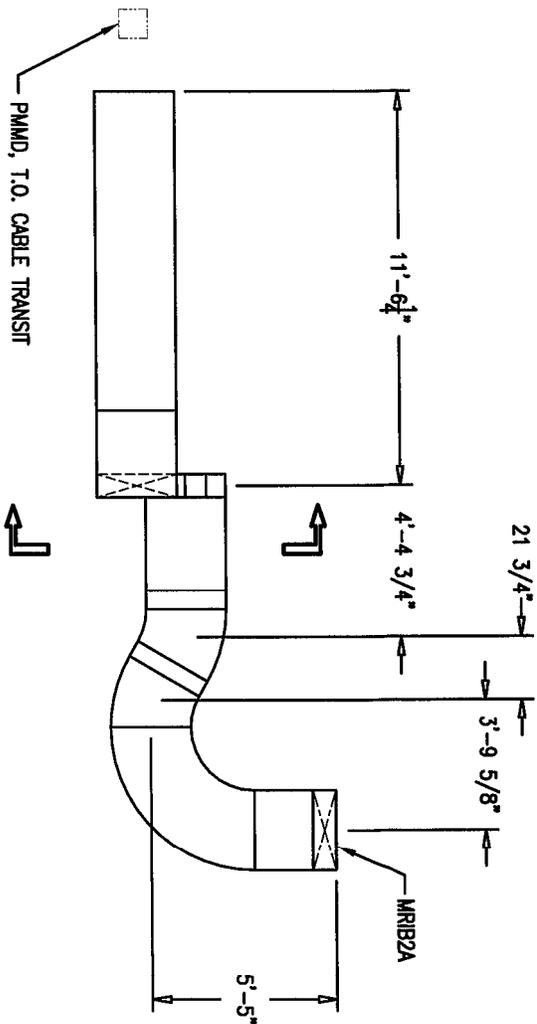
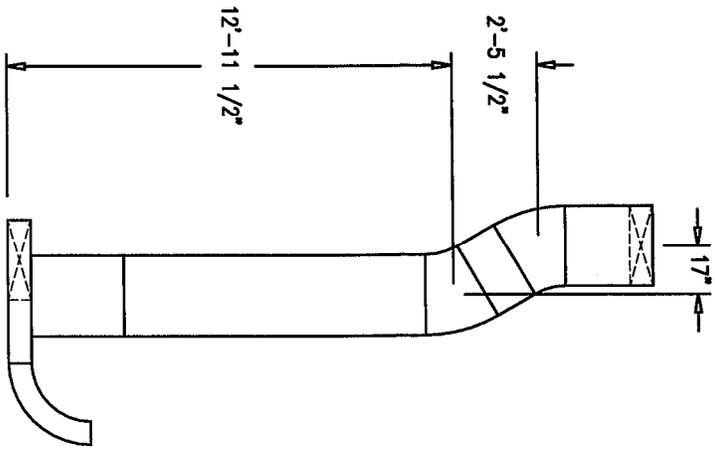
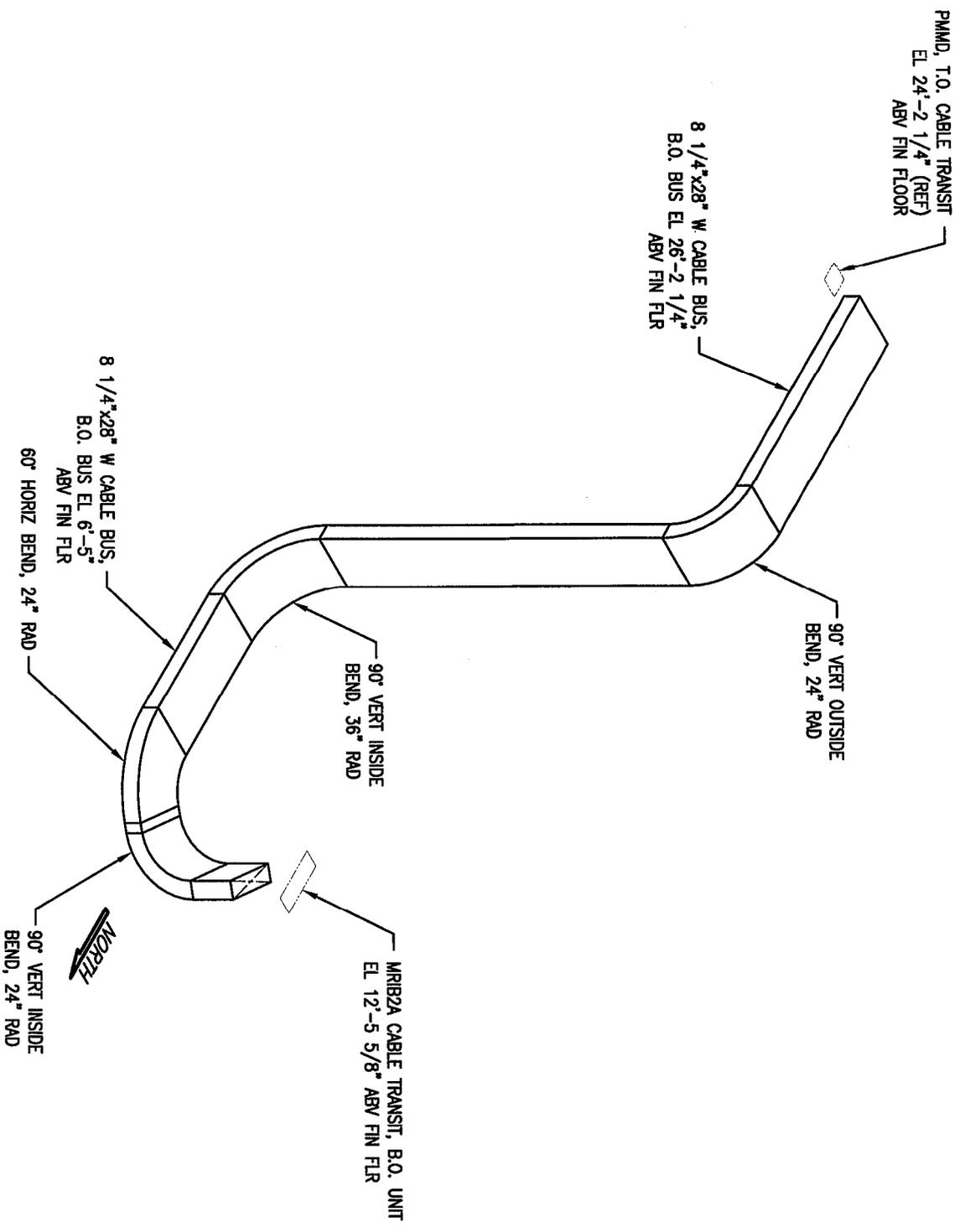
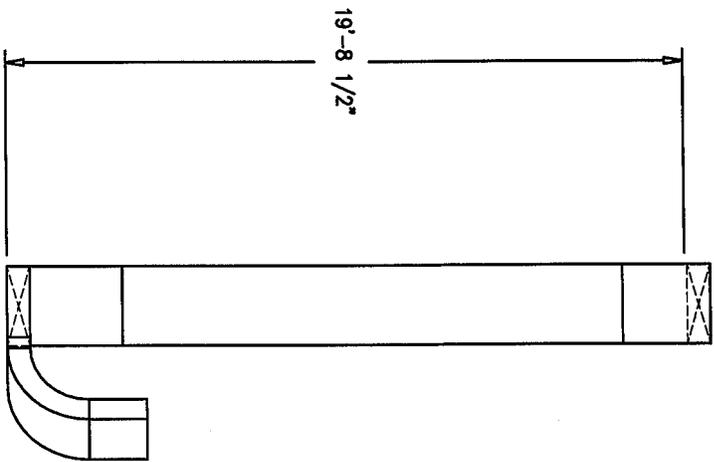


FIGURE 14H

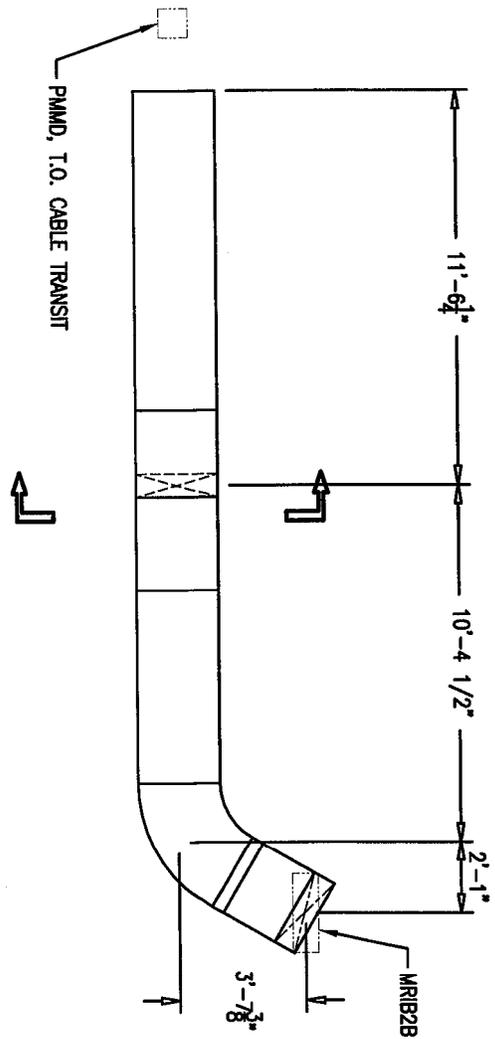


**ISOMETRIC VIEW**  
 MRIB-2B 1-3 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 15A

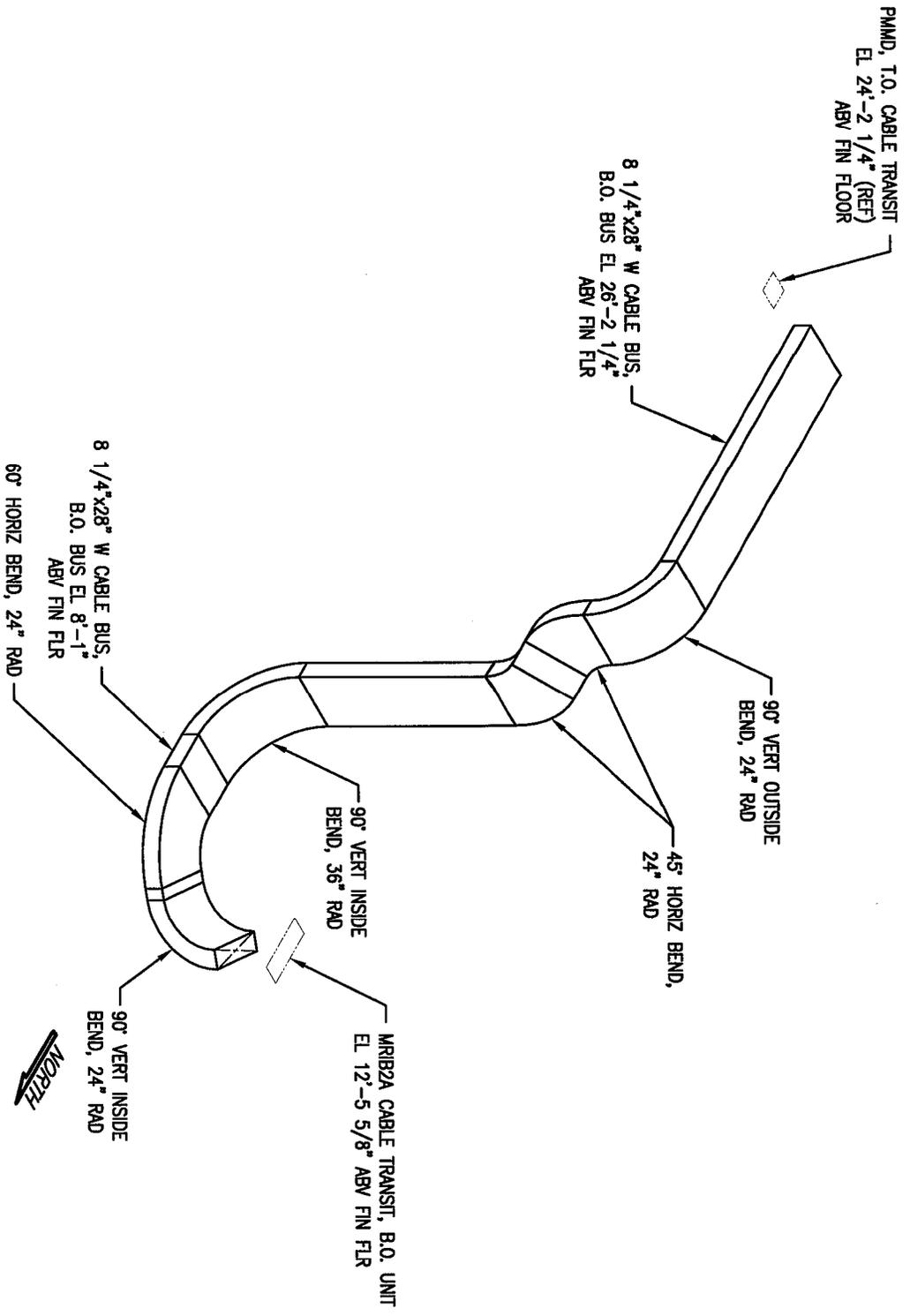


SECTION VIEW  
 MRB-2B 1-3 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



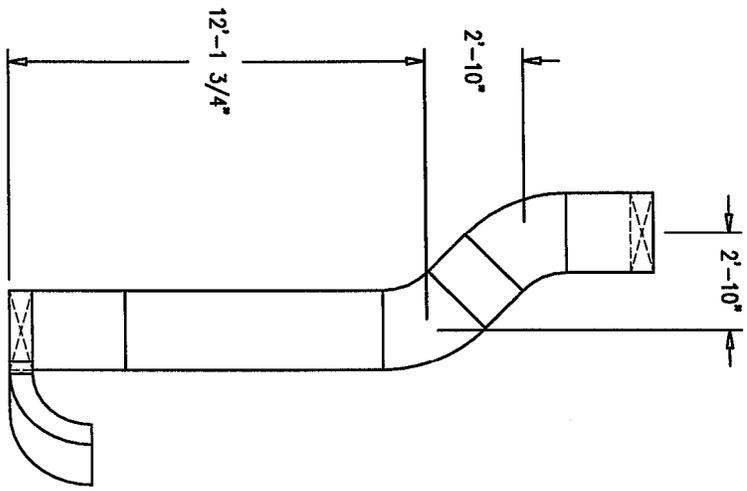
PLAN VIEW  
 MRB-2B 1-3 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 15B

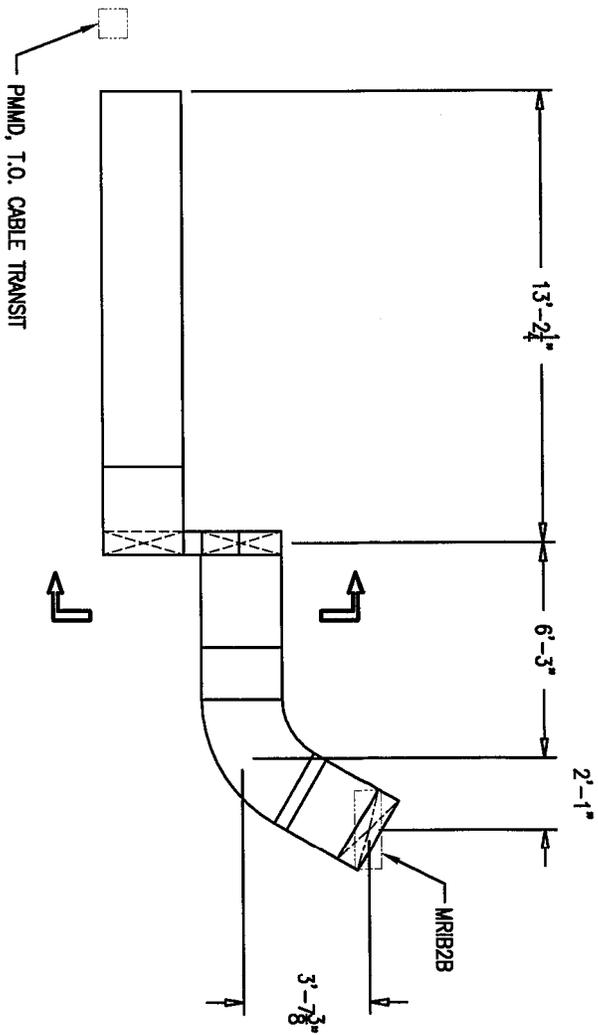


**ISOMETRIC VIEW**  
 MRIB-2B 4-6 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 15C

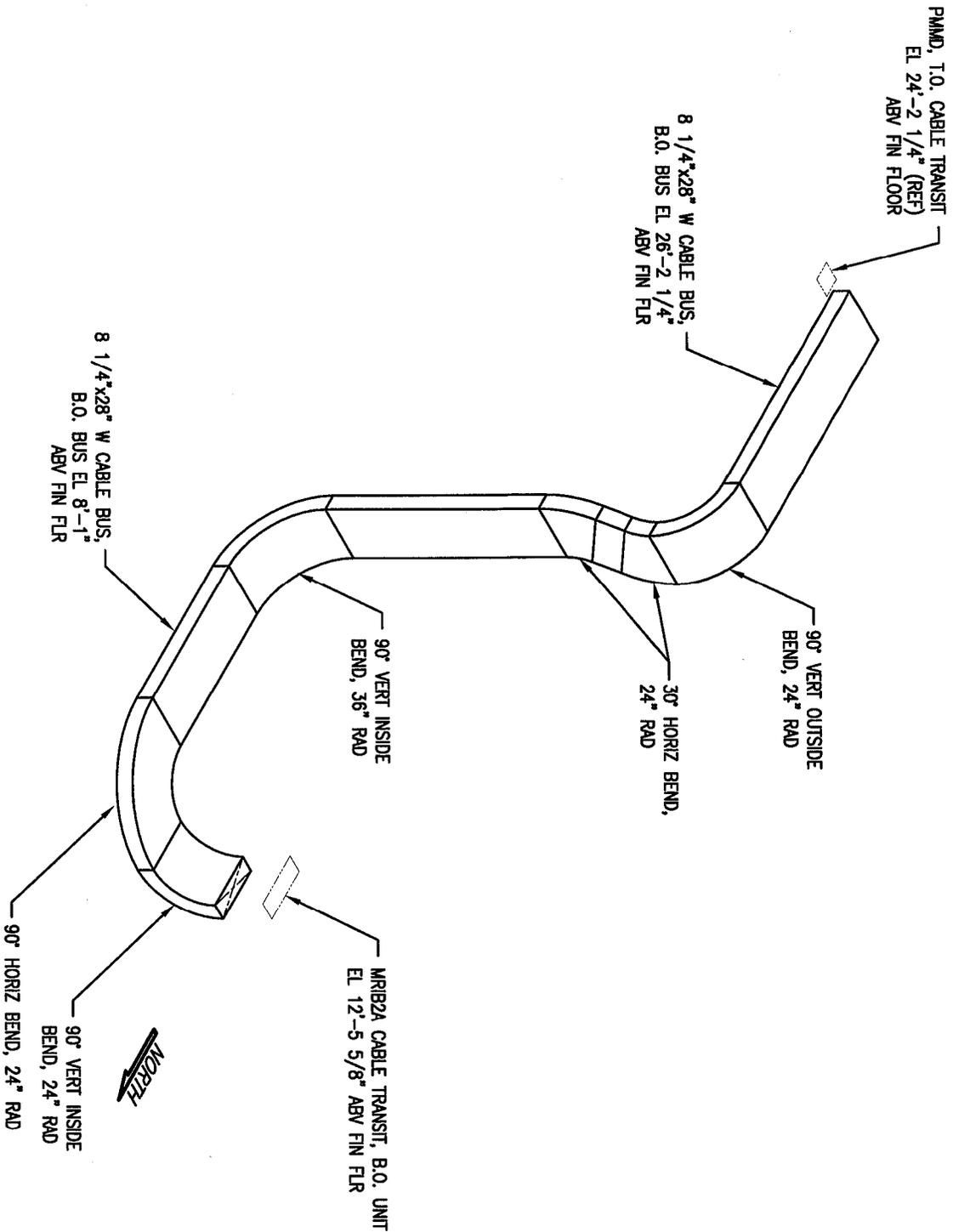


SECTION VIEW  
 MRIB-2B 4-6 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



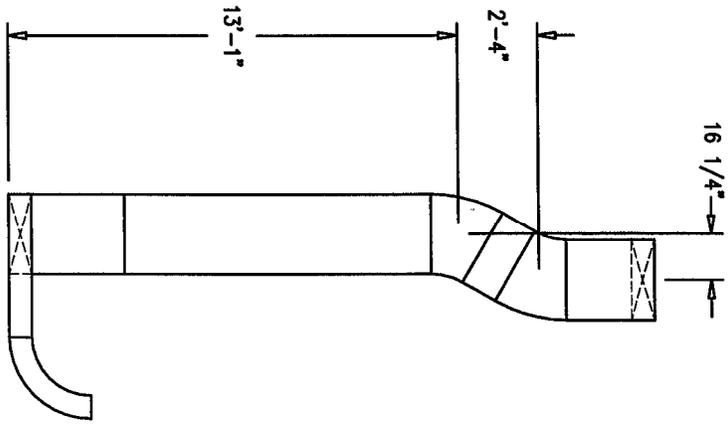
PLAN VIEW  
 MRIB-2B 4-6 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 15D

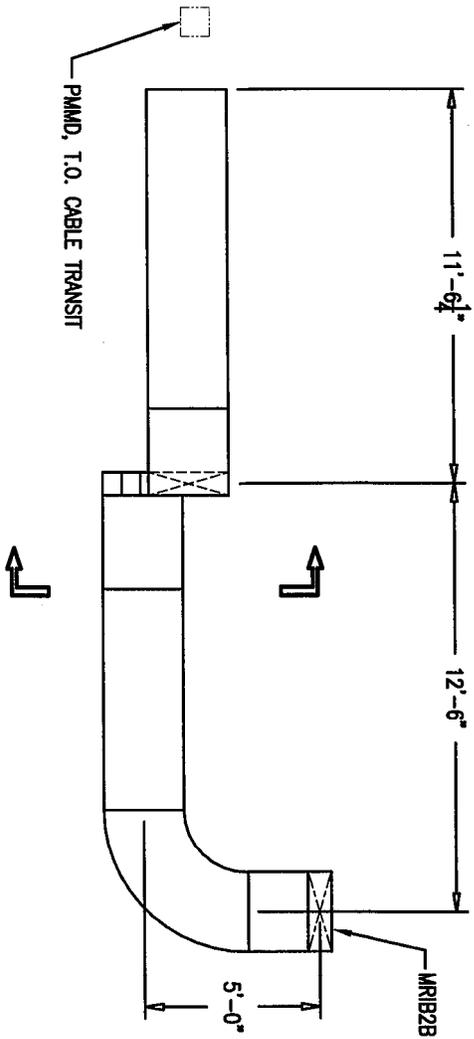


ISOMETRIC VIEW  
 MRIB-2B 7-9 TO PMMD  
 CABLE BUS RUN  
 SCALE: NONE

FIGURE 15E

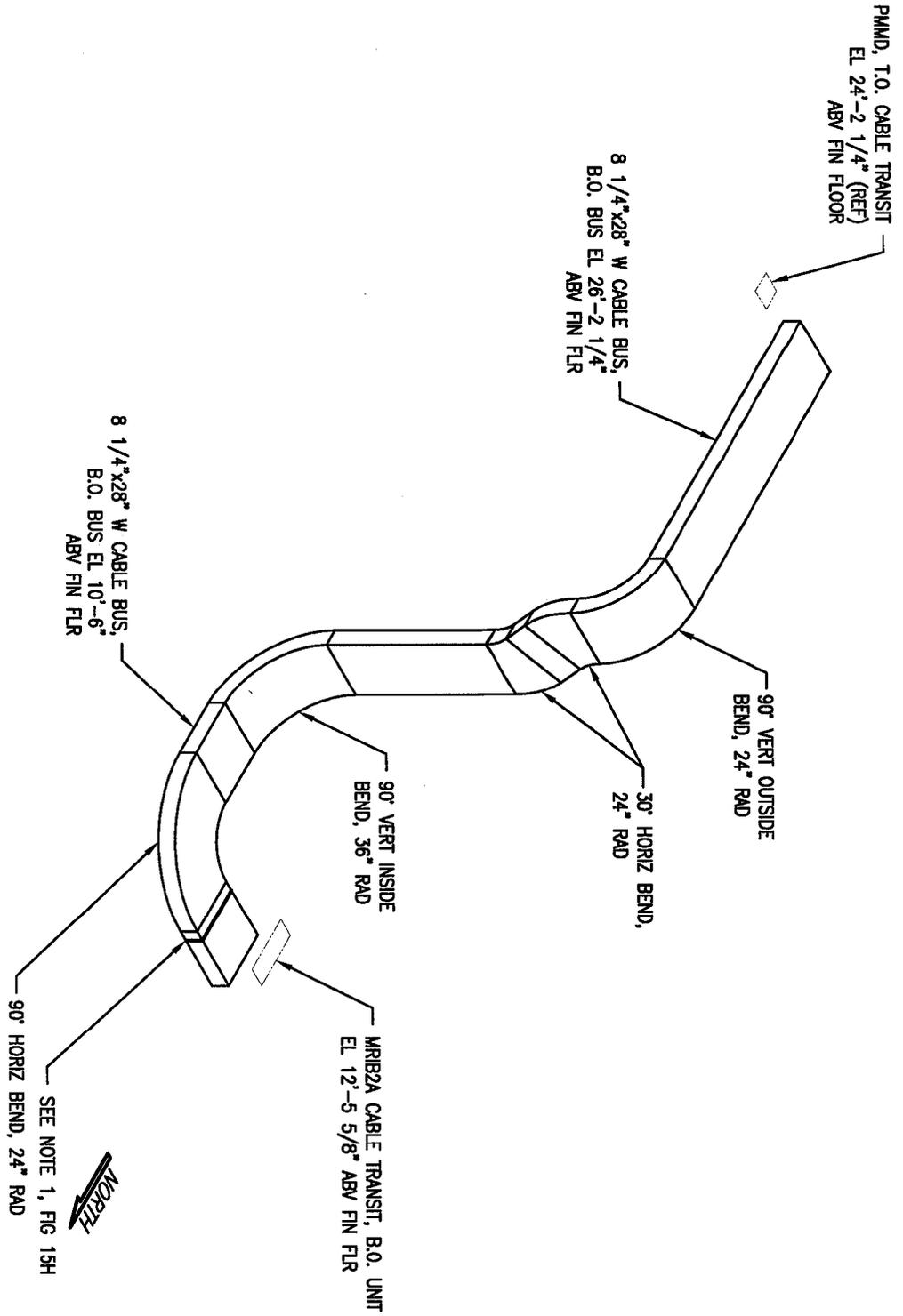


SECTION VIEW  
 MRIB-2B 7-9 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



PLAN VIEW  
 MRIB-2B 7-9 TO PMMD  
 CABLE BUS RUIN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 15F

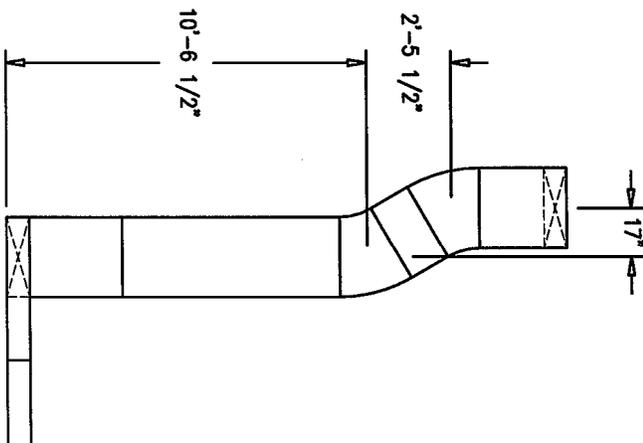


**ISOMETRIC VIEW**  
MIRIB-2B 10-12 TO PMMD  
CABLE BUS RUN  
SCALE: NONE

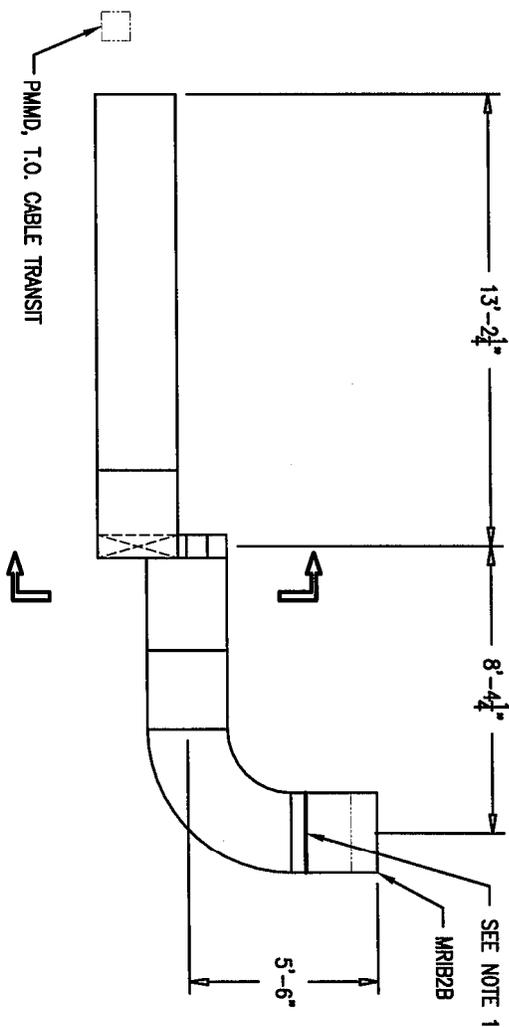
FIGURE 15G

NOTES

1. LAST CABLE BLOCK SUPPORT 18" FROM CABLE TRANSIT.



SECTION VIEW  
 MRIB-2B 10-12 TO PMMD  
 LOOKING SOUTH  
 SCALE: 3/16"=1'-0"



PLAN VIEW  
 MRIB-2B 10-12 TO PMMD  
 CABLE BUS RUN  
 SCALE: 3/16"=1'-0"  
 NORTH

FIGURE 15H