

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

BUT-4 13.85  
BUTLER COUNTY

OHIO

FHWA  
REGION 5

21

HES-8 (41)

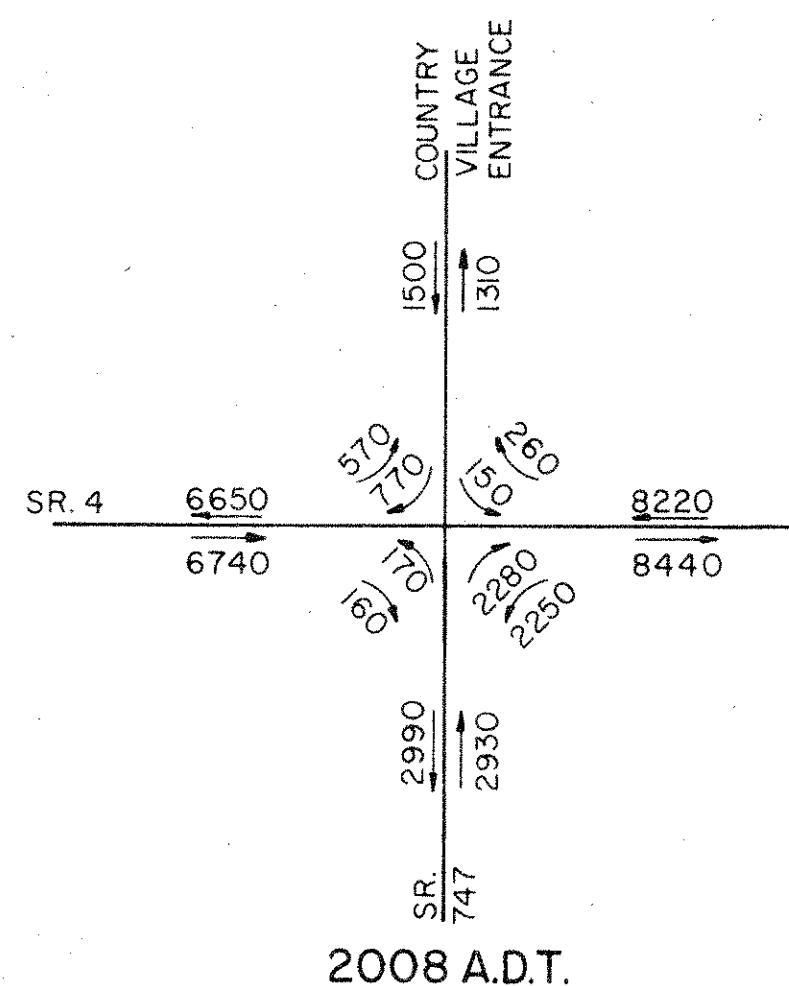
FEDERAL  
PROJECT

HES-8(41)

**BUT-4 - 13.85**  
BUTLER COUNTY  
LIBERTY TOWNSHIP

DESIGN DESIGNATION

Current A.D.T. (1988) ..... S.R.4= S.R.747=  
Design Year A.D.T. (2008) ..... S.R.4=16,660 S.R.747=5,920  
D.H.V. .... S.R.4= 1,333 S.R.747= 474  
D ..... 52 %  
T ..... 8 % (24 Hr.) 6 % (D)  
V (Design Speed) ..... 55 M.P.H.  
Legal Speed ..... 55 M.P.H.  
Functional Classification ..... Principal Arterial (Rural)  
K ..... 8 %



CONVENTIONAL SIGNS

- County Line -----
- Township Line -----
- Section Line -----
- Corporation Line ----- or -----
- Fence Line (existing) -x- (proposed) -x-
- Center Line -----
- Trees (to be removed) (to be removed)
- Utility Poles: Telephone  $\phi$ , Power  $\phi$ , Light  $\phi$
- Limited Access (only) ----- LA-----
- Right of Way (only) ----- RW-----
- Limited Access & Right of Way ----- LA & RW-----
- Existing Right of Way -----
- Property Line ----- (in existing fence) -x- -----
- Railroad ----- or -----
- Guardrail (existing) ----- (proposed) -----

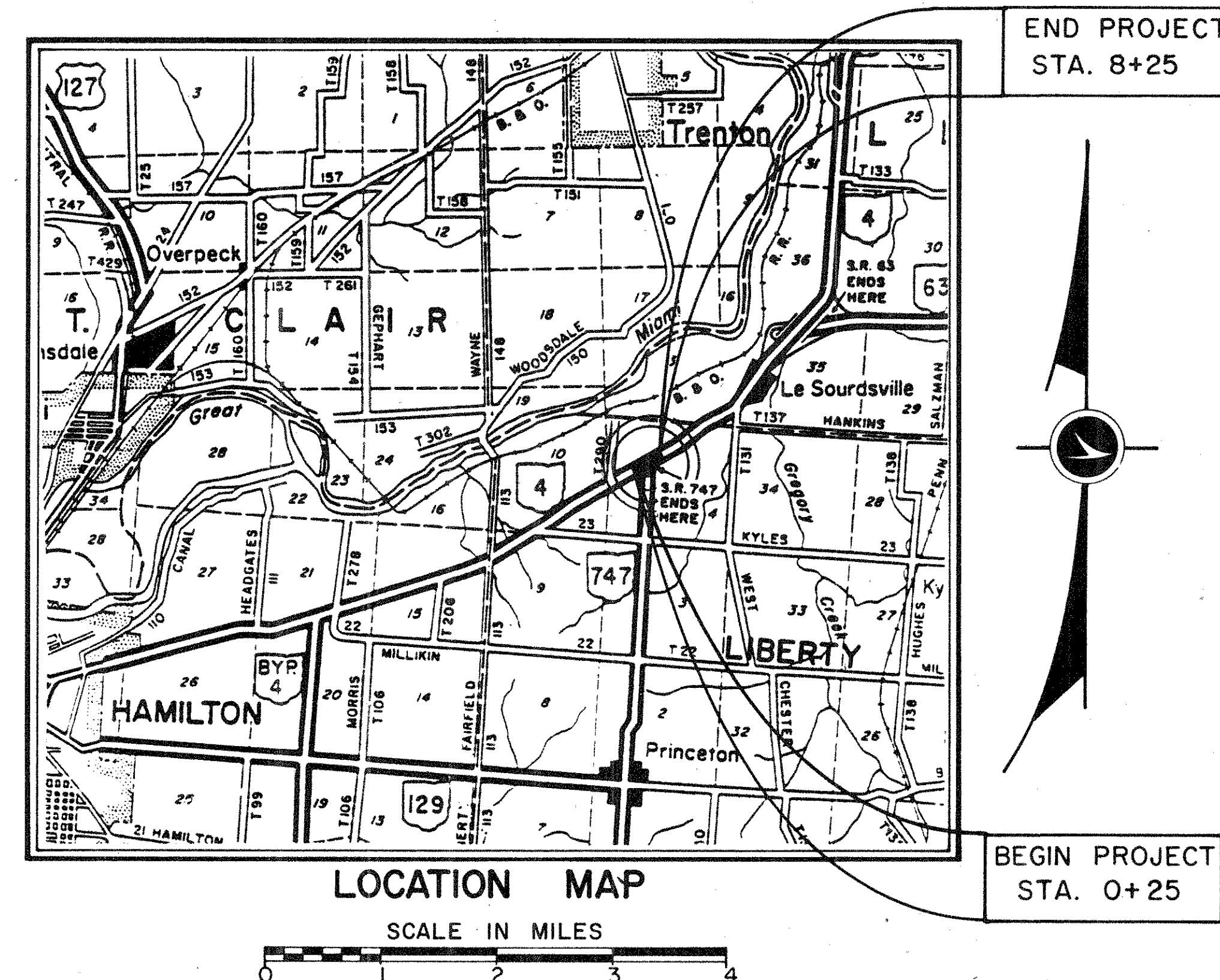
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- Maintenance of Traffic Details ..... 20-21

LINE DATA

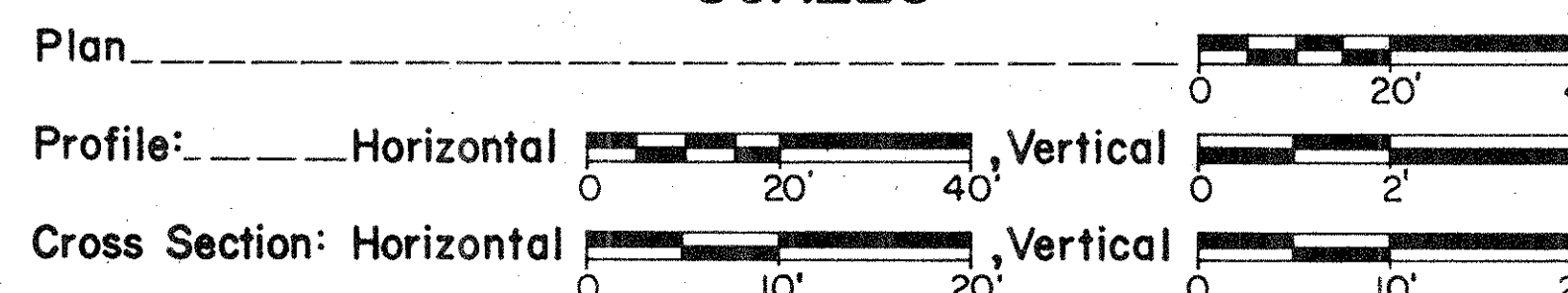
- Begin Project ..... Sta. 0+25
- End Project ..... Sta. 8+25
- Length of Project ..... 800.00 Lin. Ft. or 0.152 Miles
- Add For Approaches
- Station Equation Sta. 0+00 Ahead = Sta. 50+00 Back
- Sta. 45+15 To Sta. 0+25 ..... 510.00 Lin. Ft.
- Sta. 8+25 To Sta. 14+40 ..... 615.00 Lin. Ft.
- Length of Project ..... 1925.00 Lin. Ft. or 0.365 Miles

UNDERGROUND UTILITIES  
**TWO (2) WORKING DAYS BEFORE YOU DIG**  
Call 800-362-2764 (Toll free)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS MUST BE CALLED DIRECTLY



Portion to be improved -----  
State & Federal Routes -----  
Other Roads -----

SCALES



SUPPLEMENTAL SPECIFICATIONS	
847	10-17-83
947	10-17-83
802	5-4-88

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS					
BP-1	6-1-65	TC-41.20	3-26-79	TC-85.20	1-20-84
BP-5	10-1-87	TC-42.20	3-26-79	MT-99.10	11-14-86
BP-7	10-1-87	CB-2-2-A&B	5-1-79	TC-52.10	4-3-79
GR-1	1-11-85	CB-3-A	5-1-79	TC-52.20	4-3-79
GR-2B	2-5-82	CB-5	11-10-83	TC-71.10	4-9-79
GR-4	2-5-82	MH-1	12-18-84	TC-51.10	1-20-84
HL-30 II	5-1-87	MH-3	12-18-84	TC-51.11	1-20-84
I-2	12-18-84			TC-81.10	1-20-84
MC-4	7-26-76	TC-21.20	1-20-84	TC-82.10	8-29-84
MC-6	1-30-84	TC-35.10	8-29-84	TC-83.10	1-20-84
MC-11	8-1-78	TC-41.10	8-29-84	TC-83.20	1-20-84
				TC-84.20	1-20-84

1989 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved *John Wallace*  
Date 4-28-89 District Deputy Director of Transportation

Approved \_\_\_\_\_  
Date \_\_\_\_\_ Engineer, Bureau of Bridges and Structural Design

Approved \_\_\_\_\_  
Date \_\_\_\_\_ Deputy Director, Operations

Approved \_\_\_\_\_  
Date \_\_\_\_\_ Director, Department of Transportation

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
APPROVED: \_\_\_\_\_  
DIVISION ADMINISTRATOR DATE

Plan Prepared By:  
**SHAW, WEISS & DE NAPLES**  
Consulting Engineers

SEAL

Project: \_\_\_\_\_  
Date of Letting: \_\_\_\_\_ 19\_\_\_\_, Contract No. \_\_\_\_\_  
LD0300 Rev. 1-1-81

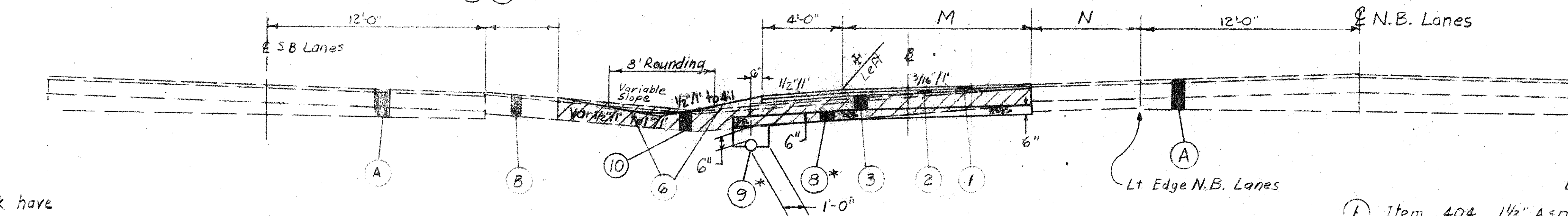
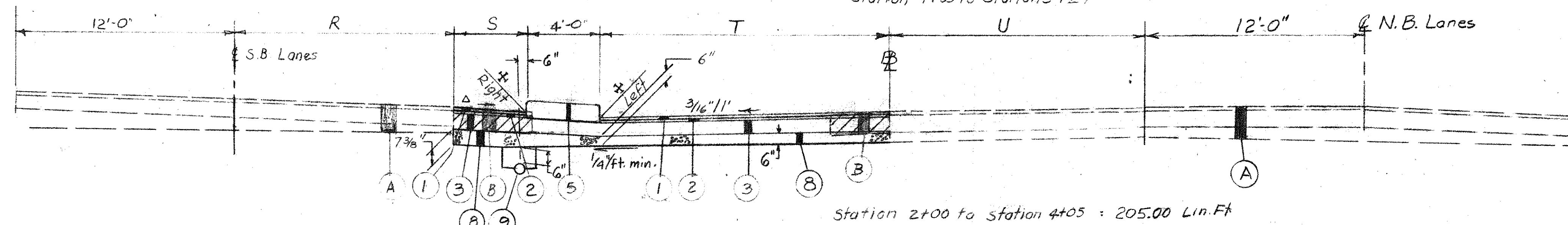
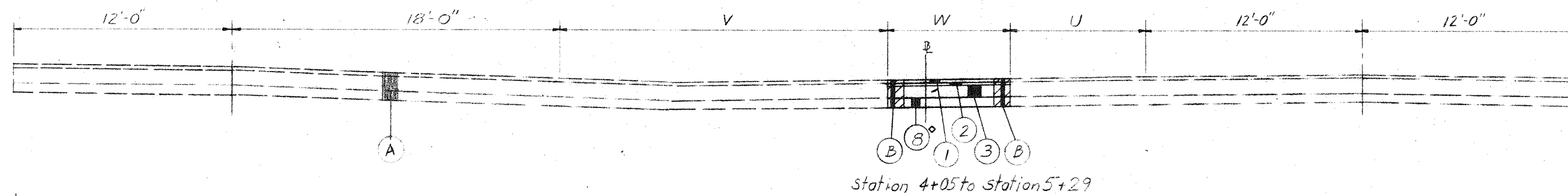
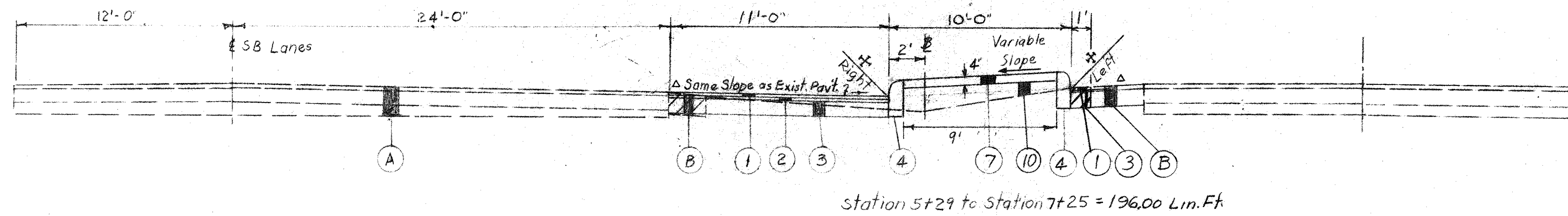
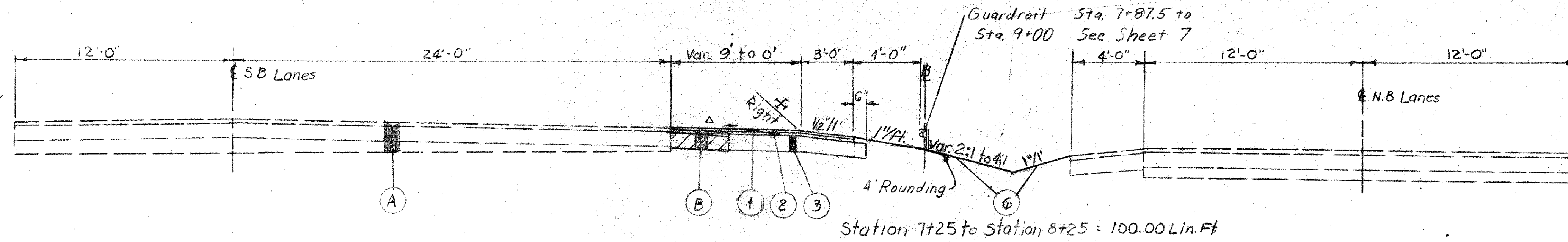
*But-4-13.85*

# TYPICAL SECTIONS

TYPE 404 ON 301

FHWA REGION	STATE	PROJECT
5	OHIO	

BUT-4-13.85  
BUTLER COUNTY



M = Varies 0' to 10'-6" Sta. 0+25 to 1+20	M = 10'-6" Sta. 1+20 to 2+00
N = 0' Sta. 0+25 to 1+20	N = Varies 0' to 8'-9" Sta. 1+20 to 2+00
R = 12'-0" Sta. 2+00 to 3+25	R = Varies 12'-0" to 18'-0" Sta. 3+25 to 4+05
S = Varies 13'-0" to 4'-0" Sta. 2+00 to 2+70	S = 4'-0" Sta. 2+70 to 3+25
S = Varies 4'-0" to 1'-0" Sta. 3+25 to 3+65	S = 1'-0" Sta. 3+65 to 4+05
T = 10'-6" Sta. 2+00 to 2+15	T = Varies 10'-6" to 17'-0" Sta. 2+15 to 2+70
T = 17'-0" Sta. 2+70 to 4+05	
U = Varies 8'-9" to 10'-0" Sta. 2+00 to 2+15	U = 10'-0" Sta. 2+15 to 5+15
U = Varies 10'-0" to 1'-6" Sta. 5+15 to 5+29	
V = Varies 0' to 20'-0" Sta. 4+05 to 4+34	V = 20'-0" Sta. 4+34 to 5+15
V = Varies 20'-0" to 7'-0" Sta. 5+15 to 5+29	
W = Varies 20'-0" to 0' Sta. 4+05 to 4+34	W = 0' Sta. 4+34 to 5+15
W = Varies 0' to 22'-0" Sta. 5+15 to 5+29	

NOTE: Dimensions shown for Proposed Work have been referenced to existing centerlines as shown.

For Reference Information:

Sta. 0+25 to 2+70,  $\mathcal{B}$  to  $\mathcal{E}$  N.B. Lanes: Varies 28'-6" to 22'-0"  
 Sta. 2+70 to 4+05,  $\mathcal{B}$  to  $\mathcal{E}$  N.B. Lanes: 22'-0"  
 Sta. 5+29 to 8+25,  $\mathcal{B}$  to  $\mathcal{E}$  S.B. Lanes: 37'-0"

- LEGEND
- ① Item 404 1/2" Asphalt Concrete, AC-20
  - ② Item 402 2" Asphalt Concrete, AC-20
  - ③ Item 301 8" Bituminous Aggregate Base, AC-20
  - ④ Item 609 Curb, Type 6
  - ⑤ Item 612 Concrete Median
  - ⑥ Item 659 Seeding and Mulching (See General Note)
  - ⑦ Item 608 4" Concrete Walk
  - ⑧ Item 310 Subbase, Type I, Grading A, (6" Min. Thickness), As per plan.
  - ⑨ Item 605 4" Shallow Pipe Underdrain, As per plan.
  - ⑩ Item 203 Variable Thickness Embankment
  - \* Begins at Sta. 1+50
  - o Ends at Sta. 4+34
  - △ Same Slope as Existing Pavement
  - ⊕ Elevations shown on Profile
  - Existing Flexible Pavement Removal
  - Existing Pavement: 3" Asphalt on 9" Portland Cement Concrete on 6" Subbase
  - Existing Berm and Cross-overs: 3" Asphalt on Variable Subbase

# GENERAL NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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BUTLER COUNTY

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 300 SQ. FEET OF FLOOR SPACE. PAYMENT SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 619 -- FIELD OFFICE.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 ORC.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THE PROJECT:

TRAFFIC CONTROL: OHIO DEPT. OF TRANSPORTATION  
P.O. BOX 272  
LEBANON, OHIO 45036  
(513) 932-3030

GAS & ELECTRIC: THE CINCINNATI GAS AND ELECTRIC COMPANY  
FOURTH AND MAIN STREETS  
P.O. BOX 960  
CINCINNATI, OHIO 45202  
(513) 632-3636 (GAS)  
(513) 632-3792 (ELECTRIC)

TELEPHONE: CINCINNATI BELL TELEPHONE  
P.O. BOX 2301  
CINCINNATI, OHIO 45201  
(513) 397-9900

WATER: BUTLER COUNTY WATER & SANITARY DEPT.  
130 HIGH STREET  
HAMILTON, OHIO 45011  
(513) 867-5757

NOTE: CALL BEFORE YOU DIG OR DRILL UNDERGROUND:  
OHIO UTILITY PROTECTION SERVICE  
1-800-362-2764

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

LOCATION OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

GUARDRAIL REPLACEMENT

NO HAZARD SHALL BE LEFT UNPROTECTED EXCEPT FOR THE ACTUAL TIME NECESSARY TO REMOVE, GRADE AND REINSTALL GUARDRAIL IN A CONTINUOUS OPERATION. THE REMOVAL OF ALL GUARDRAIL SHALL AT ALL TIMES BE AS DIRECTED BY THE ENGINEER. NO GUARDRAIL SHALL BE REMOVED UNTIL THE REPLACEMENT MATERIAL IS ON THE SITE, READY FOR INSTALLATION. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE DEEMED SUFFICIENT CAUSE TO ORDER WORK SUSPENDED ON THIS PROJECT UNTIL SUCH TIME THAT THE ENGINEER IS ASSURED OF SAID COMPLIANCE.

ELEVATION DATUM: ALL ELEVATIONS ARE BASED ON USGS DATA.

CATCH BASINS REMOVED OR ABANDONED

THE CASTINGS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT-OF-WAY FOR SALVAGE BY STATE FORCES.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 202 ITEM.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES AND/OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THIS PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201. CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201. CLEARING AND GRUBBING.

ITEM 310 -- SUBBASE, AS PER PLAN

MATERIALS FURNISHED FOR THIS ITEM SHALL EXCLUDE ALL SLAG EXCEPT GRANULATED SLAG OR CRUSHED AIR-COOLED BLAST FURNACE SLAG.

ITEM 410 -- TRAFFIC COMPACTED SURFACE, AS PER PLAN

THIS ITEM SHALL CONFORM TO THE REQUIREMENTS OF ITEM 410 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, EXCEPT THAT THE MATERIAL USED SHALL BE AS DEFINED UNDER SECTION 304.02.

1405.510 -- SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN TEN (10) FEET OUTSIDE THE WORK LIMITS, AS SHOWN ON THE CROSS SECTIONS, OR TO THE RIGHT-OF-WAY LINE, IF SUCH LINE IS LESS THAN TEN (10) FEET FROM THE WORK LIMITS.

WATERING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09:

ITEM 659 WATER 2 M GALS.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

ITEM 207 STRAW OR HAY BALES 100 EACH

CONNECTION TO EXISTING PIPE

WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS TO LAY THE PROPOSED CONDUIT.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 603 CONDUIT ITEMS.

ITEM 604 -- INLETS, AS PER PLAN

ALL REQUIRED REINFORCING STEEL AS LISTED ON THE STANDARD CONSTRUCTION DRAWINGS SHALL BE EPOXY-COATED IN ACCORDANCE WITH ITEM 509.10. ADDITIONAL PRECAST-REQUIRED REINFORCEMENT ARE NOT SUBJECT TO THIS REQUIREMENT. ALL COSTS OF THIS TREATMENT SHALL BE INCLUDED IN THE COST OF THIS ITEM.

ITEM 605 -- PIPE UNDERDRAINS, AS PER PLAN

ALL GRANULAR FILTER MATERIALS FOR THIS ITEM SHALL BE LIMITED TO DURABLE NATURAL AGGREGATES, NO. 8 OR NO. 9 SIZE.

TRENCH FOR WIDENING

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OR BARRICADES AT ALL TIMES.

PLACEMENT OF PROPOSED SUBBASE AND/OR BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND THE EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

ITEM 614 -- MAINTAINING TRAFFIC

GENERAL

IT IS THE INTENTION TO PERFORM THE REQUIRED WORK WITH THE LEAST INCONVENIENCE TO, AND THE MAXIMUM SAFETY OF, THE TRAVELING PUBLIC AND THE CONTRACTOR. ANY VARIANCES FROM THESE MAINTENANCE OF TRAFFIC NOTES MUST BE APPROVED IN ADVANCE IN WRITING BY THE DIRECTOR. IN ADDITION TO THE REQUIREMENTS FOR MAINTAINING TRAFFIC AS INDICATED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", CURRENT EDITION, AND PERTINENT ITEMS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE FOLLOWING REQUIREMENTS SHALL APPLY.

BEFORE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF A PERSON OR PERSONS WHO CAN BE CONTACTED 24 HOURS A DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION AND ALL INTERESTED POLICE AGENCIES. THIS PERSON OR PERSONS SHALL BE RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES TO MAINTAIN THE TRAVELED PAVEMENT SAFELY.

ALL TRAFFIC CONTROL DEVICES, INCLUDING PAVEMENT MARKINGS, REQUIRED BY THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", WHETHER INSIDE OR OUTSIDE THE WORK LIMITS SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION AND SHALL BE PROPERLY MAINTAINED AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER.

PLACEMENT OF ALL TRAFFIC CONTROL DEVICES SHALL START AND PROCEED IN THE DIRECTION OF THE FLOW OF TRAFFIC. REMOVAL OF TRAFFIC CONTROL DEVICES SHALL START AT THE END OF THE CONSTRUCTION AREA AND PROCEED TOWARD ONCOMING TRAFFIC.

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY THE USE OF THE EXISTING PAVEMENT, PROPOSED PAVEMENTS, AND TEMPORARY PAVEMENT USING ITEM 410 - TRAFFIC COMPACTED SURFACE, AS PER PLAN AND STABILIZED WITH ITEM 616 - CALCIUM CHLORIDE.

IT IS NOT INTENDED THAT THE TEMPORARY PAVEMENT BE USED EXCLUSIVELY FOR MAINTAINING TRAFFIC ON THIS PROJECT, BUT THAT MAXIMUM USAGE BE MADE OF THE EXISTING AND COMPLETED PAVEMENTS.

THE LIMITS AND DURATION OF TEMPORARY PAVEMENT SHALL BE HELD TO AN ABSOLUTE MINIMUM AND IN ALL CASES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE EXISTING FLASHING BEACONS SHALL BE MAINTAINED UNTIL THE NEW SIGNAL INSTALLATION IS OPERATIONAL.

STATE ROUTE 4 TRAFFIC

AT LEAST ONE THROUGH/RIGHT LANE IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES ALONG STATE ROUTE 4. ONE LEFT TURN LANE IN EACH DIRECTION SHALL ALSO BE PROVIDED AT THE EXISTING INTERSECTION. MINIMUM LANE WIDTH SHALL BE TEN (10) FEET.

LANE CLOSURES AND MAINTENANCE OF TRAFFIC OPERATIONS SHALL BE IN ACCORDANCE WITH PLATES C-10, C-12 AND C-21 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THESE DETAILS ARE INCLUDED AS PLAN SHEETS 4 AND 5.

STATE ROUTE 747 TRAFFIC

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON THE EXISTING PAVEMENT OF STATE ROUTE 747.

ESTIMATED QUANTITIES

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR MAINTENANCE OF TRAFFIC AND DUST CONTROL AS DIRECTED BY THE ENGINEER:

ITEM 404 BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	20 CU. YD.
ITEM 410 TRAFFIC COMPACTED SURFACE, AS PER PLAN	50 TON
ITEM 614 TEMPORARY LANE LINES, CLASS II	0.50 MILE
ITEM 614 TEMPORARY CHANNELIZING LINES, CLASS I	200 LIN. FT.
ITEM 614 TEMPORARY EDGE LINES, CLASS I	0.50 MILE
ITEM 614 TEMPORARY LANE ARROWS, CLASS I	2 EACH
ITEM 616 CALCIUM CHLORIDE	1 TON
ITEM 616 WATER	1 M GAL.

PAYMENT

PAYMENT FOR ALL OF THE ABOVE EXCEPT ITEMS DESIGNATED AS 404, 410, 616 AND 614 (TEMPORARY PAVEMENT MARKINGS) SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 -- MAINTAINING TRAFFIC.

BUT-4-13.85  
BUTLER COUNTY

ITEM 203 SUBGRADE COMPACTION		
From Typical Section	Sta. 0+25 to Sta. 2+00 =	175.00 L.F.
	Sta. 0+25 to 1+20 = $95.00 \times \frac{4.0+14.5}{2} + 95.00 \times 1.5 \div 9$	= 113.47 sy
	Sta. 1+20 to 2+00 = $80.00 \times 14.5 + 80.00 \times 1.5 \div 9$	= 143.39 sy
From Typical Section	Sta. 2+00 to Sta. 4+05 =	225.00 L.F.
	Sta. 2+00 to 2+15 = $15.00 \times \frac{23.5+21.5}{2} \div 9$	= 37.56 sy
	Sta. 2+15 to 2+70 = $55.00 \times \frac{21.5+21.00}{2} \div 9$	= 130.08 sy
	Sta. 2+70 to 3+25 = $55.00 \times 21.00 \div 9$	= 128.33 sy
	Sta. 3+25 to 3+65 = $40.00 \times \frac{21.00+18.00}{2} \div 9$	= 86.67 sy
	Sta. 3+65 to 4+05 = $40.00 \times 18.00 + 20.5 \times 1.0 \div 9$	= 82.28 sy
From Typical Section	Sta. 5+29 to Sta. 7+25 =	196.00 L.F.
	Sta. 5+29 to 7+25 = $196.00 \times 12.0 + 2 \times 1.5 \times 196.00 \div 9$	= 326.67 sy
	Add for intersection Sta. 4+05 to Sta. 5+29 (Also includes fillet areas at median noses):	
	By planimeter: 1080 sq. ft. $\div 9$	= 120.00 sy
From Typical Section	Sta. 7+25 to Sta. 8+25 =	100.00 L.F.
	Sta. 7+25 to 8+25 = $100.00 \times \frac{12.0+13.00}{2} + 1.5 \times 100.00 \div 9$	= 100.00 sy
TOTAL TO GENERAL SUMMARY		1,268 sy

CALCULATIONS		
ITEM 404 ASPHALT CONCRETE AC-20		
From Typical Section	Sta. 0+25 to Sta. 2+00 =	175.00 L.F.
	Sta. 0+25 to 1+20 = $95.00 \times \frac{4.0+14.5}{2} \times .125 \div 27$	4.07 C.Y.
	Sta. 1+20 to 2+00 = $80.00 \times 14.5 \times .125 \div 27$	5.37 C.Y.
From Typical Section	Sta. 2+00 to Sta. 4+05 =	225.00 L.F.
	Sta. 2+00 to 2+15 = $15.00 \times \frac{23.5+21.5}{2} \times .125 \div 27$	1.56 C.Y.
	Sta. 2+15 to 2+70 = $55.00 \times \frac{21.5+21.00}{2} \times .125 \div 27$	5.42 C.Y.
	Sta. 2+70 to 3+25 = $55 \times 21 \times .125 \div 27$	5.35 C.Y.
	Sta. 3+25 to 3+65 = $40 \times \frac{21+18}{2} \times .125 \div 27$	3.61 C.Y.
	Sta. 3+65 to 4+05 = $40 \times 18 \times .125 \div 27 + 20.5 \times 1 \times .125 \div 27$	3.43 C.Y.
From Typical Section	Sta. 5+29 to Sta. 7+25 =	196.00 L.F.
	Sta. 5+29 to 7+25 = $196 \times 12 \times .125 \div 27$	10.89 C.Y.
	Add for intersection Sta. 4+05 to Sta. 5+29 (Also includes fillet areas at median noses):	
	By planimeter: 1080 sq. ft. $\times .125 \div 27$	5.00 C.Y.
From Typical Section	Sta. 7+25 to Sta. 8+25 =	100.00 L.F.
	Sta. 7+25 to 8+25 = $100.00 \times \frac{12+13}{2} \times .125 \div 27$	3.47 C.Y.
TOTAL TO GENERAL SUMMARY		48 C.Y.

ITEM 402 ASPHALT CONCRETE AC-20		
From Item 404 Asphalt Concrete AC-20, Total: 48 C.Y.		
$48 \times 27 \div .125 = 10368$ S.F. (Deduct 1'-0" Strip Sta. 5+29 to 7+25 = 196 SF.)		
$(10368 - 196) \times .167 \div 27 = 63$ C.Y.		
TOTAL TO GENERAL SUMMARY		63 C.Y.

ITEM 301 BITUMINOUS AGGREGATE BASE, AC-20		
From Typical Section	Sta. 0+25 to 2+00 =	175.00 L.F.
	Sta. 0+25 to 1+20 = $95.00 \times \frac{4.0+14.5}{2} \times .6667 \div 27$	22.88 C.Y.
	Sta. 1+20 to 2+00 = $80.00 \times 14.5 \times .6667 \div 27$	29.64 C.Y.
From Typical Section	Sta. 2+00 to 4+05 =	205.00 L.F.
	Sta. 2+00 to 2+15 = $15.00 \times \frac{23.5+21.5}{2} \times .6667 \div 27$	9.83 C.Y.
	Sta. 2+15 to 2+70 = $55.00 \times \frac{21.5+21.00}{2} \times .6667 \div 27$	34.35 C.Y.
	Sta. 2+70 to 3+25 = $55 \times 21 \times .6667 \div 27$	33.97 C.Y.
	Sta. 3+25 to 3+65 = $40 \times \frac{21+18}{2} \times .6667 \div 27$	23.22 C.Y.
	Sta. 3+65 to 4+05 = $40 \times 18 \times .6667 \div 27$	21.74 C.Y.
From Typical Section	Sta. 5+29 to Sta. 7+25 =	196.00 L.F.
	Sta. 5+29 to 7+25 = $196 \times 12 \times .6667 \div 27$	58.10 C.Y.
	Add for intersection Sta. 4+05 to Sta. 5+29 (Also includes fillet areas at median noses):	
	By planimeter: 1080 sq. ft. $\times .6667 \div 27$	26.68 C.Y.
From Typical Section	Sta. 7+25 to Sta. 8+25 =	100.00 L.F.
	Sta. 7+25 to 8+25 = $100 \times \frac{12+13}{2} \times .6667 \div 27$	19.76 C.Y.
TOTAL TO GENERAL SUMMARY		280 C.Y.

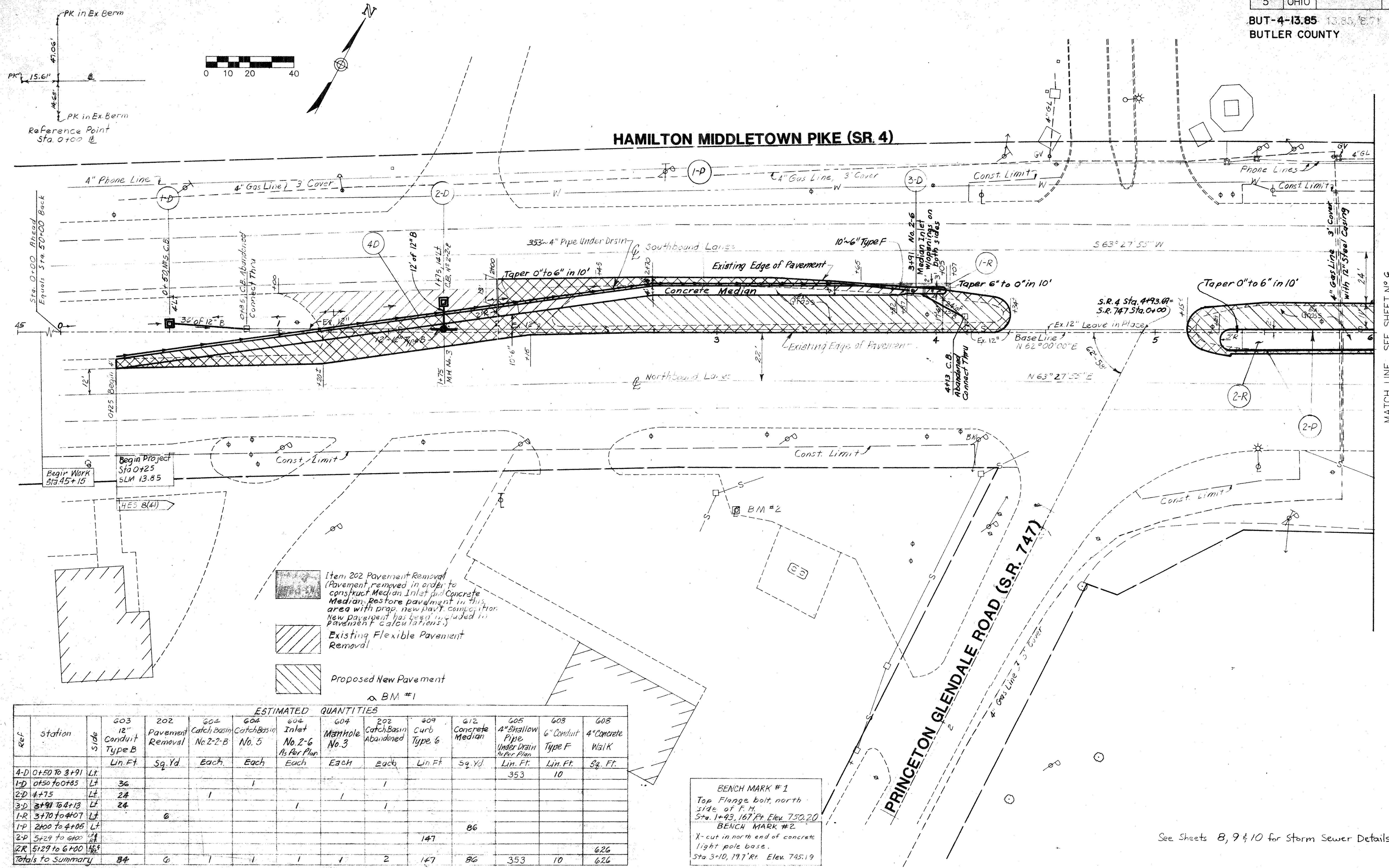
ITEM 310 SUBBASE, TYPE I, GRADING A, AS PER PLAN		
	Sta. 1+50 to 2+15 = $65 \times 16 \times .5 \div 27$	19.26 C.Y.
	Sta. 2+15 to 2+70 = $55 \times 16 \times \frac{22.5}{2} \times .5 \div 27$	19.61 C.Y.
	Sta. 2+70 to 4+05 = $135 \times 22.5 \times .5 \div 27$	56.25 C.Y.
TOTAL TO GENERAL SUMMARY		95 C.Y.

ITEM 659 COMMERCIAL FERTILIZER		
From Item 659 Seeding Total = 838 S.Y.		
$[838 \times 9 \div 1000] \times 20 = 150816 \div 2000 = 0.08$ Ton		
TOTAL TO GENERAL SUMMARY		0.10 Ton

# GENERAL SUMMARY

BUT-4-13.85  
BUTLER COUNTY

ITEM	SHEET NUMBER															GRAND TOTAL	UNIT	ITEM	ITEM EXT.	DESCRIPTION
	3	4	6	7	11	18														
	ROADWAY																			
201																Lump		201	Clearing and Grubbing	
202				112.5												112.5	Lin.Ft.	202	Guardrail Removed	
202				1												1	Each	202	Catch Basin Removed	
202				2												2	Each	202	Catch Basin Abandoned	
202				6												6	Sq.Yd.	202	Pavement Removal	
203									479							479	Cu.Yd.	203	Excavation Not Including Embankment Construction	
203									321							321	Cu.Yd.	203	Embankment	
203				1268												1268	Sq.Yd.	203	Subgrade Compaction	
404																20	Cu.Yd.	404	Bituminous Concrete for Maintaining Traffic	
410																50	Ton	410	Traffic Compacted Surface, As Per Plan (See Sheet 3)	
606							25.0									25.0	Lin.Ft.	606	Guardrail, Barrier Design, Type 5	
606							62.5									62.5	Lin.Ft.	606	Guardrail, Type 5	
606							1									1	Each	606	Anchor Assembly, Barrier Design, Type A	
608						626	1125			7						1758	Sq.Ft.	608	4" Concrete Walk	
802							2									2	Each	802	Barrier Reflectors	
	EROSION CONTROL																			
659										3537						3,537	Sq.Yd.	659	Seeding and Mulching	
659							0.10									0.10	Ton	659	Commercial Fertilizer	
659																2	M. Gal.	659	Water	
207																100	Each	207	Straw or Hay Bales	
	DRAINAGE																			
603						84	22									106	Lin.Ft.	603	12" Conduit, Type B	
603						10										10	Lin.Ft.	603	6" Conduit, Type F	
604							1									1	Each	604	Catch Basin No. 2-2-B	
604								2								2	Each	604	Catch Basin No. 3-A With V Grate	
604							1									1	Each	604	Catch Basin No. 5	
604							1									1	Each	604	Inlet No. 2-6, As Per Plan (See Sheet 6)	
604							1									1	Each	604	Manhole No. 3	
605							353									353	Lin.Ft.	605	4" Shallow Pipe Underdrains, As Per Plan (See Sheet 6)	
	PAVEMENT																			
310							95									95	Cu.Yd.	310	Subbase Type I, Grading A, As Per Plan (See Sheet 2)	
301							280									280	Cu.Yd.	301	Bituminous Aggregate Base, AC-20	
402							63									63	Cu.Yd.	402	Asphalt Concrete, AC-20	
404							48									48	Cu.Yd.	404	Asphalt Concrete, AC-20	
609							147	250								397	Lin.Ft.	609	Curb Type 6	
612							86									86	Sq.Yd.	612	Concrete Median	
	MAINTENANCE OF TRAFFIC																			
614							200									200	Lin.Ft.	614	Temporary Channelizing Lines, Class I	
614							0.50									0.50	Mile	614	Temporary Edge Lines, Class I	
614							2									2	Each	614	Temporary Lane Arrows, Class I	
614							0.50									0.50	Mile	614	Temporary Lane Lines, Class II	
616							1									1	M. Gal.	616	Water	
616							1									1	Ton	616	Calcium Chloride	
	FOR TRAFFIC CONTROL GENERAL SUMMARY SEE SHEET 1A																			
619																Lump		619	Field Office	
623																Lump		623	Construction Layout Stakes	
624																Lump		624	Mobilization	
614																Lump		614	Maintaining Traffic	



- Item 202 Pavement Removal  
(Pavement removed in order to construct Median Inlet and Concrete Median. Restore pavement in this area with prop. new pavt. composition. New pavement has been included in pavement calculations.)
- Existing Flexible Pavement Removal
- Proposed New Pavement

ESTIMATED QUANTITIES

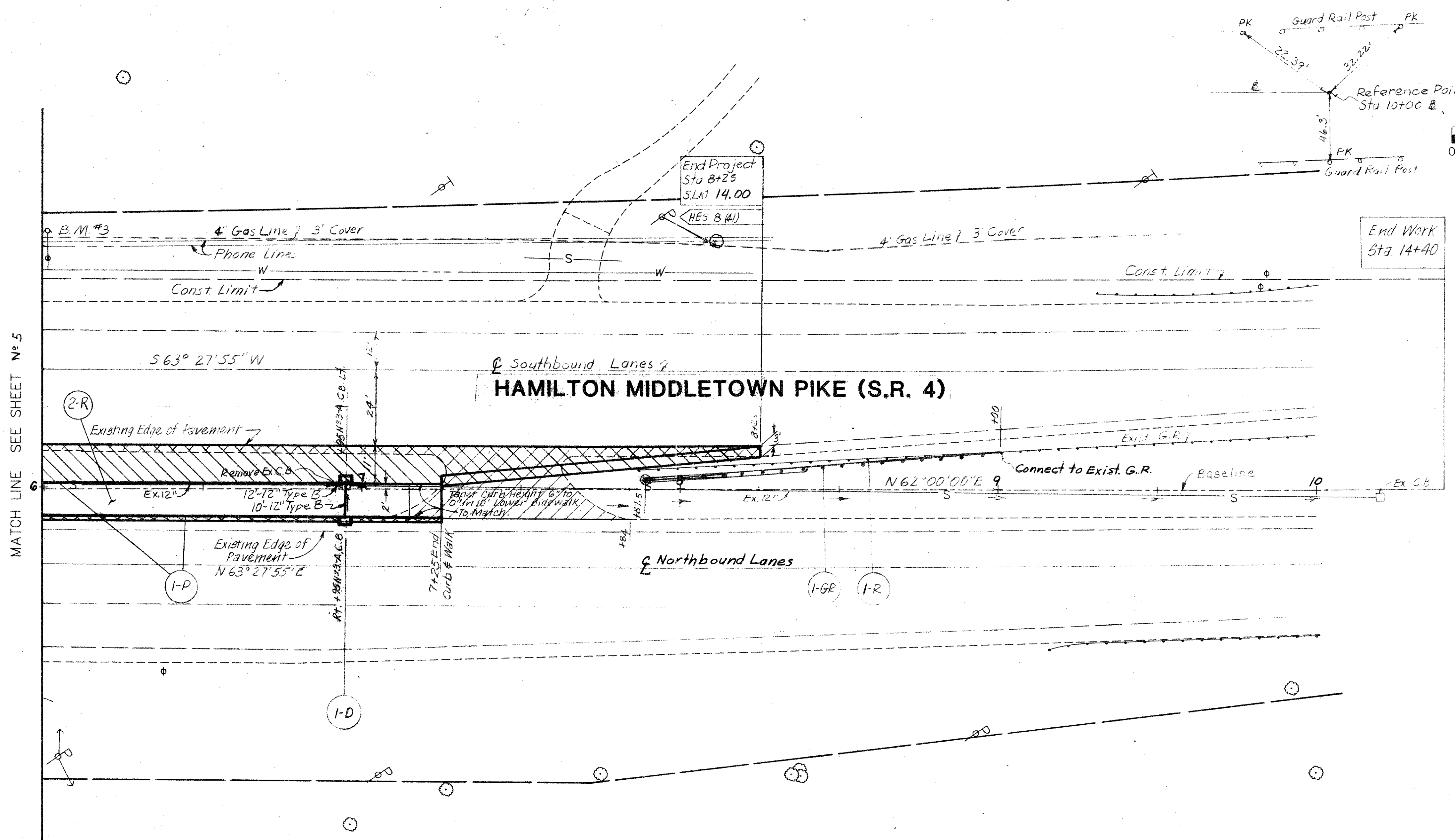
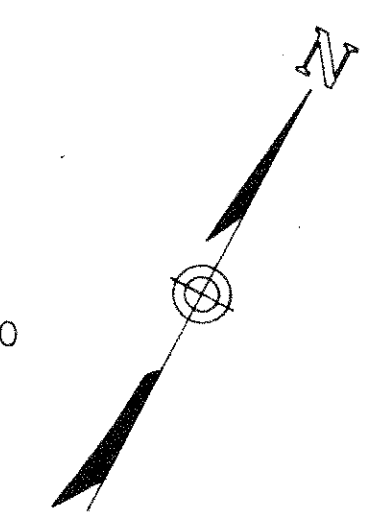
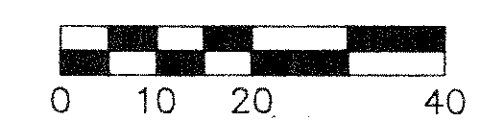
Ref	Station	Side	603 12" Conduit Type B Lin. Ft.	202 Pavement Removal Sq. Yd.	604 Catch Basin No. 2-2-B Each	604 Catch Basin No. 5 Each	604 Inlet No. 2-6 As Per Plan Each	604 Manhole No. 3 Each	202 Catch Basin Abandoned Each	609 Curb Type 6 Lin. Ft.	612 Concrete Median Sq. Yd.	605 4" Shallow Pipe Under Drain As Per Plan Lin. Ft.	603 6" Conduit Type F Lin. Ft.	608 4" Concrete Walk Sq. Ft.
4-D	0+50 to 3+91	Lt.												
1-D	0+50 to 0+85	Lt.	36									353	10	
2-D	4+75	Lt.	24		1									
3-D	3+91 to 4+13	Lt.	24						1					
1-R	3+70 to 4+07	Lt.		6										
1-P	2+00 to 4+05	Lt.									86			
2-P	5+29 to 6+00	Lt.								147				
2-R	5+29 to 6+00	Rt.												626
Totals to Summary			84	6	1	1	1	1	2	147	86	353	10	626

BENCH MARK #1  
Top Flange bolt north side of F.H.  
Sta. 1+93, 167 Ft. Elev. 750.20

BENCH MARK #2  
X-cut in north end of concrete light pole base.  
Sta. 3+10, 197 Ft. Elev. 745.19

See Sheets 8, 9 & 10 for Storm Sewer Details

BUT-4-13.85  
BUTLER COUNTY



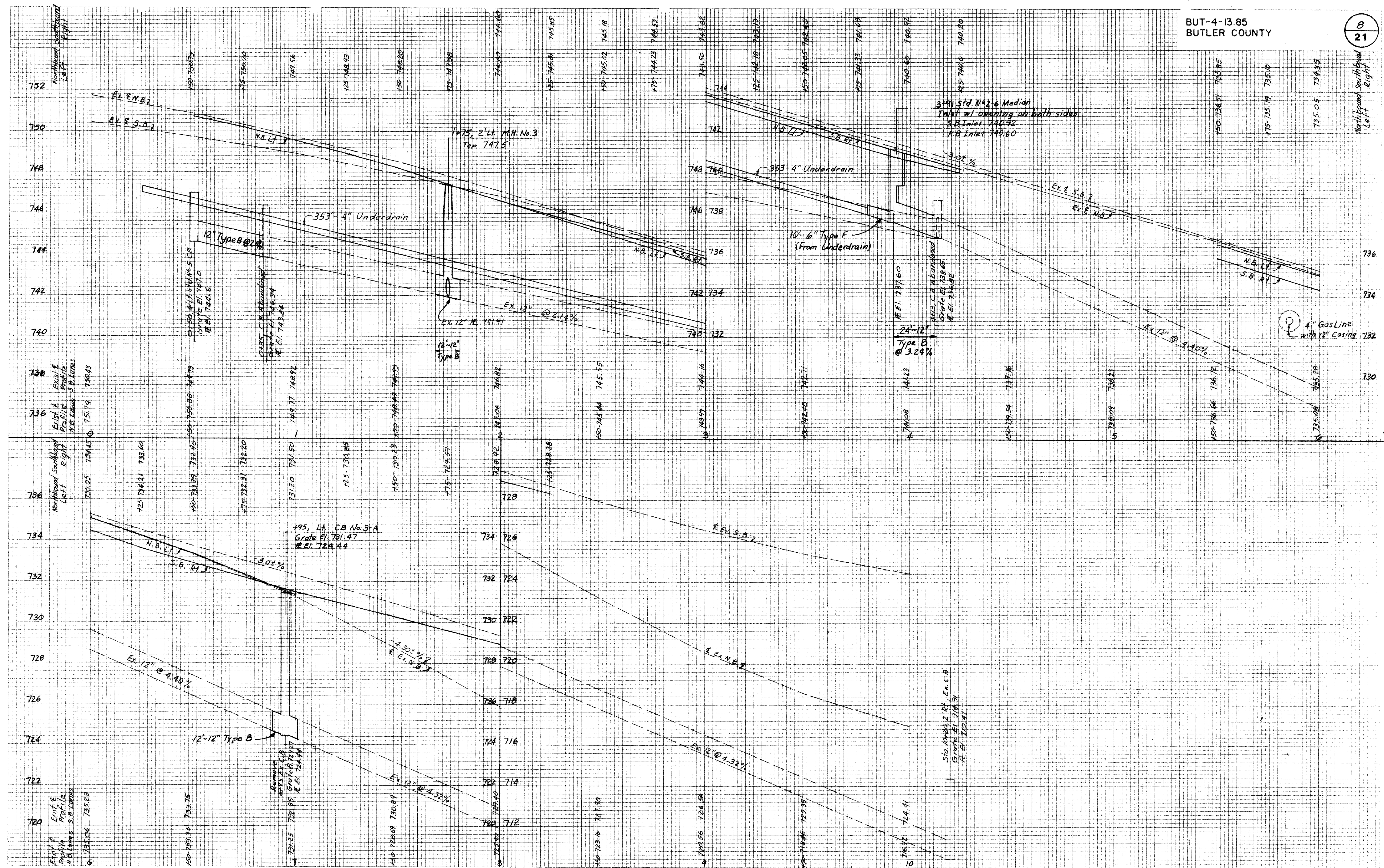
Ref	Station	Side	ESTIMATED QUANTITIES								
			603 Conduit Type B Lin. Ft.	608 4\"/>							
1-P	6+00 to 7+25	L/R					250				
1GR	7+87.5 to 9+00	L/R			62.5	1	25.0			2	
1-R	7+87.5 to 9+00	L/R						112.5			
2-R	6+00 to 7+25	L/R		1125							
1-D	6+95	L/R	22		2				1		
Totals to Summary			22	1125	2	62.5	1	250	250	112.5	2

BENCH MARK #3  
Top flange bolt, S. E. side  
of F.H.  
Sta. 6+00, 80'Lt. Elev. 734.61

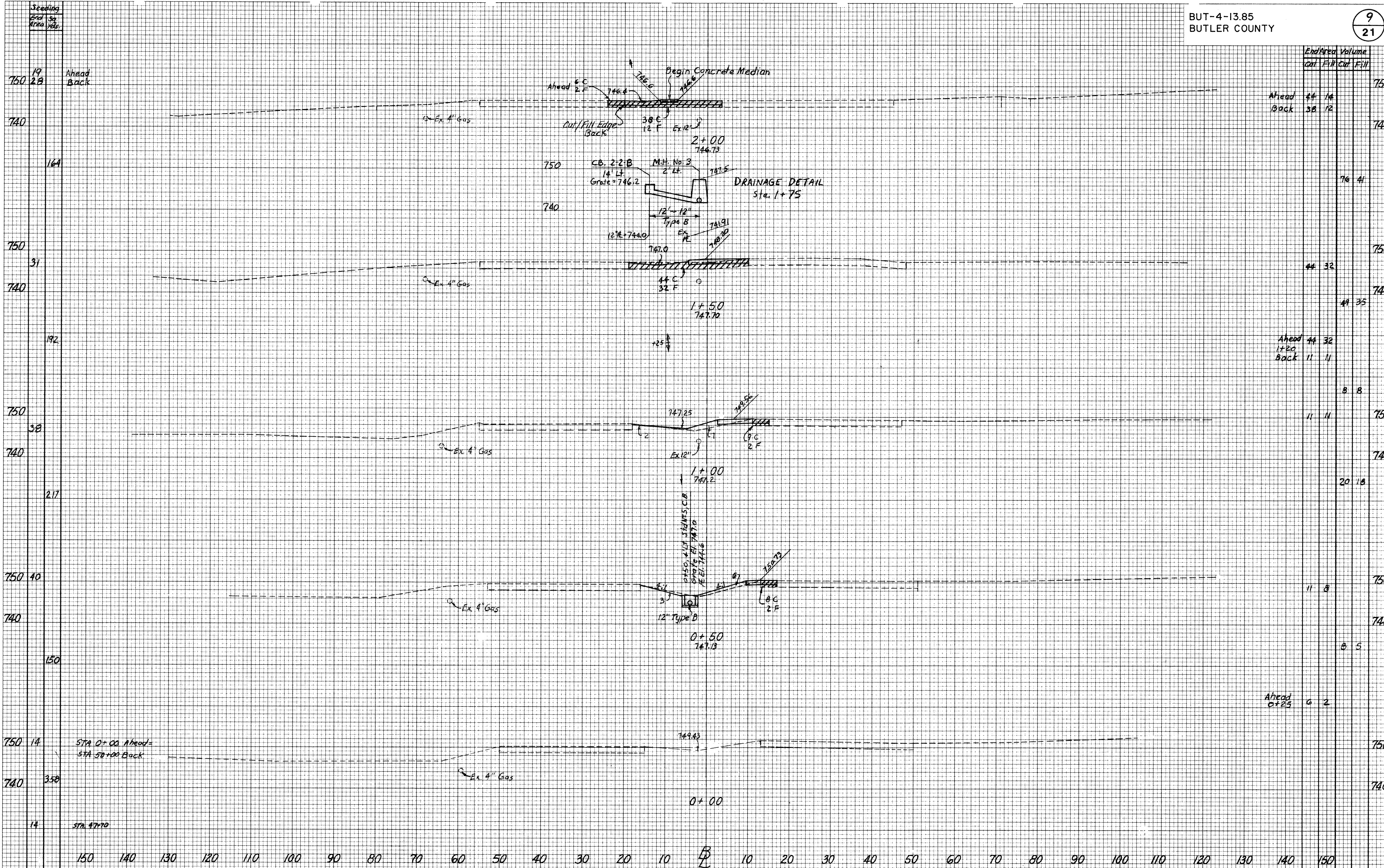
See Sheets 8 & 11 for Storm Sewer Details

DATE: \_\_\_\_\_  
 SURVEYED BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 NO. \_\_\_\_\_

DATE: \_\_\_\_\_  
 SURVEYED BY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 NO. \_\_\_\_\_







Sta	End Area		Volume	
	Cut	Fill	Cut	Fill
750	44	14		
740	38	12		
750	44	32		
740	49	35		
750	44	32		
740	11	11		
750	11	11		
740	20	18		
750	11	8		
740	6	5		
750	6	2		

BY \_\_\_\_\_ DATE \_\_\_\_\_

FINAL SURVEY NOTE BOOK NO. \_\_\_\_\_

SURVEYED, PLOTTED, TEMPLATE AREAS CHECKED

BY \_\_\_\_\_ DATE \_\_\_\_\_

ORIGINAL SURVEY NOTE BOOK NO. \_\_\_\_\_

SURVEYED, PLOTTED, TEMPLATE AREAS CHECKED

X-SECTIONS STA. 0+00 TO STA. 2+00

FINAL SURVEY NOTE BOOK NO. \_\_\_\_\_

SURVEYED BY \_\_\_\_\_

DATE \_\_\_\_\_

PLANNED BY \_\_\_\_\_

TEMPLATE NO. \_\_\_\_\_

AREAS CHECKED \_\_\_\_\_

ORIGINAL SURVEY NOTE BOOK NO. \_\_\_\_\_

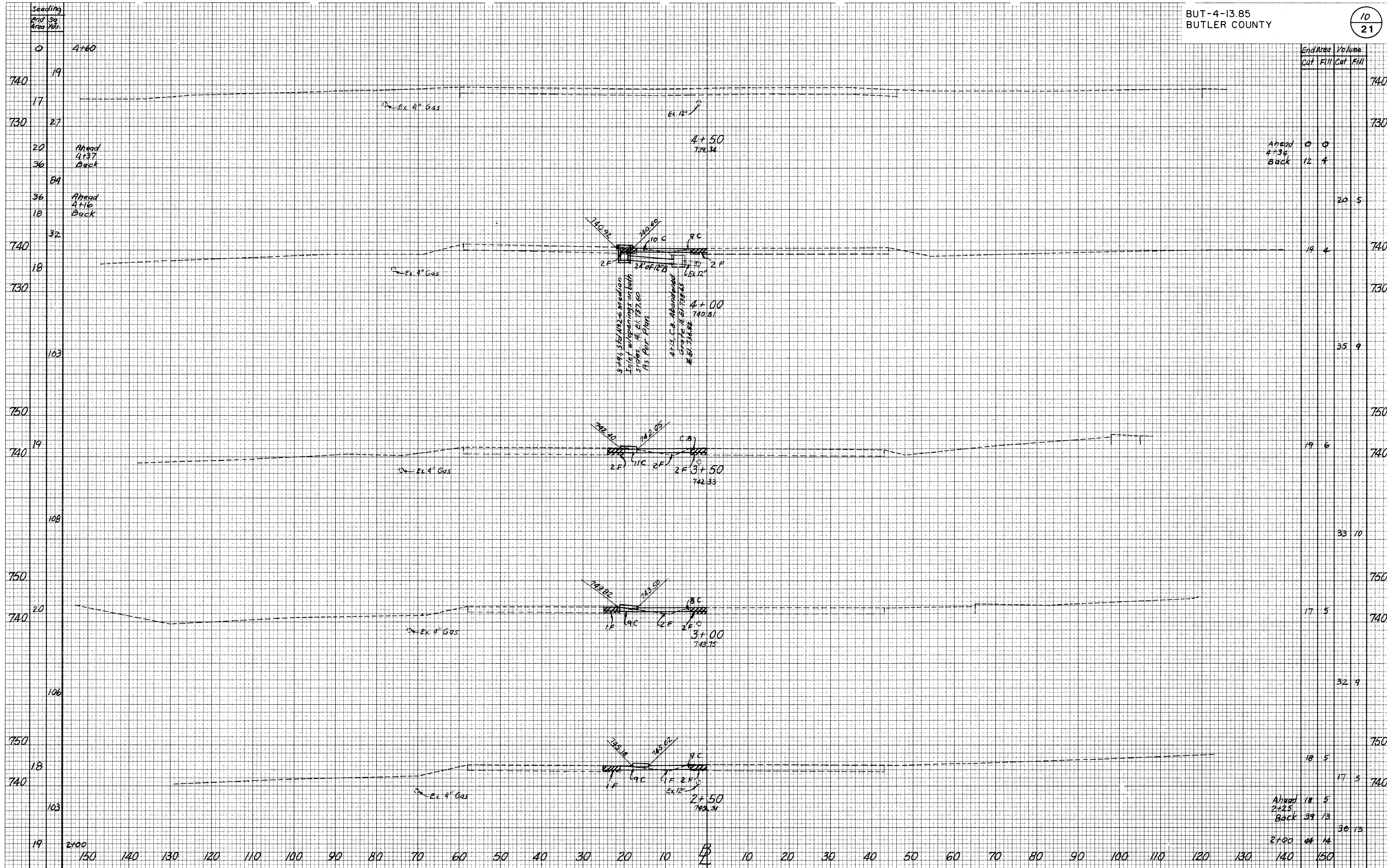
SURVEYED BY \_\_\_\_\_

DATE \_\_\_\_\_

PLANNED BY \_\_\_\_\_

TEMPLATE NO. \_\_\_\_\_

AREAS CHECKED \_\_\_\_\_

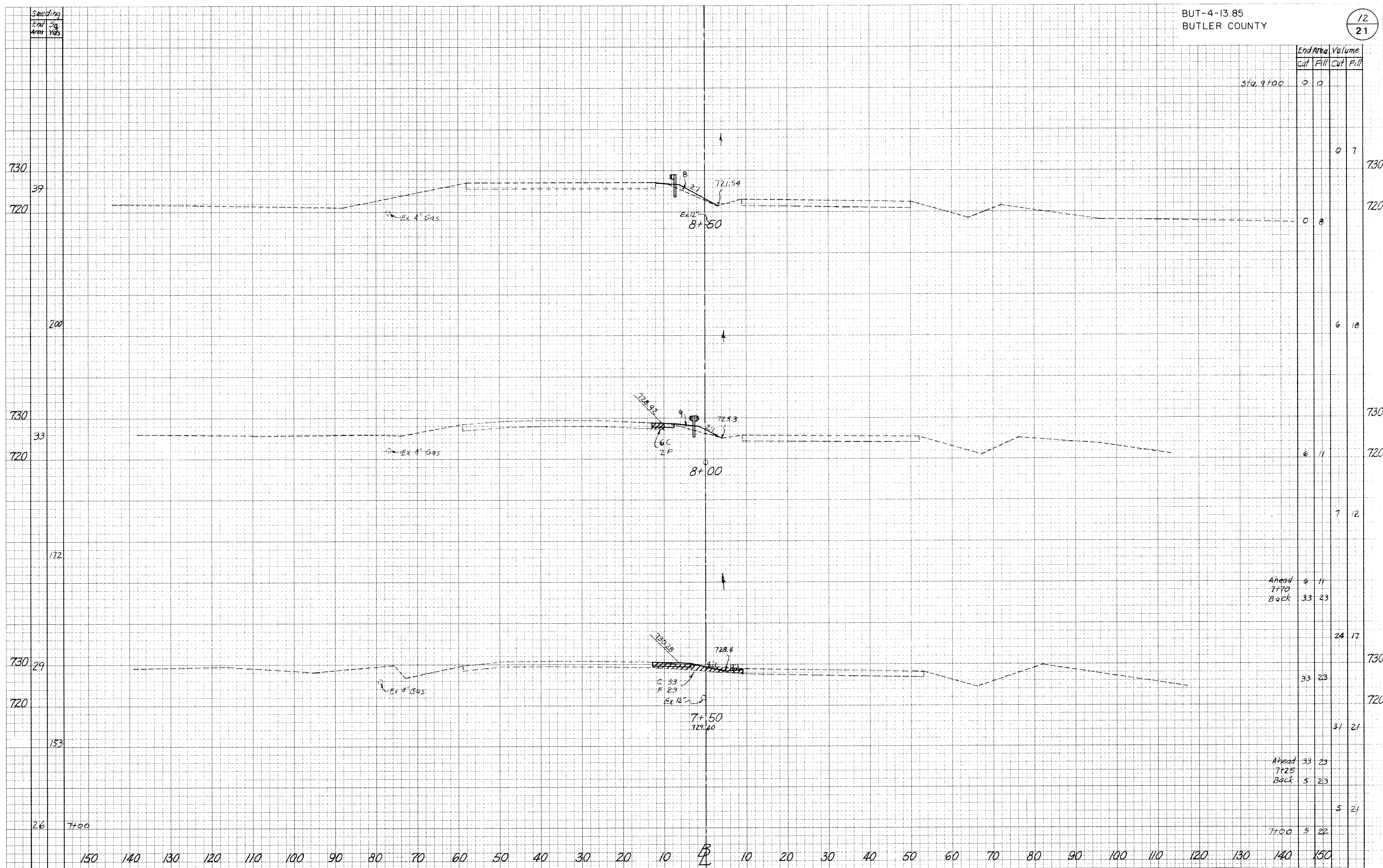


Station	End Area		Volume	
	Cut	Fill	Cut	Fill
4+60	0	0		
4+50	12	4		
4+34	0	0		
4+10	20	5		
3+50	19	4		
3+00	35	9		
2+50	19	6		
2+00	17	5		
1+50	32	9		
1+00	18	5		
0+50	17	5		
0+00	18	5		
2+00	44	14		
2+25	18	5		
2+50	39	13		
3+00	30	13		



DATE \_\_\_\_\_ BY \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 ORIGINAL SURVEY \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_  
 NO. \_\_\_\_\_

DATE \_\_\_\_\_ BY \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 ORIGINAL SURVEY \_\_\_\_\_  
 NOTE BOOK \_\_\_\_\_  
 NO. \_\_\_\_\_



Sta.	End Area		Volume	
	cut	Fill	cut	Fill
7+00	0	0	0	0
7+25	6	11	6	18
7+50	33	23	31	21
8+00	6	11	6	18
8+25	6	11	6	18
8+50	0	0	0	0

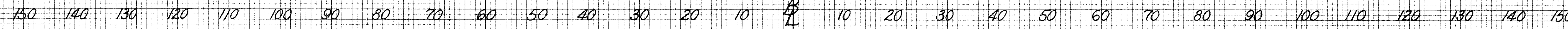
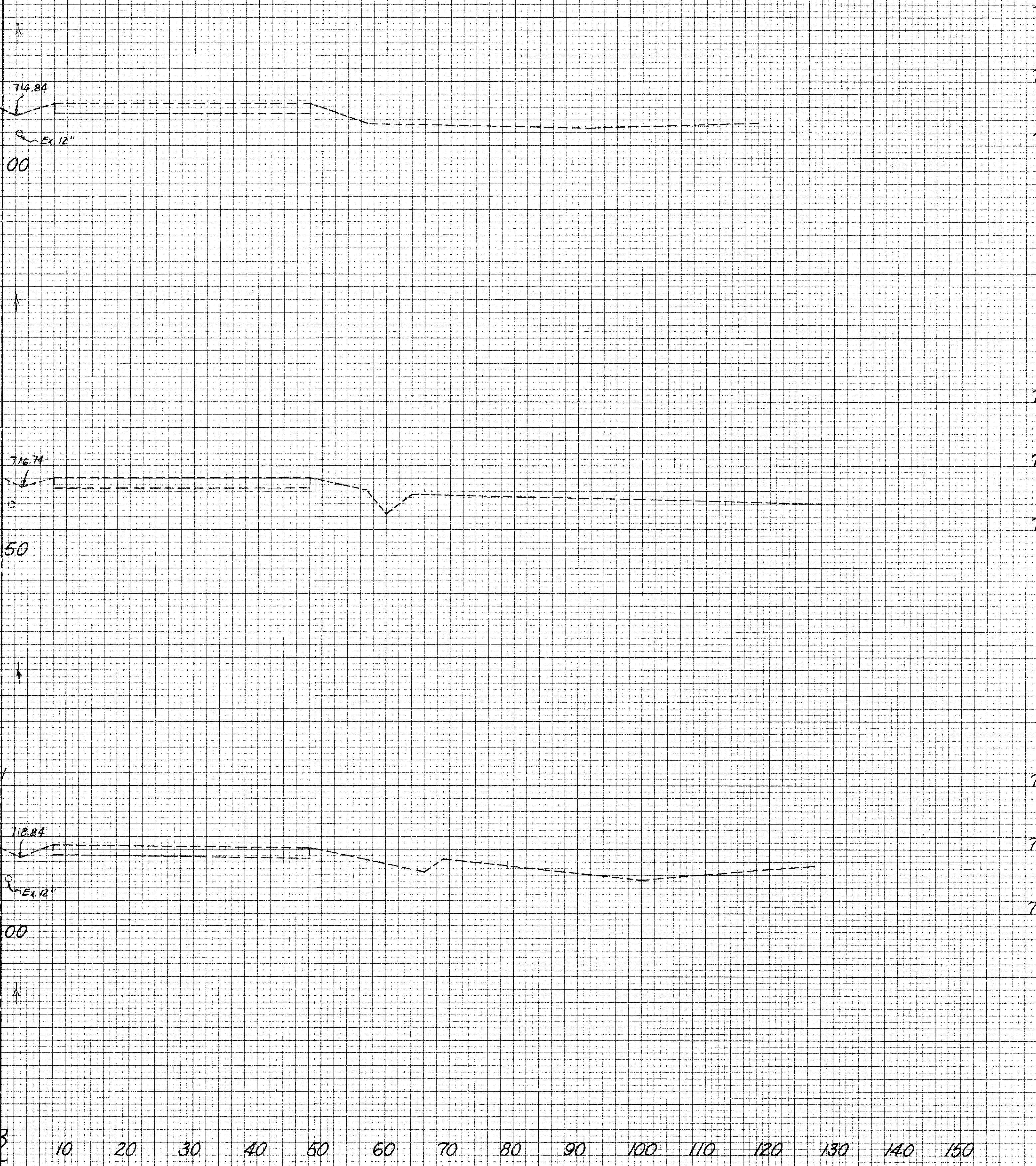
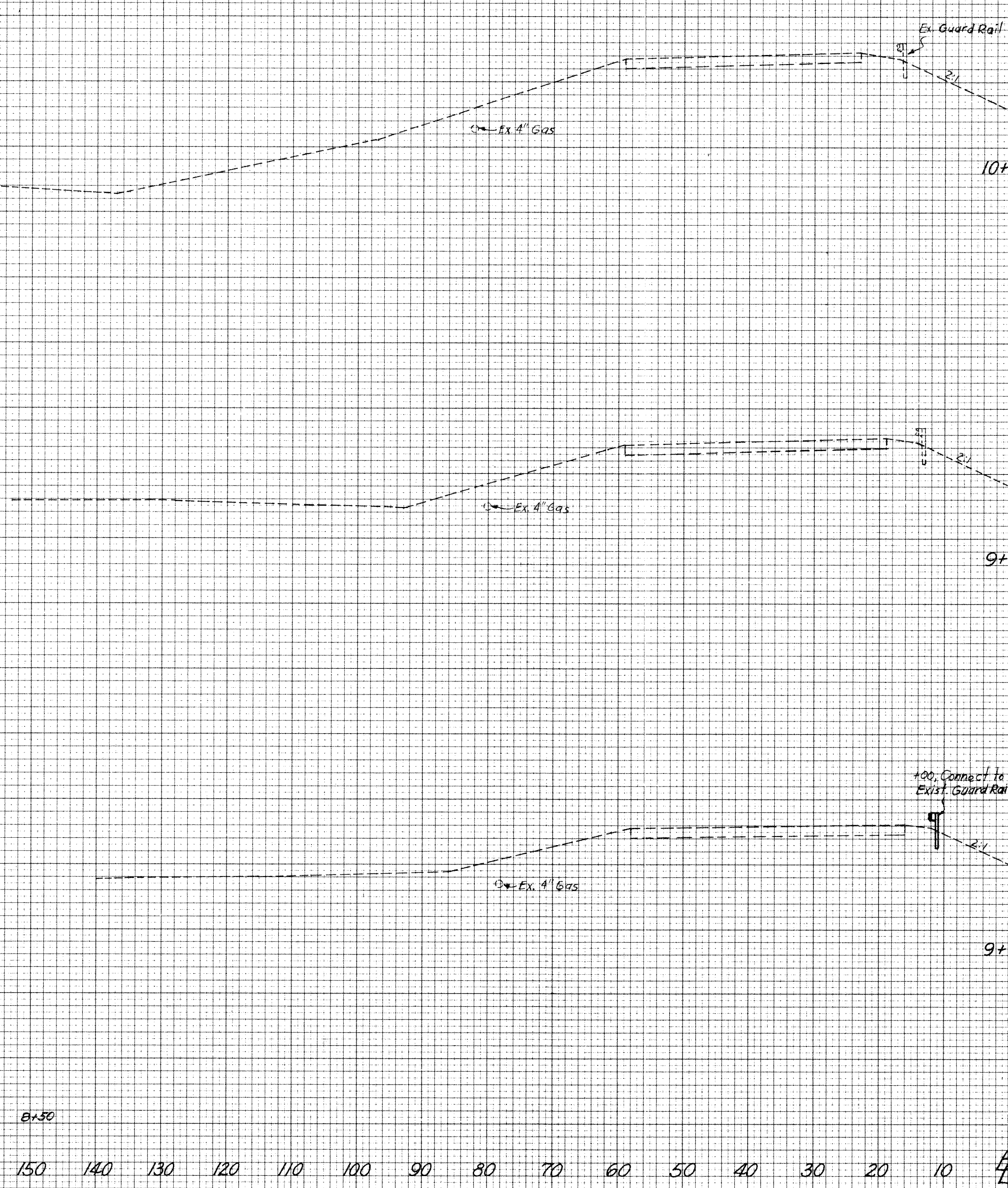
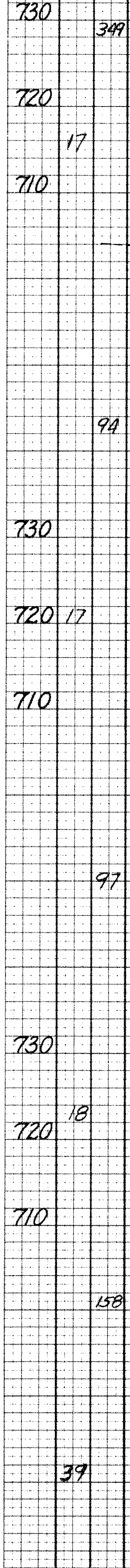
X-SECTIONS STA. 7+50 TO STA. 8+50

Seed mg  
End Sta  
Area Yds

17 STA. 11+85 END WORK

BY	
DATE	
DESIGNED	
PLOTTED	
TEMPLATE	
AREAS	
CHECKED	
NO.	
FINAL SURVEY NOTE BOOK NO.	

DATE	
BY	
DESIGNED	
PLOTTED	
TEMPLATE	
AREAS	
CHECKED	
NO.	
ORIGINAL SURVEY NOTE BOOK NO.	



X-SECTIONS STA 9+00 TO STA 10+00

# TRAFFIC CONTROL GENERAL SUMMARY

## PAVEMENT MARKING SUB-SUMMARY

Station	Side	621															
		Edge Line (White) Lin. Ft.	Edge Line (Yellow) Lin. Ft.	Lane Line Lin. Ft.	Channelizing Line Lin. Ft.	Transverse Line Lin. Ft.	Center Line (Double Solid) Lin. Ft.	Island Marking Sq. Ft.	Stop Line Lin. Ft.	Word ONLY on Pavement 96" Each	Lane Arrows Each						
SB 0+25	4+50	LT	425		400												
SB 0+25	4+25	LT			400												
SB 0+25	4+25	LT		400													
NB 0+25	3+82	LR			357												
NB 3+16	3+90	LT								1	2						
NB 1+53	4+20	LR				534	216		66								
NB 0+25	4+25	RT			400												
NB 0+25	4+00	RT	375														
SB 5+40		LT								39							
SB 5+29	9+00	LT	371														
SB 5+29	9+00	LT			371												
SB 5+29	8+25	LT				592	156		32								
SB 5+29	9+00	LT			371												
SB 5+59	6+71	LT															
NB 4+16		LR								40							
NB 5+29	9+00	RT			371												
NB 5+29	9+00	RT			371												
NB 4+90	5+75	RT	85														
NB 5+75	1+75	RT				200											
NB 5+75	9+00	RT	225														
NB 4+05	4+16	LT								11							
4+00 SR 4	2+75 SR 747	RT	246														
5+75 SR 4	2+75 SR 747	LT	300														
5+75 SR 4	0+75 SR 747	LT				75											
0+36 SR 747	0+75 SR 747	LT				39											
0+60 SR 747	2+75 SR 747	LT								12							
4+71 SR 4		LT								21							
Totals Carried to Traffic Control Summary			2027 L.F.	1499 L.F.	1542 L.F.	1440 L.F.	372 L.F.	226 L.F.	98 S.F.	112 L.F.	2 Each	4 Each					

### SHEET NO.

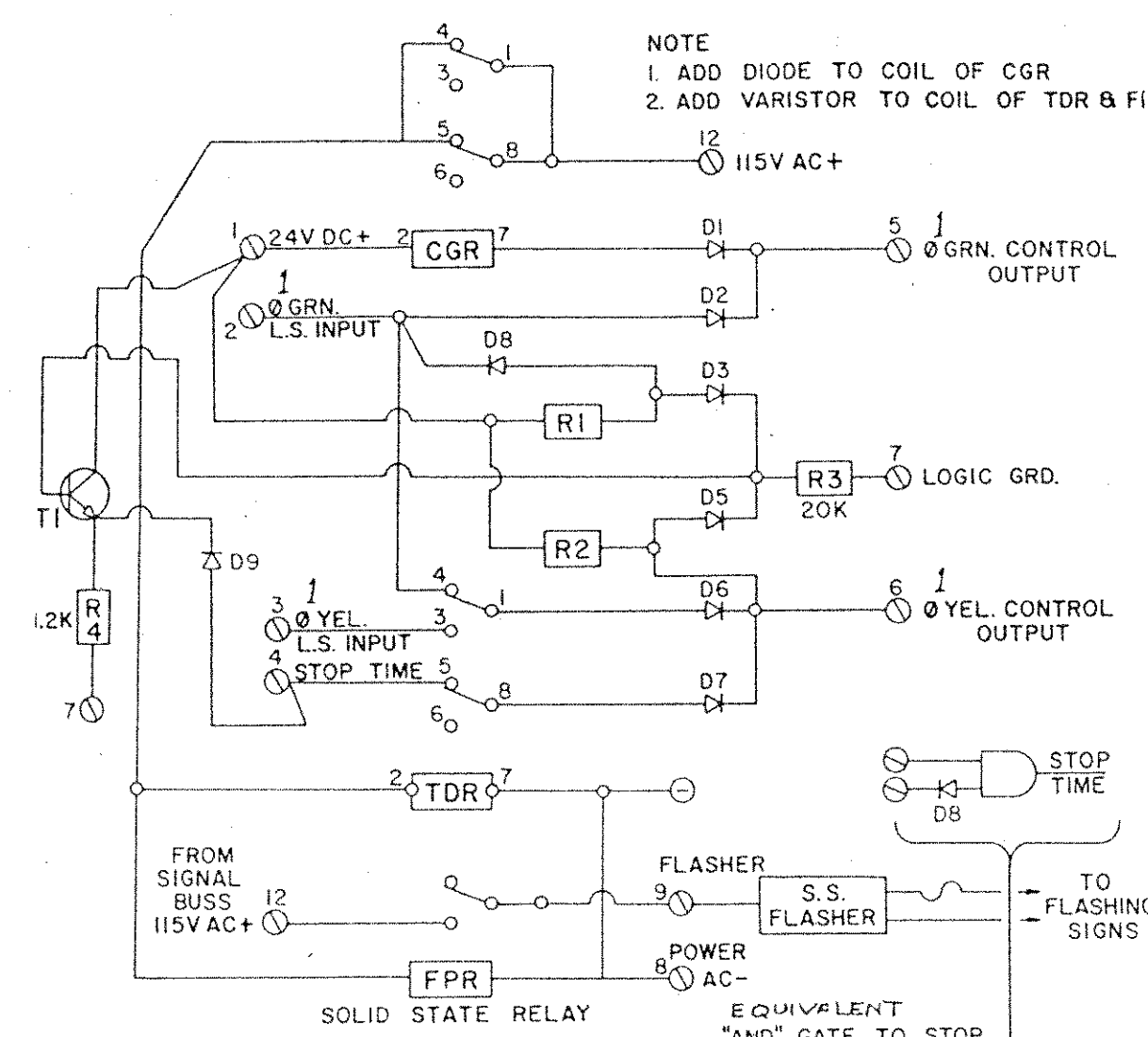
ITEM NO.					THIS SHT.	18	19	ITEM NO.	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION
608							7*	608		7	SF	4" Concrete Walk * Carried to Roadway General Summary
SIGN AND SIGN SUPPORT ITEMS												
630					169			630		169	SF	Signs, Flat Sheet
630						21		630		21	SF	Signs, Flat Sheet, Type G
630							72	630		72	SF	Signs, Extrusheet
630					340			630		340	LT	Ground Mounted Supports, No. 3 Post
625							2	625		2	Ea.	Light Pole Foundation
625							2	625		2	Ea.	Light Pole, 7 1/2" with 10 3/4" B.C., 11 Ga. Style V Steel Pole 18'
630					4			630		4	EA	Removal of Ground Mounted Sign And Storage
630							2	630		2	Ea	Sign Hanger Assembly, Span Wire, Type 2
630					8			630		8	EA	Removal of Ground Mounted Post Support
630					32			630		32	L.F.	Ground Mounted Supports, No. 4 Post
630					3			630		3	Ea	Removal of Ground Mounted Sign and Re-erection
625							2	625		2	Ea.	Connector Kit, Type VIII
625							1	625		1	Ea.	Power Service
631							2	631		2	Ea.	Photoelectric Control
631							2	631		2	Ea.	Signs Wired
631							2	631		2	Ea	Sign Flasher Assembly, As Per Plan
PAVEMENT MARKING												
621					0.67			621		0.67	Mile	Edge Lines
621					0.29			621		0.29	Mile	Lane Lines
621					1440			621		1440	L.F.	Channelizing Lines
621								621		372	L.F.	Transverse Lines
621					0.04			621		0.04	Mile	Center Lines
621					98			621		98	SF	Island Markings
621					4			621		4	Ea.	Lane Arrows
621					112			621		112	L.F.	Stop Lines
621					2			621		2	Ea.	Word on Pavement, 96 Inch
625							1	625		1	Ea.	Pull Box, 713.08, 24 Inch
625							3	625		5	Ea	Ground Rod
625							6	625		10	Ea	Pull Box 713.08, 15 Inch
625							120	1210	625	1330	LF	Trench
625								94	625	94	LF	Trench in Paved Area, Type A
625							91	625		91	LF	Conduit, 713.04 1 Inch
625							19	1304	625	1323	LF	Conduit, 713.04, 1 1/2 Inch
625							10	625		10	LF	Conduit, 713.04, 4 Inch
632							2	632		2	Ea.	Loop Detector Unit, With Delay
632							506	1364	632	1870	LF	Signal Cable, 3 Conductor, No. 10 AWG
632							254	384	632	638	LF	Loop Detector Pavement Cutting
632							570	700	632	1470	LF	Loop Detector Wire, Type E
632							2183	1719	632	3902	LF	Loop Detector Lead-in Cable
632							8	632		8	Ea	Vehicular Signal Head, 3 Section, 12 Inch, Drive Way
632							4	632			Ea	Loop Detector Unit
632							4.8	632		4.8	Cy	Concrete for Anchor Base Foundations
632							2	632		2	Ea	Strain Pole, Type TC-81.10, Design G, 32 Feet, As Per Plan
632							331	632		331	LF	Messenger Wire, 7-Strand 3/8 Inch Diameter, With Accessories
632							549	632		549	LF	Signal Cable, 5-Conductor, No. 14 AWG
632							52	632		52	LF	Power Cable, 2-Conductor, No. 8 AWG
632							232	632		232	LF	Service Cable, 3-Conductor, No. 6 AWG
632							8	632		8	Ea	Covering of Vehicular Signal Head
632							1	632		1	Ea	Removal of Traffic Signal Installation
633							1	633		1	Ea	Controller Activated, 2-Phase, Solid State Digital, Microprocessor
633							1.1	633		1.1	Cy	Concrete for Cabinet Foundation

### ITEM 630 - SIGNING SUBSUMMARY

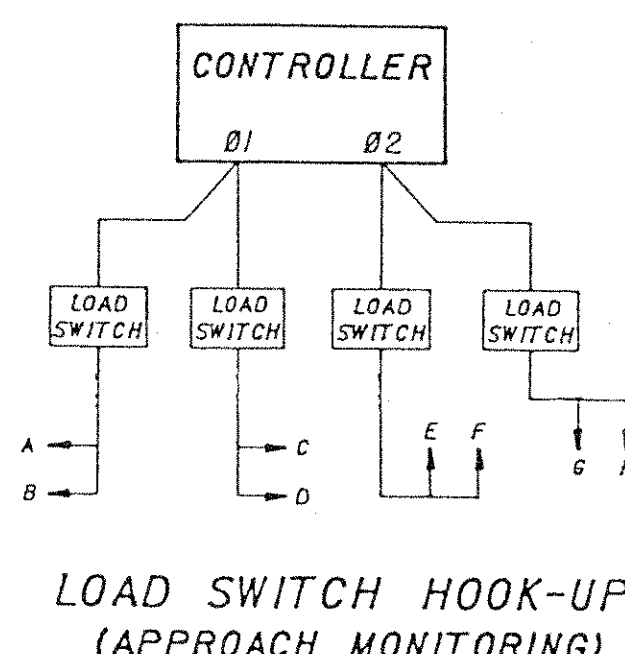
Station	Side	Sign No.	Size	Removal of Ground Mounted Sign & Storage Each	Removal of Ground Mounted Post Support Each	Removal of Ground Mounted Sign & Post Support Each	Signs, 1 Flat Sheet SF	Ground Mounted Supports No. 3 Post L.F.	Ground Mounted Supports No. 4 Post L.F.
1+00 SR 747	RT	R-1		1	1				
1+00 SR 747	LT	R-1		1	1				
1+07	LT	R-123	24x24	1	1				
4+58	LT	R-1		1	1				
3+95	LT	R-41B	36x36					13	
5+33	RT	R-37R-36	36x48		2			25	
5+75	RT	R-41B	36x36		1			13	
0+25	RT	R-31C-48	48x30				9	25	
3+98	LT	R-37R-36	36x48				12	25	
10+00	LT	R-31C-48	48x30				9	25	
7+15	RT	R-31C-48	48x30				9	25	
9+30	RT	M-2, M-25	30x30 24x18				9.25	14	
5+05	RT	M-2, M-24	24x18 24x18				10.81	14	
4+45	LT	M-2, M-24	24x18 24x18				10.81	14	
5+29	LT	M-2, M-25	30x30 24x18				9.25	14	
7+00	RT	W-49R	48x48				16		32
5+30	LT	R-31C-48	48x30				9	25	
14+40	LT	W-47-48	48x48				32	54	
45+14	RT	W-47-48	48x48				32	54	
Total to General Summary				4	8	3	169	340	32

BUT-4-13.85  
BUTLER COUNTY

"PTSWF" RELAY ASSEMBLY WITH NEMA CONTROLLER



- NOTE  
1. ADD DIODE TO COIL OF CGR  
2. ADD VARISTOR TO COIL OF TDR & F1
- 1 24VDC+      7 LOGIC GRD.  
2 0GRN L.S. INPUT      8 AC-  
3 0YEL L.S. INPUT      9 FLASHER POWER  
4 STOP TIME      10 FP No.1  
5 0GRN CONT. OUT      11 FP No.2  
6 0YEL. CONT. OUT      12 115VAC+
- CGR = CONTROL GREEN RELAY — KRPIIDG 24V  
TDR = TIME DELAY RELAY — .1-10 SEC. 120AC  
FPR = FLASH POWER RELAY — SOLID STATE RELAY — MODEL TA-1225  
TI = EMITTER FOLLOWER — 2N1711
- R1-R2 - 2K~  
D1-D9 - 1N2071  
D8 - BLOCKING DIODE  
R3-20K, R4-1.2K



TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 861, 957, 958, AND 961 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 633, 730, 731, AND 733.

ITEM 631 - - SIGN FLASHER ASSEMBLY, AS PER PLAN

THE SIGN FLASHER ASSEMBLY SHALL INCLUDE A PAIR OF FLASHING BEACONS FOR PLACEMENT ABOVE AND BELOW THE "PREPARE TO STOP WHEN FLASHING" SIGN. MERCURY VAPOR LUMINAIRE WITH SUPPORT ARM AND ALL MOUNTING HARDWARE AS SHOWN IN THE DETAILS. A BEACON SHALL CONSIST OF A SINGLE 12 INCH SIGNAL HEAD AND YELLOW LENS WITH NOMINAL 60 WATT LAMP COMPLYING WITH THE REQUIREMENTS OF ITEM 632. ITEM 631 SIGN FLASHER ASSEMBLY, AS PER PLAN, SHALL BE MEASURED AS A COMPLETE UNIT IN PLACE, TESTED AND ACCEPTED.

ITEM 632 POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE CINCINNATI GAS AND ELECTRIC COMPANY OF CINCINNATI, OHIO AT THE LOCATIONS INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS AC.

ITEM 633 CONTROLLER, ACTUATED, 2 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, WITH CABINET, AS PER PLAN

IN ADDITION TO NEMA REQUIREMENTS, THE CONFLICT MONITOR SHALL ALSO HAVE EXTENDED MONITORING IN ACCORDANCE WITH ITEM 733, PART 3B. THE CONTROLLER HOUSING SHALL BE KEYS TO THE STATE MASTER. CONTROLLER CABINET SHALL BE PAINTED YELLOW FEDERAL STANDARD 595 COLOR 13655. CONTROLLER CABINET SIZE SHALL COMPLY TO THE REQUIREMENTS OF NEMA TS-1 SECTION 14 OR SECTION 4 WHICHEVER IS SMALLER.

APPROACH MONITORING SHALL BE REQUIRED AS SHOWN ON SEPARATE DETAIL "APPROACH MONITORING HOOK-UP DIAGRAM". AUXILIARY EQUIPMENT SHALL BE PROVIDED TO OPERATE THE "PTSWF" SIGNS AS SHOWN IN THE PLANS. THE TWO BEACONS SHALL FLASH SIMULTANEOUSLY ON EACH SIGN. A SEPARATE FLASH UNIT SHALL BE PROVIDED FOR THE "PTSWF" CIRCUITS, WHICH IS INDEPENDENT OF THE FLASHER UNIT INCIDENTAL TO THE CONTROLLER ITEM.

PAYMENT FOR "ITEM 633 CONTROLLER, ACTUATED, 2 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, WITH CABINET, AS PER PLAN" WILL BE AT THE CONTRACT BID PRICE PER EACH COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS, TESTED AND ACCEPTED.

ITEM 633 GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 90 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION, THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS AND INTERCONNECTION ITEMS.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

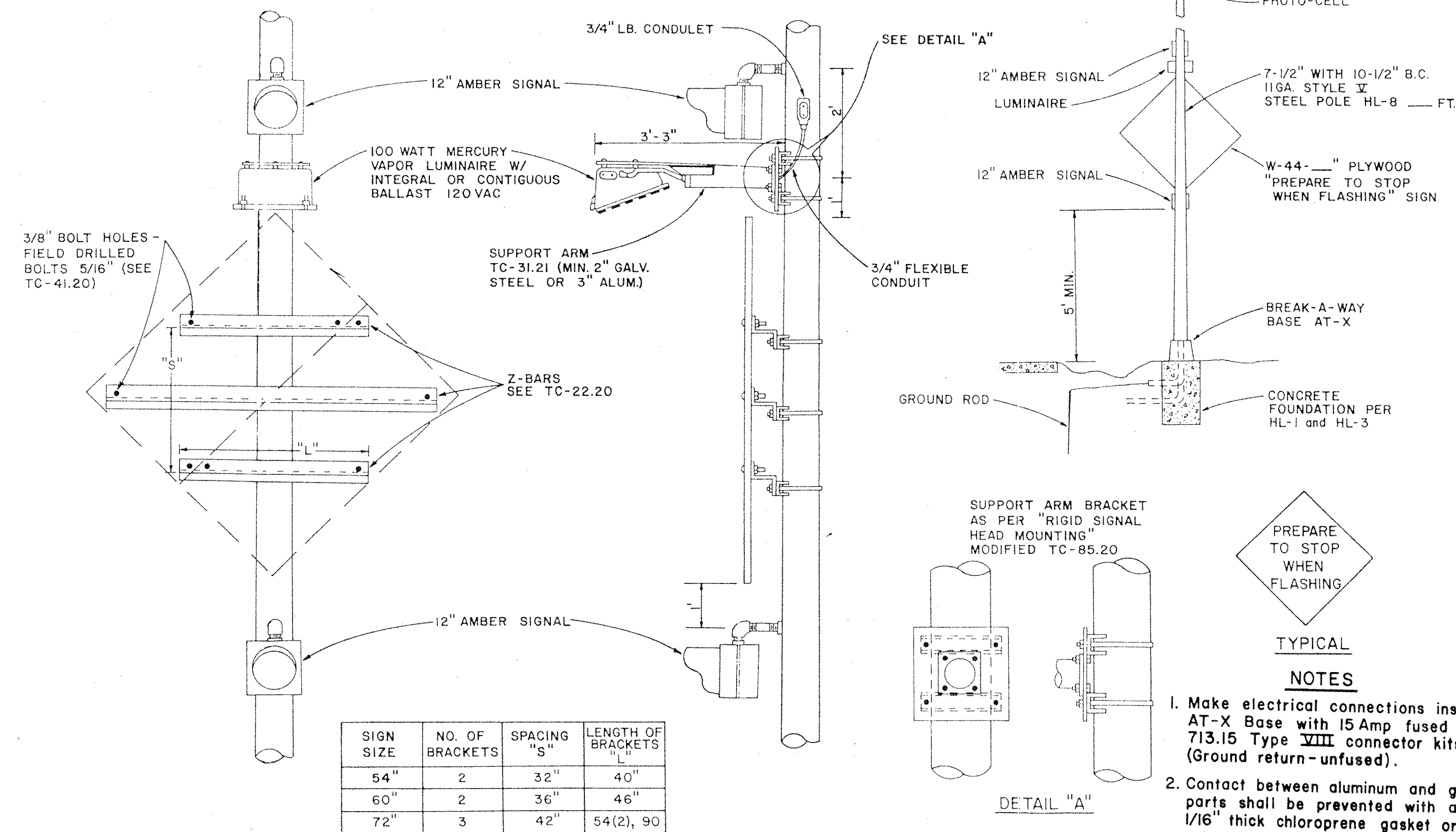
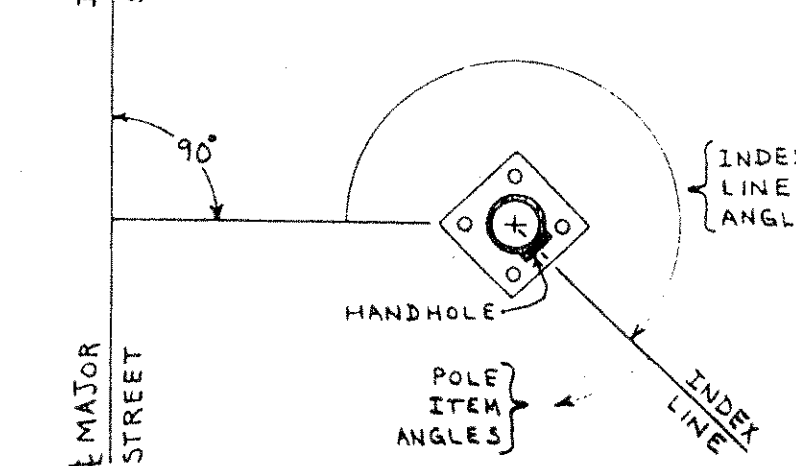
SIGNAL HEAD MOUNTING DATA

HEAD	SIZE	FIXTURES	DIST. FROM RIGHT END OF SPAN	DIST. FROM RIGHT E/P*
A	12"	3	58'	25'
B	12"	3	37'	7'
C	12"	3	43'	24'
D	12"	3	22'	6'
E	12"	3	50'	-3'
F	12"	3	37'	11'
G	12"	3	19'	10'
H	12"	3	8'	0'

\* AS FACING REFERENCED SIGNAL HEAD

FROM SHEET NO.	REFERENCE STREET STATION & OFFSET	POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV. SPAN WIRE ATTACH. HT.	INDEX LINE ANGLE (DEG.)	ANGLES (DEG.) FROM INDEX LINE						
							PEDESTRIAN SIGNALS	PUSHBUTTONS	CONTROLLER	POWER SERVICE	CABLE ENTRANCE (12" FROM TOP)	LUMINAIRE BRACKET	INTERCONNECT POLE SPALICE BOX
17	A+22 75/R	P2	6	32	210					180			150
17	5+44 62/L	P4	6	32	210					180			90
P1 + P3 ARE EXISTING POLES													

NOTES:  
1. ALL ANGLES MEASURED CLOCKWISE.  
2. INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

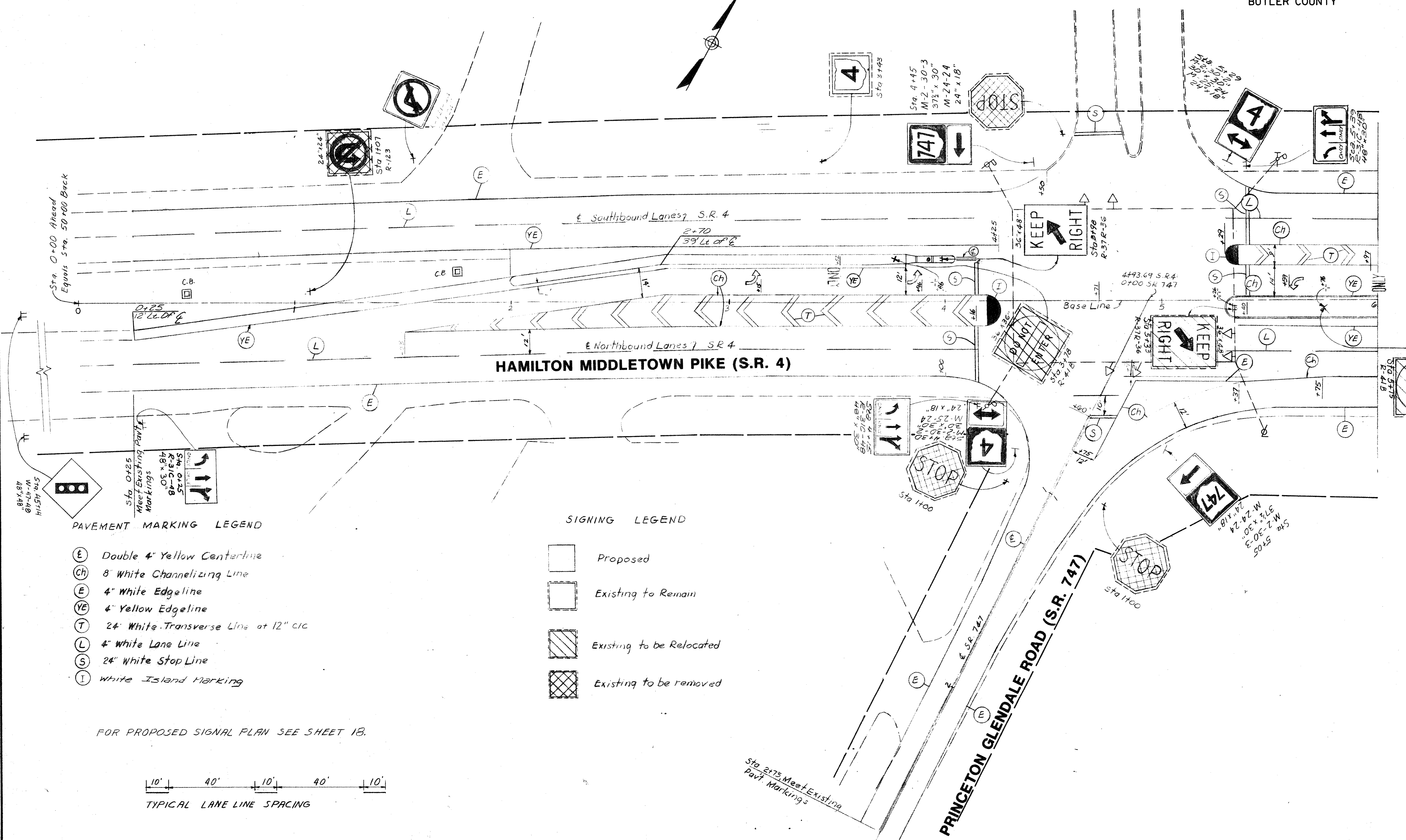
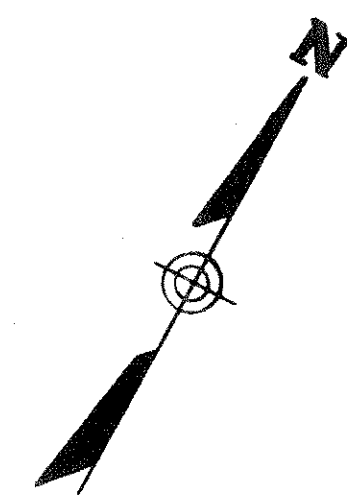


"PREPARE TO STOP WHEN FLASHING" SIGN INSTALLATION DETAIL

NOT TO SCALE

- NOTES
1. Make electrical connections inside AT-X Base with 15 Amp fused 713.15 Type VIII connector kits (Ground return-unfused).
  2. Contact between aluminum and galvanized parts shall be prevented with a minimum 1/16" thick chloroprene gasket or approved substitute. Gaskets are not required between stainless steel and aluminum.

BUT-4-13.85  
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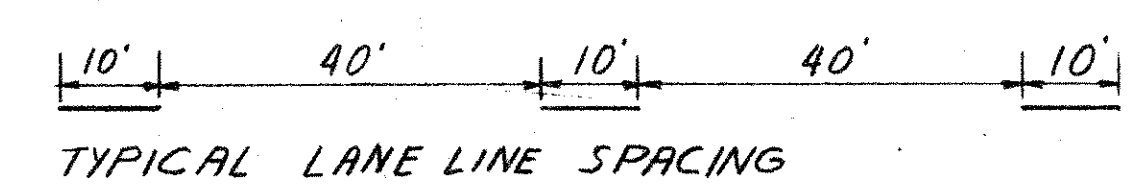
PAVEMENT MARKING LEGEND

- (E) Double 4" Yellow Centerline
- (Ch) 8" White Channelizing Line
- (E) 4" White Edgeline
- (YE) 4" Yellow Edgeline
- (T) 24" White Transverse Line at 12" CIC
- (L) 4" White Lane Line
- (S) 24" White Stop Line
- (I) White Island Marking

SIGNING LEGEND

- Proposed
- Existing to Remain
- Existing to be Relocated
- Existing to be removed

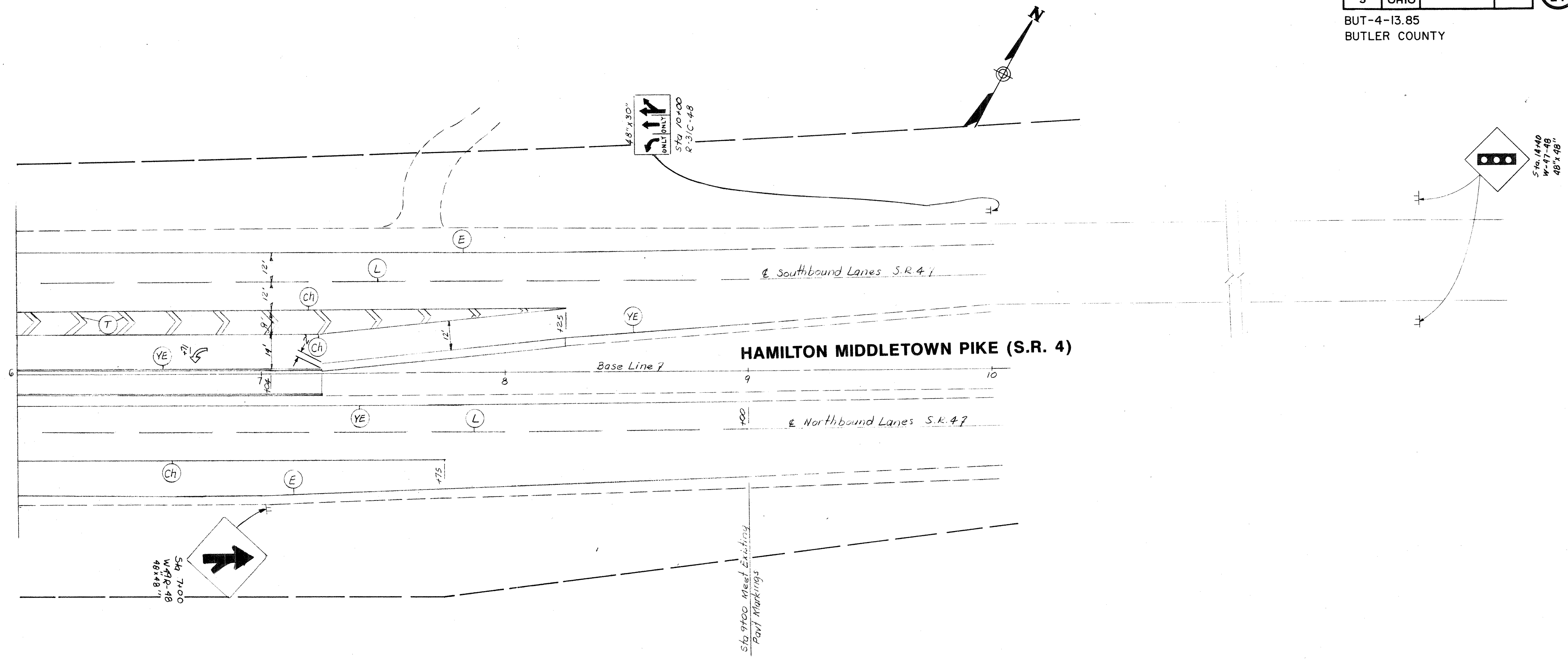
FOR PROPOSED SIGNAL PLAN SEE SHEET 18.





FHWA REGION	STATE	PROJECT
5	OHIO	

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SIGNAL SUB-SUMMARY

ITEM	REF.	QUAN.	UNIT	DESCRIPTION
608	Cont.	7*	S.F.	4" Concrete Walk * Carried to Roadway General Summary
625	P2, P4, Cont.	3	EA.	Ground Rod
625	B2, B4-B14	6	EA.	Pull Box, 713.08, 18"
625		120	L.F.	Trench
625	B 15	1	E.A.	Pull Box, 713.08, 24"
625		91	L.F.	Conduit, 713.04, 1"
625		19	L.F.	Conduit, 713.04, 1 1/2"
625		1	EA.	Power Service
625		10	L.F.	Conduit, 713.04, 4"
630		2	EA.	Sign Hanger Assembly, Span Wire, Type 2
630		21	S.F.	Signs, Flatsheet, Type G
632		8	EA.	Vehicular Signal Head, 3-Section, 12-Inch, One Way
632		4	EA.	Loop Detector Unit
632	DE1,2, DW1	254	L.F.	Loop Detector Pavement Cutting
632		4.6	C.Y.	Concrete For Anchor Base Foundations
632		2	EA.	Strain Pole, Type TC-81.10, Design 6, 32 Feet, As Per Plan
632		331	L.F.	Messenger Wire, 7-Strand, 3/8 Inch Dia., With Accessories
632		549	L.F.	Signal Cable, 5-Conductor, No.14 AWG
632		570	L.F.	Loop Detector Wire, Type E
632		2183	L.F.	Loop Detector Lead-In Cable
632		52	L.F.	Power Cable, 2-Conductor, No. 8 AWG
632		8	EA.	Covering of Vehicular Signal Head
632		1	EA.	Removal of Traffic Signal Installation
632		506	L.F.	Signal Cable, 3-Conductor, No. 10 AWG
632		2	E.A.	Loop Detector Unit, With Delay
633		1	EA.	Controller, Actuated, 2-Phase, Solid State Digital Microprocessor
633		1.1	C.Y.	Concrete For Cabinet Foundation

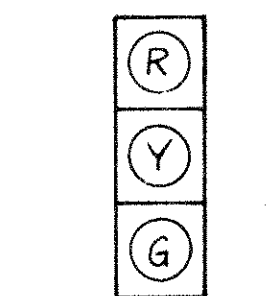
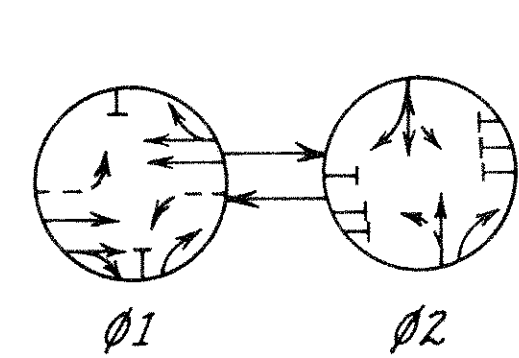
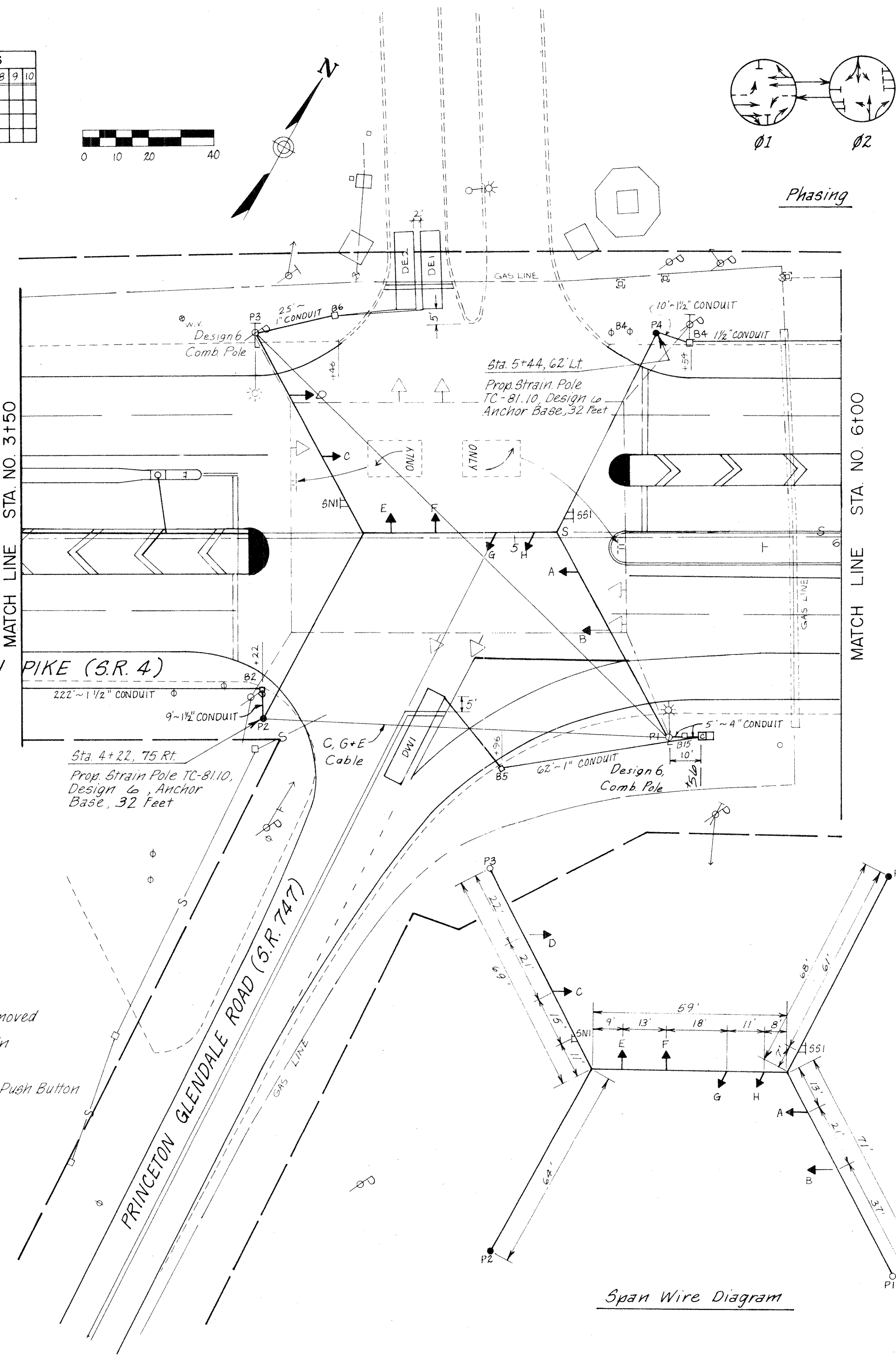
SEQUENCE

MOVEMENT	LENSE	FLASH	INTERVALS													
			1	2	3	4	5	6	7	8	9	10				
Ø1	VEH. ABCD	Y	G	Y	R	R	R	R								
	PED.															
Ø2	VEH. EFGH	R	R	R	R	G	Y	R								
	PED.															

TIMING

FUNCTION	Ø1	Ø2
RECALL	MAX	
	MIN	X
	PED	
NON-LOCK DETECTORS		X
INITIAL	15	10
EXTENSION	3	3
WALK		
PED CLEAR		
MAX 1	40.0	25.0
MAX 2	40.0	25.0
YELLOW	4.0	3.5
RED	2.0	2.5
ADDED INITIAL	0.5	0.0
MAX. INITIAL	25.0	

- START IN 3s FLASH
- FIRST PHASE ~ Ø1 GREEN
- ACTIVATE PTSWF SIGNS 8.5s BEFORE Ø1 YELLOW



A-H 12"

Signal Heads



5N1, 551

R-26A-36

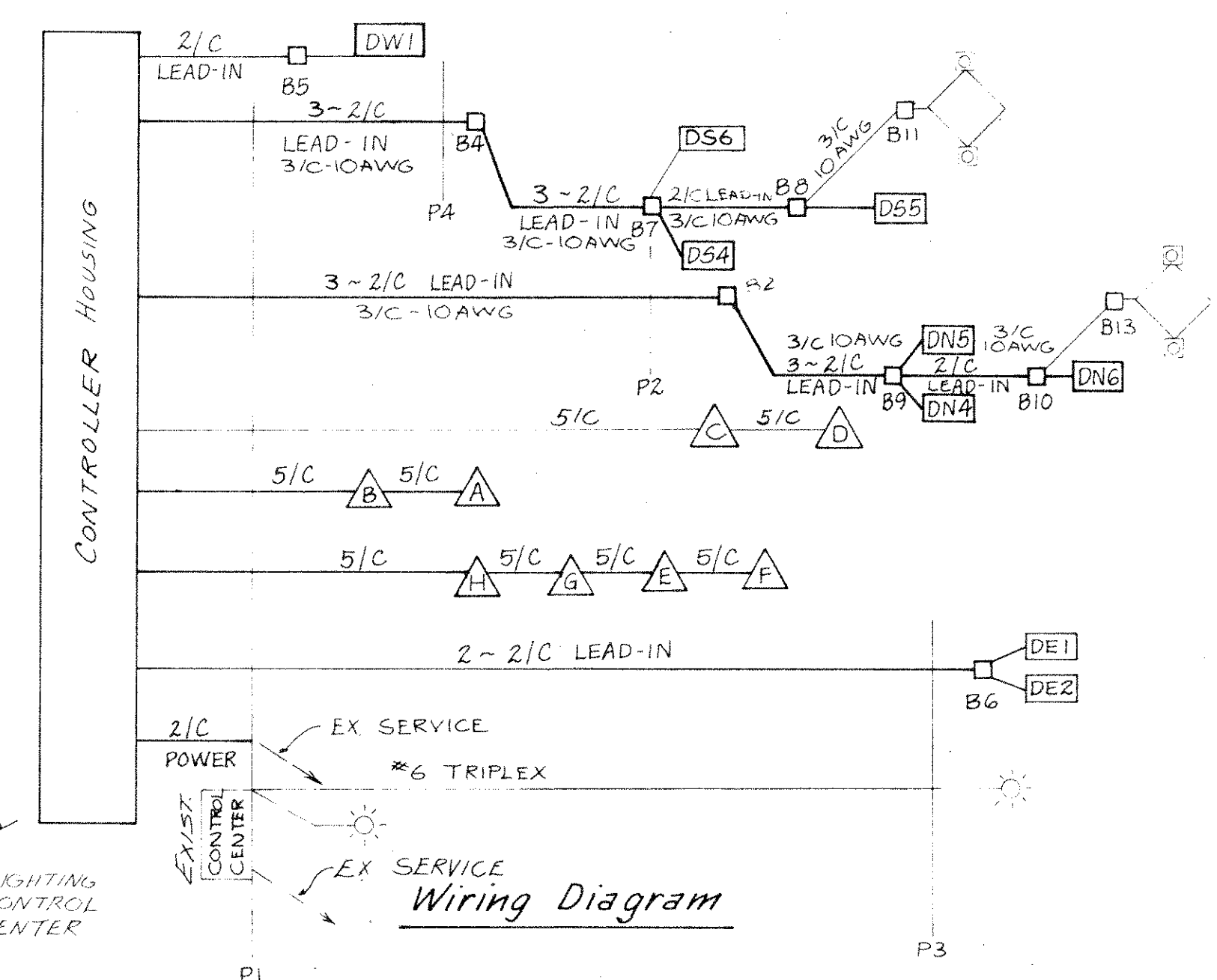
36" X 42"

Signs

LEGEND

- Existing Strain Pole To Be Removed
- Existing Strain Pole To Remain
- Strain Pole
- Strain Pole With Pedestrian Push Button
- Pull Box
- ▶ Vehicular Signal Head
- ⊢ Sign On Span Wire
- Underground Conduit
- - - Existing Span Wire
- Loop Detector
- Existing Power Pole
- New Power Pole
- ▶ Pedestrian Signal Head
- ▶ Existing Signal Head

Span Wire Diagram



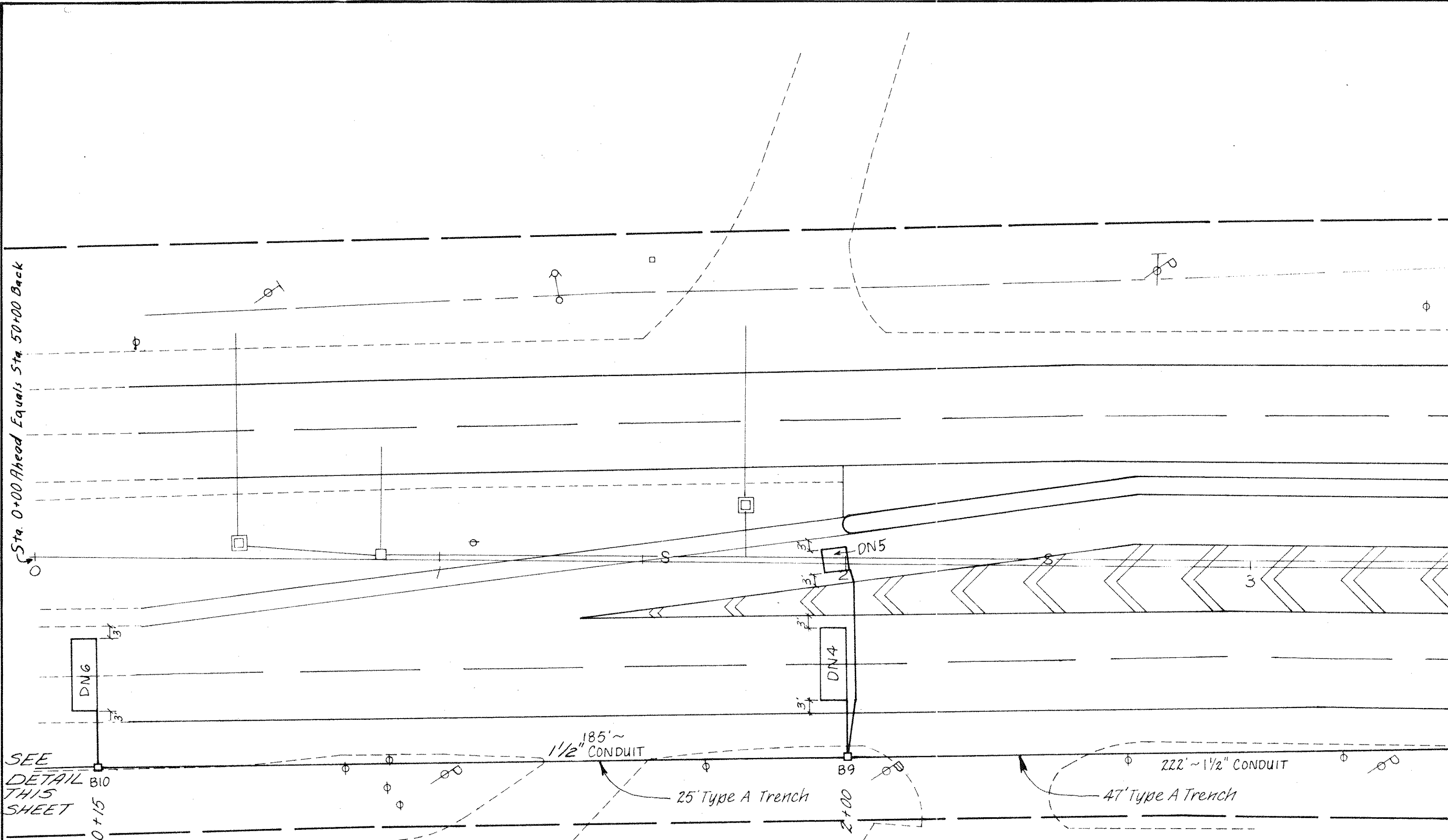
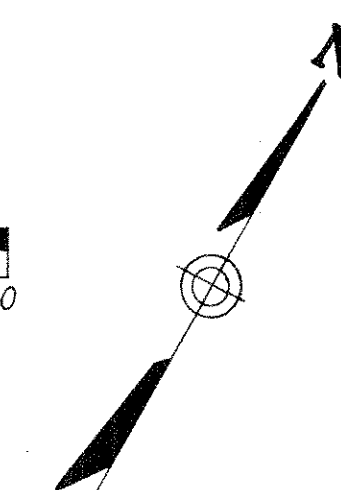
DETECTORS

Loop	Size	Phase	Delay	Det. #	Mode
DN4	18x6	1Ext	-	1	PU
DN5	6x6	1Ext	-	1	PU
DN6	18x6	1Ext	-	2	PU
DS4	18x6	1Ext	-	3	PU
DS5	22x6	1Ext	-	4	PU
DS6	6x6	1Ext	-	3	PR
DW1	6x30	2	5s	5	PR
DE1	6x2.5	2	5s	6	PR
DE2	6x2.5	2	5s	6	PR

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BUTLER COUNTY

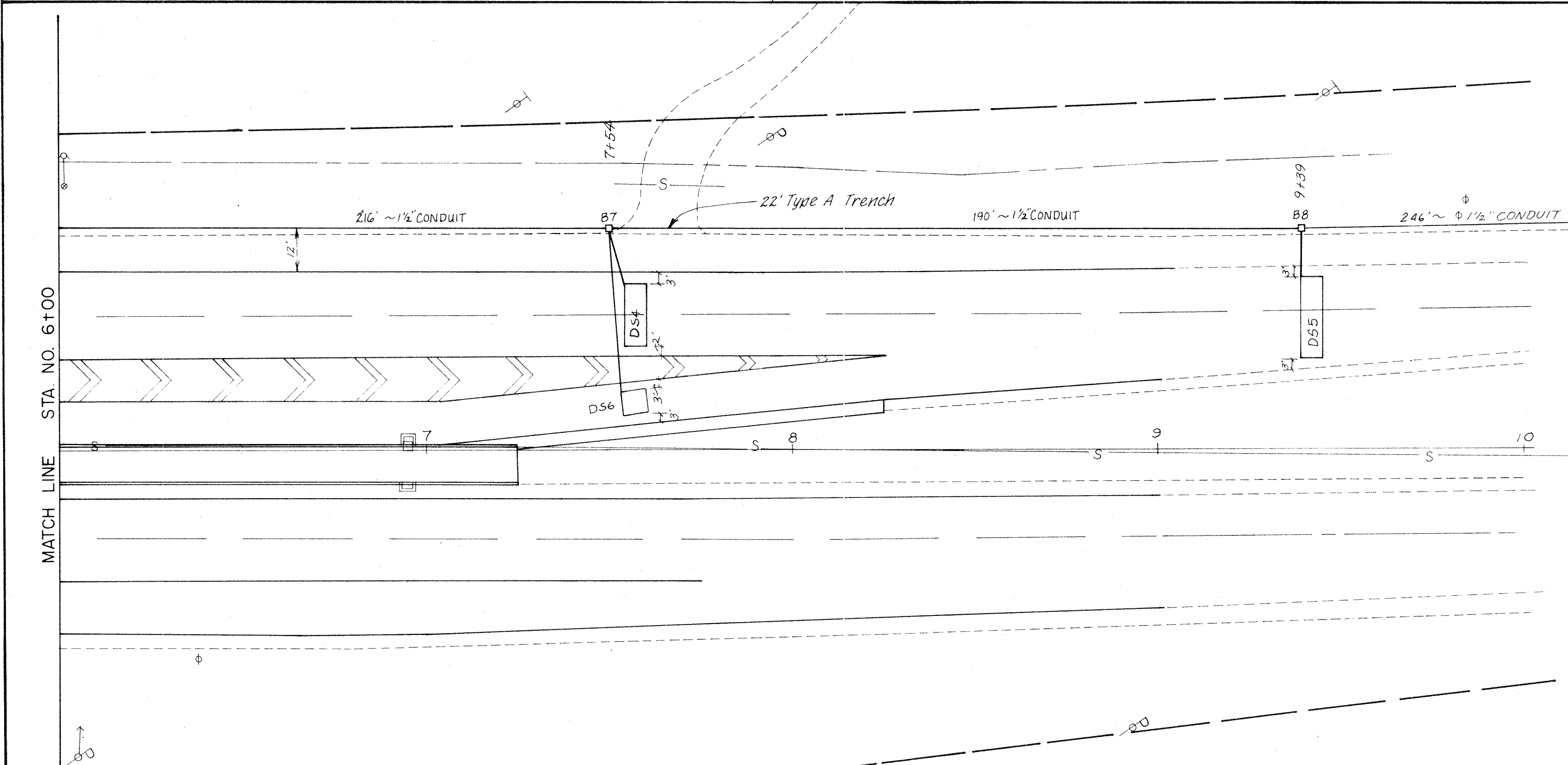
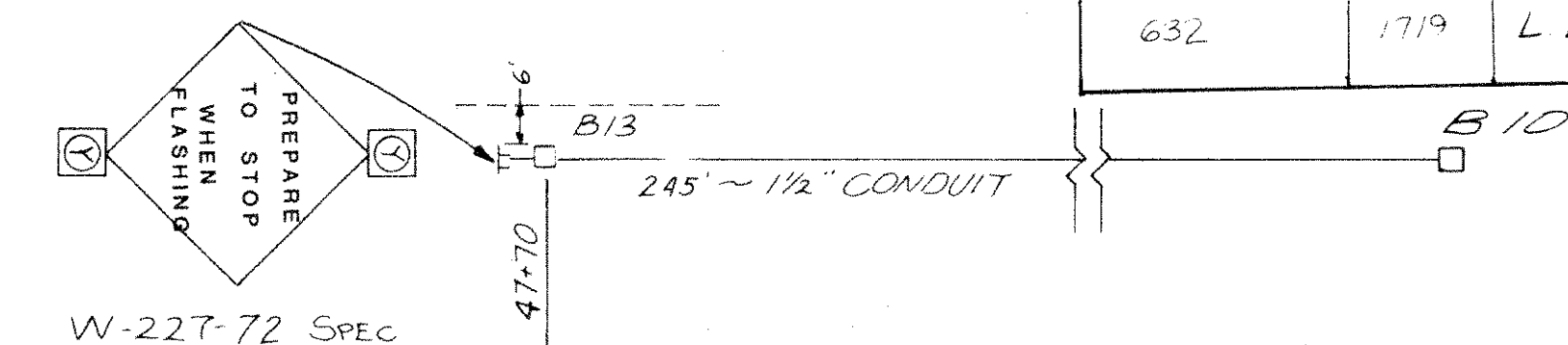
### SIGNAL SUBSUMMARY

ITEM	QTY.	UNIT	DESCRIPTION	REFERENCE
631	2	EA	SIGN FLASHER ASSEMBLY	B11-B17
630	72	S.F	SIGNS, EXTRUSHEET	B11-B14
625	2	EA	LIGHT POLE FOUNDATION	
625	1210	L.F	TRENCH	
625	94	L.F	TRENCH IN PAVED AREAS, TYPE A	
625	4	EA	PULLBOX, T13.08, 18"	
625	1304	L.F	CONDUIT, T13.04, 1 1/2"	
625	2	EA	LIGHT POLE, 7 1/2" WITH 10 1/2" B.C., 116A STYLE V	
625	2	EA	CONNECTOR KIT, TYPE VIII	
625	2	EA	GROUND ROD	
631	2	EA	SIGNS WIRED	
631	2	EA	PHOTOELECTRIC CONTROL	
632	1364	L.F	SIGNAL CABLE, 3 CONDUCTOR, NO. 10 AWG.	
632	384	L.F	LOOP DETECTOR PAVEMENT CUT.	
632	900	L.F	LOOP DETECTOR WIRE, TYPE E	
632	1719	L.F	LOOP DETECTOR LEADIN CABLE	



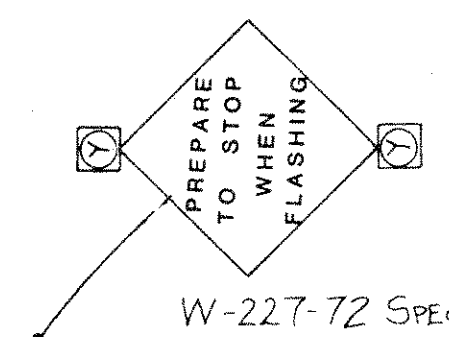
MATCH LINE STA. NO. 3+50

HAMILTON MIDDLETOWN PIKE (S.R. 4)



MATCH LINE STA. NO. 6+00

HAMILTON MIDDLETOWN PIKE (S.R. 4)

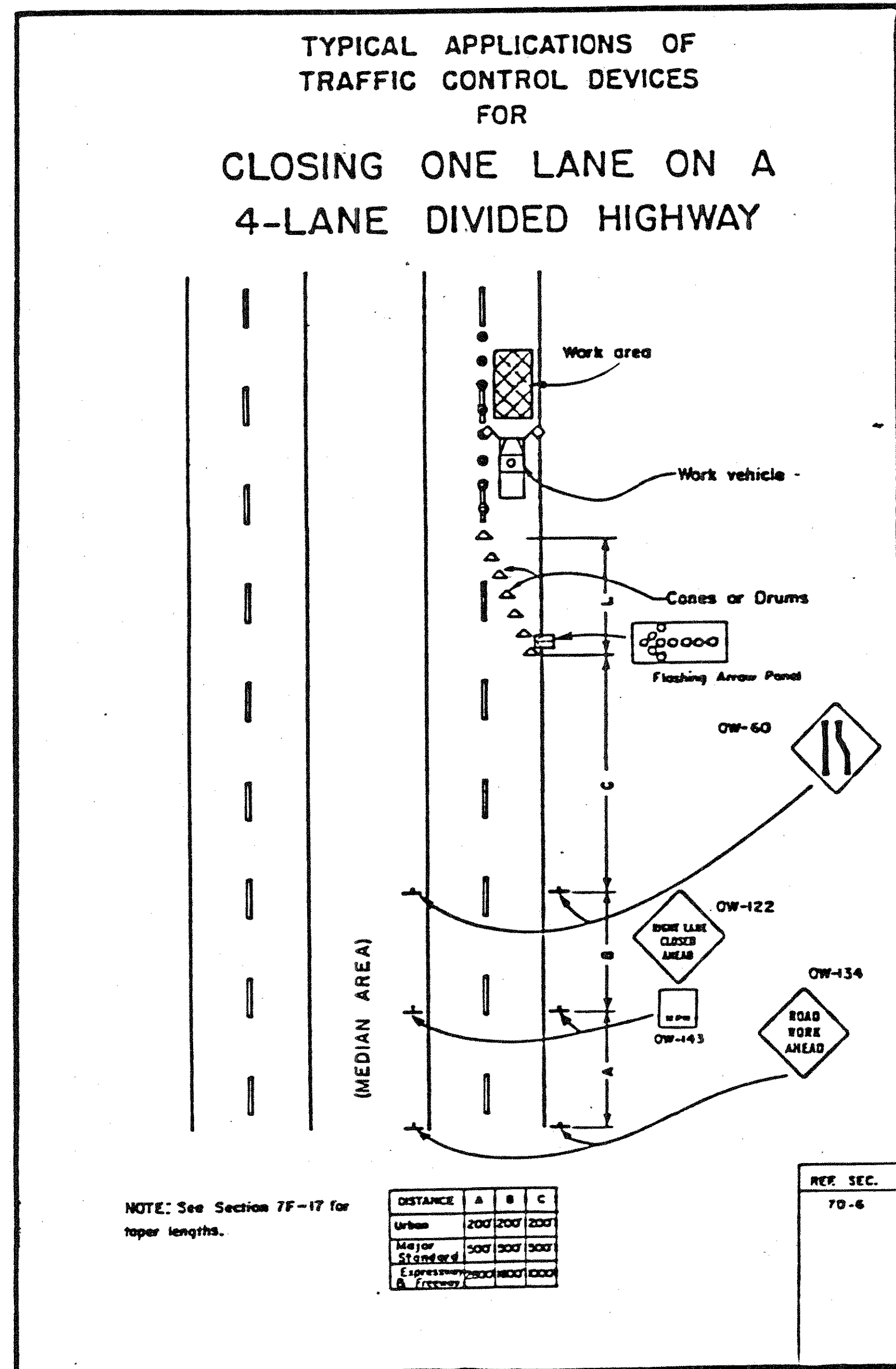


FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

20  
21

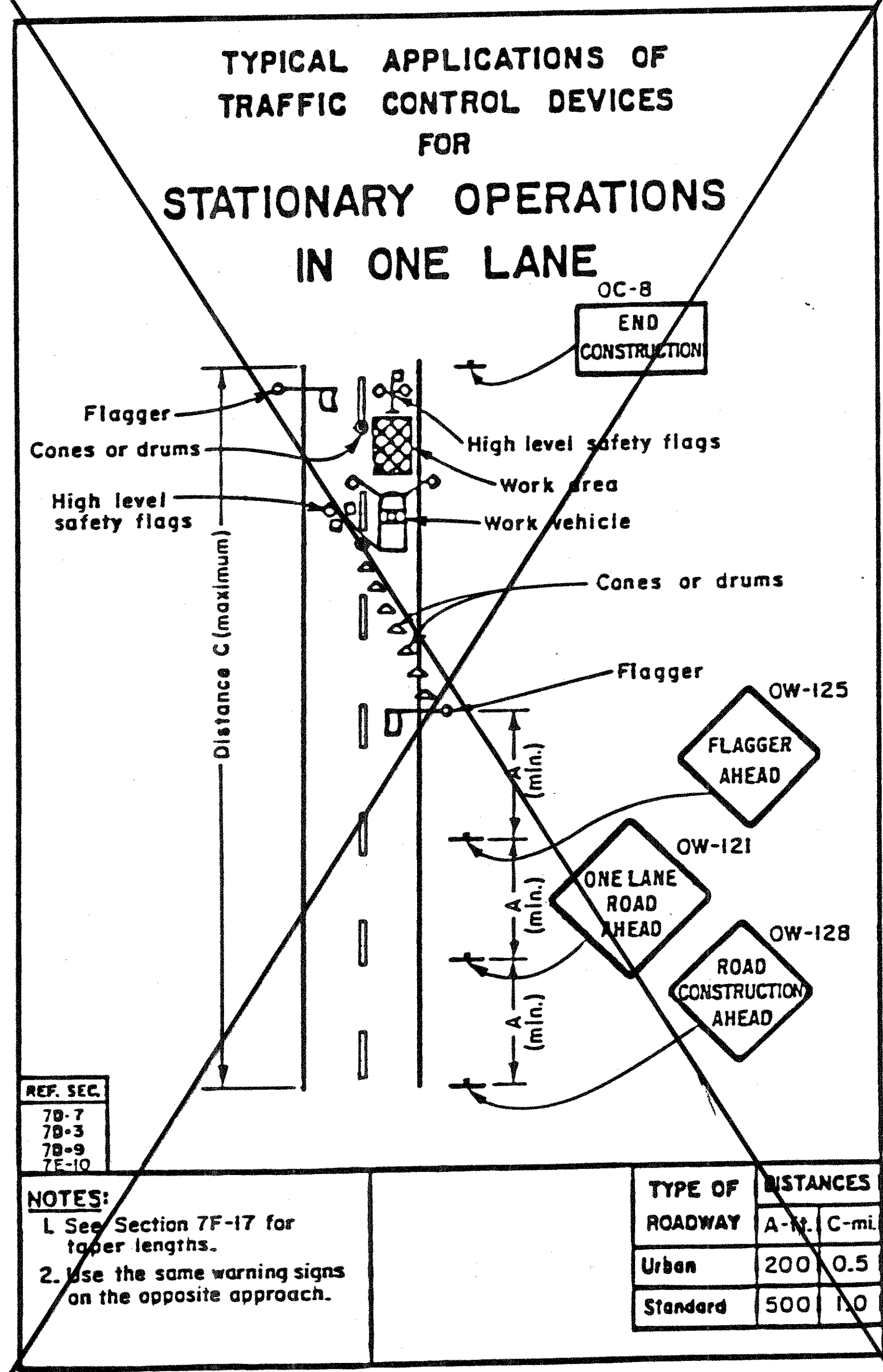
PLAN NO. BUT-4-13.85  
BUTLER COUNTY

# MAINTENANCE OF TRAFFIC

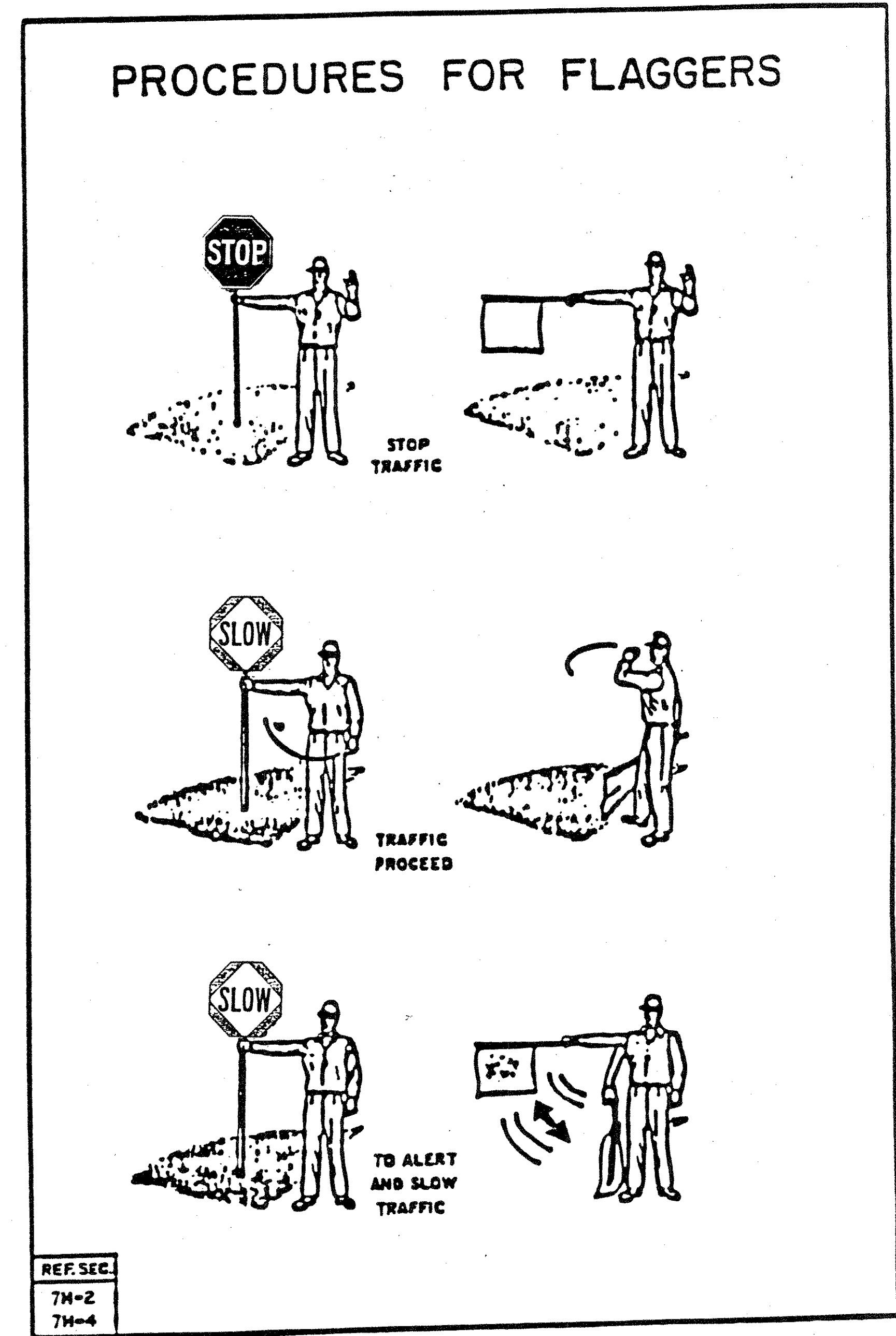


C-21

*Cones or drums shall be placed so that the Contractor's workers and equipment are totally within the channelized area when working.*



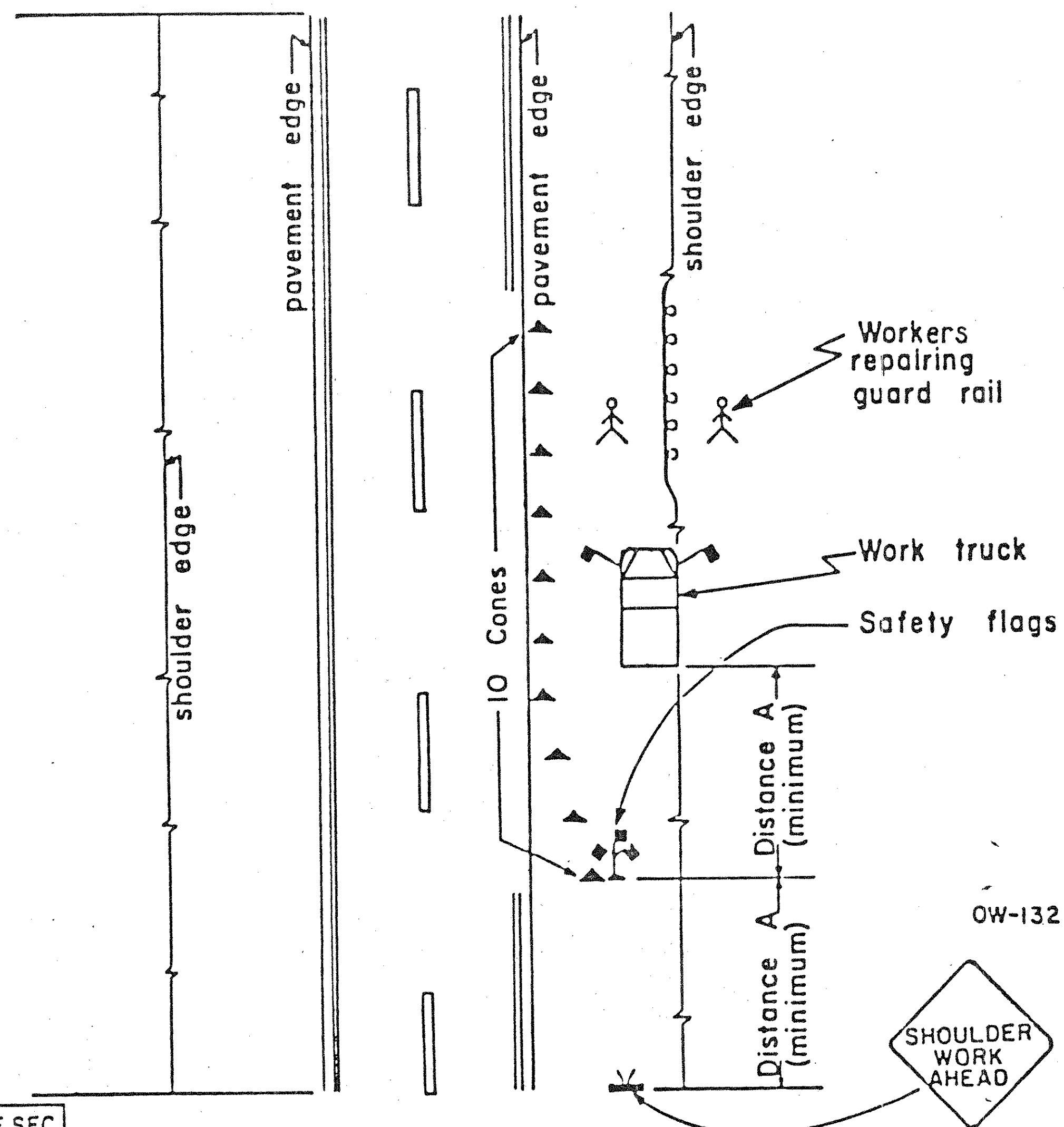
C-18



C-10

Flagging Procedures shall be as described in 7M-4 and plate C-10 of the OMUTCD (Rev.13)

### TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR STATIONARY OPERATIONS ON THE SHOULDER



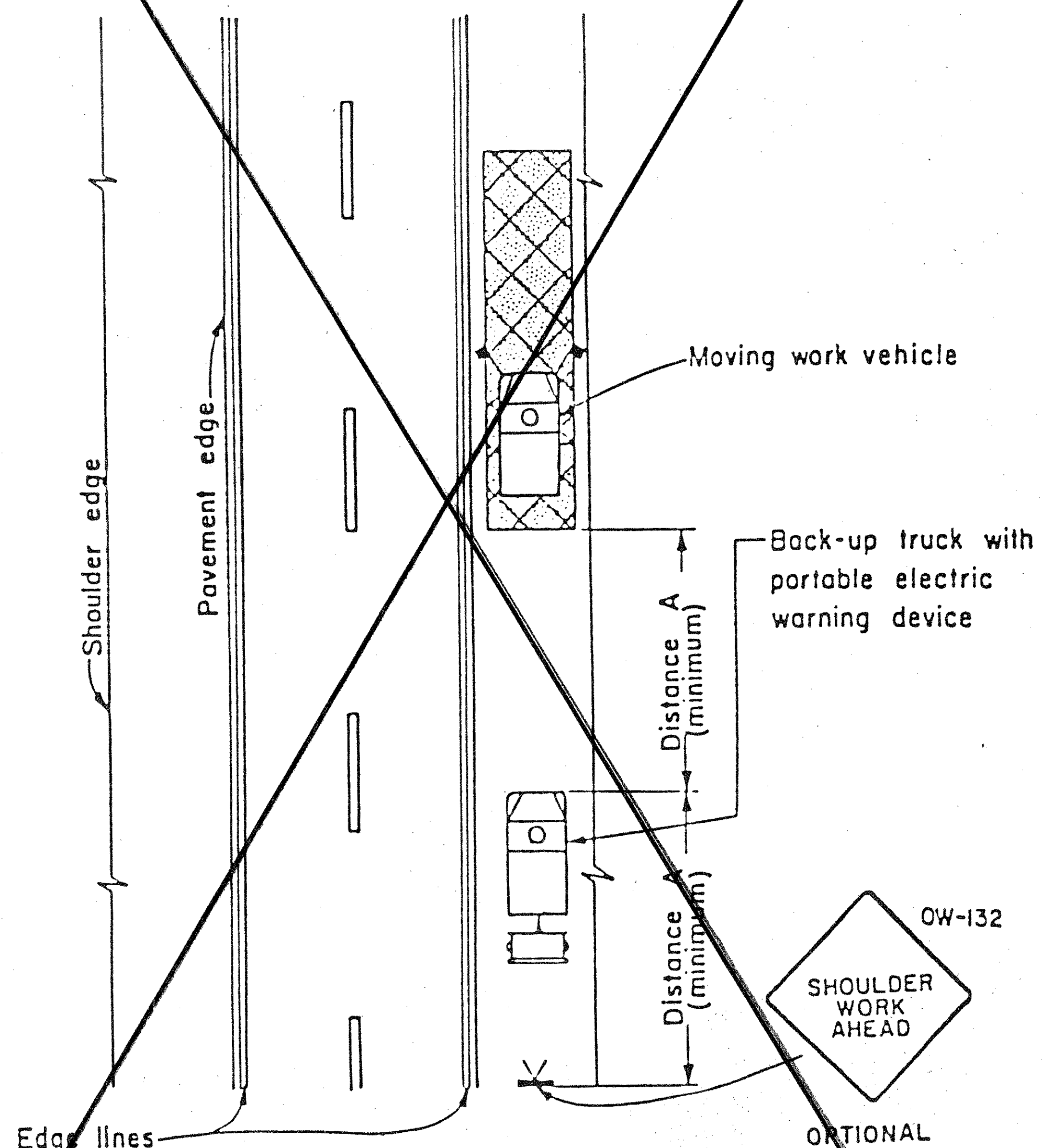
REF. SEC.  
7D-16

**NOTES:**

1. Space the cones at 50' maximum.
2. For work within the median, install the same cones and signs for both directions of travel.

TYPE OF ROADWAY	DISTANCE A - ft.
Urban	200
Standard	500
Expressway	750

### TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR MOVING OPERATIONS ON THE SHOULDER



REF. SEC.  
7D-16  
7G-8

**NOTES:**

1. For work within the median, use the same treatment for both directions of travel.

TYPE OF ROADWAY	DISTANCE A ft.
Urban	200
Standard	500
Expressway	750