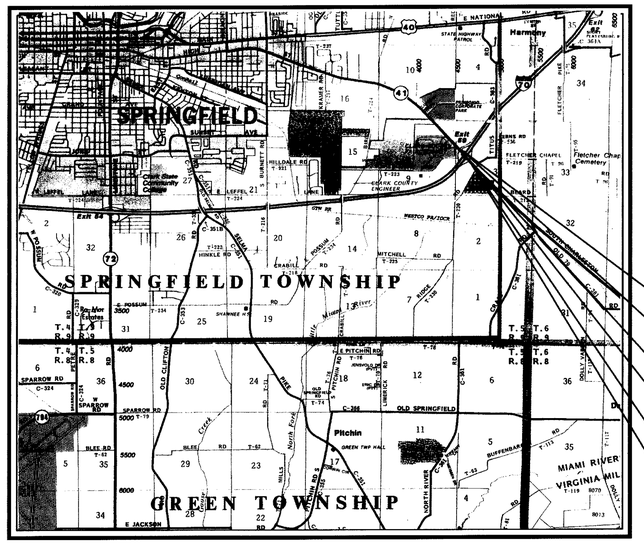
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CLA-41 (12.05)(12.19)(12.37)
SPRINGFIELD TOWNSHIP
CLARK COUNTY



RAMP B
PROJECT 12.05
STA 156+10.94

TITUS ROAD
PROJECT 12.37
STA 173+13.54

RAMP D
PROJECT 12.19
STA 166+10.35

LOCATION MAP

LATITUDE: N39°57'33" LONGITUDE: W84°10'15"

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED
STATE & FEDERAL ROUTES
OTHER ROADS

DESIGN DESIGNATION

S.R. 41

CURRENT ADT (2001)	10790
DESIGN YEAR ADT (2021)	14160
DESIGN HOURLY VOLUME (2021)	1416
DIRECTIONAL DISTRIBUTION	55%
TRUCKS (24 HOUR B&C)	14%
DESIGN SPEED	55
LEGAL SPEED	55

DESIGN FUNCTIONAL CLASSIFICATION – RURAL MAJOR COLLECTOR

DESIGN EXCEPTIONS

NONE REQUIRED

INDEX OF SHEETS:

TITLE SHEET	1
SCHEMATIC PLAN	2
TYPICAL SECTIONS	3
GENERAL NOTES	4
MAINTENANCE OF TRAFFIC	5
GENERAL SUMMARY	6
PLAN AND PROFILE, RAMP "B"	7
CROSS SECTIONS, RAMP "B"	8–9
PLAN AND PROFILE, RAMP "D"	10
CROSS SECTIONS, RAMP "D"	11–12
PLAN AND PROFILE, S.R. 41	13
CROSS SECTIONS, S.R. 41	14–15
NOT USED	16
TRAFFIC CONTROL	17–20
TRAFFIC SIGNALS	21–29

PROJECT DESCRIPTION

Installation of a fully actuated traffic signal at the intersection of S.R. 41 and Titus/Ridge Road with addition of a southbound right turn lane on S.R. 41.

Installation of a fully actuated traffic signal at the intersection of S.R. 41 and I.R. 70. Eastbound Ramp (C and D) widen the off Ramp D to accommodate an exclusive left turn lane and a combination through right turn lane.

Installation of a fully actuated traffic signal at the intersection of S.R. 41 and I.R. 70. Westbound Ramp (A and B) widen the off Ramp B to accommodate an exclusive left turn lane and a combination through right turn lane.

LIMITED ACCESS

This improvement is especially designed for through traffic and has been declared a limited access highway or freeway by action of the Director in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.

1997 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 William L. Harrison / PSM
Date 11-13-00 District Deputy Director

Approved Gordon Proctor Jr.
Date 11-20-00 Director, Department of Transportation

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

Plan Prepared By:

WORL & Associates, Inc.
Consulting Engineers & Surveyors
A Wholly Owned Subsidiary of Floyd Browne Associates, Inc.
1065 Fairington Drive · Sidney, Ohio 45365
(937) 492-7636 · FAX (937) 498-5155
eMail: worl@bright.net

ENGINEER'S SEAL:

STATE OF OHIO · STEPHEN DEE WORL · 31036 · REGISTERED · PROFESSIONAL ENGINEER

SIGNED: Stephen D. Worl
DATE: Nov. 13, 2000

STANDARD CONSTRUCTION DRAWINGS									SUPPLEMENTAL SPECIFICATIONS	
BP-1.1	7-28-00	GR-1.1M	10-21-97	MT-95.31M	4-25-94	TC-61.10M	3-31-94		806	9-9-97
BP-2.1	7-28-00	GR-1.3M	11-30-94	MT-95.32M	4-25-94	TC-65.10M	11-1-95		814	6-2-98
BP-2.2	7-28-00	GR-2.1M	4-14-98	MT-95.41M	4-25-94	TC-61.11M	11-1-95		842	1-6-99
BP-3.1	7-28-00	GR-4.2M	10-21-97	MT-96.10M	1-30-95	TC-61.12M	11-1-95		863	10-12-99
		GR-4.3M	10-21-97	MT-98.18M	4-25-94	TC-71.10M	9-1-93			
HW-1.1M	7-12-95	GR-4.4M	11-30-94	MT-97.11M	1-30-95	TC-81.10M	12-10-96		870	8-10-99
		GR-5.3M	11-30-94	MT-99.10M	1-30-95	TC-82.10	1-19-99		877	4-13-99
DM-1.1M	10-21-97	GR-1.2M	1-3-96	MT-105.10M	4-25-94	TC-82.11	1-19-99		899	10-21-98
DM-1.2M	10-21-97			MT-105.11M	4-25-94	TC-83.10M	11-24-93			
DM-4.3	4-29-99	HL-30.11M	3-31-95			TC-83.20M	11-24-93		905	4-1-98
DM-4.4	4-29-99	HL-30.21M	5-1-95			TC-84.20M	11-24-93		906	5-5-98
		HL-30.22M	3-31-95			TC-85.20M	11-24-93		907	10-21-98
		HL-40.10M	3-31-95						908	3-28-00
		HL-50.11M	3-31-95							

FEDERAL PROJECT NO. TEA1-6010(41)

PID NO. 20214

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

CLA-41 (12.05)(12.19)(12.37)

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Dist 7 2/21/01
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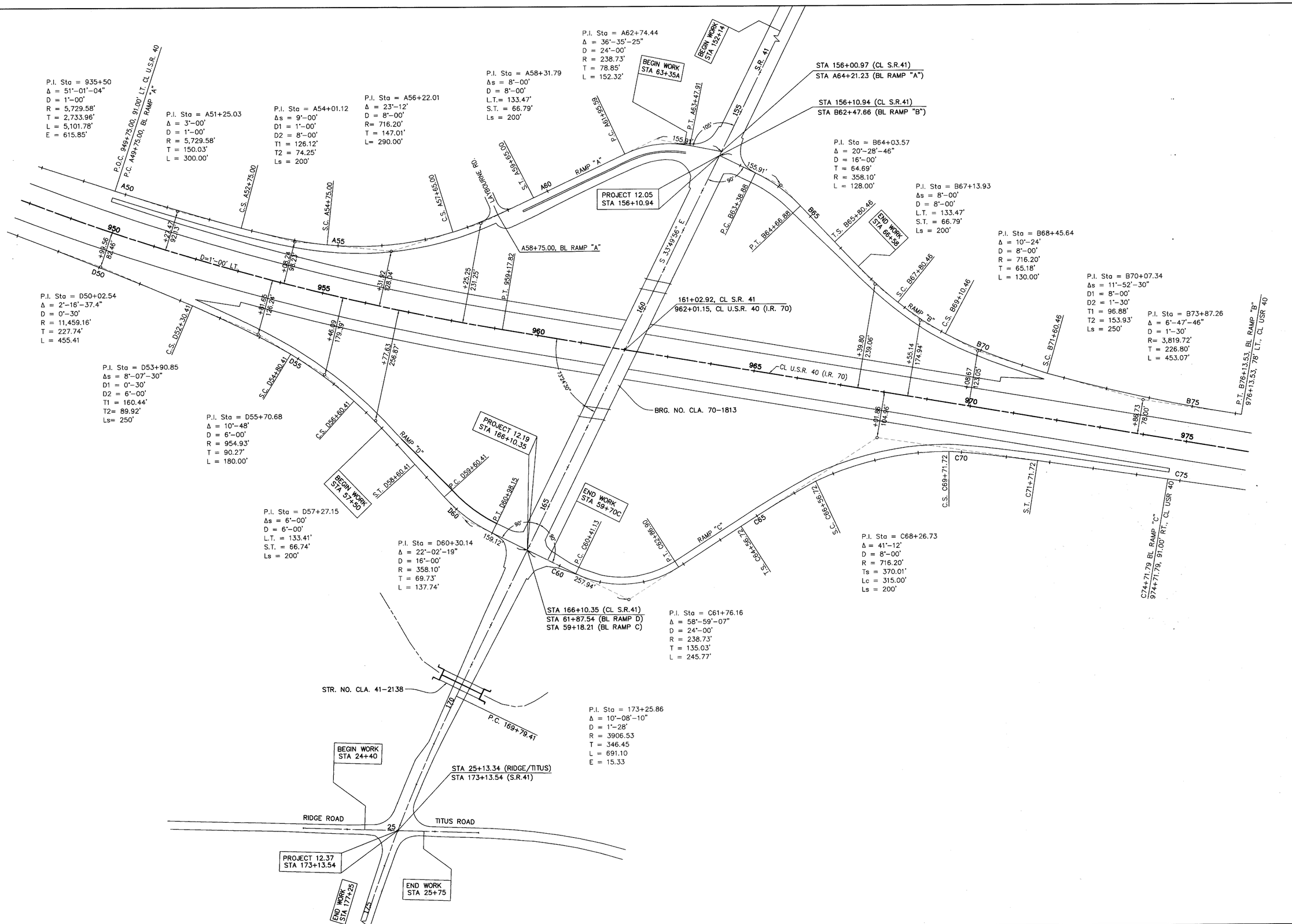

SCHEMATIC PLAN

CLA-41 (12.05)(12.19)(12.37)

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SYMBOLS

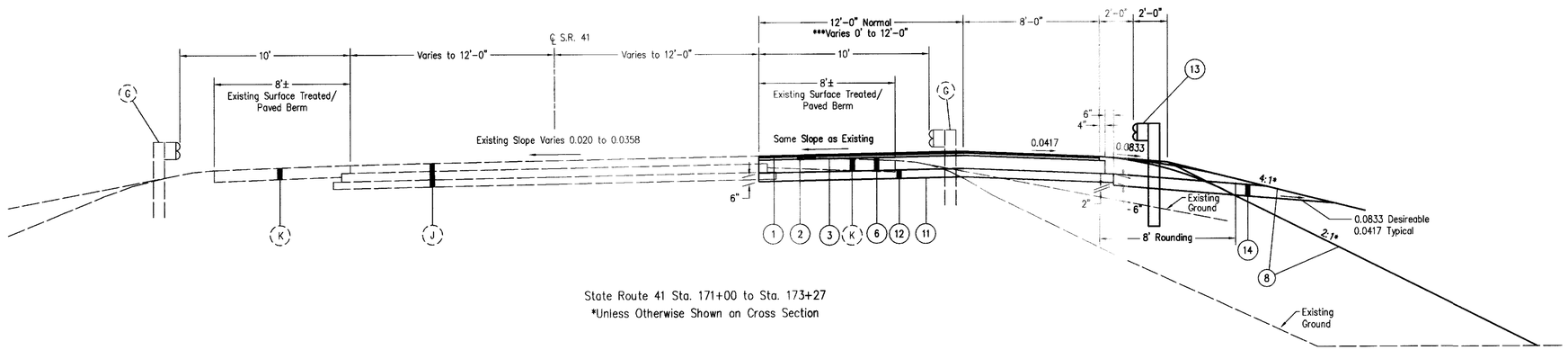
Item 448 1¼" Asphalt Conc. Surface, Type 1H
Item 407 Tack Coat For Intermediate Course (0.04 Gal./S.Y.)
Item 448 1¾" Asphalt Conc. Intermediate, Type 2, PG 64–28
Item 301 9" Bituminous Aggregate Base
Item 304 6" Aggregate Base Course or Thickness as Shown on Typical Sections

Item 451 10" Reinforced Concrete Pavement
Item 304 4" Minimum Aggregate Base, Dimension as Shown on Typical Section

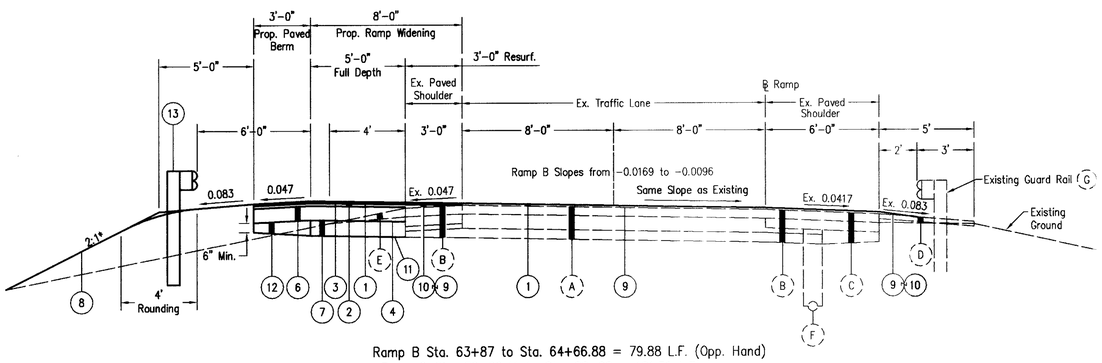
Resurface
Item 448 1¼" Asphalt Conc. Surface, Type 1H
Item 407 Tack Coat (0.075 Gal./S.Y.)

Paved Berm Adjacent to Asphalt Pavement
Item 448 1¼" Asphalt Conc. Surface, Type 1H
Item 407 Tack Coat For Intermediate Course (0.04 Gal./S.Y.)
Item 448 1¾" Asphalt Conc. Intermediate, Type 2, PG 64–28
Item 301 9" Bituminous Aggregate Base
Item 304 6" Aggregate Base Course or Thickness as Shown on Typical Sections
Paved Berm Adjacent to Concrete Pavement
Item 301 9" Bituminous Aggregate Base
Item 304 4" Minimum Aggregate Base, Dimension as Shown on Typical Section

Feather, Butt Joint Type
Item 448 1¼" Asphalt Conc. Surface, Type 1H
Item 407 Tack Coat (0.075 Gal./S.Y.)
Item 202 Wearing Course Removed 0–1¼"

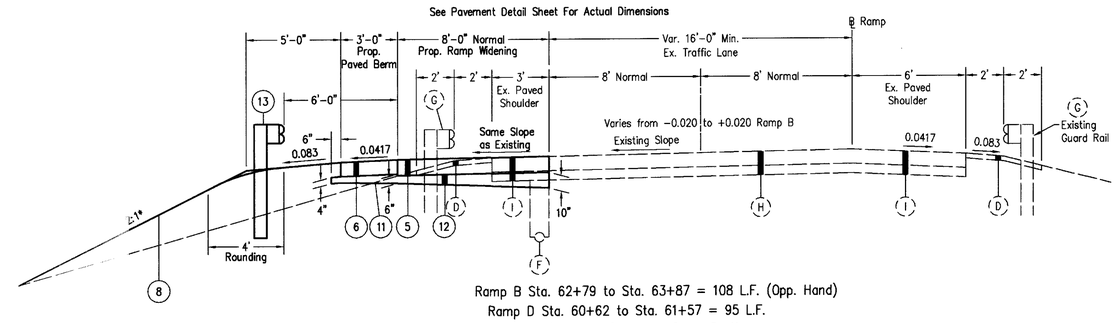


State Route 41 Sta. 171+00 to Sta. 173+27
*Unless Otherwise Shown on Cross Section

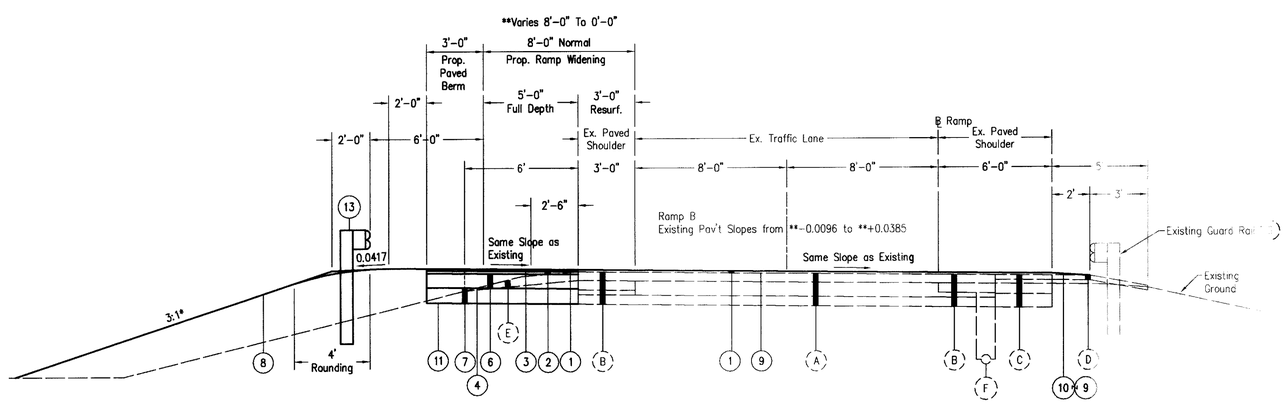


Ramp B Sta. 63+87 to Sta. 64+66.88 = 79.88 L.F. (Opp. Hand)
Ramp D Sta. 59+60.41 to Sta. 60+62 = 101.59 L.F.
*Unless Otherwise Shown on Cross Section

See Pavement Detail Sheet For Actual Dimensions



Ramp B Sta. 62+79 to Sta. 63+87 = 108 L.F. (Opp. Hand)
Ramp D Sta. 60+62 to Sta. 61+57 = 95 L.F.
*Unless Otherwise Shown on Cross Section



**Ramp B Sta. 64+66.88 to Sta. 66+29.88 = 163 L.F. (Opp. Hand)
Ramp D Sta. 57+97.41 to Sta. 59+60.41 = 163 L.F.
*Unless Otherwise Shown on Cross Section

LEGEND

1. ITEM 448 – 1¼" Asphalt Concrete Surface Course, Type 1H
2. ITEM 448 – 1¾" Asphalt Concrete Intermediate Course, Type 2, PG 64–28
3. ITEM 407 – Tack Coat (See General Notes) For Intermediate Course
4. ITEM 408 – Bituminous Prime Coat @ 0.4 Gal./S.Y.
5. ITEM 451 – 10" Reinforced Concrete Pavement
6. ITEM 301 – 9" Bituminous Aggregate Base, PG 64–22
7. ITEM 304 – 9¾" Aggregate Base
8. ITEM 870 – Seeding and Mulching
9. ITEM 407 – Tack Coat (See General Notes)
10. ITEM 448 – Variable Depth Asphalt Concrete Surface Course, Type 1H
11. ITEM 203 – Subgrade Compaction
12. ITEM 304 – 4" Min. Aggregate Base, Dimensions As Indicated Above
13. ITEM 606 – Guard Rail, Type 5
14. ITEM 605 – Aggregate Drains

- (A) Existing 5½" Asphalt Concrete on 9" Concrete Pavement on 6"± Aggregate Subbase
- (B) Existing 5½" Asphalt Concrete Surface on 6" Asphalt Concrete Base on 3" Aggregate Base on 3"–6" Subbase
- (C) Existing 3" Asphalt Concrete on 9" Asphalt Concrete Base on Variable 8½"–6" Aggregate Base
- (D) Existing 3" Asphalt Concrete
- (E) Existing Variable Depth Compacted Aggregate
- (F) Existing 6" Pipe Underdrain
- (G) Existing Type 5 Guard Rail
- (H) Existing 10" Reinforced Concrete Pavement on 6" Aggregate Subbase
- (I) Existing 9" Asphalt Concrete Base Course on 6" Aggregate Subbase
- (J) Existing 5½" Asphalt Concrete Surface on 6" Aggregate Base on 5" Aggregate Subbase (S.R. 41)
- (K) Existing 2"± Asphalt Concrete on 6"± Aggregate Base, Berm, (S.R. 41)

CALCULATED
CHECKED

TYPICAL SECTIONS

CLA-41 (12.05)(12.19)(12.37)

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ROUNDING
THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

UTILITIES
LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

AMERITECH
3233 WOODMAN DRIVE
DAYTON, OHIO 45420
CATHY WEINGARTNER
937-296-7072

M.C.I. WORLD COM
WAYNESVILLE NIC
9073 LYTLE-FERRY ROAD
WAYNESVILLE, OHIO 45068
800-377-2854

QWEST COMMUNICATIONS
555 17TH ST.
SUITE 1200
DENVER, CO 80202

SPRINT
6100 SPRINT PARKWAY
OVERLAND PARK, KS 66251

ODOT DISTRICT 7
1001 ST. MARYS AVE.
S.R. 29, BOX 969
SIDNEY, OH 45365-0969
937-492-1141

COLUMBIA GAS OF OHIO, INC.
939 WEST GOODALE BOULEVARD
P.O. BOX 2586
COLUMBUS, OHIO 43216-2586
DEBBIE BURKE
614-460-2242

OHIO EDISON COMPANY
420 SOUTH YORK STREET
SPRINGFIELD, OHIO 45505
GARY GUTHRIE
937-327-1235

CITY OF SPRINGFIELD
76 E. HIGH STREET
SPRINGFIELD, OHIO 45502
937-324-7312

TIME-WARNER CABLE
1512 SOUTH US ROUTE 68
SUITE 7
URBANA, OHIO 43078
TODD LOTZ
937-653-5507

UTILITIES
THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

CONTINGENCY QUANTITIES
THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK 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 FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

ELEVATION DATUM
ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.

WORK LIMITS
THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE
THESE WORK LIMITS.

CONVERSION OF STANDARD CONSTRUCTION DRAWINGS
THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIALS SPECIFICATIONS. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

PROFILE AND ALIGNMENT
THE PROPOSED PAVEMENT RESURFACING SHALL FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. (PREVIOUS CONSTRUCTION PLANS, PROJECT NO. CLA-70-13.98 AND CLA-40-17.87, SHOWING THE ORIGINAL ALIGNMENT AND PROFILE, ARE AVAILABLE FOR INSPECTION AT THE ODOT DISTRICT 7 OFFICE). THE PROPOSED ASPHALT CONCRETE OVERLAY SHALL (HAVE A UNIFORM THICKNESS OF 1 1/4 INCHES) (VARY IN THICKNESS FROM 1 1/4 INCHES AT THE CROWN TO 1 1/4 INCHES AT THE PAVEMENT EDGE) (BE AS SHOWN ON THE TYPICAL SECTIONS).

CONTRACTION JOINTS IN CONCRETE PAVEMENT OR BASE WIDENING
WHERE NEW CONCRETE IS PLACED ADJACENT TO EXISTING CONCRETE, CONTRACTION JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE SO AS TO FORM CONTINUOUS JOINTS WITH THOSE IN THE EXISTING CONCRETE.

THE MAXIMUM DISTANCE BETWEEN THE JOINTS IN THE NEW CONCRETE SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-2.2M, IF NECESSARY, ADDITIONAL JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE AT APPROXIMATELY EQUAL INTERVALS BETWEEN EXISTING JOINTS THAT EXCEED THE MAXIMUM SPACING.

PART-WIDTH CONSTRUCTION
BECAUSE OF THE NECESSITY TO BUILD THIS PROJECT UNDER TRAFFIC AND TO CONSTRUCT THE FULL PAVEMENT WIDTH IN STAGES, EXTREME CARE SHALL BE TAKEN TO PREVENT THE CONSTRUCTION OF A BUTT JOINT IN THE BASE COURSES. LONGITUDINAL JOINTS SHALL BE LAPPED AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1M.

ITEM 407 - TACK COAT AND ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE
THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. FOR ESTIMATING PURPOSES ONLY, THE PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF:

407, TACK COAT 0.075 GAL. PER SQ. YARD

407, TACK COAT FOR INTERMEDIATE COURSE
0.04 GAL. PER SQ. YARD

ITEM 605 - AGGREGATE DRAINS
AGGREGATE DRAINS SHALL BE PLACED AT 50 FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT 25 FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

CLEARING AND GRUBBING
ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE 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.

BENCHING OF FOUNDATION SLOPES
ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. ALL OTHER SLOPED EMBANKMENT AREAS SHALL BE BENCHED AS SET FORTH IN 203.09. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.09.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL
WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN IN AASHTO M 180. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

ITEM 606 - ANCHOR ASSEMBLY, TYPE B-98
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING EITHER OF THE FOLLOWING GUARDRAIL END TERMINALS.

1) THE SRT-350, GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO INC., 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

THE LENGTH OF THE SRT-350 SYSTEM IS CONSIDERED TO BE 37'-6", INCLUSIVE OF THREE 12'-6" LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. NO.	DRAWING NAME	DWG./ REV. DATE	ODOT APPROVAL DATE
SS444	SLOTTED RAIL TERMINAL POST LAYOUT AND ERECTION DETAILS SRT-350 (12.5, 8 POST)	7/12/99 Rev. 1	8/27/99
SS425M	SLOTTED RAIL TERMINAL SRT-350 POST LAYOUT AND ERECTION DETAILS (12.5, 9 POST)	6/21/97 Rev. 1	3/6/98

2) THE FLEAT-350 MANUFACTURED BY ROAD SYSTEMS, INC., 7631 NEW CASTLE DRIVE, FRANKFORT, IL 60423 (TELEPHONE: 815-464-5917).

THE LENGTH OF THE FLEAT-350 IS CONSIDERED TO BE 37'-6", INCLUSIVE OF THREE 12'-6" LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. NO.	DRAWING NAME	DWG./ REV. DATE	ODOT APPROVAL DATE
FLT-M	FLARED ENERGY ABSORBING TERMINAL (FLEAT-350) ASSEMBLY	4/16/98	7/31/98

GRADING SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING GR-4.3M.

THE FACE OF THE TYPE B-98 IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19: APPROXIMATELY 36" W X 12" H FOR THE SRT-350 AND 14" W X 20" H FOR THE FLEAT.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, TYPE B-98, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING REFLECTIVE SHEETING AND ALL RELATED HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

ITEM 870 - SEEDING AND MULCHING
THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

870, SEEDING AND MULCHING 3721 SQ.YD.
870, SOIL ANALYSIS TEST 1 EACH
870, PLACING TOPSOIL 182 CU.YD.
870, COMMERCIAL FERTILIZER 0.50 TON
870, AGRICULTURAL LIME 1.35 TON
870, WATER 18 M GAL

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING, ARE BASED ON THESE LIMITS.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL
THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE PLACED BY THE CONTRACTOR WITH THE ENGINEER'S CONCURRENCE FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

877, TEMPORARY SEEDING AND MULCHING 650 SQ. YD.

877, TEMPORARY SLOPE DRAINS 60 LIN. FT.

877, TEMPORARY PERIMETER FILTER FABRIC FENCE
600 LIN. FT.

877, TEMPORARY DITCH CHECK FILTER FABRIC FENCE
40 LIN. FT.

877, TEMPORARY DIKES 178 CU. YD.

601, ROCK CHANNEL PROTECTION, TYPE C (WITH FILTER)
2 CU. YD.

601, ROCK CHANNEL PROTECTION, TYPE C (WITHOUT FILTER)
60 CU. YD.

870, REPAIR SEEDING AND MULCHING 165 SQ. YD.

870, WATER 2 M. GAL.

EROSION CONTROL
ITEMS 601,660, 667, 668, 670, 671, 672 AND 673 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS AND TURF OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE 660, 667, 668, 671, 672 OR 673. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION, THESE ITEMS SHALL MEET THE REQUIREMENT OF 108.04.

STORM WATER POLLUTION PREVENTION PLAN
THE CONDITIONS OF THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT (SEE PROPOSAL) SHALL BE MET DURING ALL STAGES OF CONSTRUCTION. THE LOCATION AND TIMING OF ALL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE FIELD ADJUSTED TO PREVENT SIGNIFICANT IMPACTS ON RECEIVING WATERS. IMPLEMENTATION OF THIS STORM WATER POLLUTION
PREVENTION PLAN SHALL CONTINUE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL SUCH TIME THAT THE UPSLOPE DISTURBED AREAS ARE STABILIZED.

INSTALLATION OF SEDIMENT BASINS/DAMS, PERIMETER FILTER FABRIC FENCE, AND DITCH CHECKS SHALL BE CONCURRENT WITH CLEARING AND GRUBBING AND/OR GRADING OPERATIONS.

ALL REASONABLE ATTEMPTS SHOULD BE MADE TO MINIMIZE THE TOTAL AREA OF DISTURBED LAND.

AREAS TO REMAIN DORMANT FOR MORE THAN 45 DAYS SHOULD BE IMMEDIATELY STABILIZED WITH TEMPORARY SEEDING AND MULCHING, EROSION CONTROL MATTING OR OTHER APPROPRIATE EROSION CONTROL MEASURES.

ADDITIONAL QUANTITIES OF TEMPORARY SOIL EROSION AND SEDIMENT CONTROL ITEMS ARE GIVEN IN THE GENERAL NOTES.

202 RAISED PAVEMENT MARKERS, REMOVED FOR STORAGE
THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS TO REMOVE RAISED PAVEMENT MARKERS FOR STORAGE. THE CLARK COUNTY MANAGER SHALL BE CONTACTED FOR INSTRUCTIONS ON WHERE TO DELIVER THE RAISED PAVEMENT MARKERS.

ITEM 202 RAISED PAVEMENT MARKERS
REMOVED FOR STORAGE 108 EACH

MATERIALS SUPPLIED BY THE DEPARTMENT
ALL MATERIALS ARE TO BE CONTRACTOR FURNISHED, EXCEPT THAT THE DEPARTMENT SHALL SUPPLY RAISED PAVEMENT MARKERS AND RAISED PAVEMENT MARKER CASTINGS IN THE QUANTITIES SHOWN HEREIN TO THE CONTRACTOR. PAY ITEMS FOR THE DEPARTMENT SUPPLIED MATERIALS SHALL BE INDICATED AS "INSTALLATION ONLY". THE QUANTITY AND TYPE OF DEPARTMENT SUPPLIED MATERIALS ARE SHOWN ON THIS STREET.

THE CONTRACTOR SHALL PICK UP THE DEPARTMENT SUPPLIED RAISED PAVEMENT MARKER MATERIALS AT THE

O.P.I.
315 PHILLIPI RD.
COLUMBUS, OHIO 45895

THE TRANSPORT TO THE WORK SITE OR TO THE CONTRACTOR'S STORAGE FACILITY. THE RECYCLED RAISED PAVEMENT MARKER (RPM) AUTHORIZATION FORM IS TO BE SIGNED BY THE DISTRICT CONSTRUCTION ENGINEER PRIOR TO PICK UP OF THE RPMS. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND/OR THE PARTIES LISTED ON THE AUTHORIZATION FORM IN WRITING AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO PICK UP OF THE DEPARTMENT SUPPLIED MATERIALS. THE CONTRACTOR SHALL STORE THE RPMS WITHOUT DAMAGE OR CONTAMINATION WITH FOREIGN MATTER. A DEDUCTION IN THE AMOUNT OF THE ACTUAL COST TO THE DEPARTMENT SHALL BE MADE FOR MATERIALS DAMAGED BY THE CONTRACTOR OR FOR CASTINGS RECEIVED BY THE CONTRACTOR WHICH WERE NOT INSTALLED AND WERE NOT RETURNED TO THE DEPARTMENT.

LOADING OF MATERIALS SUPPLIED BY THE DEPARTMENT AT THE RECYCLER'S WAREHOUSE
TRUCKS SHALL HAVE A LOADING HEIGHT OF 48 INCHES (1200mm) AND BE ABLE TO BACK UP FLUSH TO THE LOADING DOCK. TRUCKS SHALL NOT HAVE ANY OBSTRUCTIONS OR PROTRUSIONS THAT PREVENT THE LOADING BY A STANDARD FORKLIFT OR LIFT TRUCK.

SEMI-TRUCKS OR 20 FOOT (6 METER) COMMERCIAL TRUCKS ARE THE MOST APPROPRIATE TRUCKS FOR LOADS IN EXCESS OF 4 PALLETS [ONE PALLET=21 BOXES=2100 POUNDS (955 kg)].

STAKE BODY TRUCKS ARE APPROPRIATE TO LOAD LESS THAN 4 PALLETS, PROVIDED THE TRUCK IS RATED FOR THE LOAD AND THE LOAD CAN BE SAFELY SECURED FOR TRANSPORT BY CHAINING OR STRAPPING DOWN AS NEEDED.

PICKUP TRUCKS ARE APPROPRIATE FOR LOADS OF APPROXIMATELY ONE PALLET, PROVIDED THE PICKUP TRUCK IS RATED FOR THE LOAD AND THE LOAD CAN BE SAFELY SECURED FOR TRANSPORT.

DUMP TRUCKS, TILT BED TRUCKS, AND NON COMMERCIAL MOVING VANS WILL NOT BE LOADED BY THE RECYCLER'S WAREHOUSE.

THE WAREHOUSE SUPERVISOR WILL REFUSE TO LOAD ANY TRUCK THAT IS UNSAFE TO LOAD OR UNSUITABLE FOR THE LOAD BEING PLACED ON THE TRUCK.

RETURN OF NON-PERFORMED RAISED PAVEMENT MARKER MATERIALS SUPPLIED BY THE DEPARTMENT
RAISED PAVEMENT MARKER MATERIALS SUPPLIED BY THE DEPARTMENT, THAT ARE NON-PERFORMED, SHALL BE CAREFULLY PACKED OR REPACKED IN THE BOXES SUPPLIED BY THE RAISED PAVEMENT MARKER RECYCLER. BOXES SHALL BE MARKED WITH THE RECYCLER'S PART OR CATALOG NUMBER, THE ODOT PROJECT NUMBER, THE STYLE OF THE CASTING, AND THE COLOR OF THE PRISMATIC RETRO-REFLECTOR. THE RECYCLER'S CATALOG OR PART NUMBERS MAY BY OBTAINED FROM THE OFFICE OF TRAFFIC ENGINEERING IN COLUMBUS, OHIO. CASTING STYLES SHALL NOT BE MIXED WITHIN A BOX. ANY BOXES NOT PROPERLY PACKED OR MARKED WILL NOT BE ACCEPTED AT THE RECYCLER'S WAREHOUSE.

THE BOXES SHALL BE PLACED ON SKIDS OR PALLETS WITH ONLY ONE STYLE (LOW PROFILE OR CONVENTIONAL, REFLECTORIZED OR NON-REFLECTORIZED) AND NO MORE THAN 21 BOXES (420 RPM'S) ON EACH SKID.

NON-PERFORMED MATERIALS SHALL BE RETURNED, TO A LOCATION SPECIFIED BY THE DISTRICT CONSTRUCTION ENGINEER, WITHIN 30 CALENDAR DAYS OF THE COMPLETION OF THE PROJECT.

THE ABOVE WORK INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL NEEDED TO PERFORM THE WORK, SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE PAY ITEM.

IF THE DEPARTMENT HAS TO REPACKAGE THE RPMS CORRECTLY, THE CONTRACTOR WILL BE ASSESSED THE ACTUAL COST FOR REPACKAGING THE MATERIALS BY THE DEPARTMENT'S FORCES.

CALCULATED | CHECKED

GENERAL NOTES

CLA-41 (12.05)(12.19)(12.37)

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ITEM 614 – MAINTAINING TRAFFIC

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON S.R. 41 AND EACH AFFECTED RAMP SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT (THROUGH LANES AND/OR PAVED BERM) AND COMPLETED PAVEMENT.

NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

CHRISTMAS	NEW YEARS
MEMORIAL DAY	FOURTH OF JULY
LABOR DAY	THANKSGIVING
CLARK COUNTY FAIR WEEK	

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY OR EVENT FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THIS PERIOD:

DAY OF THE WEEK	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY THROUGH 12:00N MONDAY
MONDAY	12:00N FRIDAY THROUGH 12:00N TUESDAY
TUESDAY	12:00N MONDAY THROUGH 12:00N WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 12:00N THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 12:00N MONDAY
FRIDAY	12:00N THURSDAY THROUGH 12:00N MONDAY
SATURDAY	12:00N FRIDAY THROUGH 12:00N MONDAY
CLARK COUNTY FAIR WEEK	12:00N PRECEEDING FIRST DAY OF FAIR THROUGH 12:00N SUCEEDING LAST DAY OF FAIR

NO EXTENSIONS OF TIME SHALL BE GRANTED FOR DELAYS IN MATERIAL DELIVERIES, UNLESS SUCH DELAYS ARE INDUSTRY–WIDE, OR FOR LABOR STRIKES, UNLESS SUCH STRIKES ARE AREA–WIDE.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN ACCORDANCE WITH 108.07.

LENGTH AND DURATION OF LANE RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

614, BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	10 CU. YD.
616, CALCIUM CHLORIDE	1 TONS
616, WATER	5 M. GAL.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

PLACEMENT OF ASPHALT CONCRETE

TWO–WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES EXCEPT THAT ONE–WAY TRAFFIC WILL BE PERMITTED FOR MINIMUM PERIODS OF TIME CONSISTENT WITH THE REQUIREMENTS OF THE SPECIFICATIONS FOR PROTECTION OF COMPLETED ASPHALT CONCRETE COURSES.

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 BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND 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.

OVERNIGHT TRENCH CLOSING

THE BASE WIDENING SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN 2 INCHES BELOW THE EXISTING PAVEMENT BY THE END OF EACH WORK DAY. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT EXCEPT FOR A SHORT LENGTH (25 FEET OR LESS) OF A WORK SECTION AT THE END OF THE TRENCH. IN CASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE TRENCH FOR THE UNCOMPLETED BASE WIDENING SHALL BE BACKFILLED AT THE DIRECTION OF THE ENGINEER.

GUARDRAIL REPLACEMENT

NO HAZARD SHALL BE LEFT UNPROTECTED EXCEPT FOR THE ACTUAL TIME NECESSARY TO REMOVE THE EXISTING GUARDRAIL, PREPARE THE SITE, AND INSTALL NEW 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 UNTIL SUCH TIME AS THE ENGINEER IS ASSURED OF COMPLIANCE.

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER AND CALCIUM CHLORIDE FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

616, WATER	10 M. GAL.
616, CALCIUM CHLORIDE	1 TONS

TEMPORARY WORK ZONE MARKINGS AND SIGNS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR TEMPORARY WORK ZONE PAVEMENT MARKINGS AND SIGNS PER THE REQUIREMENTS 614.04 AND 614.10.

614, WORK ZONE MARKING SIGN	2 EACH
614, TEMPORARY EDGE LINE, CLASS I	0.30 MILE
614, TEMPORARY STOP LINE, CLASS I	50 L.F.

ITEM 614 – LAW ENFORCEMENT OFFICER (WITH PATROL CAR)

IN ADDITION TO THE REQUIREMENTS OF 614 AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER (AND OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS) SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING TASKS:

DURING A TRAFFIC SIGNAL INSTALLATION.

LAW ENFORCEMENT OFFICERS (L.E.O.'S) SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH :

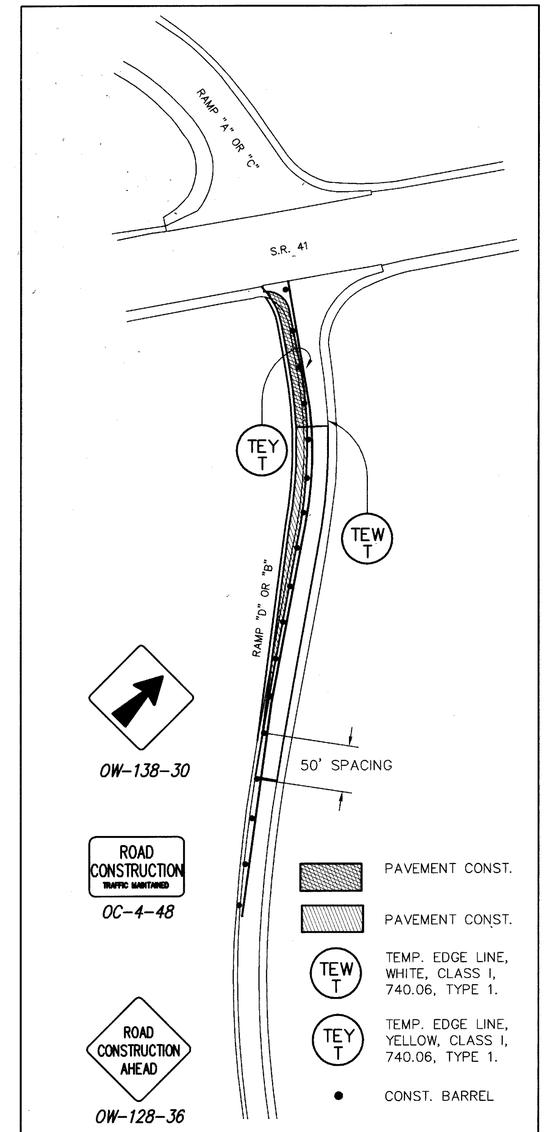
STATE HIGHWAY PATROL
Piqua Patrol Post
401 West US Route 36
Piqua, OH 45356
phone: (937) 773–1131

LAW ENFORCEMENT OFFICERS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614 – LAW ENFORCEMENT OFFICER (WITH PATROL CAR). THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR
48 HOURS

THE HOURS PAID SHALL INCLUDE MINIMUM SHOW–UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

IF CONTRACTORS WISH TO UTILIZE LEO'S FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, THEY MAY DO SO AT THEIR OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.



TYPICAL FOR RAMP "D" OR "B"

CALCULATED
CHECKED

MAINTENANCE OF TRAFFIC GENERAL NOTES

CLA-41 (12.05)(12.19)(12.37)

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SHEET NUMBER 4	5	7	8	9	10	11	12	13	14	15	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
															ROADWAY	
LUMP											201	11000	LUMP		CLEARING AND GRUBBING	
		71			71						202	23500	142	SQ. YD.	WEARING COURSE REMOVED	
		275			369			75			202	38000	719	LIN. FT.	GUARDRAIL REMOVED	
			0	0		186	81		0	0	203	12000	267	CU. YD.	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	
			424	218		437	632		198	3	203	20000	1912	CU. YD.	EMBANKMENT	
		355			344			490			203	50000	1189	SQ. YD.	SUBGRADE COMPACTION	
		287.5			356.25			75.0			606	13000	718.75	LIN. FT.	GUARDRAIL, TYPE 5	
		1									606	22000	1	EACH	ANCHOR ASSEMBLY, TYPE B-98	
		1			1			1			606	26500	3	EACH	ANCHOR ASSEMBLY, TYPE T	
															EROSION CONTROL	
2											601	32200	2	CU. YD.	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
60											601	34200	60	CU. YD.	ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER	
1											870	00100	1	EACH	SOIL ANALYSIS TEST	
182											870	00200	182	CU.YD.	PLACING TOPSOIL	
3721											870	10000	3721	SQ. YD.	SEEDING AND MULCHING	
165											870	14000	165	SQ. YD.	REPAIR SEEDING AND MULCHING	
0.50											870	20000	0.50	TON	COMMERCIAL FERTILIZER	
1.35											870	30000	1.35	TON	AGRICULTURAL LIME	
20											870	35000	20	M GAL.	WATER	
650											877	10000	650	SQ.YD.	TEMPORARY SEEDING AND MULCHING	
600											877	30100	600	LIN. FT.	TEMPORARY PERIMETER FILTER FABRIC FENCE	
40											877	30200	40	LIN. FT.	TEMPORARY DITCH CHECK FILTER FABRIC FENCE	
60											877	40000	60	LIN. FT.	TEMPORARY SLOPE DRAINS	
178											877	55000	178	CU. YD.	TEMPORARY DIKES	
															DRAINAGE	
		6									603	01500	6	LIN. FT.	6" CONDUIT TYPE F	
					6						603	02600	6	LIN. FT.	8" CONDUIT TYPE F	
								60			605	31100	60	LIN. FT.	AGGREGATE DRAIN	
															PAVEMENT	
		65			70			125			301	46000	260	CU. YD.	BITUMINOUS AGGREGATE BASE, PG 64-22	
		92			88			83			304	20000	263	CU. YD.	AGGREGATE BASE	
		40			42			19			407	10000	101	GAL.	TACK COAT	
		11			11						407	14000	22	GAL.	TACK COAT FOR INTERMEDIATE COURSE	
		103			100						408	10000	203	GAL.	BITUMINOUS PRIME COAT	
		13			12			22			448	46040	47	CU. YD.	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-28	
		27			28			17			448	50000	72	CU. YD.	ASPHALT CONCRETE SURFACE COURSE, TYPE 1H	
		96			66						451	15000	162	SQ. YD.	10" REINFORCED CONCRETE PAVEMENT	
															MAINTENANCE OF TRAFFIC	
	48										614	11100	48	HRS.	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
	2										614	12460	2	EACH	WORK ZONE MARKING SIGN	
	10										614	13000	10	CU. YD.	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	
	0.30										614	22000	0.30	MILE	TEMPORARY EDGE LINE, CLASS I	
	50										614	26000	50	LIN. FT.	TEMPORARY STOP LINE, CLASS I	
	(5)(10)										616	10000	15	M GAL.	WATER	
	(1)(1)										616	20000	2	TONS	CALCIUM CHLORIDE	
															SIGNALIZATION	
															(FOR QUANTITIES SEE SHEET No. 23)	
															LIGHTING	
															(FOR QUANTITIES SEE SHEET No. 18)	
															TRAFFIC CONTROL	
															(FOR QUANTITIES SEE SHEET No. 17 & 18)	
											614	11000	LUMP		MAINTAINING TRAFFIC	
											623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
											624	10000	LUMP		MOBILIZATION	
											806	16010	3	MONTH	FIELD OFFICE, TYPE B	

CALCULATED

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GENERAL SUMMARY

CLA-41 (12.05)(12.19)(12.37)

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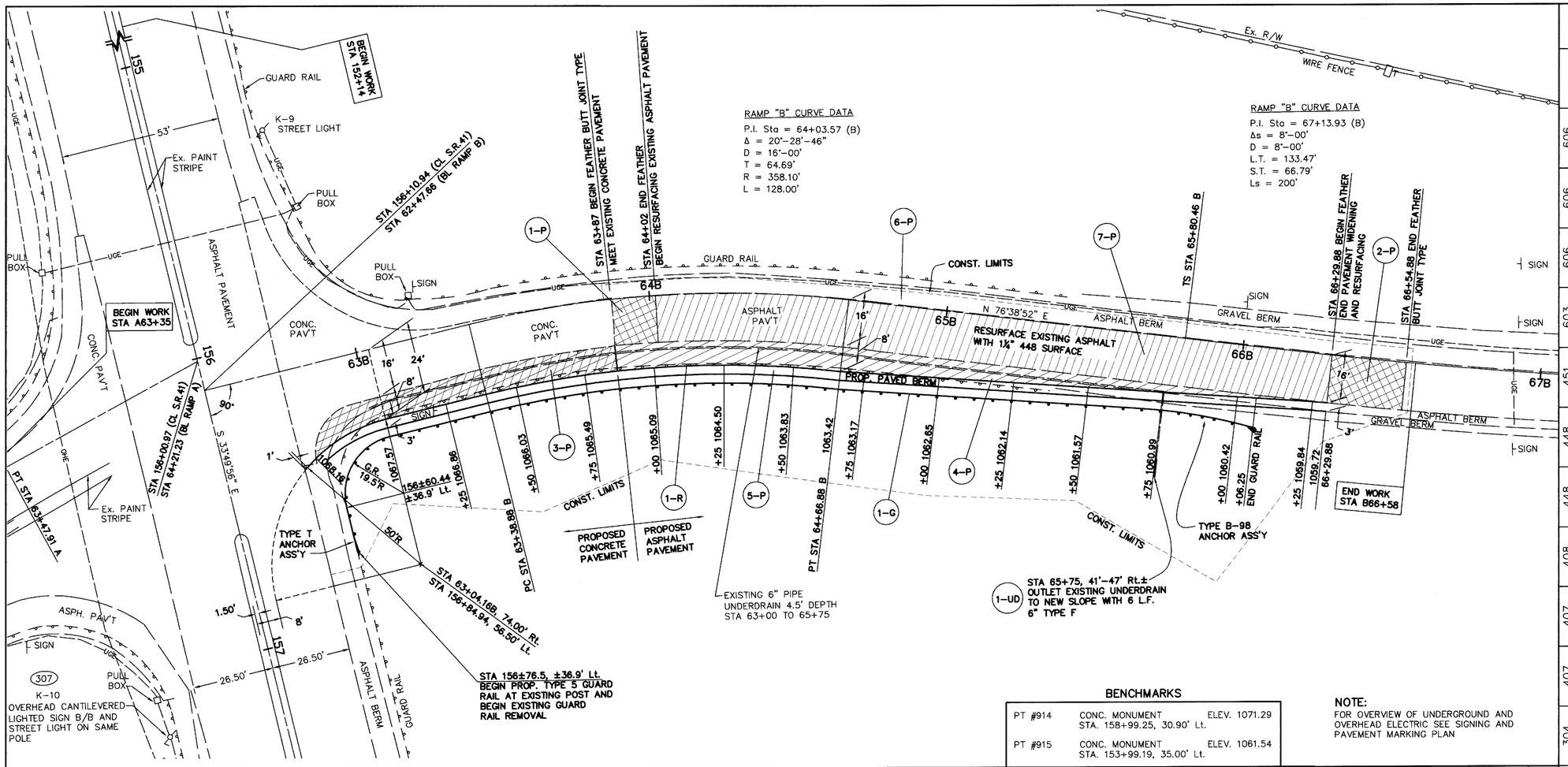
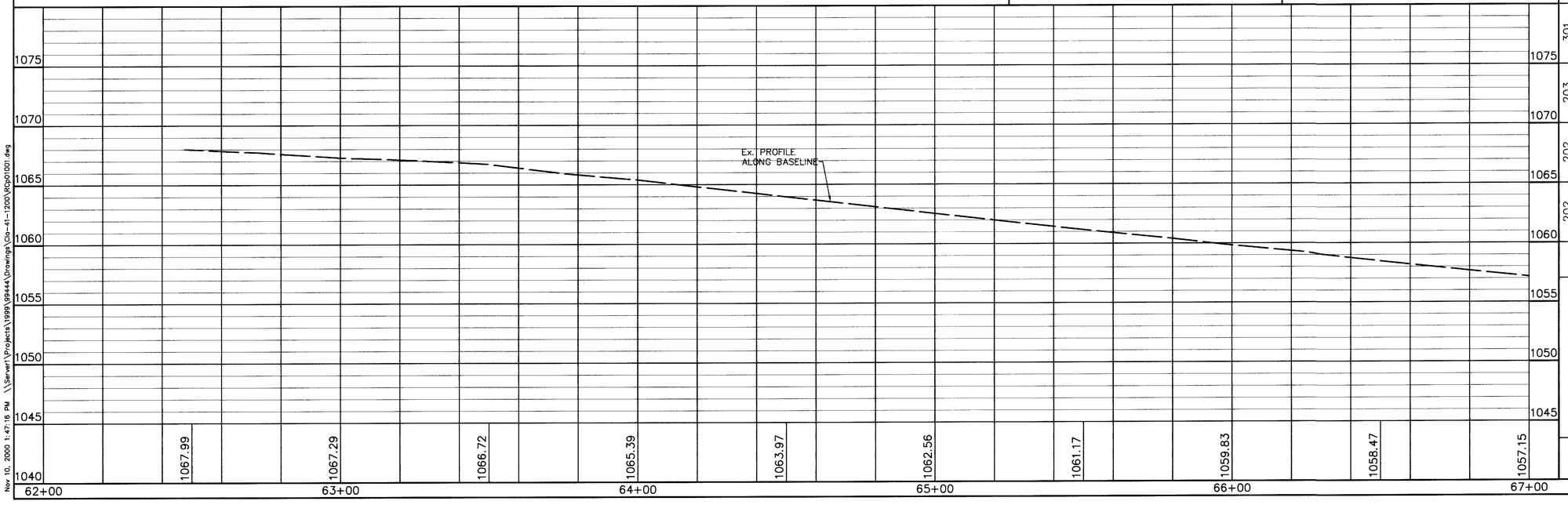


BENCHMARKS

PT #914	CONC. MONUMENT STA. 158+99.25, 30.90' Lt.	ELEV. 1071.29
PT #915	CONC. MONUMENT STA. 153+99.19, 35.00' Lt.	ELEV. 1061.54

NOTE:
FOR OVERVIEW OF UNDERGROUND AND OVERHEAD ELECTRIC SEE SIGNING AND PAVEMENT MARKING PLAN



REF. NO.	STATION FROM	STATION TO	SIDE	202 GUARD RAIL REMOVED L.F.	202 WEARING COURSE REMOVED S.Y.	203 SUBGRADE COMPACTION S.Y.	301 BITUMINOUS AGGREGATE BASE C.Y.	304 AGGREGATE BASE C.Y.	407 TACK COAT GAL.	407 TACK COAT FOR INTERM. COURSE GAL.	408 BITUMINOUS PRIME COAT GAL.	448 ASPHALT CONCRETE SURFACE C.Y.	448 ASPHALT CONCRETE INTERM. C.Y.	451 10" REINFORCED CONCRETE PAVEMENT S.Y.	603 6" CONDUIT TYPE F L.F.	606 ANCHOR ASSEMBLY TYPE T EACH	606 ANCHOR ASSEMBLY TYPE B-98 EACH	606 GUARD RAIL TYPE 5 L.F.
1-P	63+87(B)	64+02(B)	Rt		27				2		1							
2-P	66+29.88(B)	66+54.88(B)	Rt		44				3		2							
3-P	62+79(B)	63+87(B)	Rt			96		21						96				
4-P	64+02(B)	66+29.88(B)	Rt			143	36	39		6	57	5	7					
5-P	62+83(B)	66+29.88(B)	Rt			116	29	32	5	5	46	4	6					
6-P	63+87(B)	66+54.88(B)	Lt									1						
7-P	64+02(B)	66+29.88(B)	Rt						5	5		14						
1-G	156+76.5	66+00(B)	Rt						30							1	1	287.5
1-R	156+76.5	65+34(B)	Rt	275											6			
1-UD	65+75(B)		Rt															
TOTALS CARRIED TO GENRAL SUMMARY				275	71	355	65	92	40	11	103	27	13	96	6	1	1	287.5

CALCULATED
CHECKED

HORIZONTAL SCALE IN FEET 0 10 20 40

PLAN AND PROFILE - RAMP "B" STA. 62+00 TO STA. 67+00

CLA-41 (12.05)(12.19)(12.37)

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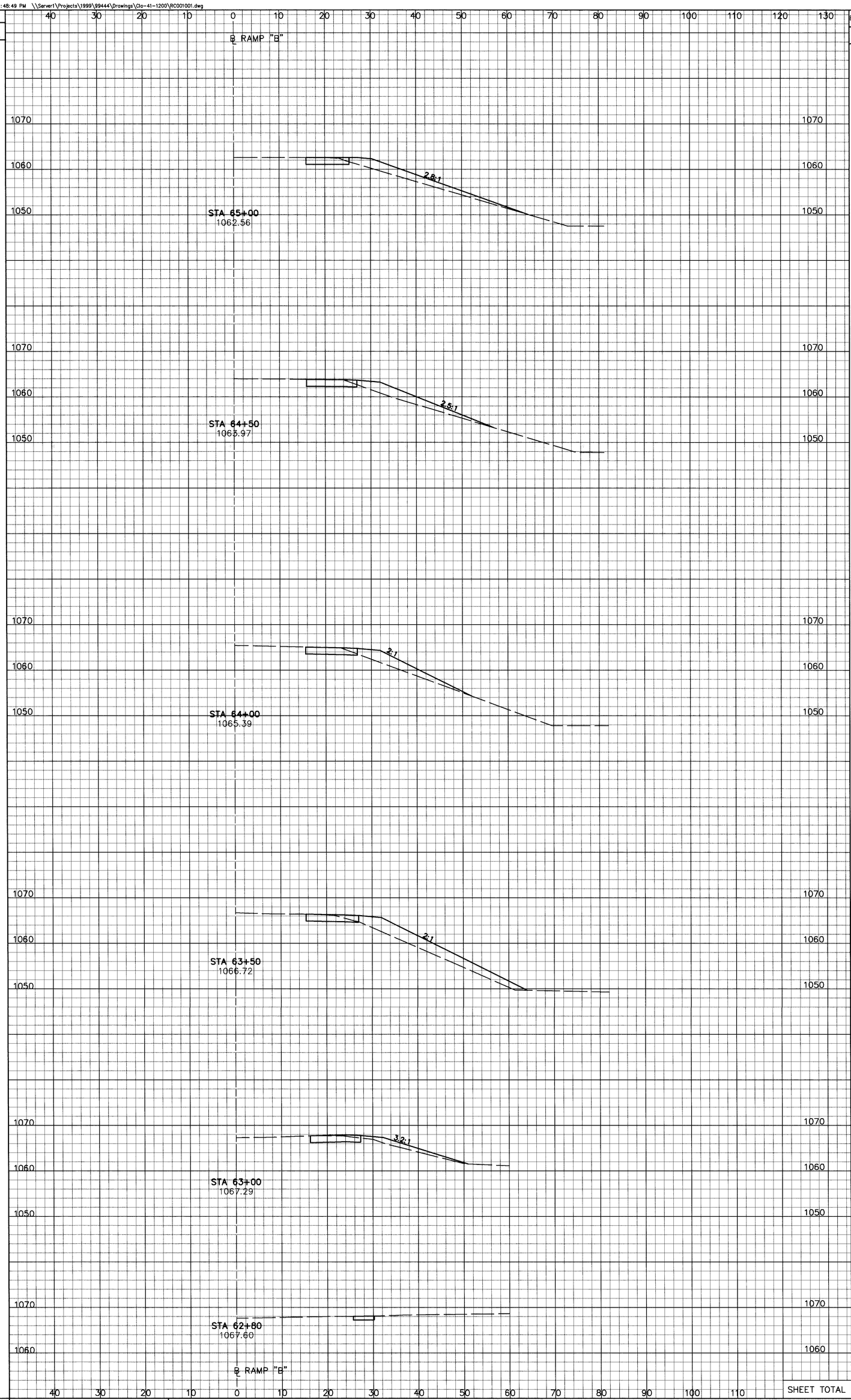

CLA-41 (12.05)(12.19)(12.37)

RAMP "B" CROSS SECTIONS
STA. 62+80 TO STA. 65+00

DESIGNED

CHECKED

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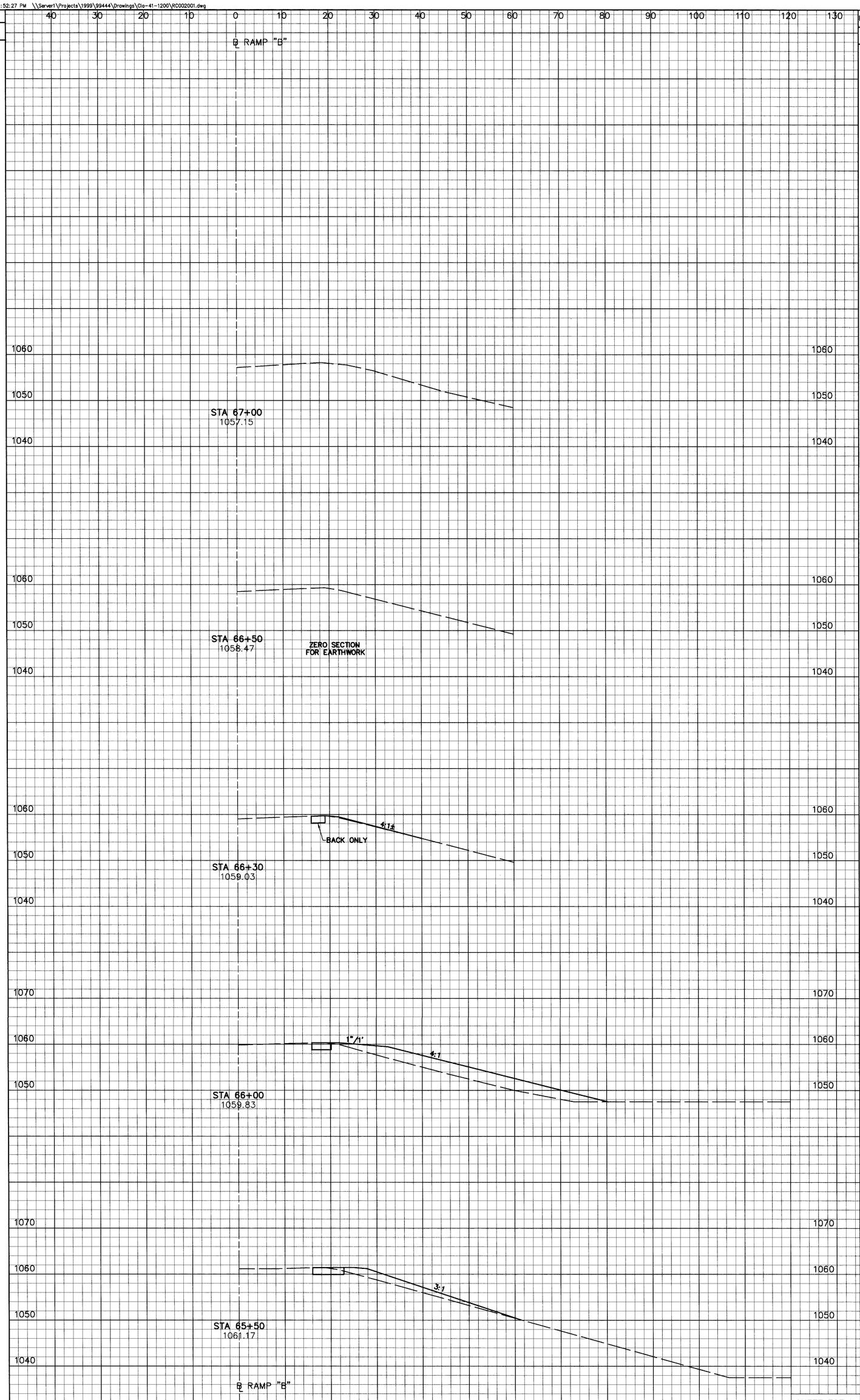


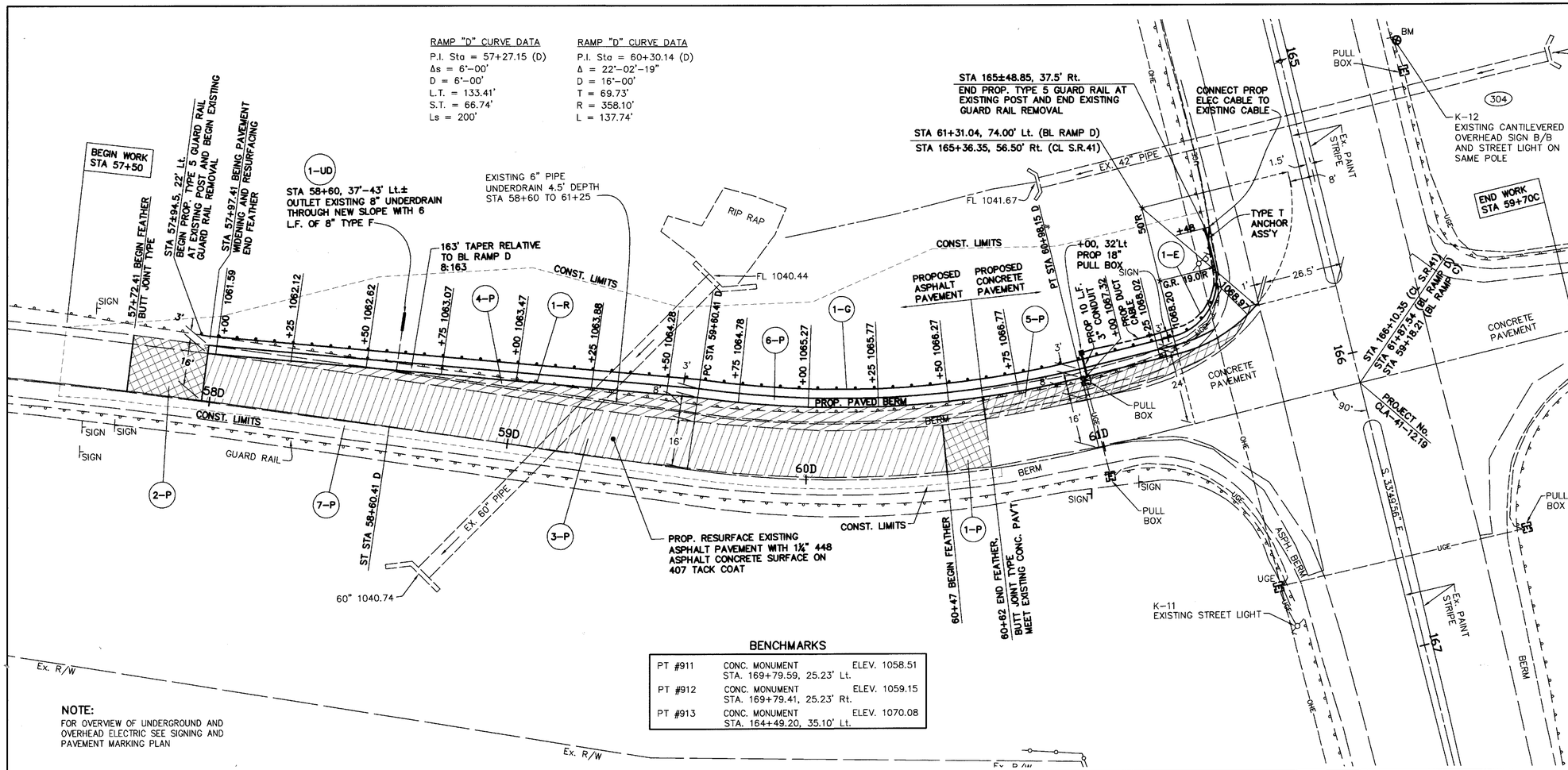
29 / 9	CLA-41 (12.05)(12.19)(12.37)	**RAMP "B" CROSS SECTIONS STA. 65+50 TO STA. 67+00**

DESIGNED

CHECKED

RAMP "D" CURVE DATA
P.I. Sta = 57+27.15 (D)
Δs = 6°-00'
D = 6°-00'
L.T. = 133.41'
S.T. = 66.74'
Ls = 200'

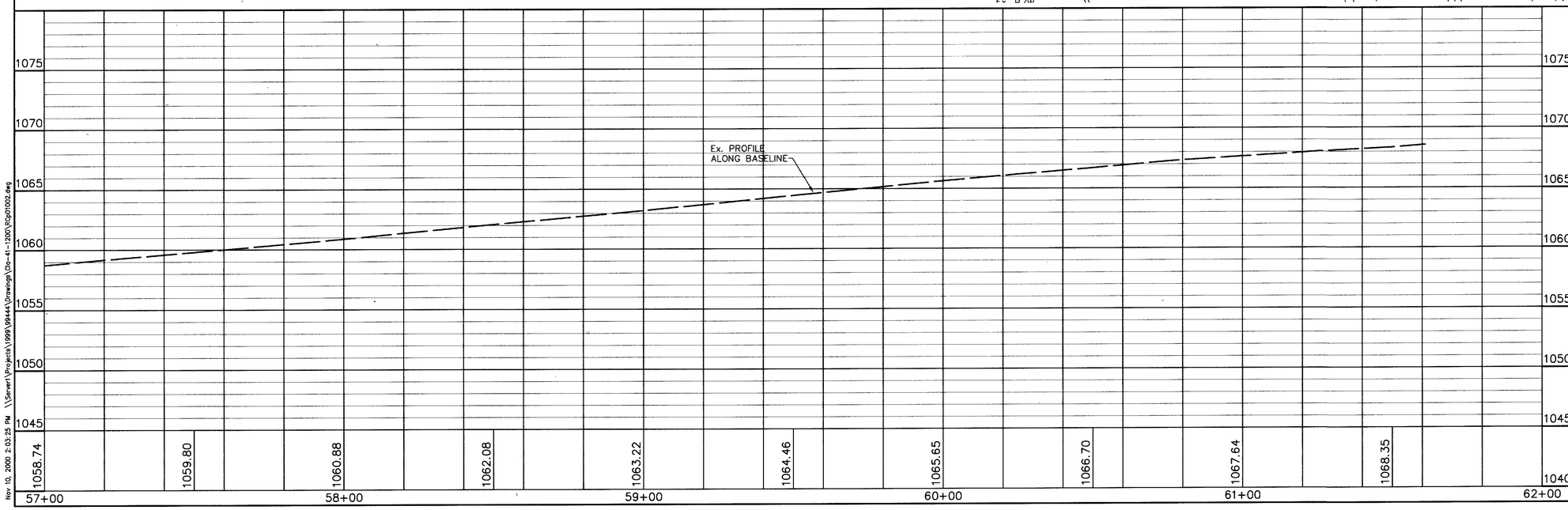
RAMP "D" CURVE DATA
P.I. Sta = 60+30.14 (D)
Δ = 22°-02'-19"
D = 16°-00'
T = 69.73'
R = 358.10'
L = 137.74'



NOTE:
FOR OVERVIEW OF UNDERGROUND AND OVERHEAD ELECTRIC SEE SIGNING AND PAVEMENT MARKING PLAN

BENCHMARKS

PT #911	CONC. MONUMENT STA. 169+79.59, 25.23' Lt.	ELEV. 1058.51
PT #912	CONC. MONUMENT STA. 169+79.41, 25.23' Rt.	ELEV. 1059.15
PT #913	CONC. MONUMENT STA. 164+49.20, 35.10' Lt.	ELEV. 1070.08



REF. NO.	STATION FROM	STATION TO	SIDE	202 GUARD RAIL REMOVED L.F.	202 WEARING COURSE REMOVED S.Y.	203 SUBGRADE COMPACTION S.Y.	301 BITUMINOUS AGGREGATE BASE C.Y.	304 AGGREGATE BASE C.Y.	407 TACK COAT GAL.	407 TACK COAT FOR INTERM. GAL.	408 BITUMINOUS PRIME COAT GAL.	448 ASPHALT CONCRETE SURFACE C.Y.	448 ASPHALT CONCRETE INTERM. C.Y.	451 10" REINFORCED CONCRETE PAVEMENT S.Y.	603 8" CONDUIT TYPE F L.F.	606 ANCHOR ASSEMBLY TYPE T EACH	606 GUARD RAIL TYPE 5 L.F.
1-P	60+47(D)	60+62(D)	Lt		27				2			1					
2-P	57+72.41(D)	57+97.41(D)	Lt		44				3			2					
3-P	57+97.41(D)	60+47(D)	Lt						33			15					
4-P	57+97.41(D)	60+62(D)	Lt			163	41	44		7	65	6	8	66			
5-P	60+62(D)	61+57(D)	Lt			66		15									
6-P	57+97.41(D)	61+41.5(D)	Lt			115	29	29		4	35	3	4				
7-P	57+97.41(D)	60+47(D)	Rt						4			1					
1-G	57+94.5(D)	165+48.9	Lt													1	356.25
1-R	57+94.5(D)	165+48.9	Lt	369													
1-UD	58+60(D)		Lt												6		
TOTALS CARRIED TO GENRAL SUMMARY				369	71	344	70	88	42	11	100	28	12	66	6	1	356.25

HORIZONTAL SCALE IN FEET 0 10 20 40

CALCULATED

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PLAN AND PROFILE - RAMP "D"
STA. 57+00 TO STA. 62+00

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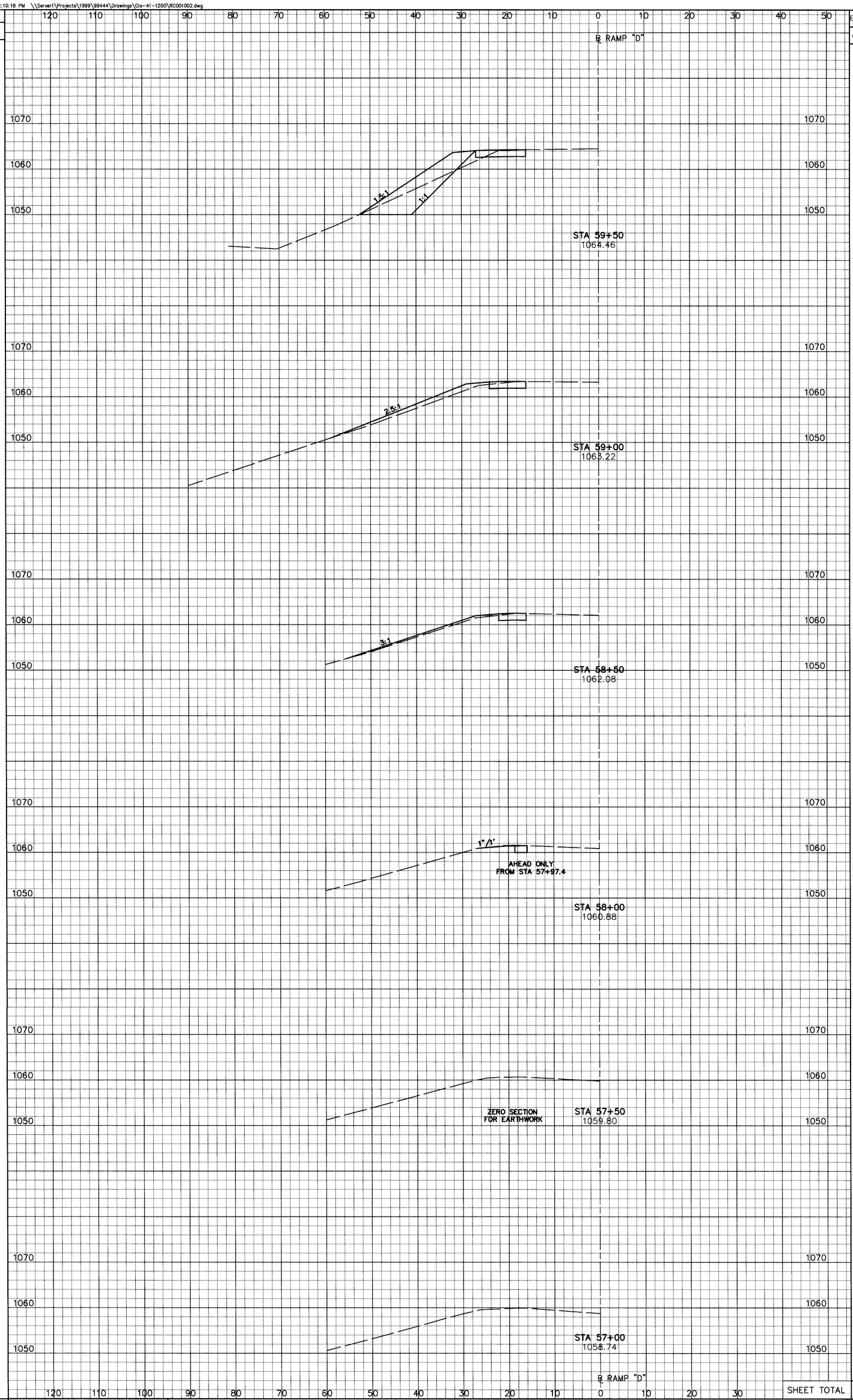

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
		132	259
56	116		
		52	132
0	27		
		0	35
0	11		
		1	11
1	0		
		1	0
0	0		
SHEET TOTAL		186	437

11
29

CLA-41 (12.05)(12.19)(12.37)

RAMP "D" CROSS SECTIONS
STA. 57+00 TO STA. 59+50

DESIGNED

CHECKED

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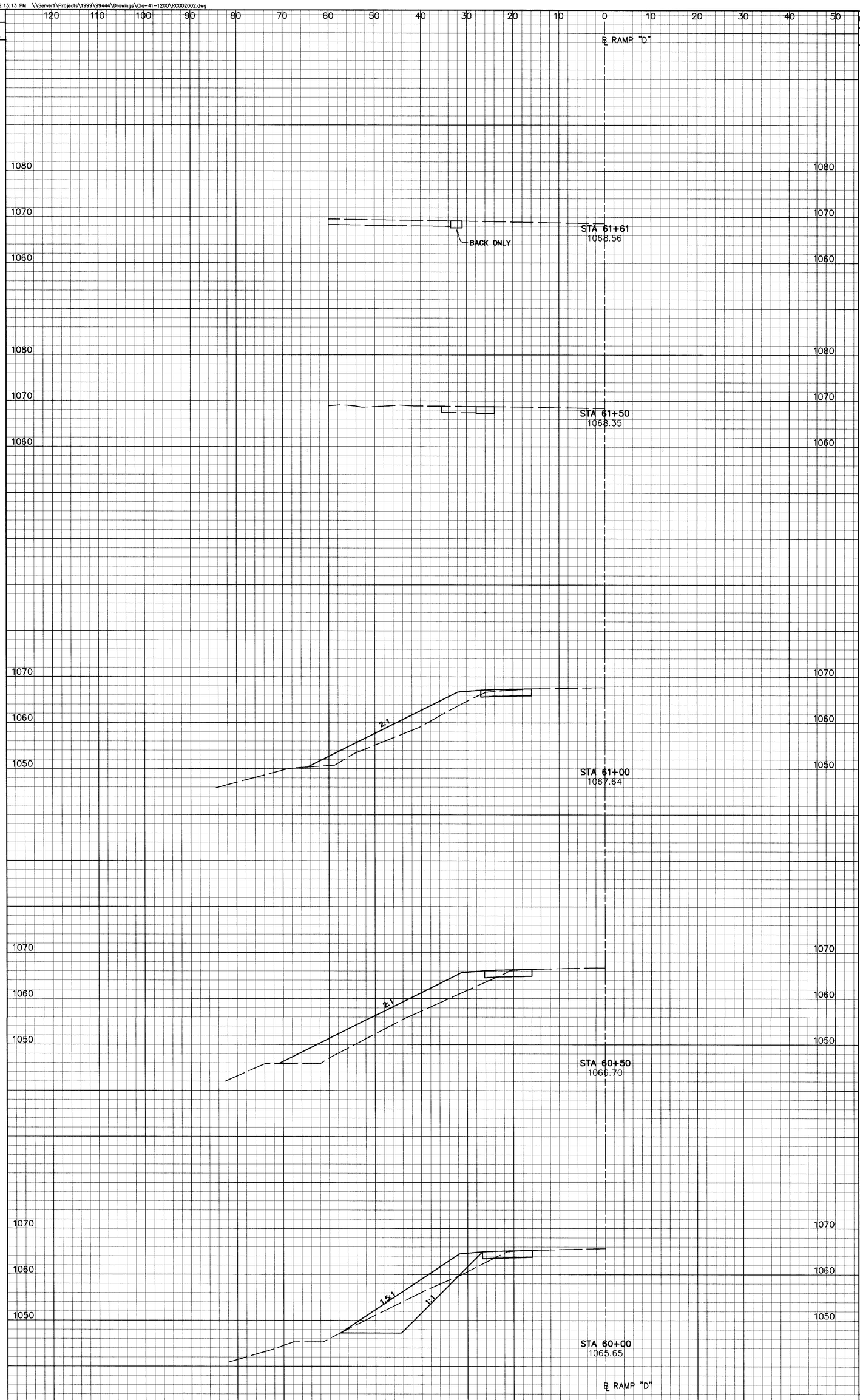

12
29

CLA-41 (12.05)(12.19)(12.37)

RAMP "D" CROSS SECTIONS
STA. 60+00 TO STA. 61+61

DESIGNED

CHECKED

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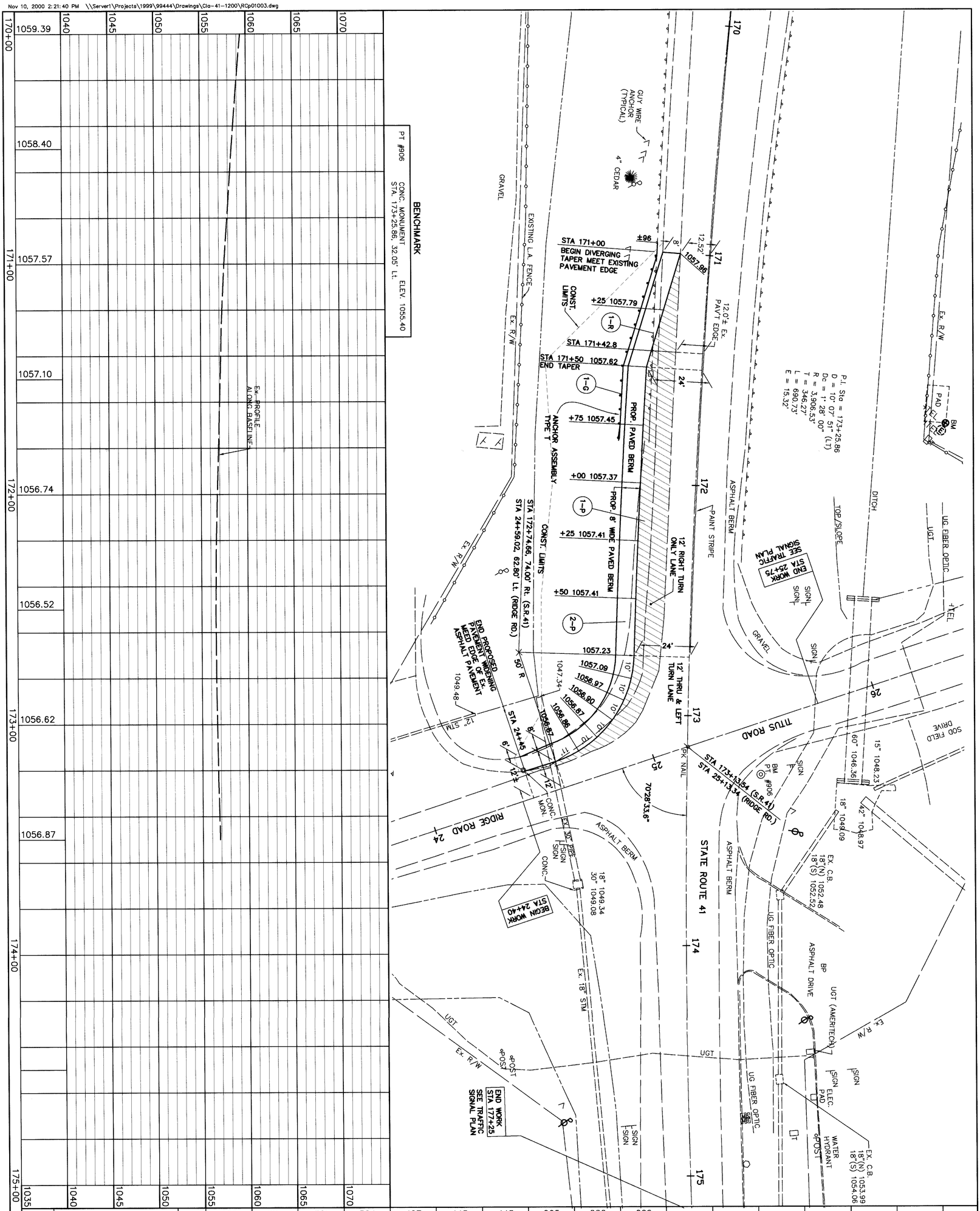

REF. NO.	STATION FROM	STATION TO	SIDE	202 GUARD RAIL REMOVED	203 SUBGRADE COMPACTION	301 BITUMINOUS AGGREGATE BASE	304 AGGREGATE BASE	407 TACK COAT FOR INTERM. COURSE	448 ASPHALT CONCRETE SURFACE	448 ASPHALT CONCRETE INTERM.	605 AGGREGATE DRAINS	606 GUARD RAIL TYPE 5	606 ANCHOR ASSEMBLY TYPE T
				L.F.	S.Y.	C.Y.	C.Y.	GAL.	C.Y.	C.Y.	L.F.	L.F.	EACH
1-P	171+00	24+45	Rt		278	70	46	11	10	12			
2-P	171+00	24+45	Rt		212	55	37	8	7	10			
1-G	170±96	171±83.2	Rt									75.0	1
1-R	170±96	171±71	Rt	75									
1-D	171+00	173+25	Rt								60		
TOTALS CARRIED TO GENRAL SUMMARY				75	490	125	83	19	17	22	60	75.0	1

29 | 13

CLA-41 (12.05)(12.19)(12.37)

PLAN AND PROFILE - S.R. 41
STA. 170+00 TO STA. 175+00

CALCULATED
CHECKED

0 10 20 40
HORIZONTAL SCALE IN FEET

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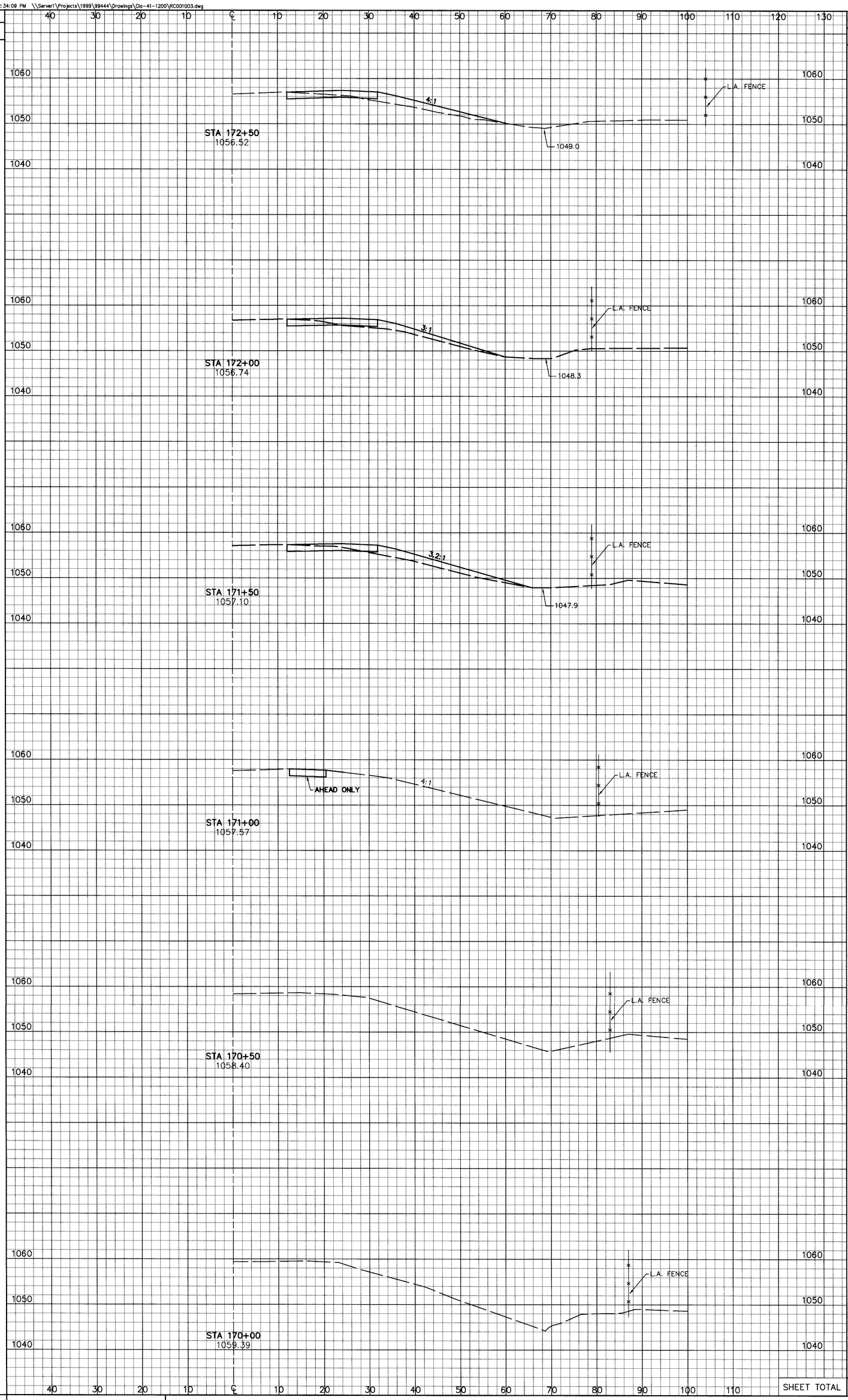

14
29

CLA-41 (12.05)(12.19)(12.37)

S.R. 41 CROSS SECTIONS
STA. 170+00 TO STA. 172+50

DESIGNED

CHECKED

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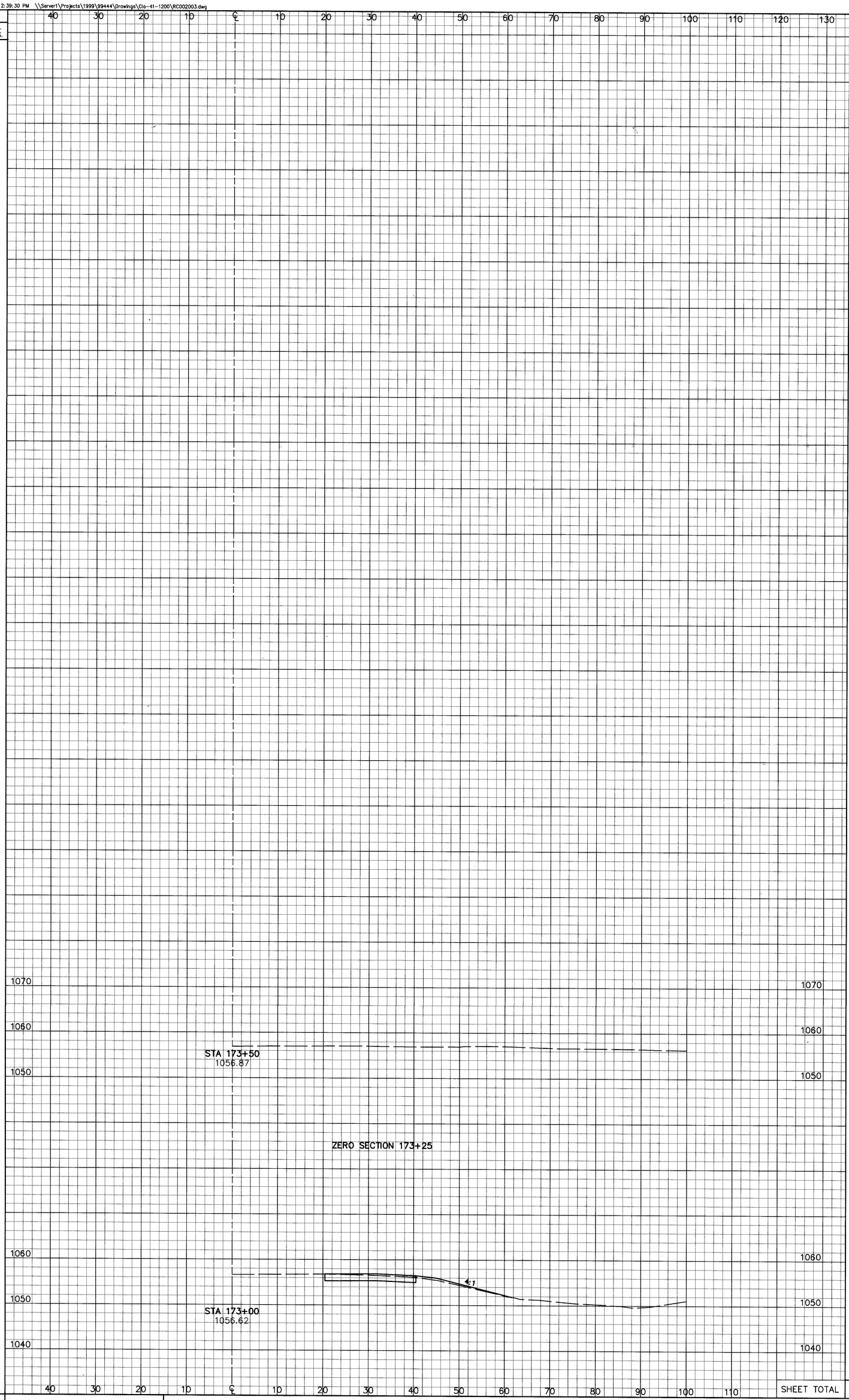
SEEDING	
END WIDTH	SQ. YDS.



END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0		
		0	3
0	6		
SHEET TOTAL		0	3

15
29

CLA-41 (12.05)(12.19)(12.37)

S.R. 41 CROSS SECTIONS
STA. 173+00 TO STA. 173+50

DESIGNED

CHECKED

FROM SHEET NO.	REF. NO.	LOCATION	STATION	SIDE	CODE	SIZE (INCHES)		630 GROUND MOUNTED SUPPORT No.3 POST	630 ONE WAY SUPPORT No. 3 SQUARE POST	630 SIGN HANGER ASSEMBLY SPAN WIRE HANGER	630 SIGN FLAT SHEET TYPE G	630 REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL
								LIN. FT.	LIN. FT.	EACH	SQ. FT.	EACH	EACH
20	1-S	SR 41 @ RIDGE RD	172±68	Rt.	R-27A-36	36"x42"				1	10.50		
20	2-S	SR 41	171+50	Rt.	R-31B-36	36"x30"		14			7.50		
20	3-S	SR 41 @ RAMP C	165±94	Lt.	R-26A-36	36"x42"				1	10.50		
20	4-S	SR 41	163+00	Lt.	R-36R-30	30"x36"		15.25			7.50		
20	5-S	SR 41	166±39	Rt.	R-26A-36	36"x42"				1	10.50		
20	6-S	RAMP D	59+60	Rt.	R-31A-30	36"x30"		13.25			7.50		
20	7-S	SR 41	163+00	Rt.	R-31Q-30	30"x30"		14.75			6.25		
20	8-S	RAMP D	61+30	Lt.	R-41B-36	36"x36"			14.75		9.00	1	1
					R-43R-36	36"x12"					3.00		
					R-43L-36	36"x12"					3.00		
19	9-S	SR 41	159+25	Lt.	R-31Q-30	30"x30"		14.75			6.25		
19	10-S	SR 41	156±84	Lt.	R-26A-36	36"x42"				1	10.50		
19	11-S	RAMP B	64+67	Lt.	R-31A-30	36"x30"		13.50			7.50		
19	12-S	RAMP B	63+20	Rt.	R-41B-36	36"x36"			14.50		9.00	1	1
					R-43R-36	36"x12"					3.00		
					R-43L-36	36"x12"					3.00		
19	13-S	SR 41	159+00	Rt.	R-36R-30	30"x36"		13.75			7.50		
19	14-S	SR 41 @ RAMP A	156±30	Rt.	R-26A-36	36"x42"				1	10.50		
19	15-S	RAMP A	63+15	Rt.	R-1-48							1	
19	16-S	RAMP B	63+25	Lt.	R-1-48							1	
20	17-S	RAMP D	61+10	Rt.	R-1-48							1	
20	18-S	RIDGE RD	24+50	Rt.	R-1-48							1	
20	19-S	TITUS RD	25+80	Lt.	R-1-48							1	
SUB TOTAL								99.25	29.25	5	132.5	7	2
TOTALS CARRIED TO TRAFFIC CONTROL GENERAL SUMMARY								99	29	5	133	7	2

FROM SHEET NO.	LOCATION	STATION FROM	STATION TO	202 RAISED PAV'T MARKER REMOVED FOR STORAGE	621 RAISED PAV'T MARKER INSTALLATION ONLY	828 EDGE LINE YELLOW	828 EDGE LINE WHITE	828 CENTER LINE DOUBLE SOLID	828 CHANNELIZING LINE	828 STOP LINE	828 TRANSVERSE LINE YELLOW	828 LANE ARROW	828 WORD ON PAV'T 96 INCHES "ONLY"	828 LANE LINE	828 ISLAND MARKING YELLOW	642 REMOVAL OF PAVEMENT MARKING	828 DOTTED LINE 4 INCHES
				EACH	EACH	LIN. FT.	LIN. FT.	MILE	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	MILE	SQ. FT.	SQ. FT.	LIN. FT.
20	RIDGE RD.	24+77 Rt								25							
20	RIDGE RD.	24+45 Lt	24+59 Lt				14										
20	SR 41	167+08 Rt	172+75 Rt	9	9		568										
20	SR 41	167+08 Lt	172+40 Lt	7	7		532										
20	SR 41	166+40 CL	174+00 CL	16	16			1152 (LF)			628				114		
20	SR 41	173+56 Lt								12							
20	SR 41	172+75 Rt								24							
20	TITUS RD.	25+52 Lt								32							
20	SR 41	171+50 Rt	172+75 Rt	4	4				125			2	1				
20	SR 41	162+00 CL	165+36.35 CL	4	4			668 (LF)			140				10		
20	SR 41	162+00 Lt	165+33.85 Lt	4	4		334							334 (LF)			
20	SR 41	162+00 Rt	165+33.85 Rt	6	6		334		150			2	1	184 (LF)			
20	SR 41	166+48.50 Lt								32							
20	SR 41	165+33.85 Rt								24							
20	RAMP D	61+51 Lt&Rt								64							
20	RAMP D	59+60.41 Lt	61+51 Lt	5	5				190			2	1				
20	RAMP D	57+72.41 Lt	61+51 Lt	4	4	379											
20	RAMP D	57+72.41 Rt	61+51 Rt				395										
19	SR 41	156+84.94 CL	162+00 CL	4	4			1025 (LF)			217				10		
19	SR 41	156+87.44 Lt	162+00 Lt	6	6		513		150			2	1				
19	SR 41	158+87.44 Lt	162+00 Lt											313 (LF)			
19	SR 41	152+14 Rt	162+00 Rt	14	14		831							873 (LF)			
19	SR 41	156+87.44 Lt								24							
19	SR 41	155+74 Rt								31							
19	SR 41	156+28 Rt	156+83 Rt							55							
19	SR 41	152+14 Lt	155+53 Lt	5	5		339								114		
19	SR 41	152+14 CL	155+82.5 CL	10	10			720 (LF)			471						
19	RAMP B	62+84 Lt&Rt								62							
19	RAMP B	62+84 Rt	64+66.88 Rt	5	5				183			2	1				
19	RAMP B	62+84 Lt	66+54.88 Lt				388										
19	RAMP B	62+84 Rt	66+54.88 Rt	5	5	371											
20	SR 41	172+75 Rt	173+21 Rt														48
19&20	SR 41	152+14 Rt&Lt	174+00 Rt&Lt													500	
SUB TOTALS				108	108	750	4248	3565 (LF)	798	385	1456	10	5	1704 (LF)	248	500	48
TOTALS CARRIED TO TRAFFIC CONTROL SUMMARY				108 EA	108 EA	4998 LF (0.95 MI)		0.68	798 LF	385 LF	1456 LF	10 EA	5 EA	0.32 MI	248 SF	500 SF	48 LF

CALCULATED

CHECKED

SIGNING AND PAVEMENT MARKING SUB-SUMMARY

CLA-41 (12.05)(12.19)(12.37)

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SHEET NUMBER	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	CALCULATED	CHECKED
10	202	54100	108	EACH	RAISED PAVEMENT MARKERS REMOVED FOR STORAGE			
17	202	75300	1	EACH	PULL BOX REMOVED			
108	621	00200	108	EACH	RAISED PAVEMENT MARKER, INSTALLATION ONLY			
1								
108								
3	625	01500	3	EACH	CABLE SPLICING KIT			
20	625	23200	20	LIN. FT.	No. 4 AWG, 5000 VOLT DISTRIBUTION CABLE			
85	625	24100	85	LIN. FT.	(1 1/2) INCH DUCT CABLE WITH TWO No. 4 AWG, 5000 VOLT CABLES			
10	625	25500	10	LIN. FT.	CONDUIT, 3 INCH, 713.04			
85	625	29002	85	LIN. FT.	TRENCH, 24" DEEP			
1	625	30700	1	EACH	PULL BOX, 713.08, 18 INCH			
LUMP	625	38000	LUMP		HIGH VOLTAGE TEST			
99	630	03100	99	LIN. FT.	GROUND MOUNTED SUPPORT No. 3 POST			
29	630	08004	29	LIN. FT.	ONE WAY SUPPORT No. 3 POST			
5	630	79000	5	EACH	SIGN HANGER ASSEMBLY, SPAN WIRE			
133	630	80102	133	SQ. FT.	SIGN, FLAT SHEET, TYPE G			
7	630	84900	7	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL			
2	630	86002	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL			
500	642	30010	500	SQ. FT.	REMOVAL OF PAVEMENT MARKING			
0.95	828	10000	0.95	MILE	EDGE LINE			
0.32	828	10100	0.32	MILE	LANE LINE			
0.68	828	10200	0.68	MILE	CENTER LINE			
798	828	10300	798	LIN. FT.	CHANNELIZING LINE			
385	828	10400	385	LIN. FT.	STOP LINE			
1456	828	10600	1456	LIN. FT.	TRANSVERSE LINE			
248	828	10800	248	SQ. FT.	ISLAND MARKING			
10	828	20300	10	EACH	LANE ARROW			
5	828	20410	5	EACH	WORD ON PAVEMENT, 96 INCH			
48	828	20500	48	LIN. FT.	DOTTED LINE, 4 INCH			

TRAFFIC CONTROL GENERAL SUMMARY

CLA-41 (12.05)(12.19)(12.37)

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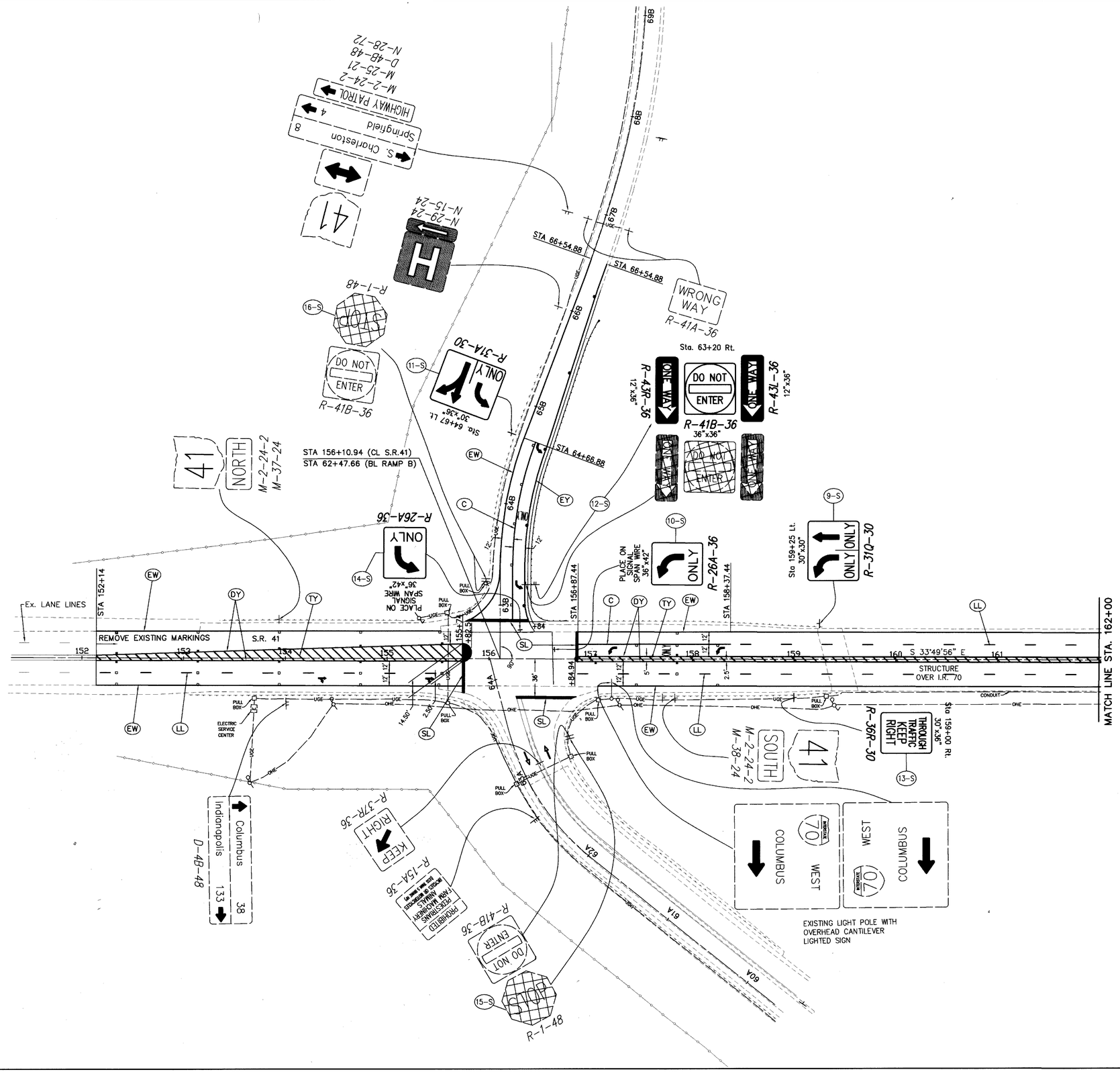

PAVEMENT MARKING LEGEND

- (EW) 4" EDGE LINE, WHITE
- (EY) 4" EDGE LINE, YELLOW
- (LL) 4" LANE LINE
- (C) 8" CHANNELIZING LINE
- (DY) DOUBLE LINE, YELLOW
- (TY) 12" TRANSVERSE, YELLOW
- (SL) 24" STOP LINE
- (DW) DOTTED LINE, WHITE
- □ RAISED PAVEMENT MARKER 2 WAY – WHITE/RED
- ○ RAISED PAVEMENT MARKER 2 WAY – YELLOW/YELLOW
- ■ RAISED PAVEMENT MARKER 1 WAY – YELLOW
- ● RAISED PAVEMENT MARKER 2 WAY – YELLOW/RED

SIGNING LEGEND

- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- PROPOSED

HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED

CHECKED

SIGNING AND PAVEMENT MARKING PLAN

CLA-41 (12.05)(12.19)(12.37)

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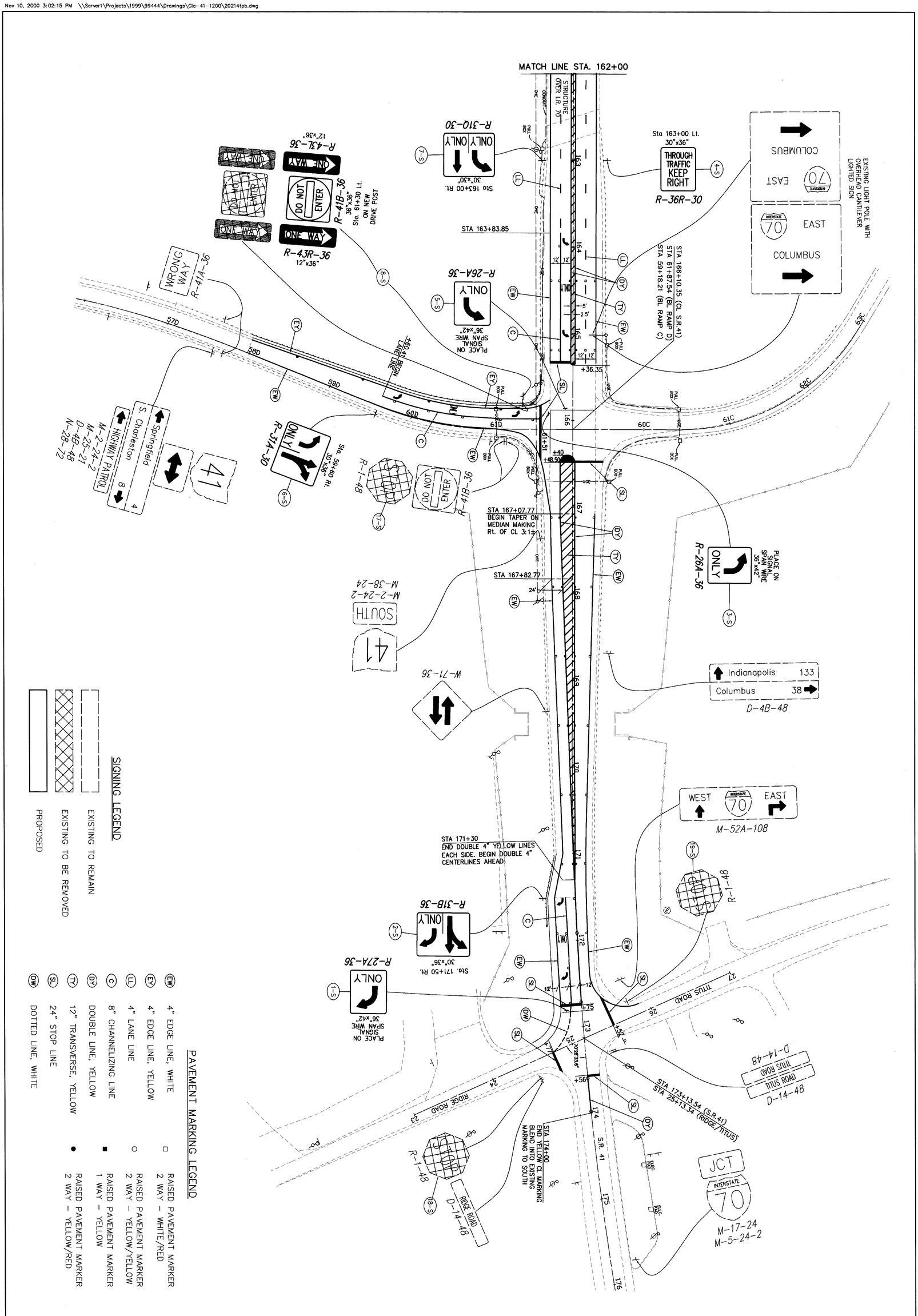

20 / 29	CLA-41 (12.05)(12.19)(12.37)	SIGNING AND PAVEMENT MARKING PLAN	CALCULATED / CHECKED — 0 25 50 100 HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC SIGNAL INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

A) EXISTING SIGNAL INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST START CONSTRUCTION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.

B) NEW SIGNAL INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE MAINTAINING AGENCY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISSALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK TO SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE. THE CONTRACTOR SHALL ARRANGE FOR FULL TRAFFIC CONTROL UNTIL THE SIGNAL IS BACK IN OPERATION.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION, THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE OR THE CITY OF CENTERVILLE FOR POLICE SERVICES AND MAINTENANCE SERVICES BY CITY FORCES SHALL BE DEDUCTED FROM MONEYS DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 4 HOURS AND SHALL NOT INCLUDE THE PEAK HOURS (7-9 AM, 4-6PM). ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT DESCRIBED ABOVE, SHALL BE PROTECTED, BY THE CONTRACTOR, BY THE INSTALLATION OF TEMPORARY "STOP" SIGNS.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.24.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

CABLE LASHING

THE COST TO LASH ALL EXTRA CABLES TO MESSENGER WIRES SHALL BE INCIDENTAL TO THE COST OF THE SPECIFIED CABLES. NO SEPERATE SEPERATE COMPENSATION WILL BE GIVEN FOR LASHING RODS OR DELASHING AND RELASHING.

632 LOOP DETECTOR UNIT, TWO CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS TS-2-1 992, 632 AND 732.071, ICCP DETECTOR UNITS SHALL HAVE THE FOLLOWING REQUIREMENTS FEATURES:

1. THE UNITS SHALL BE RACK MOUNTED.
2. EACH UNIT SHALL HAVE TWO (2) LOOP DETECTOR CHANNELS.
3. THE UNITS SHALL BE SELF TUNING.

IN ADDITION TO THE REQUIREMENTS LISTED ABOVE, TILE DETECTOR UNIT SHALL HAVE EASILY ADJUSTABLE TIMERS INCORPORATED IN THE UNIT THAT ARE CAPABLE OF BOTH EXTEND CALL AND DELAY CALL OUTPUTS. THESE ADJUSTMENTS SHALL BE SEPARATE AND CONTROLLABLE BY CALIBRATED SWITCHES OR KNOBS ON THE OUTSIDE OF THE DETECTOR UNIT. THE EXTEND CALL TIMER SHALL BE CAPABLE OF HOLDING THE CALL OF A VEHICLE FOR A PERIOD OF TIME BEGINNING AT THE INSTANT THE VEHICLE LEAVE THE DETECTION AREA. THE DELAY CALL TIMER SHALL BE SUCH THAT IT DOES NOT ISSUE AN OUTPUT UNTIL THE DETECTION ZONE HAS BEEN OCCUPIED FOR A PERIOD OF TIME THAT HAS BEEN SET ON THE ADJUSTABLE TIMER. WHEN TIMES ARE SET ON BOTH THE DELAY AND EXTEND TIMERS, THE UNIT SHALL BE DESIGNED TO INHIBIT THE EXTEND FUNCTION UNTIL THE DELAY TIME HAS BEEN MET. WHEN THE LOOP BECOMES UNOCCUPIED, THE DELAY OUTPUT IS REMOVED. WHEN THE VEHICLE GAP EXCEEDS THE EXTEND TIME, THE ENTIRE DELAY-EXTEND OPERATION BECOMES EFFECTIVELY RESET READY FOR THE NEXT CYCLE, DELAY TO TIME OUT, ETC.

PAYMENT FOR ITEM 632 LOOP DETECTOR UNIT, TWO CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH UNIT AND SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS

632 DETECTOR LOOP, AS PER PLAN

IN ADDITION TO ITEM 632.10, LOOP DETECTOR WIRE INSTALLATIONS IN NEW ASPHALT SHALL BE SAWED, EMBEDDED AND SEALED IN A SUBSURFACE COURSE WITH SUBSEQUENT COVERING BY THE SURFACE COURSE. A LOOP SHALL BE CENTERED IN THE LANE OF TRAFFIC AT THE INTERSECTION UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL MARK VEHICLE LOOP DETECTOR LOCATIONS FOR INSPECTION BY THE ENGINEER BEFORE ANY PAVEMENT CUTTING.

LOCAL (NON SYSTEM) DETECTION ZONE PLACEMENT

DETECTION ZONE PLACEMENT HAS BEEN SHOWN AS ACCURATELY AS POSSIBLE. IN THE ABSENCE OF DIMENSIONS SHOWING PLACEMENT OF DETECTION ZONE, THE DETECTION ZONE SHALL BE CENTERED BETWEEN THE CENTER LINE AND THE CURB. IN NO CASE, DIMENSIONED OR OTHERWISE, SHALL THE DETECTION ZONE BE LOCATED WITHIN TWO (2) FEET OF THE EDGE OF THE LANE. DETECTION ZONE WIDTH SHALL BE FIELD ADJUSTED AS NECESSARY TO MEET THIS REQUIREMENT.

632 PHONE DROP

CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE TELEPHONE COMPANY FOR INSTALLATION OF THE TELEPHONE DROP IN THE MASTER CONTROL CABINETS. ALL RELATED COSTS SHALL BE INCLUDED IN THE BID ITEM PRICE INCLUDING CABLES, TRENCH, CONDUIT, MISC. HARDWARE AND FEES.

632 INTERCONNECT CABLE, 6 PAIR, NO.19 AWG, SOLID, REA PE39, AS PER PLAN

THE NUMBER OF SPLICE LOCATIONS SHALL BE KEPT TO A MINIMUM.

MEASUREMENT WILL BE BASED UPON THE NUMBER OF LINEAR FEET OF INTERCONNECT CABLE, BY SIZE, IN PLACE IN ACCORDANCE WITH THE METHOD DESCRIBED IN 632.28 AND NO SEPARATE PAYMENT WILL BE PROVIDED FOR ANY SEPARATE MESSENGER WIRE USED TO SUPPORT INTERCONNECT CABLES.

632 POWER SERVICE, AS PER PLAN

POWER SERVICE SHALL BE AS PER SPEC~ICATION 632 AND STANDARD CONSTRUCTION DRAWING TC-83. 10 WITH THE FOLLOWENG EXCEPTIONS:

1. THE METER BASE MOUNTING HEIGHT SHAI.L BE NO MORE THAN FIVE (5) FEET (1.5 M) HIGH TO THE CENTER OF THE METER BASE FROM THE GROUND.
2. THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASES.
3. POW POWER SERVICES SHALL BE METERED. THE METER SHAI.L HAVE A LEVER OPERATED BYPASS.

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH ITEM 632, POWER SERVICE, AS PER PLAN, SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER.

THE CONTRACTOR SHALL CONTACT THE METER SECTION OF THE POWER COMPANY FOR INFORMATION REGARDING THE METER BASE INTALLATION PRIOR TO ORDERING POLES. THE CONTRACTOR WILL BE RESPONSIBLE FOR REQUESTING, AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOK UP. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE POWER COMPANY FOR THE ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL IS ACCEPTED BY THE MAINTAINING AGENCY.

632 STRAIN POLE, TYPE TC-81.10, AS PER PLAN

IN ADDITION TO SECTION 632.15, THE CONTRACTOR SHALL INSTALL A STRAIN POLE IN ACCORDANCE WITH THE ODOT BUREAU OF DESIGN SERVICES, STANDARD CONSTRUCTION DRAWING TC-81.10.

POLE LOCATIONS HAVE BEEN INDICATED AS ACCURATELY POSSIBLE. IN NO CASE SHALL THE CLEARANCE FROM FACE OF GUARDRAIL TO FACE OF POLE, SIGN OR OTHER PROPOSED ITEMS BE LESS THAN 4.5 FEET.

HAND DIGGING MAY BE REQUIRED TO AVOID EXISTING CONDUIT(S).

632 VEHICULAR SIGNAL HEAD, BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

A) ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET FITTING SHALL BE FERROUS METAL FOR SIGNAL DISPLAYS OF TWO OR MORE SECTIONS.

B) WHEN SIGNAL HEADS ARE SUSPENDED FROM SPAN WIRES OR MAST ARMS AND NOT RIGIDLY MOUNTED THEY SHALL BE PROVIDED WITH A PIVOT AND LOCK BALANCE ADJUSTER.

C) ALL BALANCE ADJUSTERS SHALL HAVE A MINIMUM 3/4" (19mm) EYE BOLT AND 3/4" (19mm) WIDE SLOT. EYE BOLTS ARE CAST FROM 316 STAINLESS STEEL AND PROVIDED WITH A SATIN FINISH. 3/4" (19mm) BODY HALVES ARE CAST FROM A MINIMUM 65-45-12 DUCTILE IRON AND PROVIDED WITH A BRIGHT ZINC FINISH (ZN1). BALANCE ADJUSTERS SHALL ONLY BE USED WHERE NECESSARY. BALANCE ADJUSTERS SHALL BE USED ON ONE-WAY HEADS.

D) GLASS LENSES SHALL BE USED.

E) THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 120 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 FOLLOWEING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

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.

633 CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN

THIS UNIT ALSO KNOWN AS A SUBAREA MASTER SHALL BE FURNISHED WITH ALL PANELS AND REQUIRED LIGHTNING PROTECTION BY ONE OF THE FOLLOWING MANUFACTURERS. THE SYSTEM MASTER SHALL BE THE LATEST MODEL OF MASTER CONTROLLER MANUFACTURED, AND SHALL BE COMPATIBLE WITH THE LOCAL CONTROLLER:

1. AUTOMATIC SIGNAL/EAGLE SIGNAL, INC. OR
2. ECONOLITE CONTROL PRODUCTS, INC., OR
3. PEEK TRAFFIC - TRANSYT CORP.

MASTER CONTROLLERS SHALL BE CAPABLE OF PROVIDING THE FOLLOWING MODES OF OPERATION AND MEET THE TESTING REQUIREMENTS OUTLINED IN THIS ITEM WITH ONLY THE CENTRAL OFFICE MONITOR, LOCAL CONTROLLER, AND RELATED EQUIPMENT:

1. TRAFFIC RESPONSIVE MODE. GENERATE SYSTEM PATTERN COMMANDS TO THE LOCAL CONTROLLERS IN THE SYSTEM IN RESPONSE TO PREVAILING TRAFFIC CONDITIONS AS INDICATED BY THE SAMPLING SENSORS ON A SUBAREA AND AN INDIVIDUAL INTERSECTION BASIS.

2. ALL TRAFFIC RESPONSIVE TIMING PARAMETERS SHALL BE ESTABLISHED INCLUDING VOLUME, OCCUPANCY, AND DIRECTIONAL THRESHOLDS, TRANSITION SMOOTHING FACTORS, SYSTEM DETECTOR ASSIGNMENT AND SYSTEM DETECTOR WEIGHTING FACTORS BY THE CONTRACTOR. THE TRAFFIC RESPONSIVE OPERATION SHALL AUTOMATICALLY SELECT THE TIMING PLAN AND CYCLE FOR WHICH TRAFFICE FLOW PARAMETERS HAVE BEEN DEFINED THAT MOST CLOSELY MATCH THE DETECTED TRAFFIC PATTERN BY INTERSECTION OR BY LOGICAL ZONE. TWO (2) MONTHS OF DATA COLLECTION FROM THE SYSTEM LOOPS ARE REQUIRED BEFORE THE CONTRACTOR CAN DEVELOP TIMING PARAMETERS FOR TRAFFIC RESPONSIVE OPERATION. THE CONTRACTOR SHALL INSTALL THE CONTROLLER TIMING AS SHOWN IN THE PLANS BEFORE THE TRAFFIC RESPONSIVE TIMING PARAMETERS ARE DEVELOPED.

3. LOCAL TIME BASE MODE. OPERATE A USER DEFINED TIME-OF-DAY SEQUENCE OF TIMING PLANS BY MINUTE, HOUR, DAY, MONTH, AND YEAR THAT RELIES ON TIME BASED COORDINATION. LOCAL CONTROLLERS ALSO SHALL REVERT TO TIME BASED COORDINATION BY INTERSECTION IF A COMMUNICATION LINK BETWEEN A LOCAL CONTROLLER AND A MASTER CONTROLLER FAILS DURING TRAFFIC RESPONSIVE OPERATION.

4. MONTHLY SCHEDULES SHALL BE USER PROGRAMMABLE WITH UNIQUE DAY ASSIGNMENTS FOR EACH DAY OF THE YEAR. AUTOMATIC DAYLIGHT SAVINGS TIME AND LEAP YEAR ADJUSTMENTS SHALL BE MADE BY THE MASTER CONTROLLER.

5. FLASH MODE. ENABLE REMOTE FLASH OPERATION BY USER COMMAND EITHER FROM THE CENTRAL OFFICE MONITOR OR FROM A REMOTE WORKSTATION, MANUAL FLASH OPERATION WITH A CABINET SWITCH, AND CONFLICT FLASH OPERATION BY DEFAULT WITH THE CONFLICT MONITOR.

6. FREE MODE. ENABLE FREE MODE OPERATION ON AN INDIVIDUAL INTERSECTION BASIS.

7. STANDBY MODE. ENABLE INTERSECTION STANDBY CONDITIONS WHERE THE SYSTEM SHALL BE IN CONTROL BUT THE CONTROLLER SHALL RUN ON ITS LOCAL TIME-BASED CONTROL SCHEDULE.

8. PREEMPT MODE. THE CENTRAL SYSTEM SHALL BE ABLE TO MONITOR AND TO RECORD A RAILROAD OR EMERGENCY VEHICLE PREEMPT SEQUENCE.

9. MANUAL MODE. THE MANUAL MODE OF SYSTEM OPERATION SHALL ALLOW LOCAL CONTROLLERS TO RESPOND TO SYSTEM COMMANDS FOR TIMING PLAN SELECTION. THIS OPERATIONAL MODE SHALL BE IMPLEMENTED ON A GROUP BASIS OR BY INDIVIDUAL INTERSECTIONS.

SYSTEM SENSORS AND LOCAL INTERSECTION SENSORS ARE TO BE CONNECTED VIA SOFTWARE FOR TRANSMISSION OF THE SENSOR DATA TO THE SYSTEM MASTER. THIS SHALL BE DONE IN SUCH A MANNER SO AS TO ALLOW TRANSMISSION OF LOCAL AND SYSTEM SENSOR DATA TO THE CENTRAL OFFICE MONITOR FOR PROCESSING AND STORAGE.

A HIGH QUALITY MODEM (IF APPLICABLE) THAT IS COMPATIBLE WITH THE COORDINATED SIGNAL SYSTEM AND ABLE TO COMMUNICATE WITH THE CENTRAL OFFICE MONITOR.

MASTER CONTROLLER TESTING

THE CONTRACTOR SHALL LOAD SYSTEM PROGRAMS AND INTERSECTION TIMING FURNISHED BY THE ENGINEER AND SHALL OPERATE THE TEST SYSTEM FOR A 48 HOUR PERIOD WITHOUT FAILURE DURING WHICH TIME THE FOLLOWING TESTS SHALL BE PERFORMED AND OPERATIONS VERIFIED:

1. VERIFY PATTERN CHANGES ARE TAKING PLACE AND REPORTS ARE PRINTED.
2. FALL A LOCAL CONTROLLER AND VERIFY THE REPORT FAILURE
3. CHANGE LOCAL CONTROLLER TIMING AT THE MASTER (OR CENTRAL OFFICE MONITOR) AND VERIFY THE CHANGE IS MADE TO THE LOCAL CONTROLLER.
4. VERIFY SYSTEM SENSORS ARE OPERATING. INPUT COUNTS THROUGH A SYSTEM SENSOR AND VERIFY FROM SYSTEM SENSOR REPORT.
5. VERIFY TIME CLOCK ACCURACY.
6. VERIFY UPLOADING/DOWNLOADING TO LOCAL CONTROLLERS AND UPLOADING FROM A RECORDING CONFLICT MONITOR FROM A MASTER CONTROLLER TO THE CENTRAL OFFICE MONITOR.

A WRITTEN REPORT SHALL BE SUBMITTED TO THE ENGINEER UPON SUCCESSFUL COMPLETION OF THE ABOVE TESTS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH OF ITEM 633 CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN.

633 CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN

THE ELECTRICAL TRAFFIC CONTROL EQUIPMENT PROVIDED SHALL MEET THE FOLLOWING SPECIFICATIONS AND BE MANUFACTURED BY EAGLE SIGNAL, ECONOLITE CONTROL PRODUCT, OR TRANSYT CORPORATION, OR APPROVED EQUAL. THE ABOVE COMPANIES WERE LISTED IN ALPHABETICAL ORDER. THIS DOES NOT INDICATE ANY PREFERENCE. ALL EQUIPMENT PROVIDED AS PART OF THIS CONTRACT SHALL BE THE LATEST MODEL CURRENTLY IN PRODUCTION AND NEW. EQUIPMENT NO LONGER BEING MANUFACTURED SHALL NOT BE ACCEPTABLE EVEN IF IT MEETS THE FOLLOWING SPECIFICATIONS.

IN ADDITION TO THE REQUIREMENTS OF 633 AND NEMA STANDARD PUBLICATION NO. TS-2-1 992, CONTROLLERS AND CABINETS SHALL HAVE THE FOLLOWING FEATURES:

1. THE TRATHE TRAFFIC CABINET SHALL COMPLY WITH THE NEMA TS-2 TYPE 1 STANDARD AND THE CONTROLLER SHALL COMPLY WITH THE NEMA TS-2 TYPE 2 STANDARD WITH A SDLC PORT.
2. THE DETECTORS SHALL BE RACK MOUNTED WITH A BIU (BUS INTERFACE UNIT) INCLUDED FOR THE SDLC PORT ON THE CONTROLLER.
3. TIME BASE COORDINATION.
4. SYSTEM COMMUNICATION CAPABILITY/TELEMETRY MODULE.
5. PROVIDE LOCAL PREEMPTION CONTROL.
6. PROVIDE A RENAL TIME BASE SCHEDULER INCLUDING AUTOMATIC ACCOMMODATION FOR DAYLIGHT SAVINGS TIME.
7. PROVIDE DATA UPLOADLNG AND DOWNLOADING CAPABILITY.
8. EEPROM DATA MODULE, USER ENTERED DATA AND INTERSECTION CONFIGURATION PROGRAMMING SHALL BE STORED IN AN ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY (EEPROM). TO FACILITATE DATA TRANSFER FROM ONE INTERSECTION CONTROLLER TO ANOTHER, THE EEPROM DEVICE SHALL BE MOUNTED ON A SUB-MODULE.
9. THE CABINET DOOR LOCKS SHALL BE CORBIN TYPE KEYED TO THE STANDARD #2 COMBINATION.
10. THE CABINET SHALL BE SUPPLIED WITH ONE MALFUNCTION MANAGEMENT UNIT (MMU) AS DEFINED BY THE REQUIREMENTS OF SECTION FOUR OF THE NEMA TS-2 STANDARD. THE MALFUNCTION MANAGEMENT UNIT (MMU) SHALL BE A TYPE 18.
11. THE LOAD SWITCHES SHALL PROVIDE INPUT AND OUTPUT INDICATIONS.
12. ALL OVERLAPS SHALL BE PROGRAMMABLE THROUGH A STANDARD NEMA PROGRAM CARD AS PROGRAMMED BY THE USER.
13. CONTROLLER SETTINGS SHALL BE PROGRAMMABLE THROUGH A KEYBOARD ON THE CONTROLLER FRONT PANEL, OR VIA PORTABLE IBM COMPATIBLE NOTEBOOK COMPUTER AND CONNECTER CABLE.
14. THE- CONTROLLER SHALL HAV1E A LIQUID CRYSTAL DISPLAY WITH ADJUSTABLE BACK LIGHT. THE DISPLAY SHALL BE A SUFFICIENT SIZE TO DISPLAY A MINIMUM OF FOUR (4) LINES OF TEXT WITH A MINIMUM OF TWENTY (20) CHARACTER PER LINE. THE DISPLAY SHALL BE READABLE IN DIRECT SUNLIGHT OR DARKNESS.
15. THE CONTROLLER CABINETS SHALL HAVE DETECTOR CALL BUTTONS FOR ALL EIGHT (8) PHASES AND PEDESTRIAN MOVEMENTS, CONTROLLER POWER SWITCH, STOP TIMING SWITCH, CABINET LIGHT WITH SWITCH, AND AN AUTO FLASH SWITCH, ALL LOCATED ON THE INSIDE CABINET DOOR.
16. TO ACCOMMODATE FUTURE OPERATIONAL UPGRADES, UP TO AND INCLUDING AND EIGHT (8) PHASE OPERATION, PROVIDE ALL WIRING AND COMPONENTS FOR THE MMU, FLASH TRANSFER RELAY, AND LOAD SWITCHES SUCH THAT WHEN EXPANSION IS IMPLEMENTED THE ONLY WORK REQUIRED WILL BE TO REPROGRAM THE MMU, HOOK-UP THE SIGNAL HEADS AND DETECTORS, AND ACTIVATE THE ADDED PHASES ON THE CONTROLLER. THE SPARE LOOP AMPLIFIERS SHALL BE PLACED IN THE CONTROLLER CABINET AND BE CLEARLY LABELED TO INDICATE THE PHASE IT CA AND TO INDICATE FUTURE USE. THE CABINET SHALL PROVIDE FOR 16 CHANNELS OF LOOP DETECTION WITH DELAY AND EXTENSION ON ALL CHANNELS.

NOT TO SCALE

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TRAFFIC SIGNAL AND SYSTEM GENERAL NOTES

CLA-41-12.19

16. TO ACCOMMODATE FUTURE OPERATIONAL UPGRADES, UP TO AND INCLUDING AND EIGHT (8) PHASE OPERATION, PROVIDE ALL WIRING AND COMPONENTS FOR THE MMU, FLASH TRANSFER RELAY, AND LOAD SWITCHES SUCH THAT WHEN EXPANSION IS IMPLEMENTED THE ONLY WORK REQUIRED WILL BE TO REPROGRAM THE MMU, HOOK-UP THE SIGNAL HEADS AND DETECTORS, AND ACTIVATE THE ADDED PHASES ON THE CONTROLLER. THE SPARE LOOP AMPLIFIERS SHALL BE PLACED IN THE CONTROLLER CABINET AND BE CLEARLY LABELED TO INDICATE THE PHASE IT CA AND TO INDICATE FUTURE USE. THE CABINET SHALL PROVIDE FOR 16 CHANNELS OF LOOP DETECTION WITH DELAY AND EXTENSION ON ALL CHANNELS.

17. THE FOLLOWING INFORMATION SHALL BE ON ALL LAPELS IN THE CONTROLLER CABINET TO IDENTIFY THE WIRING AND FUNCTION:
LOOP DETECTOR LEAD-IN CABLE:
PHASE NUMBER SERVICED, DIRECTION, MOVEMENT TYPE, AND LOOP(S) PLAN NUMBER(S).
SIGNAL HEAD FIELD WIRING:
PHASE NUMBER, DIRECTION, MOVEMENT TYPE AND COLOR (RED, YELLOW, GREEN, YELLOW ARROW, GREEN ARROW OR PEDESTRIAN MOVEMENT.

18. PRINTED CIRCUIT BOARD TYPE BACK PANELS OF THE CONTROLLER CABINET WILL NOT BE ACCEPTED. NO QUICK CONNECT PLUG-IN CONNECTION SHALL BE PERMITTED ON THE BACK PANEL. SOLDERED CONNECTIONS WILL BE PERMITTED FOR WIRING ON THE BACK SIDE OF THE BACK PANEL.

19. THE CONTROLLER SHALL AUTOMATICALLY AND CONTINUALLY MONITOR INTERSECTION ACTIVITY AND LOG/REPORT OCCURRENCES OF THE INTERSECTION ALARM CONDITIONS. ALL ALARM CONDITION EVENTS SHALL INCLUDE A DESCRIPTION OF EVENT, TIME AND DATE OF OCCURRENCE, MONITORED INTERSECTION ALARM CONDITIONS SHALL INCLUDE, AS A MINIMUM:
A) CYCLE FAULTS AND FAILURES
B) COORDINATION FAILURES
C) VOLTAGE MONITOR
D) PREEMPT
E) LOCAL REMOTE FLASH CONDITION
F) LOCAL FREE CONDITION
G) AT LEAST SIX SPECIAL USER DEFINED ALARMS

20. EACH DETECTOR SHALL BE CONTINUALLY VERIFIED FOR PROPER OPERATION. THE LOCAL INTERSECTION CONTROLLER SHALL MAINTAIN A LOG OF ALL DETECTOR FAILURES INCLUDING DATE AND TIME OF THE FAILURE AND RESUMPTION OF PROPER OPERATION. AS A MINIMUM EACH DETECTOR SHALL BE CONTINUOUSLY MONITORED FOR CONSTANT CALLS, ABSENCE OF CALLS AND ERRATIC OUTPUT.

21. THE CONTROLLER SHALL HAVE CAPABILITY TO CONDUCT AND STORE DETECTOR COUNTS UTILIZING PHASE DETECTORS AND THE ABILITY TO RETRIEVE REPORTS FOR 24 HOUR PERIODS IN 15 MINUTE INTERVALS.

22. WARRANTY: THE CONTROLLER UNIT SHALL BE WARRANTED TO BE FREE FROM DEFECTS ON WORKMANSHIP AND MATERIAL FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF SHIPMENT BY THE MANUFACTURER. ANY COMPONENT FOUND TO BE DEFECTIVE SHALL BE REPLACED FREE OF CHARGE, THE DEFECTIVE UNIT SHALL BE DELIVERED OR SHIPPED BY ODOT TO THE FACTORY REPRESENTATIVE LOCATED IN OHIO FOR REPAIR. THE REPAIRED UNIT SHALL BE DELIVERED TO ODOT DISTRICT SEVEN (7) AT 1001 ST. MARYS AVENUE, SIDNEY, OHIO 45365 THE ATTENTION OF THE DISTRICT HIGHWAY MANAGEMENT ADMINISTRATOR, AT THE EXPENSE OF THE VENDER/SUPPLIER

23. THE CONTRACTOR SHALL PROVIDE ODOT WITH TWO (2) SETS OF OPERATING MANUALS FOR THE CONTROLLER AS WELL AS TWO (2) SETS OF ANY ADDITIONAL MANUALS PERTINENT TO THE INTERSECTION IN ANY WAY

24. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY ITEMS TO COMPLY WITH NTCIP FOR THE NEXT FIVE YEARS AT NO ADDITIONAL COST

25. THE CABINET DOOR KEYHOLE SHALL BE SEALED IN A FASHION TO PREVENT WATER FROM ENTERING THE INTERIOR OF THE CABINET.

26. THE MODULAR AC POWER PROTECTION UNIT, EDCO MODEL SHA-1250R, SHALL CONSIST OF A TERMINAL BASE UNIT AND A REMOVABLE PROTECTION MODULE WITH A RELAY CONTACT CLOSURE SUITABLE FOR INTERFACING WITH OTHER ELECTRONIC EQUIPMENT FOR THE PURPOSE OF REMOTE MONITORING. THE REMOTE SENSING OUTPUT SHALL BE GROUND TRUE AND CONNECTED TO THE SPECIAL STATUS 2 INPUT ON ON THE BIU. THE UNIT SHALL MEET OR EXCEED THE REQUIREMENTS OF NEMA TS-2.

PAYMENT FOR ITEM 633, CONTROLLER, ACTUATED, EIGHT PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN, WITH INTERNAL TIME BASE COORDINATION WILL BE AT THE CONTRACT BID PRICE COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS TESTED AND ACCEPTED.

633 CENTRAL OFFICE MONITOR, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING, INSTALLING, TESTING AND TRAINING FOR THE CLOSED LOOP SYSTEM SOFTWARE AND RELATED COMPUTER HARDWARE. THE CENTRAL OFFICE MONITOR SHALL INCLUDE A DESKTOP COMPUTER FOR ENGINEERING PERSONNEL TO BE DELIVERED BY THE CONTRACTOR TO ODOT DISTRICT 7. THE CENTRAL OFFICE MONITOR SHALL BE DELIVERED TO ODOT DISTRICT 7 PLANNING WITHIN 2 MONTHS AFTER THE CONTRACT IS AWARDED TO THE CONTRACTOR. COPIES OF THE CLOSED LOOP SIGNAL SYSTEM SOFTWARE, LATEST VERSION, WITH DOCUMENTATION AND ANY OTHER SOFTWARE NECESSARY TO OPERATE THE CLOSED LOOP SYSTEM SHALL BE SUPPLIED AND LICENSED TO ODOT DISTRICT 7 AS A PART OF THIS CONTRACT.

GENERAL REQUIREMENTS
THE CENTRAL OFFICE MONITOR SHALL MEET THE FOLLOWING REQUIREMENTS:

1. THE USER SHALL BE ABLE TO DOWNLOAD AND UPLOAD ALL TIMING PARAMETERS OR SELECTED DATA ITEMS IN THE LOCAL CONTROLLER'S MEMORY FROM A CLOSED LOOP DATABASE WHICH CONTAINS DATA FOR ALL CONTROLLERS IN THE SUBSYSTEM. THE CENTRAL OFFICE MONITOR SHALL BE ABLE TO TABULATE, FORMAT, OUTPUT, AND EDIT PARAMETER DATA ON THE CENTRAL DISK OR FIELD CONTROLLER. ANY SYSTEM WORKSTATION (REMOTE AND CENTRAL) SHALL BE ABLE TO TABULATE, FORMAT, OUTPUT, AND EDIT PARAMETER DATA AT THE MASTER CONTROLLER OR FIELD CONTROLLER.

2. THE DOWNLOADING TASK SHALL INCLUDE AN ACKNOWLEDGMENT BY THE LOCAL CONTROLLER THAT DATA HAS BEEN CORRECTLY RECEIVED AFTER SUCCESSIVE ATTEMPTS FROM ANY CENTRAL OFFICE MONITOR OR REMOTE COMPUTER. THE ACKNOWLEDGMENT THAT DATA IS CORRECTLY RECEIVED WHEN UPLOADING/DOWNLOADING MULTIPLE CONTROLLERS SHALL BE LISTED FOR EACH CONTROLLER ON THE MONITOR AND IN PRINTED FORM.

3. THE CENTRAL OFFICE MONITOR SHALL BE CAPABLE OF MONITORING THE REAL TIME OPERATION OF LOCAL INTERSECTION CONTROLLERS (INCLUDING BUT NOT LIMITED TO SIGNAL AND DETECTOR INDICATIONS), COLLECT DETECTOR AND OCCUPANCY DATA AT LEAST ONCE EVERY DAY AND PROCESS AND EVALUATE ALL MEASURES OF EFFECTIVENESS PARAMETERS AT LEAST ONCE EVERY 120 SECONDS AT INDIVIDUAL SIGNALIZED INTERSECTIONS.

4. THE CENTRAL OFFICE MONITOR SHALL AUTOMATICALLY GENERATE THE FOLLOWING USER PROGRAMMABLE ALARMS: PRINTER OUTPUT STATUS REPORT, AUDIBLE ALARM, SYSTEM LOG UPDATE, AND PAGER ALARM TO ALERT USERS OF THE EXISTENCE OF A FAILURE OR MARGINAL OPERATING CONDITION.

5. THE CENTRAL OFFICE MONITOR SHALL PERFORM AUTOMATIC TASKS SUCH AS DATA COLLECTION, EVENT LOGGING, DATA ANALYSIS, AND AUTOMATIC BACKUP FUNCTIONS TO DISK, TAPE, AND/OR SCREEN AT USER PROGRAMMABLE TIME OF DAY. DATA STORAGE CAPABILITY SHALL BE LARGE ENOUGH TO ALLOW FOR THE BACKUP OF INTERSECTION DATABASES, MASTER DATABASES, AND THE STORAGE OF OPERATIONAL EVENTS AND DATA WITHOUT OVERWRITING OLD DATA.

6. THE CENTRAL OFFICE MONITOR SHALL BE ABLE TO RETRIEVE, PROCESS, STORE, AND PRINT ALL TRAFFIC DATA MEASURED BY THE SYSTEM DETECTORS. THE USER SHALL BE ABLE TO VIEW A REPORT WHICH INCLUDES AS A MINIMUM THE STATUS, VOLUME, AND OCCUPANCY FOR EACH PHASE AND DETECTOR (LOCAL AND SYSTEM).

7. THE CENTRAL OFFICE MONITOR SHALL BE ABLE TO AUTOMATICALLY CALL A PAGER WITH USER PROGRAMMABLE ALARM LEVELS AND CODES TO INFORM MAINTENANCE PERSONNEL OF SIGNAL FAILURES, CABINET DOORS OPEN, ETC.

HARDWARE – DESKTOP COMPUTER

THE CONTRACTOR SHALL FURNISH AND INSTALL AN IBM COMPATIBLE COMPUTER FOR USE BY ODOT DISTRICT 7. THE COMPUTER SHALL BE STAND ALONE DEVICE IN A TOWER CASE ABLE TO CALL THE MASTER CONTROLLER FROM A REMOTE LOCATION AND HAVE FULL ACCESS TO THE CLOSED LOOP SIGNAL SYSTEM. THE TOWER UNIT SHALL HAVE AT LEAST 3 UNUSED BAYS FOR FUTURE USE. AS A MINIMUM, THE DESKTOP COMPUTER SHALL MEET THE FOLLOWING REQUIREMENTS:

1. MICROPROCESSOR/PLATFORM. THE MICROPROCESSOR OF THE SERVER SHALL BE PENTIUM III PC BASED WITH A MINIMUM PROCESSOR SPEED OF 700 MHZ. THE MICROPROCESSORS MUST BE FULLY COMPATIBLE WITH THE CLOSED LOOP SYSTEM SOFTWARE. DESIGNS INCLUDING MOTHERBOARDS THAT CAN BE UPGRADED TO ACCEPT FUTURE MICROPROCESSORS ARE RECOMMENDED.

2. HARD DISK DRIVE. AN ENHANCED EDI HARDDRIVE SHALL STORE THE SOFTWARE REQUIRED TO SERVE THE SYSTEM. AFTER FULL INSTALLATION OF THE OPERATING SYSTEM, CLOSED LOOP SYSTEM SOFTWARE, SYSTEM AND INTERSECTION GRAPHICS FILES, AND MISCELLANEOUS SOFTWARE, AT LEAST 50% OF THE HARDDRIVE ON THE SERVER MUST REMAIN AVAILABLE FOR SYSTEM SOURCE DATA FILES. EACH HARDDRIVE SHALL BE REMOVABLE WITHOUT HAVING TO REMOVE THE OUTER CASING OF THE COMPUTER. A MINIMUM 20GB HARDDRIVE WITH A MAXIMUM ACCESS RATE OF 10 MB AND A TRANSFER RATE OF MODE 4.

3. RANDOM ACCESS MEMORY AND CACHE SIZE. RANDOM ACCESS MEMORY (RAM) SHALL BE SUFFICIENT TO OPERATE THE CLOSED LOOP SYSTEM SOFTWARE TO MEET OR EXCEED THE SPEED REQUIREMENTS SET BY THE FUNCTIONAL SOFTWARE REQUIREMENTS. RAM CHIPS SHALL BE IN LARGE DENOMINATIONS SO THAT EMPTY SLOTS ARE AVAILABLE FOR FUTURE CHIPS TO INCREASE TOTAL RAM WITHOUT WASTING CHIPS OF SMALLER DENOMINATIONS. RAM SHALL BE FURNISHED AS A STATIC DYNAMIC RANDOM ACCESS MEMORY (SDRAM) CHIP. AT A MINIMUM, THE SERVER SHALL HAVE 128K RAM INSTALLED AND BE EXPANDABLE TO 256MB OF RAM. THE MINIMUM CACHE SIZE SHALL BE 512KB.

4. GRAPHICS CARD. THE GRAPHICS CARD SHALL BE CAPABLE OF PRODUCING COLOR IMAGES WITH A RESOLUTION OF 1280 – 1280 PIXELS. IT SHALL HAVE AT LEAST 8MB OF MEMORY AND MUST SUPPORT THE FUNCTIONAL REQUIREMENTS FOR SCREEN REFRESH RATES.

5. ACCESS MODES. A MODEM INSTALLED EXTERNAL TO THE DESKTOP COMPUTER SHALL ALLOW REMOTE ACCESS TO THE MASTER CONTROLLER FROM COMMERCIAL TELEPHONE LINES. THE MODEM SHALL BE CONNECTED TO THE SERIAL PORT OF THE COMPUTER. THE MODEM SHALL BE HAYES COMPATIBLE AND DEFAULT TO AUTO-ANSWER ON POWER-UP. THE MODEM SHALL BE CAPABLE OF TRANSMISSION THROUGHOUT OF AT LEAST 33.6 KBPS.

6. COMPUTER MONITOR. THE MONITOR SHALL HAVE A MINIMUM VIEWING AREA OF 482 MM (19 INCH) DIAGONAL, HAVE A RESOLUTION OF AT LEAST 85HZ, HAVE A 0.26 PITCH OR LESS, AND BE NON-INTERLACED WITH A DIAMONDTRON TUBE. THE MONITOR BASE SHALL PROVIDE TILT AND SWIVEL CAPABILITIES.

7. KEYBOARD AND MOUSE. A STANDARD 104-KEY KEYBOARD AND MS THREE BUTTON MOUSE SHALL ACCOMPANY THE CENTRAL OFFICE MONITOR. THESE COMPONENTS SHALL BE SUPPLIED WITH NECESSARY CABLES TO OPERATE THE COMPUTER.

8. INTERNAL DATA ARCHIVE DRIVE. A COMPACT DISK READ-WRITE (CDRW) DRIVE SHALL BE FURNISHED AND INSTALLED FOR STORAGE OF ALL GENERATED DATA AND SYSTEM SOURCE DATA THROUGH PROCESSORS IMPLEMENTED WITHIN THE CLOSED LOOP SYSTEM SOFTWARE. THE DRIVERS SHALL ALSO HAVE THE CAPABILITY OF LOADING SYSTEM SOFTWARE, READING BACK THE ARCHIVE COMPACT DISKS, ETC. THE CDRW DRIVES SHALL HAVE AN IDE INTERFACE WITH A MINIMUM 4X WRITE TRANSFER RATE AND A MINIMUM 6X READ TRANSFER RATE. THE DRIVES SHALL SUPPORT AN INCREMENTAL RECORDING MODE

9. DISK DRIVE. THE DESKTOP COMPUTER SHALL HAVE ONE DISK DRIVE FOR (3.5 INCH) HIGH-DENSITY DISKETTES.

THE FOLLOWING MISCELLANEOUS EQUIPMENT OR FUNCTIONS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AS A MINIMUM IN ADDITION TO THE ABOVE REQUIREMENTS:

1. ENERGY STAR. ALL PERSONAL COMPUTERS AND MONITORS SHALL COMPLY WITH THE ENERGY STAR COMPUTERS PROGRAM INITIATED BY THE ENVIRONMENTAL PROTECTION AGENCY.

2. ENVIRONMENT. EACH UNIT OF HARDWARE SHALL BE SELF-CONTAINED. ALL EQUIPMENT SHALL OPERATE PROPERLY AND WITHIN SPECIFICATION LIMITS BETWEEN 50°F AND 100°F WITHOUT THE NEED FOR SUPPLEMENTAL COOLING.

3. DOCUMENTATION. EACH UNIT OF EQUIPMENT DELIVERED BY THE CONTRACTOR SHALL HAVE ITS OWN DOCUMENTATION MANUAL CONTAINING ALL MANUFACTURER SUPPLIED BOOKLETS, LICENSE CARDS, PACKING SLIPS, WARRANTEE INFORMATION, ETC. THIS DOCUMENTATION SHOULD BE GROUPED TOGETHER FOR EACH PIECE OF EQUIPMENT AND DELIVERED TO THE SYSTEM ADMINISTRATOR IN AN ENVELOPE, BINDER, OR OTHER CONTAINER LABELED IN A MANNER TO EASILY IDENTIFY THE DOCUMENTATION TO THE RELATED EQUIPMENT.

4. INTERFERENCE. THE CONTRACTOR SHALL SELECT SYSTEM COMPONENTS AND INSTALL SUCH COMPONENTS IN A MANNER TO ELIMINATE CROSS COMPONENT ELECTRONIC INTERFERENCE.

5. SOFTWARE. THE CONTRACTOR SHALL FURNISH AND SET UP ALL HARDWARE NECESSARY FOR THE PROPER OPERATION OF THE CLOSED LOOP SIGNAL SYSTEM. THE COMMERCIAL SOFTWARE INSTALLED IN EACH COMPUTER SHALL BE COMPATIBLE WITH ITS OPERATING SYSTEM SOFTWARE AND HARDWARE. THE CONTRACTOR SHALL FURNISH AND INSTALL ANY SOFTWARE DRIVERS NECESSARY FOR EACH UNIT OF HARDWARE TO PERFORM AS REQUIRED IN ADDITION TO THE FOLLOWING PROGRAMS AND OPERATING SYSTEM:
a) WINDOWS NT 3.0 OR LATER OR WINDOWS 95 OR LATER.
b) MICROSOFT OFFICE

6. SURGE PROTECTION. SURGE PROTECTION SHALL BE PROVIDED FOR THE REMOTE OPERATOR INTERFACE UNIT AND FOR ANY PHONE LINES CONNECTED TO MODEMS FOR REMOTE ACCESS.

7. ARCHIVE MEDIA. THE CONTRACTOR SHALL FURNISH TWO (2) BLANK RECORDABLE CDRW DISKS FOR USE WITH THE CD DRIVE.

A QUANTITY OF ONE (1) DESKTOP COMPUTER AND MISCELLANEOUS EQUIPMENT SHALL BE FURNISHED AND DELIVERED TO THE ODOT DISTRICT 7 PLANNING OFFICE AS DEFINED ABOVE.

THE CONTRACTOR SHALL SUPPLY UPGRADES TO THE CLOSED LOOP SYSTEM SOFTWARE AND HARDWARE FOR FEATURES FURNISHED AS A PART OF THE CONTRACT AT NO COST FOR A TWO (2) YEAR PERIOD AFTER THE SEQUENTIAL INTERSECTION AND SYSTEM 10 DAY BURN TESTS.

REPORTS

THE MENU SELECTION SHALL ENABLE THE USER TO GENERATE PRINTED REPORTS FROM THE OPERATOR INTERFACE UNITS AND TO GENERATE A SERIES OF STANDARD PRINTED REPORTS. IT SHALL BE POSSIBLE TO IDENTIFY THE REPORT TO BE PRINTED THROUGH A MENU SELECTION SCREEN. STANDARD REPORTS SHALL INCLUDE PRINTED REPORTS OF THE STATUS OF THE INTERSECTIONS AND THE SYSTEM, THE SYSTEM LOG, FAILURES OF EQUIPMENT AND INTERSECTIONS, AND TRAFFIC VOLUME HISTORY BY LOCATION AND TIME. THE REPORTS SHALL ALLOW THE USER TO IDENTIFY THE DATA ELEMENTS TO BE PRINTED AND SHALL INCLUDE AS A MINIMUM THE FOLLOWING REPORTS:

1. CURRENT FAILURES REPORT. TO INCLUDE THE SELECTION OF FAILURE LOCATION, EQUIPMENT TYPE, REASON FOR FAILURE, FAILURE DATE, FAILURE TIME, FAILURE TYPE, AND STATUS.

2. DETECTOR DEFINITION REPORT. TO INCLUDE THE SELECTION OF DETECTOR NAME, DETECTOR ID, INTERSECTION ID, DETECTOR NUMBER AND LOOP LENGTH.

3. TIME OF DAY COMPARE. THE SYSTEM SHALL BE ABLE TO COMPARE INTERSECTION CONTROLLER OR MASTER DATA FROM DISK TO THE SAME DATA AT THE CONTROLLER. RESULTS SHALL BE ABLE TO BE DISPLAYED AT THE CONSOLE, ON THE PRINTER, OR IN A DISK FILE. COMPARE SHALL BE ABLE TO BE PERFORMED ON PHASE DATA, COORDINATION DATA, LOCAL TBC DATA, SYSTEM DETECTOR DATA, OR ALL DATA FOR INTERSECTION CONTROLLERS AND FOR ALL DATA FOR MASTERS.

4. MMU. THE SYSTEM SHALL BE ABLE TO DISPLAY CONFLICT REPORTS. THESE REPORTS SHALL CONTAIN STATUS AND CONFLICT LOG DATA REPORTED FROM THE MMU.

5. INTERSECTION TIMING REPORT. TO INCLUDE THE SELECTION OF INTERSECTION ID, DATE AND TIME, CYCLE, SPLIT AND OFFSET NUMBER, FAILURE STATUS, ACTUAL OFFSET, AND SPECIAL FUNCTIONS. SPECIAL FUNCTIONS SHALL INCLUDE SPLIT, CYCLE LENGTH, OFFSET AND TOD SETTINGS FOR PHASES 1 THROUGH 8.

SECURITY

CONFLICT CHECKING SHALL BE PROVIDED BY THE SYSTEM TO ENSURE ONLY SINGLE USER DATA ACCESS. SYSTEM SECURITY SHALL BE PROVIDED BY PASSWORD AND USER DEFINED PRIVILEGE LEVELS TO PREVENT UNAUTHORIZED ACCESS AT VARIOUS LEVELS OF OPERATION. THE MASTER CONTROLLER AND THE LOCAL CONTROLLER SHALL HAVE A SECURITY CODE TO PREVENT UNAUTHORIZED CHANGES IN THE TIMING PLANS.

GRAPHICS

THE GRAPHICAL USER INTERFACE SHALL BE WINDOWS BASED AND OPERABLE BY SELECTION COMMANDS USING A KEYBOARD OR A MOUSE FROM DISPLAYED MENUS. THE REAL TIME MONITORING SHALL BE DISPLAYED GRAPHICALLY IN INTERSECTION AND AREA GRAPHIC DISPLAYS.

INFORMATION DISPLAYED GRAPHICALLY SHALL INCLUDE VEHICLE SIGNALS, PEDESTRIAN SIGNALS, VEHICLE AND PEDESTRIAN DETECTORS, INTERSECTION AND GROUP STATUS (ON/OFF LINE), AND MODE OF OPERATION. PRESENCE DETECTORS SHALL IDENTIFY WHEN A VEHICLE IS OFF OR ON A DETECTOR. THE USER SHALL BE ABLE TO ADD, DELETE AND MODIFY THE PHASES ON THESE GRAPHICAL FEATURES. THE GRAPHICAL FEATURES SHALL BE ABLE TO BE PLACED ANYWHERE ON THE INTERSECTION GRAPHICS BACKGROUND SCREEN.

THE USER SHALL BE ABLE TO SELECT INTERSECTION BACKGROUNDS FROM A LIBRARY OF BACKGROUNDS OR CREATE A BACKGROUND VIA A COMMERCIAL PAINT PROGRAM (.BMP OR .PCX FORMAT), CAD PROGRAM (.DWG OR .DGN FORMAT), SCANNING, ETC. THE SYSTEM OR AREA GRAPHICS SHALL DISPLAY VEHICLE SIGNALS AND SYSTEM LOOP STATUS. THE CONTRACTOR SHALL CREATE INTERSECTION GRAPHICS THAT CORRESPOND TO THE GEOMETRY OF INTERSECTION IN THE FIELD AND AN AREA GRAPHIC FOR THE ENTIRE PROJECT AREA WHICH CORRESPONDS TO LAYOUT OF STREETS AND INTERSECTIONS.

TESTING

THE CONTRACTOR SHALL INITIATE A 10 DAY BURN TEST FOR EACH INTERSECTION WHICH CANNOT RUN CONCURRENTLY WITH OTHER INTERSECTION BURN TEST AFTER THE CENTRAL OFFICE MONITOR AND ALL SIGNALIZED INTERSECTIONS WITHIN THE PROJECT AREA ARE ON-LINE. THE CLOSED LOOP TRAFFIC SIGNAL SYSTEM SHALL THEN HAVE A 10 DAY BURN TEST AFTER THE BURN TESTS OF ALL INTERSECTIONS ARE COMPLETE. THE BURN TEST PERIOD WILL CONSIST OF THE OPERATION OF THE LOCAL INTERSECTIONS AND TRAFFIC CONTROL SYSTEM BY ODOT DISTRICT 7 STAFF/AUTHORIZED REPRESENTATIVE.

EACH BURN-IN PERIOD WILL EXPIRE IN 10 WORKING DAYS UNLESS A SYSTEM MALFUNCTION OCCURS. IF A MALFUNCTION OCCURS, THE BURN-IN PERIOD WILL BE STOPPED. WHEN THE SYSTEM MALFUNCTION IS CORRECTED AND THE SYSTEM IS FUNCTIONING PROPERLY AGAIN, THE BURN-IN PERIOD WILL START OVER FROM THE BEGINNING OF THE 10 DAYS. SYSTEM MALFUNCTIONS RELATED TO THE EQUIPMENT AND SOFTWARE SUPPLIED BY THE CONTRACTOR SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE PUBLIC AGENCIES.

THE CONTRACTOR SHALL REPAIR OR REPLACE ANY EQUIPMENT THAT FAILS TO FUNCTION PROPERLY BECAUSE OF DEFECTIVE MATERIALS OR WORKMANSHIP AT THE CONTRACTOR'S EXPENSE THROUGHOUT THE DURATION OF THE BURN TESTING PERIOD. THE CONTRACTOR SHALL REPLACE ANY PIECE OF EQUIPMENT THAT MALFUNCTIONS MORE THAN ONCE DURING EACH TEST PERIOD. THE CONTRACTOR SHALL RESTORE NORMAL SYSTEM OPERATION WITHIN 24 HOURS AFTER BEING NOTIFIED OF A SYSTEM MALFUNCTION BY THE ENGINEER.

TRAINING AND DOCUMENTATION

THE CONTRACTOR SHALL PROVIDE A TRAINING COURSE COVERING THE THEORY OF OPERATION AND TROUBLE SHOOTING TECHNIQUES. OTHER ASPECTS OF THE COURSE SHALL COVER THE USE OF THE OPERATING SYSTEM SOFTWARE, THE UTILITY SOFTWARE, THE MAINTENANCE AND DIAGNOSTIC SOFTWARE, AND THE CENTRAL OFFICE EQUIPMENT. THE COURSE SHALL TEACH THE ODOT DISTRICT 7 MAINTENANCE AND ENGINEERING PERSONNEL TO OPERATE AND MAINTAIN THE TRAFFIC MANAGEMENT SYSTEM AFTER FINAL ACCEPTANCE.

THE TRAFFIC MANAGEMENT SYSTEM TRAINING SHALL BE LIMITED TO 14 HOURS. NO MORE THAN SEVEN (7) HOURS OF TRAINING SHALL BE CONDUCTED IN A SINGLE DAY. THE ODOT DISTRICT 7 SHALL HAVE THE RIGHT TO VIDEOTAPE ALL TRAINING COURSES. THE TRAINING COURSES SHALL BE 50% COMPLETE PRIOR TO STARTING THE SERIES OF 10 DAY BURN TESTS AND 100% COMPLETE BY THE EXPIRATION OF THE 120 DAY GUARANTEE.

SOFTWARE OR HARDWARE UPDATES SHALL BE ACCOMPANIED BY COMPLETE DOCUMENTATION THAT REFERENCES AN UPGRADE VERSION, THAT PROVIDES A LIST OF IMPROVED CAPABILITIES WITH UPGRADE, AND PROVIDES A LIST OF PROBLEMS RESOLVED WITH THE UPGRADE (IF APPLICABLE). ALL FUNCTIONS, FEATURES, AND CAPABILITIES NOT ADDRESSED SHALL OPERATE AS INTENDED BEFORE THE UPGRADE WAS IMPLEMENTED.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER EACH OF ITEM 633 CENTRAL OFFICE MONITOR, AS PER PLAN.

NOT TO SCALE

DESIGNED
CHECKED

TRAFFIC SIGNAL AND SYSTEM
GENERAL NOTES

CLA-41-12.19

INTERSECTION ON SR41			INTERCONNECT PLAN		PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
RAMP A & RAMP B	RAMP C & RAMP D	TITUS & RIDGE	STA. 152+00 TO 163+00	STA. 163+00 TO 174+00	CITY, STATE & FEDERAL	100% CITY						
65	30	40					625	25402	135	L.F.	CONDUIT, 2", 713.07	
			1250	1400			625	25500	2650	L.F.	CONDUIT, 3", 713.04	
35	110						625	25502	145	L.F.	CONDUIT, 3", 713.07	
	110						625	25900	110	L.F.	CONDUIT, JACKED OR DRILLED, 3"	
90	140	40	900	1400			625	29002	2570	L.F.	TRENCH, 24" DEEP	
2	5	2	6	8			625	30700	23	EACH	PULL BOX, 713.08, 18"	
1							625	30706	1	EACH	PULL BOX, 713.08, 24"	
4	4	4					625	32000	12	EACH	GROUND ROD	
2	2	1					630	79000	5	EACH	SIGN HANGER ASSEMBLY, SPAN WIRE	
15	15	7.5					630	80102	37.5	S.F.	SIGN, FLAT SHEET, TYPE G	
8	5	8					632	00301	21	EACH	VEH. SIG. HD., 3-SECTION, 12" LENS, 1 WAY, AS PER PLAN	21
1	1						632	00501	2	EACH	VEH. SIG. HD., 5-SECTION, 12" LENS, 1 WAY, AS PER PLAN	21
9	6	8					632	25000	23	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
13	7	9					632	26501	29	EACH	DETECTOR LOOP, AS PER PLAN	
13	7	9					632	27105	29	EACH	LOOP DETECTOR UNIT, 2 CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN	21
395	305	280					632	30200	980	L.F.	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER. WITH ACCESSORIES	
620	400	500					632	40700	1520	L.F.	SIGNAL CABLE, 7-CONDUCTOR NO. 14 AWG	
		1					632	63000	1	EACH	PHONE DROP	
4	4	4					632	64000	12	EACH	STRAIN POLE FOUNDATION	
3800	800	2400					632	65200	7000	L.F.	LOOP DETECTOR LEAD-IN CABLE	
250	35	75					632	68200	360	L.F.	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	
1	1	1					632	70001	3	EACH	POWER SERVICE, AS PER PLAN	21
4	4	4					632	82701	12	EACH	STRAIN POLE, TYPE TC-81.10, DESIGN 7, AS PER PLAN	21
1	1	1					633	38001	3	EACH	CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, AS PER PLAN	22
		1					633	39001	1	EACH	CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN	22
							633	40501	1	EACH	CENTRAL OFFICE MONITOR, AS PER PLAN	22
			630	1000			632	53203	1630	L.F.	INTERCONNECT CABLE, 6 PAIR, NO. 19 AWG, SOLID, REA PE39, AS PER PLAN	21
8.6	8.6	8.6					633	70500	25.8	SQ. FT	CONTROLLER WORK PAD	

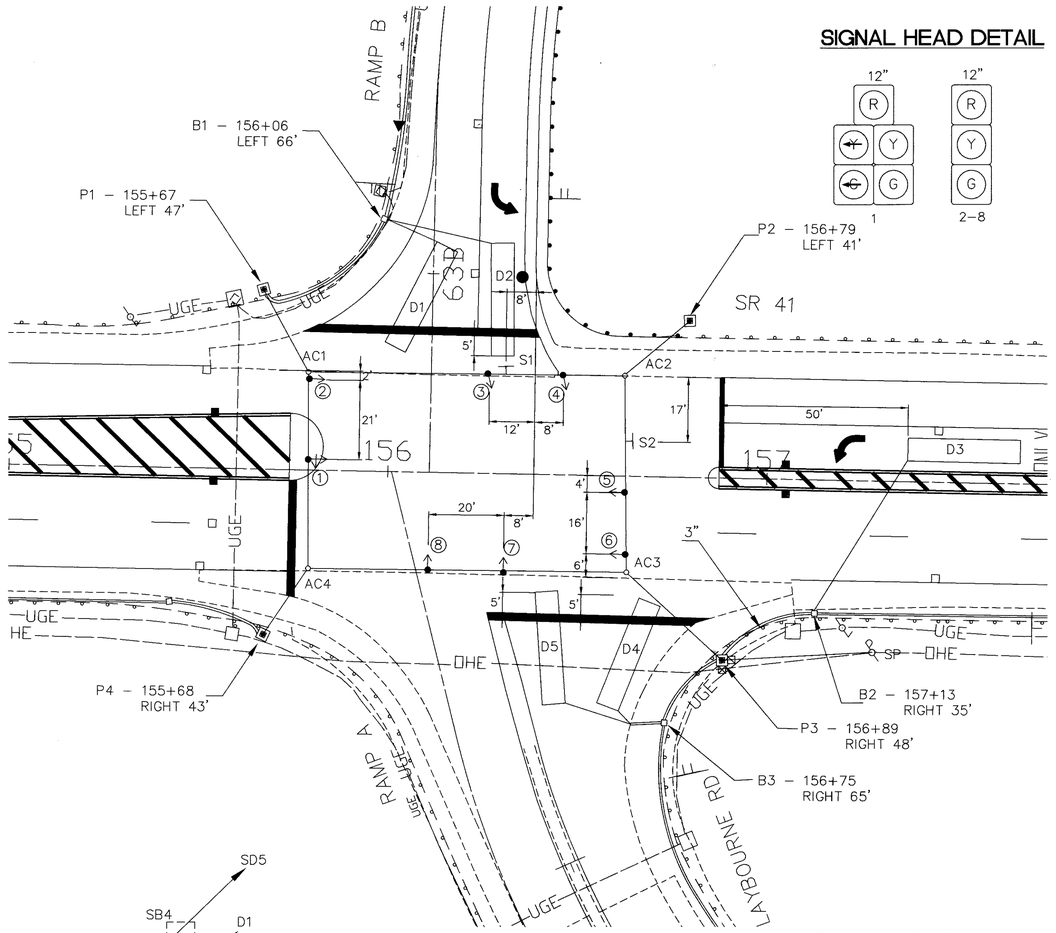
NOT TO SCALE

DESIGNED

CHECKED

TRAFFIC SIGNAL PLAN AND INTERCONNECT GENERAL SUMMARY

CLA-41-12.19



SIGNAL HEAD DETAIL

TRAFFIC SIGNAL CONTROLLER TIMING CHART

SR 41 AND IR 70 WESTBOUND RAMP A AND B
MAINTAINING AGENCY: ODOT, DISTRICT 7, SIDNEY, OHIO

START UP
START IN: Y/R FLASH ⊗ALL RED ○
TIME FOR FLASH OR ALL RED: 10SEC.
FIRST PHASE: ø2+ø6
COLOR DISPLAYED:GREEN ⊗YELLOW ○

DUAL ENTRY ○
REST IN RED: R1 ⊗R2 ○

OVERLAP PHASES	A	B	C	D

INTERVAL OR FEATURE	CONTROLLER MOVEMENT Nº 1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT		←		↑	↙	→		↓
MINIMUM GREEN (INITIAL) (SEC.)		22		10	10	22		10
ADDED INITIAL (sec./actuation)								
PASSAGE TIME (PRESET GAP)		3		3	3	3		3
MINIMUM GAP (SEC.)								
TIME TO REDUCE (SEC.)								
MAXIMUM GREEN I (SEC.)		40		22	22	40		22
MAXIMUM GREEN II (SEC.)								
YELLOW CHANGE (SEC.)		5.0		5.0	5.0	5.0		5.0
ALL RED CLEARANCE (SEC.)		1.2		1.2	1.2	1.2		1.2
WALK (SEC.)		–		–	–	–		–
PEDESTRIAN CLEARANCE (SEC.)		–		–	–	–		–
RECALL MAXIMUM (ON/OFF)		OFF		OFF	OFF	OFF		OFF
RECALL MINIMUM (ON/OFF)		ON		OFF	OFF	ON		OFF
RECALL PEDESTRIAN (ON/OFF)		OFF		OFF	OFF	OFF		OFF
MEMORY (ON/OFF)		OFF		OFF	OFF	OFF		OFF
CALL TO NON-ACTUATED Nº 1		YES				YES		
CALL TO NON-ACTUATED Nº 2								

SIGNAL DISPLAY CHART

HEAD	PHASE 2 & 5 RW	PHASE 2 & 5 CLR	PHASE 2 & 5 RED	PHASE 2 & 6 RW	PHASE 2 & 6 CLR	PHASE 2 & 6 RED	PHASE 4 & 8 RW	PHASE 4 & 8 CLR	PHASE 4 & 8 RED	FLASH
1	G ↖	Y ↖	R	G	Y	R	R	R	R	Y
2	G	Y	R	G	Y	R	R	R	R	Y
3	R	R	R	R	R	R	G	Y	R	R
4	R	R	R	R	R	R	G	Y	R	R
5	R	R	R	G	Y	R	R	R	R	Y
6	R	R	R	G	Y	R	R	R	R	Y
7	R	R	R	R	R	R	R	R	R	R
8	R	R	R	R	R	R	R	R	R	R
9	R	R	R	G	Y	R	R	R	R	Y

ITEM	DESCRIPTION	UNIT	QUANT
625	CONDUIT, 2", 713.07	L.F.	65
625	CONDUIT, 3", 713.07	L.F.	25
625	TRENCH, 24" DEEP	L.F.	90
625	PULL BOX, 713.08, 18"	EACH	2
625	PULL BOX, 713.08, 24"	EACH	1
625	GROUND ROD	EACH	4
~~630~~	~~SIGN, FLAT SHEET, TYPE G, AS PER PLAN~~	~~S.F.~~	~~15~~
~~630~~	~~SIGN HANGER ASSEMBLY, SPAN WIRE~~	~~EACH~~	~~2~~
632	VEH. SIG. HD., 3–SECTION, 12" LENS, 1 WAY, AS PER PLAN	EACH	8
632	VEH. SIG. HD., 5–SECTION, 12" LENS, 1 WAY, AS PER PLAN	EACH	1
632	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER, WITH ACCESSORIES	L.F.	395
632	SIGNAL CABLE, 7–CONDUCTOR NO. 14 AWG	L.F.	620
632	POWER CABLE, 2–CONDUCTOR NO. 6 AWG	L.F.	250
632	DETECTER LOOP, AS PER PLAN	EACH	13
632	LOOP DETECTOR LEAD–IN CABLE	L.F.	3800
632	LOOP DETECTOR UNIT, 2 CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN	EACH	13
632	STRAIN POLE, TYPE TC–81.10 , DESIGN 7, AS PER PLAN	EACH	4
632	POWER SERVICE, AS PER PLAN	EACH	1
632	COVERING OF VEHICULAR SIGNAL HEAD	EACH	9
633	CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, AS PER PLAN	EACH	1
633	CONTROLLER WORK PAD	S.F.	8.6

LOOP DETECTOR CHART

LOOP	SIZE	TURNS PER LOOP	MODE	DELAY (SEC.)	CONNECT TO DETECTOR UNIT NUMBER	ASSOCIATED CONTROLLER PHASE
D1	6' x 30'	3	PRESENCE	15	1	8
D2	6' x 30'	3	PRESENCE	-	2	8
D3	6' x 30'	3	PRESENCE	-	3	5
D4	6' x 30'	3	PRESENCE	15	4	4
D5	6' x 30'	3	PRESENCE	-	5	4
SD1	6' x 6'	5	PULSE	-	6	6
SD2	6' x 6'	5	PULSE	-	7	6
SD3	6' x 6'	5	PULSE	-	8	6
SD4	6' x 6'	5	PULSE	-	9	6
SD5	6' x 20'	5	PULSE	-	10	8
SD6	6' x 20'	5	PULSE	-	11	4
SD7	6' x 6'	5	PULSE	-	12	2
SD8	6' x 6'	5	PULSE	-	13	2

SIGN DETAIL

R–26A

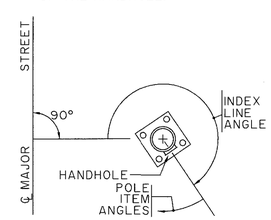
S1,S2
30" x 36"

POLE CHART

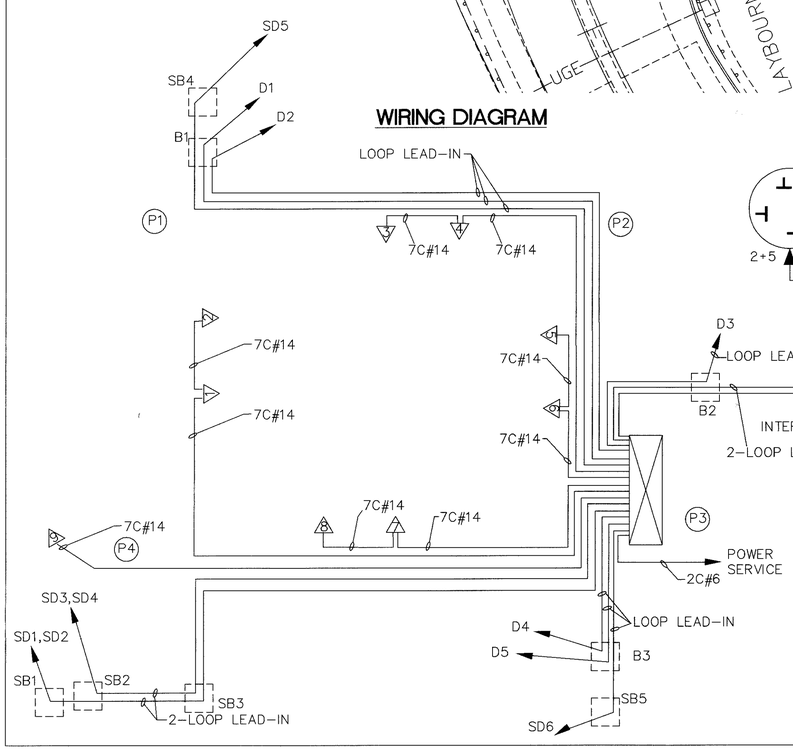
POLE NO.	DESIGN NO.	POLE HT. (FT)	INDEX ANGLE (DEG.)	ANGLES (DEG.) FROM INDEX LINE: PEDESTRIAN SIGNALS	PEDESTRIAN PUSHBUTTONS	CONTROLLER	POWER SERVICE	CABLE ENTRANCE (12" FROM TOP)	LUMINAIRE BRACKET
P1	7	30	135	-	-	-	-	180	-
P2	7	30	225	-	-	-	-	180	-
P3	7	30	90	-	-	90	0	225	-
P4	7	30	225	-	-	-	-	180	-

ALL INDEX ANGLES MEASURED FROM SR 41.

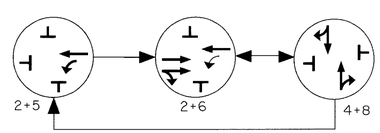
NOTES:
1. ALL ANGLES MEASURED CLOCKWISE.
2. INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.



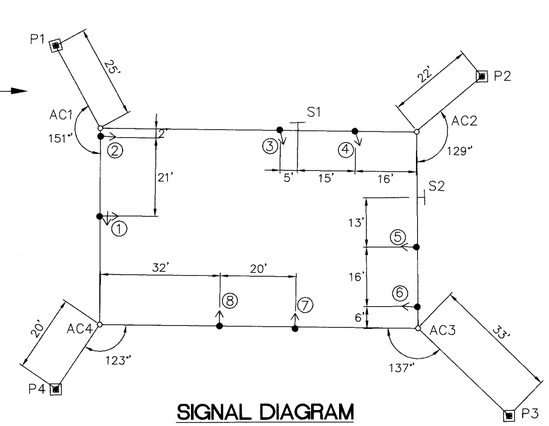
WIRING DIAGRAM



PHASING DIAGRAM



SIGNAL DIAGRAM



NOTES:
1. ALL SIGNAL HEADS SHALL BE FIELD ADJUSTED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER TO INSURE VISIBILITY.
2. ALL DIMENSIONS ARE IN FEET.
3. ALL CONDUIT ARE 2", UNLESS NOTED.
4. ALL PULLBOXES ARE 18", EXCEPT B2 (24")
5. LOCATION OF PULLBOXES ON CORNERS MAY BE FIELD ADJUSTED.
6. HAND DIGGING MAY BE REQUIRED TO AVOID EXISTING CONDUIT(S).
7. SIGNAL HEAD 9 SHALL BE ATTACHED TO POLE P4 AND SHALL BE FOCUSED ON THE LANE LINE 400' FROM THE STOP BAR.
8. LOCATION OF SYSTEM/EXTENSION LOOPS SD1–SD8 CAN BE SEEN ON THE INTERCONNECT PLAN. QUANTITIES FOR THESE LOOPS ARE ON THE SIGNAL PLAN PAGE.

LEGEND

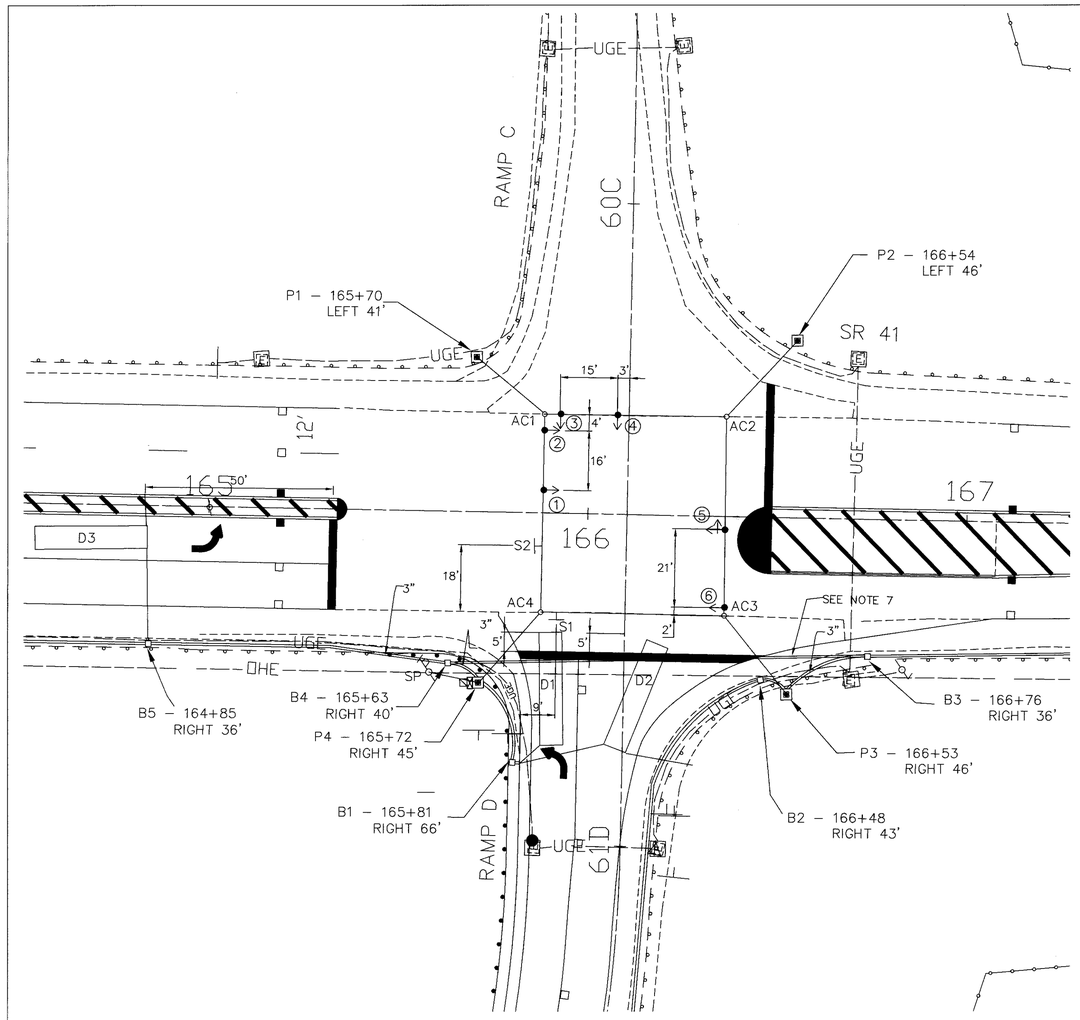
- PROPOSED VEHICLE SIGNAL
- PROPOSED PED SIGNAL
- PROPOSED STRAIN POLE
- PROPOSED SIGN
- CONTROLLER
- SERVICE SWITCH
- EXISTING UTILITY POLE
- PROPOSED PULLBOX
- LOOP DETECTORS
- PROPOSED CONDUIT

HORIZONTAL SCALE IN FEET 0 10 20 40

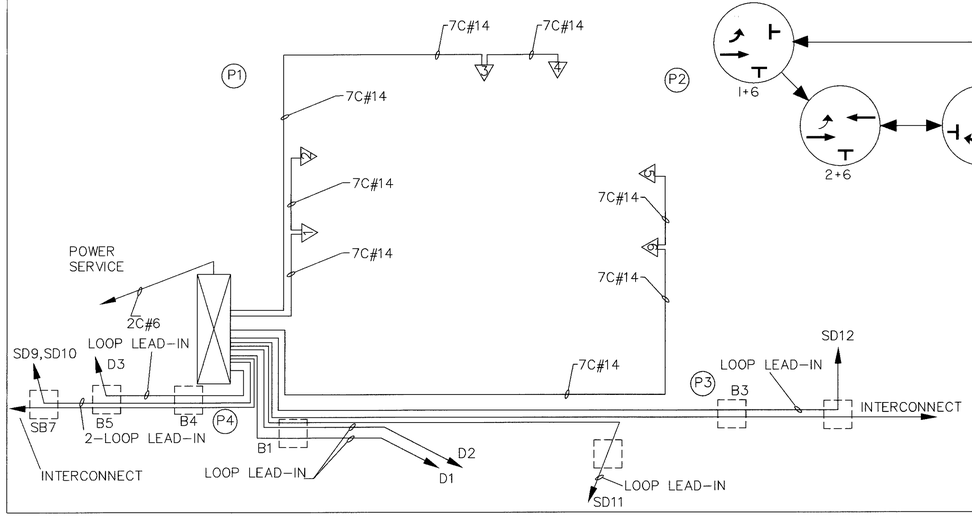
DESIGNED
CHECKED

SR 41 AND IR 70 WESTBOUND RAMP A & B TRAFFIC SIGNAL PLAN

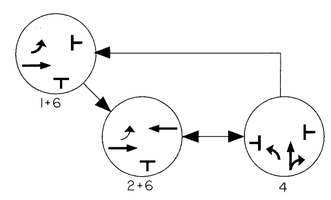
CLA-41-12.19



SIGNAL WIRING DIAGRAM



PHASING DIAGRAM



TRAFFIC SIGNAL CONTROLLER TIMING CHART

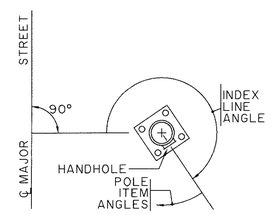
SR 41 AND IR 70 EASTBOUND RAMP C AND D
MAINTAINING AGENCY: ODOT, DISTRIC 7, SIDNEY, OHIO

START UP
START IN: Y/R FLASH ⊗ ALL RED ⊗
TIME FOR FLASH OR ALL RED: 10SEC.
FIRST PHASE: ø2+ø6
COLOR DISPLAYED: GREEN ⊗ YELLOW ○

DUAL ENTRY ○
REST IN RED: R1 ⊗ R2 ○

OVERLAP PHASES	A	B	C	D

INTERVAL OR FEATURE		CONTROLLER MOVEMENT Nº 1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT		↱	←		↑		→		
MINIMUM GREEN (INITIAL)	(SEC.)	10	22		10		22		
ADDED INITIAL (sec./actuation)									
PASSAGE TIME (PRESET GAP)		3	3		3		3		
MINIMUM GAP	(SEC.)								
TIME TO REDUCE	(SEC.)								
MAXIMUM GREEN I	(SEC.)	22	40		22		40		
MAXIMUM GREEN II	(SEC.)								
YELLOW CHANGE	(SEC.)	5.0	5.0		5.0		5.0		
ALL RED CLEARANCE	(SEC.)	1.2	1.2		1.2		1.2		
WALK	(SEC.)		–		–		–		
PEDESTRIAN CLEARANCE	(SEC.)		–		–		–		
RECALL – MAXIMUM	(ON/OFF)	OFF	OFF		OFF		OFF		
RECALL – MINIMUM	(ON/OFF)	OFF	ON		OFF		ON		
RECALL – PEDESTRIAN	(ON/OFF)	OFF	OFF		OFF		OFF		
MEMORY	(ON/OFF)	OFF	OFF		OFF		OFF		
CALL TO NON-ACTUATED	Nº 1		YES				YES		
	Nº 2								

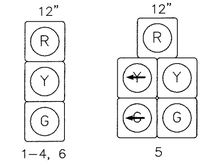


NOTES:
1. ALL ANGLES MEASURED CLOCKWISE.
2. INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

SIGNAL DISPLAY CHART

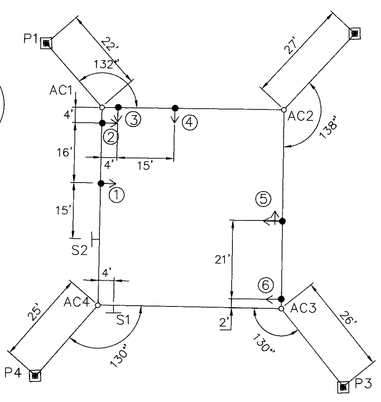
HEAD	PHASE 1 & 6 RW	CLR	RED	PHASE 2 & 6 RW	CLR	RED	PHASE 4 RW	CLR	RED	FLASH
1	R	R	R	G	Y	R	R	R	R	Y
2	R	R	R	G	Y	R	R	R	R	Y
3	R	R	R	R	R	R	G	Y	R	R
4	R	R	R	R	R	R	G	Y	R	R
5	←/G	←/Y	R	G	Y	R	R	R	R	Y
6	G	Y	R	G	Y	R	R	R	R	Y

SIGNAL HEAD DETAIL



SIGN DETAIL

SIGNAL DIAGRAM



NOTES:
1. ALL SIGNAL HEADS SHALL BE FIELD ADJUSTED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER TO INSURE VISIBILITY.
2. ALL DIMENSIONS ARE IN FEET.
3. ALL CONDUIT ARE 2", UNLESS NOTED.
4. LOCATIONS OF PULLBOXES ON CORNERS MAY BE FIELD ADJUSTED.
5. HAND DIGGING MAY BE REQUIRED TO AVOID EXISTING CONDUIT(S).
6. LOCATION OF SYSTEM/EXTENSION LOOPS SD9–SD12 CAN BE SEEN ON THE INTERCONNECT PLAN. QUANTITIES FOR THESE LOOPS ARE ON THE SIGNAL PLAN PAGE.
7. CONDUIT UNDER PAVEMENT SHALL BE JACKED OR DRILLED.
8. ELECTRICAL POWER SHALL COME FROM THE POLE (SP) MARKED ON THE PLANS, POWER SHALL BE 120 VOLTS.

ITEM	DESCRIPTION	UNIT	QUANT
625	CONDUIT, 2", 713.07	L.F.	30
625	CONDUIT, 3", 713.07	L.F.	110
625	CONDUIT, JACKED OR DRILLED, 3"	L.F.	110
625	TRENCH, 24" DEEP	L.F.	140
625	PULL BOX, 713.08, 18"	EACH	5
625	GROUND ROD	EACH	4
~~630~~	~~SIGN, FLAT SHEET, TYPE G, AS PER PLAN~~	~~S.F.~~	~~15~~
~~630~~	~~SIGN HANGER ASSEMBLY, SPAN WIRE~~	~~EACH~~	~~2~~
632	VEH. SIG. HD., 3-SECTION, 12" LENS, 1 WAY, AS PER PLAN	EACH	5
632	VEH. SIG. HD., 5-SECTION, 12" LENS, 1 WAY, AS PER PLAN	EACH	1
632	COVERING OF VEHICULAR SIGNAL HEAD	EACH	6
632	SIGNAL CABLE, 7-CONDUCTOR NO. 14 AWG	L.F.	400
632	POWER CABLE, 2-CONDUCTOR NO. 6 AWG	L.F.	35
632	DETECTER LOOP, AS PER PLAN	EACH	7
632	LOOP DETECTOR UNIT, 2 CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN	EACH	7
632	LOOP DETECTOR LEAD-IN CABLE	L.F.	800
632	STRAIN POLE, TYPE TC-81.10 , DESIGN 7, AS PER PLAN	EACH	4
632	STRAIN POLE FOUNDATION	EACH	4
632	POWER SERVICE, AS PER PLAN	EACH	1
632	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER, WITH ACCESSORIES	L.F.	305
633	CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, AS PER PLAN	EACH	1
633	CONTROLLER WORK PAD	S.F.	8.6

LOOP DETECTOR CHART

LOOP	SIZE	TURNS PER LOOP	MODE	DELAY (SEC.)	CONNECT TO DETECTOR UNIT NUMBER	ASSOCIATED CONTROLLER PHASE
D1	6' x 30'	3	PRESENCE	-	1	4
D2	6' x 30'	3	PRESENCE	15	2	4
D3	6' x 30'	3	PRESENCE	-	3	1
SD9	6' x 6'	5	PULSE	-	4	6
SD10	6' x 6'	5	PULSE	-	5	6
SD11	6' x 20'	4	PULSE	-	6	4
SD12	6' x 6'	5	PULSE	-	7	2

POLE CHART

POLE NO.	DESIGN NO.	POLE HT. (FT)	INDEX ANGLE (DEG.)	ANGLES (DEG.) FROM INDEX LINE: PEDESTRIAN SIGNALS	PEDESTRIAN PUSHBUTTONS	CONTROLLER	POWER SERVICE	CABLE ENTRANCE (12" FROM TOP)	LUMINAIRE BRACKET
P1	7	30	135	-	-	-	-	180	-
P2	7	30	225	-	-	-	-	180	-
P3	7	30	135	-	-	-	-	180	-
P4	7	30	225	-	-	45	-	180	-

ALL INDEX ANGLES MEASURED FROM SR 41.

LEGEND

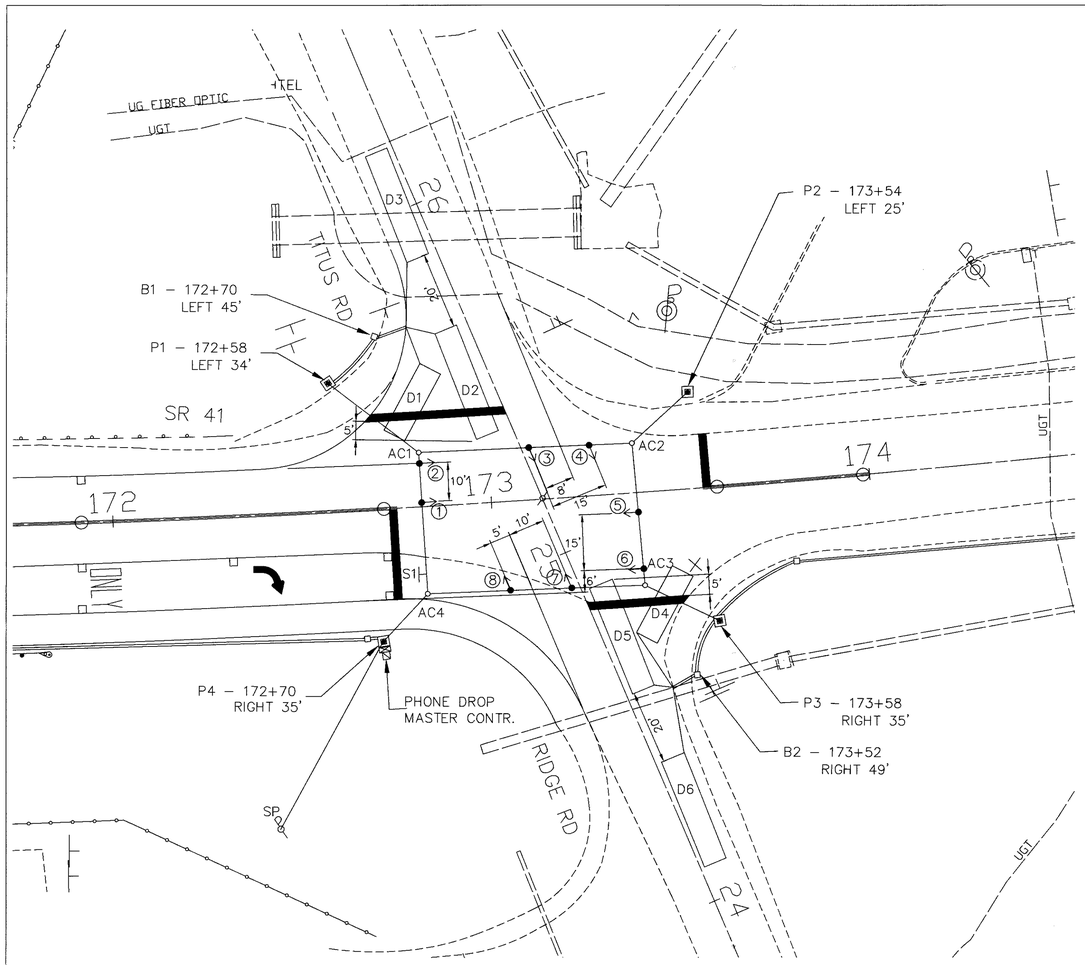
- PROPOSED VEHICLE SIGNAL
- PROPOSED PED SIGNAL
- PROPOSED STRAIN POLE
- PROPOSED SIGN
- CONTROLLER
- SERVICE SWITCH
- EXISTING UTILITY POLE
- PROPOSED PULLBOX
- LOOP DETECTORS
- PROPOSED CONDUIT
- SP POWER SERVICE POLE

HORIZONTAL SCALE IN FEET 0 10 20 40

DESIGNED
CHECKED

SR 41 AND IR 70 EASTBOUND RAMP C & D TRAFFIC SIGNAL PLAN

CLA-41-12.19



TRAFFIC SIGNAL CONTROLLER TIMING CHART

SR 41 AND TITUS RD/RIDGE RD.
MAINTAINING AGENCY: ODOT, DISTRICT 7, SIDNEY, OHIO

START UP
START IN: Y/R FLASH ⊗ ALL RED ⊗
TIME FOR FLASH OR ALL RED: 10SEC.
FIRST PHASE: ø2+ø6
COLOR DISPLAYED: GREEN ⊗ YELLOW ○

DUAL ENTRY ○
REST IN RED: R1 ⊗ R2 ○

OVERLAP PHASES	A	B	C	D

INTERVAL OR FEATURE		CONTROLLER MOVEMENT Nº 1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT			←		↑		→		↓
MINIMUM GREEN (INITIAL)	(SEC.)		22		10		22		10
ADDED INITIAL (sec./actuation)									
PASSAGE TIME (PRESET GAP)			3		3		3		3
MINIMUM GAP	(SEC.)								
TIME TO REDUCE	(SEC.)								
MAXIMUM GREEN I	(SEC.)		40		22		40		22
MAXIMUM GREEN II	(SEC.)								
YELLOW CHANGE	(SEC.)		5.0		5.0		5.0		5.0
ALL RED CLEARANCE	(SEC.)		1.2		1.2		1.2		1.2
WALK	(SEC.)		–		–		–		–
PEDESTRIAN CLEARANCE	(SEC.)		–		–		–		–
RECALL – MAXIMUM	(ON/OFF)		OFF		OFF		OFF		OFF
RECALL – MINIMUM	(ON/OFF)		ON		OFF		ON		OFF
RECALL – PEDESTRIAN	(ON/OFF)		OFF		OFF		OFF		OFF
MEMORY	(ON/OFF)		OFF		OFF		OFF		OFF
CALL TO NON-ACTUATED	Nº 1		YES				YES		
	Nº 2								

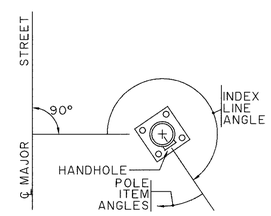
ITEM	DESCRIPTION	UNIT	QUANT
625	CONDUIT, 2", 713.07	L.F.	40
625	TRENCH, 24" DEEP	L.F.	40
625	PULL BOX, 713.08, 18"	EACH	2
625	GROUND ROD	EACH	4
~~630~~	~~SIGN, FLAT SHEET, TYPE G, AS PER PLAN~~	~~S.F.~~	~~7.5~~
~~630~~	~~SIGN HANGER ASSEMBLY, SPAN WIRE~~	~~EACH~~	~~1~~
632	VEH. SIG. HD., 3-SECTION, 12" LENS, 1 WAY, AS PER PLAN	EACH	8
632	COVERING OF VEHICULAR SIGNAL HEAD	EACH	8
632	SIGNAL CABLE, 7-CONDUCTOR NO. 14 AWG	L.F.	500
632	POWER CABLE, 2-CONDUCTOR NO. 6 AWG	L.F.	75
632	DETECTER LOOP, AS PER PLAN	EACH	9
632	LOOP DETECTOR UNIT, 2 CHANNEL, DELAY AND EXTENSION TYPE, AS PER PLAN	EACH	9
632	LOOP DETECTOR LEAD-IN CABLE	L.F.	2400
632	STRAIN POLE, TYPE TC-81.10 , DESIGN 7	EACH	4
632	STRAIN POLE FOUNDATION	EACH	4
632	POWER SERVICE, AS PER PLAN	EACH	1
632	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER, WITH ACCESSORIES	L.F.	280
633	CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN	EACH	1
632	PHONE DROP	EACH	1
633	CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, AS PER PLAN	EACH	1
633	CONTROLLER WORK PAD	S.F.	8.6

LOOP DETECTOR CHART

LOOP	SIZE	TURNS PER LOOP	MODE	DELAY (SEC.)	CONNECT TO DETECTOR UNIT NUMBER	ASSOCIATED CONTROLLER PHASE
D1	6' x 20'	3	PRESENCE	15	1	8
D2	6' x 30'	3	PRESENCE	-	2	8
D3	6' x 30'	3	PRESENCE	-	3	8
D4	6' x 20'	3	PRESENCE	15	4	4
D5	6' x 30'	3	PRESENCE	-	5	4
D6	6' x 30'	3	PRESENCE	-	6	4
SD13	6' x 6'	5	PULSE	-	7	6
SD14	6' x 6'	5	PULSE	-	8	2
SD15	6' x 6'	5	PULSE	-	9	2

SIGNAL DISPLAY CHART

HEAD	PHASE 2 & 6 RW	CLR	RED	PHASE 4 & 8 RW	CLR	RED	FLASH
1	G	Y	R	R	R	R	Y
2	G	Y	R	R	R	R	Y
3	R	R	R	G	Y	R	R
4	R	R	R	G	Y	R	R
5	G	Y	R	R	R	R	Y
6	G	Y	R	R	R	R	Y
7	R	R	R	G	Y	R	R
8	R	R	R	G	Y	R	R



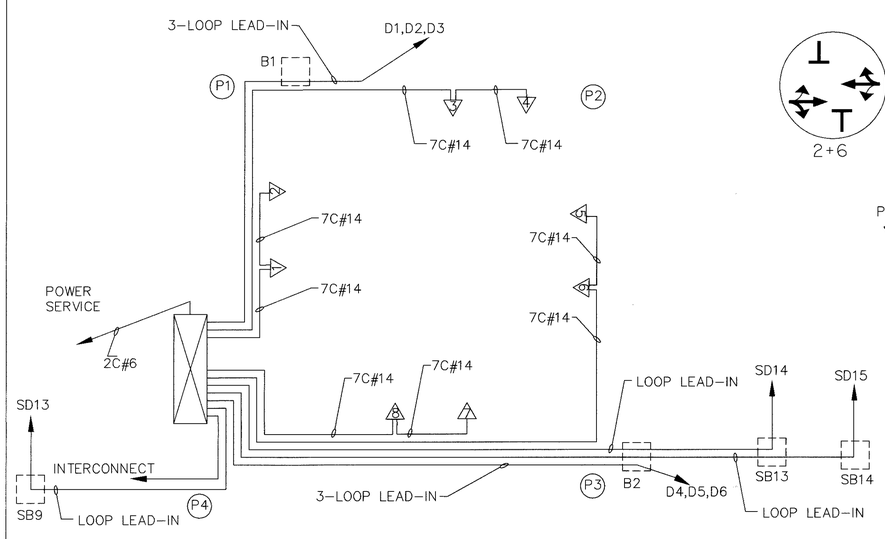
NOTES:
1. ALL ANGLES MEASURED CLOCKWISE.
2. INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

POLE CHART

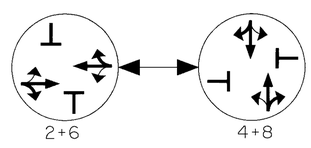
POLE NO.	DESIGN NO.	POLE HT. (FT)	INDEX ANGLE (DEG.)	ANGLES (DEG.) FROM INDEX LINE: PEDESTRIAN SIGNALS	PEDESTRIAN PUSHBUTTONS	CONTROLLER	POWER SERVICE	CABLE ENTRANCE (12" FROM TOP)	LUMINAIRE BRACKET
P1	7	30	135	-	-	-	-	180	-
P2	7	30	225	-	-	-	-	180	-
P3	7	30	135	-	-	-	-	180	-
P4	7	30	225	-	-	0	0	180	-

ALL INDEX ANGLES MEASURED FROM SR 41.

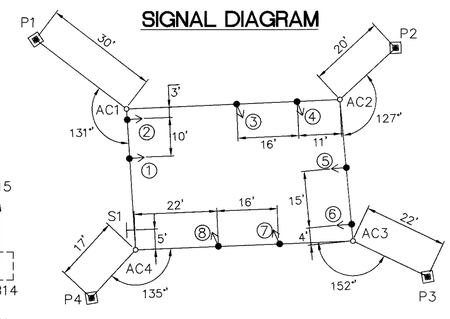
WIRING DIAGRAM



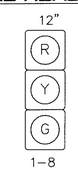
PHASING DIAGRAM



SIGNAL DIAGRAM



SIGNAL HEAD DETAIL



SIGN DETAIL

NOTES:
1. ALL SIGNAL HEADS SHALL BE FIELD ADJUSTED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER TO INSURE VISIBILITY.
2. ALL DIMENSIONS ARE IN FEET.
3. ALL CONDUIT ARE 2", UNLESS NOTED.
4. LOCATIONS OF PULLBOXES ON CORNERS MAY BE FIELD ADJUSTED.
5. LOCATION OF SYSTEM/EXTENSION LOOPS SD13-SD15 CAN BE SEEN ON THE INTERCONNECT PLAN. QUANTITIES FOR THESE LOOPS ARE ON THE SIGNAL PLAN PAGE.
6. ELECTRICAL POWER SHALL COME FROM THE POLE (SP) MARKED ON THE PLANS. POWER SHALL BE 120 VOLTS.

LEGEND

- PROPOSED VEHICLE SIGNAL
- PROPOSED STRAIN POLE
- PROPOSED SIGN
- CONTROLLER
- SERVICE SWITCH
- EXISTING UTILITY POLE
- PROPOSED PULLBOX
- LOOP DETECTORS
- PROPOSED CONDUIT
- SP – POWER SERVICE POLE

HORIZONTAL SCALE IN FEET 0 10 20 40

DESIGNED
CHECKED

SR 41 AND TITUS RD.(CR 363)/RIDGE RD. (TR 230)
TRAFFIC SIGNAL PLAN

CLA-41-12.19

SR 41 AND IR 70 WESTBOUND RAMP A & B
COORDINATION TIMING CHART

☒ PERCENT ☐ SECONDS		CYCLE NUMBER 1	2	3	4	5
CYCLE LENGTH (SEC)		100	110	-	-	-
OFFSET	1	-	-	-	-	-
	2	-	71	-	-	-
	3	66	73	-	-	-
	4	-	68	-	-	-
	5	-	-	-	-	-

☒ PERCENT ☐ SECONDS		SPLIT NUMBER 1	2	3	4	5	6	7	8
SPLIT TIME	1	-	47	-	27	21	26	-	27
	2	-	45	-	27	19	26	-	27
	3	-	47	-	27	21	26	-	27
	4	-	44	-	28	16	28	-	28
	5	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-

SR 41 AND TITUS RD./RIDGE RD.
COORDINATION TIMING CHART

☒ PERCENT ☐ SECONDS		CYCLE NUMBER 1	2	3	4	5
CYCLE LENGTH (SEC)		100	110	-	-	-
OFFSET	1	-	-	-	-	-
	2	-	8	-	-	-
	3	7	7	-	-	-
	4	-	56	-	-	-
	5	-	-	-	-	-

☒ PERCENT ☐ SECONDS		SPLIT NUMBER 1	2	3	4	5	6	7	8
SPLIT TIME	1	-	55	-	45	-	55	-	44
	2	-	51	-	49	-	51	-	49
	3	-	56	-	44	-	56	-	44
	4	-	50	-	50	-	50	-	50
	5	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-

SR 41 AND IR 70 EASTBOUND RAMP C & D
COORDINATION TIMING CHART

☒ PERCENT ☐ SECONDS		CYCLE NUMBER 1	2	3	4	5
CYCLE LENGTH (SEC)		100	110	-	-	-
OFFSET	1	-	-	-	-	-
	2	-	0	-	-	-
	3	0	0	-	-	-
	4	-	0	-	-	-
	5	-	-	-	-	-

☒ PERCENT ☐ SECONDS		SPLIT NUMBER 1	2	3	4	5	6	7	8
SPLIT TIME	1	-	57	-	43	-	57	-	43
	2	-	54	-	46	-	54	-	46
	3	-	57	-	43	-	57	-	43
	4	-	50	-	50	-	50	-	50
	5	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-

COORDINATION PATTERN SCHEDULE

PATTERN IN EFFECT	CYCLE	OFFSET	SPLIT
6:00AM - 9:00AM	2	2	1
9:00AM - 11:00AM	1	3	4
11:00AM - 3:00PM	2	3	2
3:00PM - 7:00PM	2	4	3
7:00PM - 10:00PM	1	3	4
10:00PM - 6:00AM	FREE	FREE	FREE

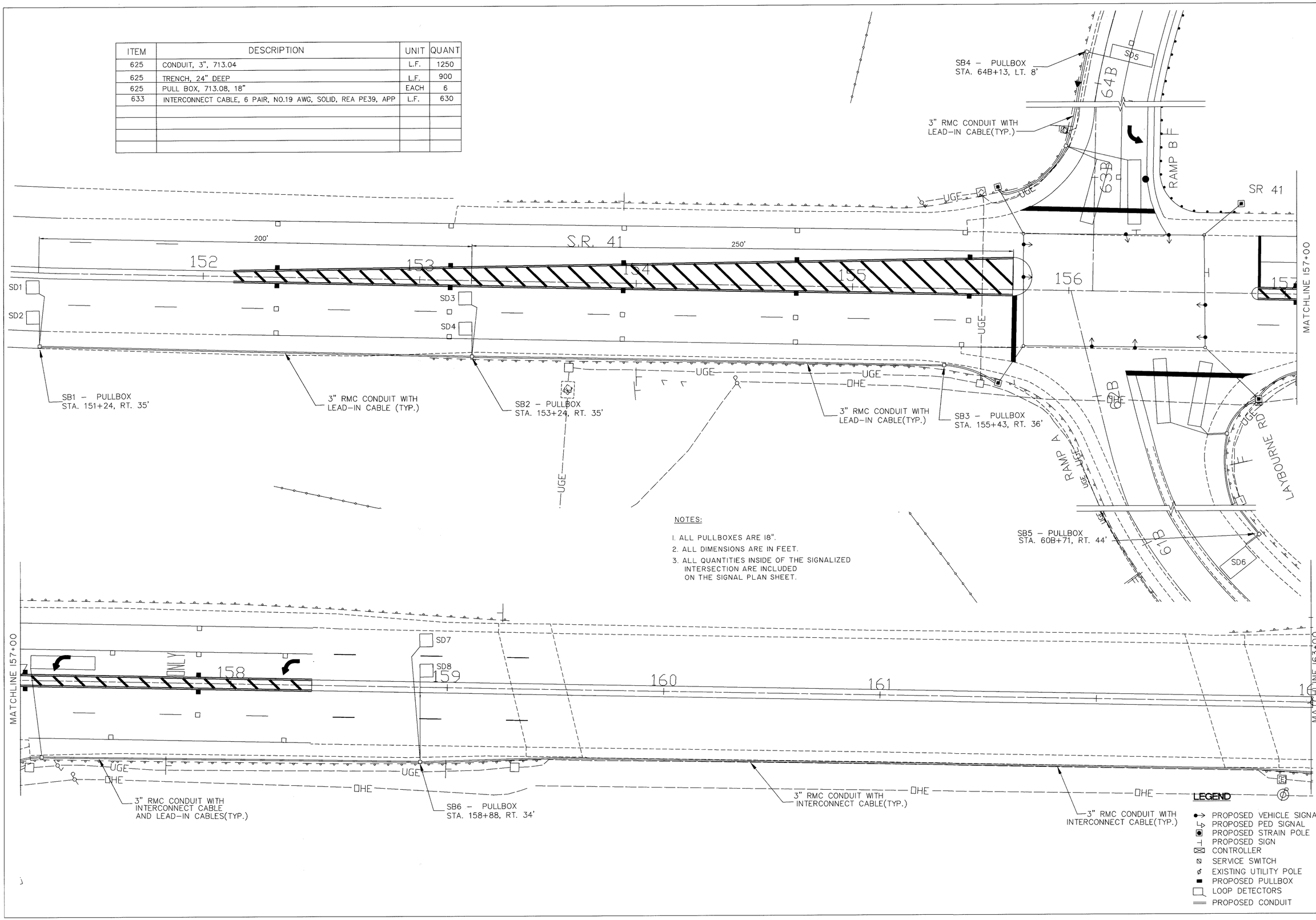
0 10 20 40
HORIZONTAL SCALE IN FEET

DESIGNED
CHECKED

SR 41 TRAFFIC SIGNALS
COORDINATION TIMING AND PATTERN SCHEDULE

CLA-41-12.19

ITEM	DESCRIPTION	UNIT	QUANT
625	CONDUIT, 3", 713.04	L.F.	1250
625	TRENCH, 24" DEEP	L.F.	900
625	PULL BOX, 713.08, 18"	EACH	6
633	INTERCONNECT CABLE, 6 PAIR, NO.19 AWG, SOLID, REA PE39, APP	L.F.	630



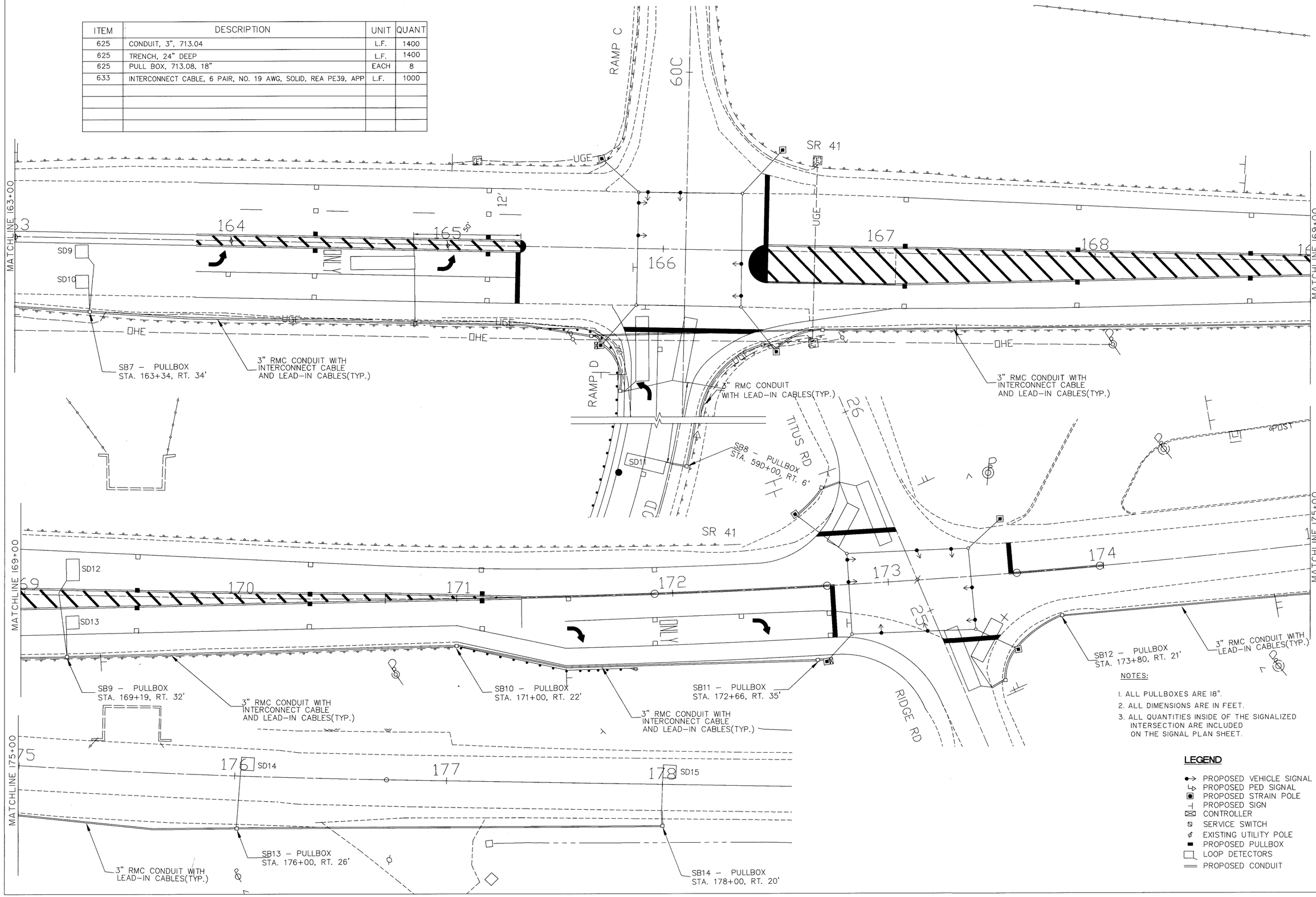
HORIZONTAL SCALE IN FEET
0 10 20 40

DESIGNED
CHECKED

SR 41 INTERCONNECT AND SYSTEM PLAN
STA. 151+00 TO STA. 163+00

CLA-41-12.19

ITEM	DESCRIPTION	UNIT	QUANT
625	CONDUIT, 3", 713.04	L.F.	1400
625	TRENCH, 24" DEEP	L.F.	1400
625	PULL BOX, 713.08, 18"	EACH	8
633	INTERCONNECT CABLE, 6 PAIR, NO. 19 AWG, SOLID, REA PE39, APP	L.F.	1000



NOTES:

1. ALL PULLBOXES ARE 18".
2. ALL DIMENSIONS ARE IN FEET.
3. ALL QUANTITIES INSIDE OF THE SIGNALIZED INTERSECTION ARE INCLUDED ON THE SIGNAL PLAN SHEET.

SR 41 INTERCONNECT AND SYSTEM PLAN
STA. 163+00 TO STA. 178+00

CLA-41-12.19

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29 / 29