

NOTES AND SPECIFICATIONS

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SCOPE OF WORK

THE CONTRACTOR SHALL INSTALL AN INTERCONNECTED PROGRESSIVE TRAFFIC SIGNAL SYSTEM AT THE INTERSECTIONS DESCRIBED IN THESE PLANS. THIS WORK SHALL INCLUDE THE INSTALLATION OF SIGNAL SUPPORT POLES, TRAFFIC SIGNAL HEADS, CONTROLLERS AND INTERCONNECT CABLE.

SPECIFICATIONS

THE 1973 CONSTRUCTION AND MATERIAL SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, AS SUPPLEMENTED AND AMENDED HEREIN, SHALL GOVERN ALL CONSTRUCTION WITH FINAL APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL ALSO CONFORM TO THE NATIONAL ELECTRIC CODE AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

PAYMENT FOR BID ITEMS

THE QUANTITIES OF THE VARIOUS ITEMS FOR WHICH PAYMENT WILL BE MADE WILL BE THE QUANTITIES ACTUALLY FURNISHED AND INSTALLED OR ACTUALLY CONSTRUCTED, IN ACCORDANCE WITH THE PLANS AND NOTES, COMPLETE, IN PLACE AND ACCEPTED.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE OR CONTRACT LUMP SUM PRICE BID PER EACH "ITEM" AS LISTED IN THE SCHEDULE OF QUANTITIES, WHICH PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

MATERIAL, LABOR AND EQUIPMENT

ANY ITEMS OF MATERIAL, LABOR OR EQUIPMENT REQUIRED BUT NOT SHOWN AS A SEPARATE BID ITEM IN THE PROPOSAL SHALL BE FURNISHED AND INSTALLED AS INCIDENTAL TO THE VARIOUS ITEMS.

RESTORATION OF DISTURBED AREAS

THE CONTRACTOR SHALL REPLACE ALL PAVEMENT, SEEDED AND SODDED AREAS, PAVED SHOULDERS, AND ALL OTHER DISTURBED SURFACES TO A CONDITION EQUAL TO THAT EXISTING BEFORE THE WORK WAS STARTED. ALL REPLACEMENTS SHALL BE DONE IN ACCORDANCE WITH THE PERTINENT SPECIFICATION ITEMS AND AS DIRECTED BY THE ENGINEER. PAYMENT FOR ALL RESTORATION WORK, INCLUDING MATERIALS, EQUIPMENT, LABOR, INCIDENTALS AND DISPOSAL OF ALL SURPLUS MATERIALS, SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE VARIOUS BID ITEMS.

COORDINATION AND COOPERATION WITH UTILITY COMPANIES

THE CONTRACTOR IS ADVISED THAT THROUGHOUT THESE PLANS IT WILL BE NECESSARY TO COORDINATE ACTIVITIES WITH UTILITY COMPANIES AND/OR LOCAL GOVERNMENTAL AGENCIES. THE CONTRACTOR SHALL COOPERATE WITH SUCH UTILITIES AND/OR AGENCIES IN ARRANGING SUITABLE WORK SCHEDULES SUBJECT TO THE APPROVAL OF THE ENGINEER.

PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL SUCH UTILITIES AND/OR AGENCIES HAVING INSTALLATIONS IN THE AREA TO SECURE AND AFFIRM DATA ON UTILITY LOCATIONS.

COMPENSATION FOR THE ABOVE COORDINATION AND COOPERATION SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS INCLUDED IN THE PROPOSAL.

APPROPRIATE CARE SHALL BE EXERCISED IN AREAS WITH UNDERGROUND ELECTRICAL CONDUIT OR CABLES, SEWER DRAINS, WATER LINES OR OTHER UTILITIES.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ALL DAMAGE INFLECTED ON UNDERGROUND UTILITIES IN THE EXCAVATION AND PLACEMENT OF POLES AND SIGNAL SUPPORT FOUNDATIONS. TOLEDO EDISON CO., 225 N. MAIN ST., CLYDE, OHIO; COLUMBIA GAS OF OHIO, 132 S. MAIN ST., CLYDE, OHIO; NORTHERN OHIO TELEPHONE CO., 120 W. BUCKEYE ST., CLYDE, OHIO; MUNICIPAL WATER AND SEWER SYSTEMS, ELM ST., CLYDE, OHIO.

WIRE AND CABLE IDENTIFICATION

ALL CIRCUIT CABLES SHALL BE COLOR CODED AND IDENTIFIED IN JUNCTION BOXES, CONTROLLER HOUSINGS, AND OTHER JUNCTIONS. TAGS SHALL BE AS SPECIFIED UNDER 713.18:

MARKING SHALL CONSIST OF THE FOLLOWING OR VARIATIONS THEREOF: GROUND, GRD; CIRCUIT A, CK + A; PHASE A, 0A; COMMON, COM.

COST OF FURNISHING AND INSTALLING IDENTIFICATION TAGS SHALL BE INCLUDED IN THE VARIOUS BID ITEMS FOR WIRE, CABLE AND DUCT-CABLE.

METHOD OF MEASUREMENT FOR ELECTRICAL SERVICES RELATED ITEMS

SUPPLEMENTING ITEM 625.24, LINEAR MEASUREMENTS FOR ELECTRICAL SERVICE BID ITEMS SHALL BE MADE AS FOLLOWS:

1.0 POWER AND SERVICE CABLE

THE LENGTH MEASURES FROM CENTER TO CENTER OF BOXES, METERS, SWITCHES AND CONTROLLERS, PLUS TEN FEET (10'-0") PER EACH BOX OR JUNCTION.

2.0 MESSENGER WIRE WITH ACCESSORIES

MEASURED HORIZONTALLY FROM CENTER TO CENTER OF POLE TO POLE; NOT INCLUDING ANY ADDITIONAL MESSENGER WIRE REQUIRED FOR ATTACHMENT OF MESSENGER TO POLES, CLEVICES, OR STRAIN INSULATORS BY WRAPPING OR BENDING.

625 POWER SERVICE

THE CONTRACTOR SHALL FURNISH 120/240 VOLT, SINGLE PHASE, 60 HZ. ELECTRIC SERVICE EQUIPMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, AND SHALL INCLUDE THE WEATHERHEAD, CONDUIT, SUPPORTS, AND CONNECTORS, SERVICE DISCONNECT IN NEMA 4 STAINLESS STEEL ENCLOSURE, AND INSTALLATION OF METER BASE.

SERVICE SWITCH AND CONDUCTORS SHALL BE RATED FOR 30 AMPS. SERVICE ENTRANCE GROUNDS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF NATIONAL ELECTRIC CODE. METER BASE WILL BE SUPPLIED BY THE TOLEDO EDISON CO.

PAYMENT FOR THIS ITEM SHALL BE AT THE CONTRACT UNIT PRICE EACH FOR ITEM 625, POWER SERVICE INCLUDING ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE ITEM.

625 POWER CABLE

POWER CABLE SHALL BE 3C-#8AWG, STRANDED COPPER WITH 600 VOLT RHW INSULATION. CABLES SHALL BE INSTALLED FROM THE CONTROLLER CABINET, THRU CONDUIT, SWITCH AND METER, TO WEATHERHEAD, TO THE SERVICE CABLE. IT SHALL BE ATTACHED TO TOLEDO EDISON CO. SERVICE CABLE WITH PRESSURE CONNECTORS, AND WRAPPED WITH MASTIC INSULATING TAPE. POWER CO. WILL MAKE POWER CABLE CONNECTION.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE UNIT PRICE BID PER LINEAL FOOT COMPLETE IN PLACE, TESTED AND ACCEPTED, INCLUDING WIRE, TERMINALS, CONNECTIONS, AND ALSO INCLUDING COST INCURRED TO ARRANGE THE SERVICE INSTALLATION BY THE POWER COMPANY.

623 CONSTRUCTION LAYOUT STAKES FOR TRAFFIC SIGNAL POLES

THE CONTRACTOR SHALL STAKE OUT ALL TRAFFIC SIGNAL POLES IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 PRIOR TO INSTALLATION OF ANY FOUNDATIONS OR SUPPORTS.

AFTER STAKEOUT THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF SEVEN (7) DAYS IN ADVANCE OF SCHEDULED WORK. SUPPORT LOCATIONS FOR EACH POLE WILL BE FIELD CHECKED AND APPROVED BY THE ENGINEER WHO SHALL COORDINATE WITH THE DIVISION AND/OR LOCAL TRAFFIC ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION WORK REQUIRED.

COST FOR THIS ITEM OF WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 623 "CONSTRUCTION LAYOUT STAKES."

CERTIFICATION AND APPROVAL OF TRAFFIC SIGNAL POLES AND EQUIPMENT

THE REFERENCE TO ANY MAKE OR MODEL IS DESCRIPTIVE AND NOT RESTRICTIVE AND IS TO INDICATE TO BIDDERS THE DESIGN THAT WILL BE ACCEPTABLE. BIDS ON OTHER NAMES, MAKES AND MODELS WILL BE CONSIDERED.

BEFORE ANY EQUIPMENT IS ORDERED OR INSTALLATION OF A TRAFFIC SIGNAL SYSTEM IS BEGUN, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER.

THE SCHEDULE SHALL INCLUDE EIGHT (8) SETS OF SHOP DRAWINGS, MATERIAL LISTS, CATALOG CUTS, TEST DATA SHEETS AND/OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE FOR TRAFFIC SIGNAL SUPPORTS, SIGNAL HEADS, CONTROLLERS, AND THE VARIOUS TYPES OF CABLE.

THE PRECEDING DATA SHALL PERTAIN TO THE CONSTRUCTION, ASSEMBLY, CAPACITY AND SUITABILITY OF DESIGN OF THE VARIOUS ITEMS: THE CONTRACTOR SHALL IDENTIFY THE ITEM ON EACH SHEET AND SHALL MARK ALL PRINTS "RECORD DRAWING." ONE COPY WILL BE RETURNED MARKED "APPROVED" IF FOUND SATISFACTORY.

ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THESE SPECIFICATIONS SHALL BE NEW, FIRST QUALITY AND FREE FROM DEFECTS AND POOR WORKMANSHIP.

ALL MAJOR ITEMS OF MATERIAL OR EQUIPMENT, SUCH AS SIGNAL HEADS, CONTROLLERS, SUPPORTS, TYPES OF CABLE AND ETC., SHALL BE OF THE SAME MANUFACTURE AND SAME TYPE IN ORDER TO ASSURE UNIFORMITY IN DESIGN, INTERCHANGEABILITY OF COMPONENTS, SINGLE RESPONSIBILITY OF COMMAND AND THE MOST SATISFACTORY SERVICE.

ALL EQUIPMENT SHALL BE FURNISHED WITH TWO (2) WIRING DIAGRAMS, SERVICE MANUALS AND INSTALLATION AND MAINTENANCE INSTRUCTIONS.

TRAFFIC SIGNAL STEEL POLE FOUNDATIONS

THE CONTRACTOR SHALL STAKE THE LONGITUDINAL AND LATERAL LOCATION, AND THE ELEVATION OF THE TOP OF EACH FOUNDATION SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER ELEVATION, OFFSET, AND LEVEL OF EACH FOUNDATION. THE FOUNDATION LOCATIONS MAY BE CHANGED AS DIRECTED BY THE ENGINEER, IN CASE OF SLOPE OR SUBSURFACE DIFFICULTIES.

EXCAVATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 503. EXCAVATION SHALL BE TO THE DIMENSIONS SHOWN ON THE PLANS, AND SHALL BE PERFORMED BY MEANS OF AN EARTH AUGER OF THE SPECIFIED DIA. UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WHERE SUBSURFACE OBSTRUCTIONS ARE ENCOUNTERED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REMOVE THE OBSTRUCTION OR TO REPLACE THE EXCAVATED MATERIAL AND RELOCATE THE FOUNDATION.

IF CAVING OF THE EXCAVATION OCCURS, THE CONTRACTOR SHALL EXCAVATE THE SPECIFIED DEPTH MAINTAINING THE SIDES AS NEARLY VERTICAL AS POSSIBLE. NO PAYMENT SHALL BE MADE FOR ANY EXCAVATION, CONCRETE, OR REINFORCING STEEL USED IN EXCESS OF THE PLAN QUANTITIES.

CONCRETE, CLASS C, SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 511, AND SHALL BE PLACED AGAINST UNDISTURBED SOIL OR COMPACTED EMBANKMENT. STEEL REINFORCEMENT BARS, WHERE REQUIRED, SHALL BE POSITIONED AS SHOWN ON THE PLANS AND PLACED IN ACCORDANCE WITH ITEM 509.

CYLINDRICAL ANCHOR BASE TYPE FOUNDATIONS FOR TRAFFIC SIGNAL POLES SHALL HAVE ANCHOR BOLTS AND CONDUIT ACCURATELY HELD IN POSITION WITH A TEMPLAT WHILE CONCRETE IS PLACED. FORMS SHALL BE USED FOR THE UPPER PORTIONS OF ALL FOUNDATIONS AND NO BACKFILLING SHALL BE PERMITTED FROM THE BOTTOM TO SIX INCHES BELOW GRADE LEVEL. NO GROUTING OF CONCRETE SHALL BE PERMITTED BETWEEN THE FOUNDATION TOP AND THE POLE BASE.

625 TRAFFIC SIGNAL HEADS (BY TYPE)

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING TRAFFIC SIGNAL HEADS OF THE TYPE AND SIZE SPECIFIED IN THESE PLANS AND INSTALLING THEM AS DETAILED IN THESE PLANS.

ALL TRAFFIC SIGNALS SHALL MEET THE LATEST INSTITUTE OF TRAFFIC ENGINEERS STANDARDS FOR "ADJUSTABLE FACE TRAFFIC CONTROL SIGNAL HEADS." IN ADDITION, THE TRAFFIC SIGNALS SHALL MEET THE FOLLOWING REQUIREMENTS.

THE WORK SHALL INCLUDE SUSPENDING SIGNALS FROM SPAN WIRE ERECTED IN ANOTHER ITEM. CABLE CLAMPS, ENTRANCE FITTINGS AND ALL NECESSARY HARDWARE AND ATTACHMENTS SHALL BE INCLUDED.

LENS BODY SECTION SHALL BE A COMPLETE UNIT CROUSE-HINDS "TRAFLO" TYPE, EAGLE, OR EQUIVALENT, WITH INTEGRAL TOP, BOTTOM AND SIDES, ALL DIE CAST AS SINGLE UNIT. OUTSIDE TOP AND BOTTOM SHALL BE FLAT WITH ALL REQUIRED COMPONENTS TO LOCK THE SIGNALS IN PLACE AND PROVIDE A WATER AND DUST TIGHT CONNECTION, RADIALLY ARRANGED ABOUT THE 1-1/2" PIPE SIZE OPENING HOLE IN BOTH ENDS. NOTCHES SHALL BE PROVIDED TO ALLOW ACCURATE AIMING OF SIGNALS IN NOT OVER 5 DEGREE STEPS. WHEN SECTIONS ARE ASSEMBLED TOGETHER THESE NOTCHES SHALL ENGAGE BETWEEN THE SECTIONS TO HOLD ENTIRE SIGNAL FACE IN POSITIVE ALIGNMENT. IT SHALL BE POSSIBLE TO ROTATE AND LOCK ANY INDIVIDUAL SECTION WITH REGARD TO BALANCE OF THE FACE FOR A SPECIAL PURPOSE.

SECTIONS SHALL BE ATTACHED TOGETHER BY SPECIAL LOCKING RINGS AND AT LEAST THREE BOLTS AND NUTS, IN A MANNER LEAVING NO HOLES OTHER THAN MAIN MOUNTING HOLE IN TOP OR BOTTOM OF SECTION, THUS PERMITTING INDIVIDUAL SECTIONS TO BE USED WITHOUT NECESSITY OF PLUGGING HOLES OTHER THAN MAIN MOUNTING.

OPTICAL UNIT LENSES AND REFLECTORS SHALL BE I.T.E. SPECIFICATIONS AND SHALL BE DOUBLY GASKETED. THERE SHALL BE A NEOPRENE GASKET BETWEEN THE DOOR AND THE LENS AND THERE SHALL BE A NEOPRENE GASKET BETWEEN THE REFLECTOR HOLDER AND THE DOOR IN ORDER TO RENDER THE UNION BETWEEN THE REFLECTOR HOLDER AND THE DOOR ASSEMBLY DUST TIGHT. THE JUNCTION BETWEEN THE REFLECTOR AND REFLECTOR HOLDER SHALL BE DUST AND WATER TIGHT.

THE REFLECTOR SHALL BE HIGHLY SPECULAR FINISHED ALUMINUM IN DIE CAST ALUMINUM HOLDER WHICH SHALL BE HINGED TO SIGNAL BODY, SO IT DOES NOT OPEN WHEN THE DOOR OPENS. IT SHALL BE POSSIBLE TO SWING THE REFLECTOR ASSEMBLY WITHOUT USE OF TOOLS. SOCKET SHALL BE PREFOCUS TYPE, HOLDING STANDARD TRAFFIC SIGNAL LAMP IN PROPER FOCUS, AND MEANS SHALL BE PROVIDED FOR ADJUSTMENT OF FILAMENT CENTER OF DIFFERENT WATTAGE LAMPS OF VARIOUS MANUFACTURERS. THIS ADJUSTMENT SHALL BE MADE WITHOUT USE OF TOOLS AND WITHOUT INTERFERENCE WITH SOCKET WIRES. SOCKET SHALL BE MOLDED BAKELITE WITH COVERED SOCKET LEADS. THE OPTICAL UNIT SHALL BE WIRED TO THE TERMINAL BLOCK IN THE TOP OF EACH SIGNAL. AT LEAST FOUR POSITIONS SHALL BE PROVIDED AND TAGGED AS FOLLOWS: R-Y-G-C.

THE LENSES SHALL BE OF THE CONCAVE, CONVEX TYPE WITH THE CONVEX SIDE SMOOTH AND THE CONCAVE SIDE FLUTED FOR THE PURPOSE OF PROPERLY DIRECTING THE LIGHT RAYS. THE LENSES SHALL BE OF A CLEAR COLORED GLASS, FREE FROM BUBBLES AND FLAWS AND ANNEALED TO RELIEVE INTERNAL STRESSES. THE ANALYSIS OF THE LENS COLOR SHALL BE WITHIN THE LIMITS RECOMMENDED BY THE INSTITUTE OF TRAFFIC ENGINEERS AND AMERICAN STANDARD ASSOCIATION FOR TRAFFIC SIGNAL LENSES. THE LENSES SHALL BE LOCATED AS FOLLOWS, READING FROM TOP TO BOTTOM: RED, YELLOW, GREEN. THE LENS AND REFLECTOR AS A UNIT SHALL NOT BE AFFECTED BY LOW ANGLE SUN RAYS (SUN PHANTOM).

THE EXTERIOR OF THE SIGNAL SHALL BE FINISHED WITH LACQUER OR ENAMEL OF RECOGNIZED TYPE QUALITY, AND STANDARD "FEDERAL" YELLOW IN COLOR, EXCEPT THE UNDERSIZE OF VISORS WHICH SHALL BE DULL BLACK. VISORS SHALL BE STANDARD TYPE.

THE CONTRACTOR SHALL FURNISH AND INSTALL A 6,000 HOUR RATED BULB IN EACH TWELVE INCH SIGNAL SECTION, AND CORRECTLY POSITION EACH BULB AND RECEPTACLE FOR HIGHEST CANDLE OUTPUT AND PROPER FOCAL PLANE. NOMINAL SIZES SHALL BE 150 WATTS FOR 12" RED AND GREEN 69 WATTS FOR 12" YELLOW.

THE SIGNAL HEADS SHALL BE INSTALLED ON THE SPAN WIRE AT THE LOCATIONS SHOWN ON THE DRAWINGS. EACH SIGNAL HEAD SHALL BE INSTALLED WITH A CABLE CLAMP, BALANCE ADJUSTER AND WIRE ENTRANCE FITTING AND IN ACCORDANCE WITH THE TRAFFIC SIGNAL INSTALLATION DETAIL IN THE DRAWINGS. WHEN SIGNAL HEADS BECOME TWO FEET OR CLOSER TOGETHER, THEY SHALL BE CONNECTED BY TOP AND BOTTOM BRACKETS.

PAYMENT FOR ITEM 625 "TRAFFIC SIGNAL HEADS (BY TYPE)" WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH TRAFFIC SIGNAL HEAD ASSEMBLY COMPLETE, IN PLACE, TESTED AND ACCEPTED.

DISTRICT 2				
OHIO				
DEPARTMENT OF TRANSPORTATION				
NOTES AND SPECIFICATIONS				
APPROVED		DATE		
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
NONE	S.W.K.	D.E.S.		6-1-73

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625 COVERING OF TRAFFIC SIGNAL HEADS

ALL EXISTING AND NEW TRAFFIC SIGNAL HEADS WHEN NOT IN USE SHALL BE COVERED.

THE COVERING SHALL BE PLASTIC COATED BURLAP BLANKETS AS PER SPECIFICATION 705.06. THEY SHALL BE FIRMLY ATTACHED AND COMPLETELY COVER THE SIGNAL WITHOUT DAMAGE TO THE HEADS. THE COVERING SHALL BE MAINTAINED IN PLACE AT ALL TIMES WHILE TRAFFIC IS USING THE AREA AND THE COVERED SIGNAL LENSES ARE NOT IN OPERATION.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH ITEM 625 "COVERING OF TRAFFIC SIGNAL HEAD" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO ERECT, MAINTAIN AND REMOVE THE COVERING FOR EACH HEAD.

625 INTERCONNECT CABLE

INTERCONNECT CABLE SHALL BE WEATHERPROOF, 7 CONDUCTOR, AWG. #14, INSULATED AND JACKETED, RATED 600 VOLTS. IT SHALL BE COLOR CODED AND IN EVERY RESPECT FOLLOW THE INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION SPECIFICATION NO. 19-1-1967.

IT SHALL BE SUITABLE FOR INSTALLATION AS AERIAL CABLE, CARRIED BY LASHING RODS SUPPORTED BY A MESSENGER.

PAYMENT FOR ITEM 625 "INTERCONNECT CABLE" (BY TYPE) NO. 14 AWG. WILL BE MADE AT THE CONTRACT PRICE BID PER LINEAL FOOT, IN PLACE, COMPLETED, AND ACCEPTED INCLUDING WIRING, TERMINALS, CONNECTIONS, TAP SPLICE ENCLOSURES, AND ALL NECESSARY INCIDENTALS.

625 MESSENGER WIRE STRANDED (BY SIZE) WITH ACCESSORIES

MESSENGER WIRE SHALL BE UTILITY GRADE GALVANIZED STEEL AS PER ASTM A-475 CLASS B, 7 STRAND - 3/8" O.D., ULT. STR. 11, 500 LBS, AND 3 - #10 STRANDED ALUMINUM COATED STEEL, .22" O.D., ULT. STR. 4532 LBS. STEEL AND ALUMINUM LASHING RODS SHALL BE USED TO SUSPEND THE SIGNAL CABLE FROM THE MESSENGER WIRE, TIGHTLY SECURED. WET-PORCELAIN STRAIN INSULATORS (600 VOLT), GUY CLAMPS, AND GALVANIZED PERFORMED GUY GRIP DEAD ENDS, THIMBLES, AND BULL RINGS (WHEN REQUIRED) WITH A RATED LOADING STRENGTH EQUAL TO OR GREATER THAN THE BREAKING LOAD OF THE MESSENGER WIRE SHALL BE INSTALLED AS SHOWN ON THE PLANS AND/OR SPECIFIED BY THE ENGINEER. THE MESSENGER WIRE SHALL BE INSTALLED SO THAT THE ENTIRE LOAD OF THE SIGNAL EQUIPMENT WILL NOT CAUSE SAG TO EXCEED A MAXIMUM OF 5% OR A MINIMUM OF 3% OF THE SPAN.

PAYMENT FOR ITEM 625 "MESSENGER WIRE (BY SIZE) STRANDED WITH ACCESSORIES" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT (MEASURED TO CENTER OF POLE OR AERIAL CORNERS) COMPLETELY ASSEMBLED IN ACCORDANCE WITH THE TYPICAL SIGNAL INSTALLATION DETAILS AND SHALL INCLUDE MESSENGER WIRE, LASHING RODS, STRAIN INSULATORS, PREFORMED GUY GRIPS, THIMBLES, GUY CLAMPS, AND AERIAL CORNER BULL RINGS AS DESCRIBED ABOVE AND SHOWN ON THE DETAIL SHEETS.

625 CABLE SUPPORT ASSEMBLY

A CABLE SUPPORT ASSEMBLY SHALL BE INSTALLED FOR EACH GROUP OF CABLES PASSING THROUGH EACH WIRE OUTLET NEAR THE TOP OF POLE, IT SHALL BE ATTACHED TO THE "J" HOOK AS SHOWN IN THE PLANS AND SHALL CONSIST OF THE FOLLOWING MAJOR ITEMS:

1. ONE PIECE OF THREE-STRAND COPPER-CLAD MESSENGER, LENGTH AS REQUIRED.
2. TWO HOT-DIPPED GALVANIZED THIMBLES.
3. TWO #6 SPLIT BOLT CONNECTORS.
4. ONE BRONZE OR STAINLESS STEEL CABLE GRIP WITH SINGLE "U" EYE BALE.
5. ALL OTHER MISCELLANEOUS ITEMS THAT MAY BE NECESSARY TO MAKE THE ASSEMBLY COMPLETE.

THE MESSENGER SHALL BE 0.164 INCHES IN DIAMETER CONSISTING OF THREE STRANDS OF 0.075 INCH COPPER-COVERED STEEL WIRES TWISTED IN THE FORM OF A CABLE. GUY THIMBLES SHALL BE GROOVED TO FIT THE GUY STRAND AND BENT TO THE PROPER RADIUS TO PREVENT THE STRAND FROM BEING SHARPLY BENT. THE CABLE GRIP SHALL HAVE A SINGLE "U" EYE BALE. THE GRIPS SHALL BE OF THE PROPER SIZE TO FIT THE CABLE AND SHALL HAVE A MINIMUM RATED BREAKING STRENGTH OF 250 LBS.

THE GRIP SHALL BE EITHER THE "CLOSED," OR "SPLIT WITH ROD" TYPE.

PAYMENT FOR ITEM 625 CABLE SUPPORT ASSEMBLY WILL BE MADE AT THE CONTRACT UNIT PRICE EACH, COMPLETELY ASSEMBLED IN PLACE AND ACCEPTED.

625 TRAFFIC SIGNAL CABLE

SIGNAL CABLE SHALL ENTER THE CONTROL BOXES AND RUN CONTINUOUSLY FROM SIGNAL HEAD TO SIGNAL HEAD WITHOUT SPLICES. ALL WIRES IN THE CONTROLLER CABINETS SHALL BE LABELED, NEATLY LASHED AND FASTENED TO THE CABINET WITH CLAMPS.

ALL CABLE ON POLES SHALL BE INSTALLED IN TWO INCH CONDUIT STRAPPED TO THE POLES, AND TERMINATE IN A JUNCTION BOX. IF SUITABLE CONDUIT EXISTS ON THE POLE, IT MAY BE UTILIZED.

ALL CABLE SHALL BE SUSPENDED FROM SUSPENSION MESSENGERS BY TWO INCH CABLE RINGS, SPACED NOT FURTHER THAN 15 INCHES APART AS SHOWN ON THE TYPICAL INSTALLATION DETAIL OR BY LASHING RODS.

SIGNAL CABLE SHALL BE WEATHERPROOF AND SHALL CONSIST OF THE NUMBER OF CONDUCTORS AS SPECIFIED ON THE DRAWINGS. ALL CONDUCTORS SHALL BE AWG #14. CABLE SHALL BE INSULATED, JACKETED AND RATED 600 VOLTS. IT SHALL BE COLOR CODED AND IN EVERY RESPECT FOLLOW THE INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION SPECIFICATION NO. 19-1-1967. PAYMENT FOR THIS ITEM SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER LINEAL FOOT BY TYPE, IN PLACE, COMPLETED AND ACCEPTED, INCLUDING WIRING, TERMINALS, CONNECTIONS, TESTING AND ALL NECESSARY INCIDENTALS.

TESTING OF TRAFFIC SIGNALS

THE CONTRACTOR SHALL FURNISH ALL PERSONNEL, EQUIPMENT AND APPLIANCES REQUIRED TO SUCCESSFULLY TEST THE COMPLETED INSTALLATIONS.

THE CONTRACTOR SHALL TEST AND DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER OR HIS AUTHORIZED REPRESENTATIVE, THAT THE CIRCUITS ARE PROPERLY CONNECTED, CONTINUOUS AND FREE FROM SHORT CIRCUITS, CROSSES AND UNSPECIFIED GROUNDS, AND THAT THEY ARE CONNECTED IN ACCORDANCE WITH THE WIRING INSTRUCTIONS AND THAT EACH CIRCUIT IS OPERABLE CORRECTLY AND INDEPENDENTLY OF ANY OTHER CIRCUIT.

THE CONTRACTOR SHALL TEST EACH UNGROUNDED CIRCUIT AND SPARE WIRES TERMINATING AT THE TRAFFIC CONTROLLER CABINET FOR RESISTANCE TO GROUND. THIS RESISTANCE TO GROUND SHALL BE NOT LESS THAN TEN (10) MEGOHMS. THE CONTRACTOR SHALL FURNISH A COMPLETE REPORT OF ALL MEGOHM READINGS OF EACH CIRCUIT AND SPARE CONDUCTORS IN CABLES APPEARING AT THE CONTROLLER BASE. THE GROUND ROD AT THE TRAFFIC CONTROLLER SHALL HAVE A RESISTANCE OF NOT MORE THAN 25 OHMS TO GROUND.

AFTER ALL CIRCUITS AND SPARE CONDUCTORS HAVE BEEN TESTED THE CONTRACTOR WILL INSTALL THE TRAFFIC CONTROLLER AND CONNECT THE FIELD WIRING TO THE TERMINAL CONTACTS OF THE TRAFFIC CONTROLLER. THE COMPLETED INSTALLATION SHALL OPERATE CONTINUOUSLY FOR A PERIOD OF 10 DAYS WITHOUT INTERRUPTION OR FAILURE ATTRIBUTABLE TO POOR WORKMANSHIP OR DEFECTIVE MATERIAL PRIOR TO ACCEPTANCE AND AFTER ANY DEFECTIVE PARTS HAVE BEEN REPLACED AND ALL FAULTS CORRECTED.

THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF CORRECTING MALFUNCTIONS OF THE INSTALLATION. POWER FOR THE TEST WILL BE FURNISHED FROM THE SERVICE INSTALLED AS A PART OF THIS CONTRACT. THE COST OF THE POWER TO CONDUCT THE TEST WILL BE BORNE BY THE CONTRACTOR. COSTS OF CONDUCTING TESTS BY THE CONTRACTOR SHALL BE INCLUDED IN THE BID PRICE FOR THE ITEM TESTED.

METHOD OF MEASUREMENT FOR TRAFFIC SIGNAL RELATED ITEMS

SUPPLEMENTING ITEM 625.24, LINEAR MEASUREMENTS FOR PAYMENT OF VARIOUS TRAFFIC SIGNAL BID ITEMS SHALL BE MADE AS FOLLOWS:

1.0 SIGNAL CABLE, INTERCONNECT CABLE, LEAD-IN CABLE.

THE LENGTH MEASURED HORIZONTALLY FROM CENTER TO CENTER OF PULL BOXES, POLES, FOUNDATIONS, OR SIGNAL HEADS; PLUS THE FOLLOWING:

- A. FIVE (5) FEET PER EACH PULL BOX, POLE OR TERMINATION AT CONTROLLER OR SIGNAL HEAD TO ALLOW FOR SLACK AND SPLICING OF LEADS.
- B. THE LENGTH MEASURED VERTICALLY ON POLES, FROM CONTROLLER TO MAST ARM OR SUSPENSION ATTACHMENT ON VERTICAL RUNS.

NOTE: MULTIPLIERS AS CONTAINED IN ITEM 625.24 PARAGRAPH (C) AND (E) SHALL NOT BE USED FOR MULTI-CONDUCTOR CABLES COVERED IN THIS NOTE.

2.0 MESSENGER WIRE WITH ACCESSORIES.

MEASURED HORIZONTALLY FROM CENTER TO CENTER OF POLE TO POLE; OR BULLRING (AERIAL CORNER) TO POLE; OR BULLRING TO BULLRING; BUT NOT INCLUDING ANY ADDITIONAL MESSENGER WIRE REQUIRED FOR ATTACHMENT OF MESSENGER TO POLES, BULLRINGS OR STRAIN INSULATORS BY WRAPPING OR BENDING.

614 MAINTENANCE OF TRAFFIC

THIS ITEM OF WORK SHALL CONSIST OF MAINTAINING TRAFFIC IN ACCORDANCE WITH THE PLAN GENERAL NOTES, THE CONSTRUCTION AND MATERIALS SPECIFICATIONS ITEM 614, AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

THIS ITEM OF WORK SHALL INCLUDE MAINTENANCE OF THE EXISTING SIGNAL UNTIL THE NEW SIGNAL IS OPERATIONAL AND THE EXISTING SIGNAL REMOVED.

PAYMENT SHALL BE AT THE LUMP SUM PRICE BID ITEM 614 "MAINTENANCE OF TRAFFIC."

EXISTING SIGNS LOCATED WITHIN THE ROAD WORK AREAS WHICH ARE NECESSARY FOR INTERIM OR PERMANENT TRAFFIC CONTROL SHALL BE REMOVED AND RE-ERECTED IN THE LOCATIONS INDICATED IN THE PLANS OR AS APPROVED BY THE ENGINEER. STOP SIGNS SHALL BE IN PLACE AT ALL TIMES WHILE TRAFFIC IS BEING MAINTAINED.

THE CONTRACTOR SHALL FURNISH, ERECT, AND MAINTAIN ALL WARNING AND INFORMATION SIGNS NECESSARY IN MAINTAINING TRAFFIC.

THE CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THE PRECEEDING REQUIREMENTS.

PAYMENT SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 "MAINTENANCE OF TRAFFIC."

MAINTENANCE OF PEDESTRIAN TRAFFIC

PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL INTERSECTIONS BY THE USE OF EXISTING SIDEWALKS. WHEN PEDESTRIAN TRAFFIC IS TEMPORARILY RESTRICTED BY CONSTRUCTION IN A SIDEWALK AREA, AND CONDITIONS PERMIT, A PORTION OF THE STREET PAVEMENT MAY BE USED FOR PEDESTRIAN TRAVEL IF AUTHORIZED BY THE ENGINEER. IN SUCH CASE ONE OR MORE FLAGMEN MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. THE CONTRACTOR SHALL KEEP ALL SIDEWALK AREAS REASONABLE FREE OF DIRT, MUD AND OTHER DEBRIS TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 "MAINTENANCE OF TRAFFIC."

202 REMOVAL OF EXISTING SIGNAL INSTALLATION

THE REMOVAL OF EXISTING SIGNALS SHALL NOT TAKE PLACE UNTIL THE NEW SIGNALS AT THAT INTERSECTION HAVE BEEN TESTED AND PLACED INTO OPERATION. IN THE EVENT THE ERECTION OF THE NEW SIGNAL LOCATION FORCES THE EXISTING SIGNAL TO BE MOVED, THE CONTRACTOR SHALL PROVIDE A TEMPORARY SIGNAL TO OPERATE IN THE INTERIM PERIOD.

SIGNALS, HEADS AND CONTROLLERS REMOVED, SHALL BE THE CONTRACTOR'S RESPONSIBILITY, SALVAGED AND REMOVED FROM THE SITE.

PAYMENT FOR REMOVAL OF EXISTING EQUIPMENT SHALL BE MADE AT THE CONTRACT "PER EACH INTERSECTION" PRICE BID, AND INCLUDE ALL NECESSARY LABOR AND HANDLING, IN TAKING DOWN AND REMOVING FROM THE SITE, THE OLD EQUIPMENT, AND STEEL POLE AT U.S. 20 AND MAIN ST.

S-625 PLAN REFERENCE SPECIFICATIONS

REFERENCES TO ITEM 625 AND 713 IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 5625 AND 5713.

816 ANCHOR AND GUY ATTACHMENTS

ANCHORS AND GUYS INSTALLED ON EXISTING POLES SHALL HAVE A MINIMUM OF 12,000# HOLDING POWER, WITH 8' x 3/4" GALVANIZED STEEL RODS, EQUIPPED WITH THIMBLE EYES. GUY WIRE SHALL BE EXTRA HIGH STRENGTH, 3/8" GALVANIZED STEEL STRAND, MADE UP WITH PRE-FORMED GUY GRIPS 5/8" BOLT MOUNTED POLE ATTACHMENTS.

BASIS OF PAYMENT SHALL BE AT CONTRACT UNIT PRICE PER POLE, INCLUDING FITTINGS, APPURTENANCES, AND LABOR REQUIRED.

WOOD POLES SHALL BE WESTERN RED CEDAR, BUTTS SAWED SQUARE AND TOPS ROOFED 15 DEGREES.

POLE CIRCUMFERENCE SHALL CONFORM TO AMERICAN STANDARD DIMENSIONS OF CLASS 4, WESTERN RED CEDAR POLES, FOR POLE HEIGHTS SPECIFIED.

ALL POLES SHALL BE FULL LENGTH TREATED WITH 5% PENTACHLOROPHENAL SOLUTION AND BE BUTT-TREATED WITH 1/2 INCH INCISED PROCESS, USING CREOSOTE OIL OF STANDARD SPECIFICATIONS, WITH A GUARANTEE OF 1/2 INCH PENETRATION OR COMPLETELY THROUGH THE SAPWOOD. THE INCISED AREA SHALL EXTEND ONE FOOT ABOVE THE GROUND LINE AND TWO FEET BELOW THE GROUND LINE.

POLES SHALL BE SET SIX (6) FEET DEEP, PROPERLY PLUMBED AND ALIGNED, HOLES BACKFILLED AND FIRMLY TAMPED. THIS WORK IS SHOWN ON ELEVATION VIEW ON SHEET 8.

METAL FITTINGS, SUCH AS GUY HOOKS AND PLATES, BOLTS, RACKS, PINS, LAG SCREWS, ETC., SHALL BE GALVANIZED. HARDWARE DIMENSIONS AND SIZES SHALL CONFORM TO FIGURES GIVEN ON THE DETAILED DRAWINGS, IN GENERAL 5/8 INCH BOLTS AND 2-1/4 INCH WASHERS.

POLE TOP EXTENSIONS SHALL BE GALVANIZED STEEL ANGLES AS SHOWN.

ANCHORS SHALL BE OF THE PATENTED EXPANSION TYPE, PUT IN PLACE WITH A MINIMUM OF AUGERING, AND SO SET THAT THEY ARE WORKING AGAINST UNDISTURBED EARTH. THEY SHALL BE KEARNEY #8136, CHANCE, OR APPROVED EQUAL, 12,000 POUND MINIMUM HOLDING POWER, WITH 8' x 3/4" GALVANIZED STEEL RODS, EQUIPPED WITH THIMBLEYES.

GUY WIRE SHALL BE 3/8 INCH GALVANIZED EXTRA HIGH STRENGTH STEEL STRAND, 15,000 POUNDS MINIMUM ULTIMATE STRENGTH.

GUYS SHALL BE MADE UP WITH PRE-FORMED GUY GRIPS RATED 12,000 POUNDS. GUY WIRE ATTACHMENT AT POLES SHALL BE BY MEANS OF MALLEABLE IRON FITTING COMPANY P135AX GUY ATTACHMENT BRACKETS JOSLYN J5555, OR APPROVED EQUAL, MOUNTED ON THROUGH BOLTS.

816 SIGNAL STRAIN POLE-STEEL

STEEL POLES SHALL BE FURNISHED AND INSTALLED AT U.S. 20 AND MAPLE, MAIN AND MAPLE, U.S. 20 AND MAIN STREETS; U.S. 20 AND PARKWAY, MAIN AND BUCKEYE, U.S. 20 AND WOODLAND, PEDESTAL MOUNTED. POLES AT FIRE STATION SHALL BE SAME TYPE AS SPECIFIED ABOVE.

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND ERECTION OF POLES AS SHOWN AND SPECIFIED IN THE PLANS.

SHAFTS SHALL BE TAPERED TUBES.

EACH POLE SHALL BE GALVANIZED AND INCLUDE THE FURNISHING OF ANCHOR BOLTS, HANDHOLE WITH COVERS, BASE, AND CONDUIT ELLS FOR INSTALLATION IN FOUNDATIONS (ONE 3" ELL REQUIRED PER POLE).

THE POLES SHALL BE INSTALLED AND ADJUSTED TO THE PROPER RAKE SO THAT THE WEIGHT OF THE SIGNAL INSTALLATION WILL NOT CAUSE THE POLES TO BE OFF VERTICAL ALIGNMENT BY MORE THAN 1%.

BASIS OF PAYMENT SHALL BE AT THE CONTRACT BID PRICE PER EACH 816 SIGNAL STRAIN POLE STEEL - BY TYPE AND SIZE, INCLUDING ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS RELATED TO THIS ITEM OF WORK.

816 WOOD LINE POLE REPLACEMENT

35', CLASS 4 BUTT TREATED POLE SHALL BE FURNISHED AND INSTALLED AT MAIN STREET RAILROAD CROSSING. POLE TOP EXTENSION SHALL BE INSTALLED FOR INTERCONNECT CABLE ON SOUTH RAILROAD CROSSING POLE. EXTENSION SHALL BE 4"x4"x 3/8" GALVANIZED ANGLE.

BASIS OF PAYMENT SHALL BE AT CONTRACT UNIT PRICE PER POLE, INCLUDING CABLE FITTINGS, TRANSFER OF SECONDARY DEAD ENDS, POLE TOP EXTENSION, EXCAVATION APPURTENANCES AND LABOR REQUIRED TO PERFORM THIS ITEM OF WORK.

DISTRICT 2				
OHIO				
DEPARTMENT OF TRANSPORTATION				
NOTES AND SPECIFICATIONS				
APPROVED		DATE		
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
NONE	S.W.K.	D.E.S.		6-1-73

NOTES AND SPECIFICATIONS

FED. RD. DIVISION	STATE	PROJECT	4 12
5	OHIO	T-4040 (I)	

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625 PRETIMED MASTER-SECONDARY SIGNAL CONTROLLER (BY TYPE) 625 PRETIMED INTERCONNECTED LOCAL SIGNAL CONTROLLER (BY TYPE)

THE CONTRACTOR SHALL FURNISH AND INSTALL A PRETIMED FULLY EXPANSIBLE TRAFFIC SIGNAL CONTROLLER CAPABLE OF PROVIDING UP TO THREE PLUG CONNECTED DIAL UNITS WITHOUT ADDITIONAL WIRING OR MODIFICATION OF THE UNIT. THE CONTROLLER SHALL BE CAPABLE OF BEING OPERATED WITHIN AN INTERCONNECTED (FLEXIBLE PROGRESSIVE) SYSTEM BY THE ADDITION OF EASILY INSTALLED AUXILIARY ATTACHMENTS. THE CONTROLLER SHALL BE CAPABLE OF PROVIDING THE BASIC SIGNAL SEQUENCE IN ACCORDANCE WITH THE SIGNAL OPERATION DRAWINGS AND CHARTS CONTAINED IN THESE PLANS.

THE MASTER CONTROLLER SHALL PERFORM THE FOLLOWING THREE FUNCTIONS:

- 1.0 ACT AS SUPERVISOR BY CHECKING ONCE PER CYCLE AND CORRECTING, IF NECESSARY, THE OFFSET RELATIONSHIP OF THE LOCAL CONTROLLERS.
- 2.0 SERVE AS THE CENTRAL POINT FROM WHICH THE MANUAL AND AUTOMATIC CONTROL OF REMOTE FEATURES IS EXERCISED. THESE FEATURES ARE SYSTEM FLASH, DIAL SELECTION IN SYSTEMS WHOSE CONTROLLERS HAVE MORE THAN ONE DIAL UNIT, AND THE OFFSET SELECTION IN SYSTEMS WHOSE DIAL UNITS HAVE MORE THAN ONE OFFSET.
- 3.0 CONTROL THE TRAFFIC SIGNALS AT THE INTERSECTION AT WHICH IT IS INSTALLED.

THE LOCAL CONTROLLER SHALL PERFORM THE FOLLOWING TWO FUNCTIONS:

- 1.0 ACT AS A SATELLITE CONTROLLER SUBJECT TO THE OFFSET RELATIONSHIPS PROVIDED BY THE MASTER CONTROLLER.
- 2.0 CONTROL THE TRAFFIC SIGNALS AT THE INTERSECTION AT WHICH IT IS INSTALLED.

THE POLE MOUNTED CONTROLLER CABINET SHALL BE MANUFACTURED BY THE CONTROLLER SUPPLIER AND PREWIRED AT THE FACTORY. THE CABINET SHALL CONTAIN A SEPARATE JACK-MOUNTED FLASHING UNIT, RADIO INTERFERENCE FILTER AND FUSED DISCONNECT SWITCH.

THE LARGE CABINET DOOR SHALL BE FITTED WITH A SMALLER POLICE PANEL DOOR WHICH SHALL CONTAIN A MAIN ON-OFF SWITCH AND AN AUTOMATIC FLASH SWITCH. THE LOCK ON THE LARGE CABINET DOOR SHALL BE KEYPED TO THE CITY OF CLYDE MASTER. THE LOCK ON THE POLICE PANEL DOOR SHALL BE KEYPED TO THE CITY OF CLYDE POLICE MASTER. TWO KEYS SHALL BE FURNISHED WITH EACH LOCK.

THE CONTROLLER SHALL BE FUSED FOR 120/240 VOLT, 30 AMP SERVICE AND EQUIPPED WITH A LIGHTNING ARRESTER. CYCLE GEARS OF 50, 60, 65, 70 AND 80 SECONDS SHALL BE PROVIDED.

ALL CONTROLLERS SHALL BE OF THE SAME MANUFACTURER AND SHALL BE EQUIPPED TO PROVIDE FOR INSTALLATION OF A FIRE PRE-EMPTION SYSTEM. THE MASTER CONTROLLER SHALL BE EAGLE SIGNAL MODEL EF31A500 OR CROUSE-HINDS MODEL PCFM-371, OR MARBELITE MODEL M-30 OR ECONOLITE MODEL 2TC24F21 OR APPROVED EQUAL. THE LOCAL CONTROLLER SHALL BE EAGLE SIGNAL MODEL EF21A500 OR CROUSE-HINDS MODEL PCE-371, OR MARBELITE MODEL M-30 OR ECONOLITE MODEL 2TC24F21 OR APPROVED EQUAL. THE NUMBER OF DIALS SUPPLIED SHALL BE ADEQUATE TO OBTAIN THE OPERATION SHOWN IN THE PLANS. CONTROLLERS SHALL BE SET IN ACCORDANCE WITH THE OFFSET INTERVALS PRESCRIBED AND INTERCONNECTED WITH THE MASTER CONTROLLER AT MAIN ST. AND MCPHERSON HWY. KEYS SHALL BE DELIVERED TO ENGINEER BY CONTRACTOR. TIME CLOCKS SHALL BE PROVIDED TO OBTAIN THE OPERATION SHOWN IN THE PLANS.

THE CONTROLLER WITH FIRE PRE-EMPTION SHALL DISPLAY STEADY GREEN TO THE SOUTH APPROACH AND STEADY RED TO ALL OTHER APPROACHES DURING PHASE F-1. A 3 SECOND YELLOW CLEARANCE SHALL PRECEED PHASE F-1 ON ALL APPROACHES WHICH WILL CHANGE FROM GREEN TO RED.

THE CONTROLLER WITH THE RAILROAD PRE-EMPTION DEVICE SHALL BE CAPABLE OF DISPLAYING PHASE RR-1 FOR A SET PERIOD ADJUSTABLE FROM 10 TO 30 SEC. ENTRY INTO PHASE RR-1 SHALL BE PRECEDED BY A YELLOW CLEARANCE INTERVAL OF 3.0 SEC. DISPLAYED TO ANY OF THE NORTH, SOUTH, OR EAST APPROACHES SHOWING GREEN PRIOR TO PRE-EMPTION. FOLLOWING THE DISPLAY OF RR-1 THE SIGNAL SHALL DISPLAY RR-2 WHILE THE RAILROAD FLASHERS ARE OPERATING. FOLLOWING THE DISPLAY OF RR-2 THE SIGNAL SHALL REVERT TO NORMAL CYCLING OF PHASE A AND B AGAIN USING NECESSARY YELLOW CLEARANCE INTERVALS. PRE-EMPTION COMMAND WILL BE SUPPLIED FROM THE RAILROAD TRACK CIRCUIT VIA 5 CONDUCTOR CABLE. CONNECTION OF THE CABLE TO THE TRACK CIRCUIT WILL BE PERFORMED BY OTHERS.

PAYMENT FOR ITEM 625, PRETIMED MASTER-SECONDARY SIGNAL CONTROLLER (BY TYPE) AND ITEM 625, PRETIMED INTERCONNECTED LOCAL SIGNAL CONTROLLER (BY TYPE) WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH INCLUDING CABINET, WIRED COMPLETE, IN PLACE, TESTED AND ACCEPTED.

MAINTENANCE OF VEHICULAR TRAFFIC

THE CONTRACTOR SHALL MAINTAIN TRAFFIC ON EXISTING ROADWAYS AND RAMPS IN ACCORDANCE WITH THE PLAN DRAWINGS, THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CONSTRUCTION AND MATERIALS SPECIFICATION 614, AND THE FOLLOWING ADDITIONAL REQUIREMENTS:

- 1.0 TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON THE EXISTING PAVEMENT WITHOUT INTERRUPTION DURING CONSTRUCTION OF WORK UNLESS ONE-WAY TRAFFIC IS APPROVED FOR SHORT DURATIONS BY THE ENGINEER. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO MINIMIZE ENCROACHMENT UPON THE TRAVELED WIDTH OF PAVEMENT.
- 2.0 THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND LOCAL LAW ENFORCEMENT AGENCIES NOT LESS THAN TWENTY-FOUR (24) HOURS PRIOR TO A SCHEDULED DISRUPTION OF TRAFFIC.
- 3.0 LANE RESTRICTIONS ON ANY ROADWAY OR STREET AND CONSTRUCTION WORK IN MEDIAN AREAS SHALL NOT OCCUR BETWEEN 6:00 A.M. AND 9:00 A.M. AND 3:00 P.M. AND 6:00 P.M. MONDAY THRU FRIDAY. NO WORK SHALL BE PERFORMED ON NATIONAL HOLIDAYS OR BETWEEN 4:00 P.M. FRIDAY AND 9:00 A.M. MONDAY.
- 4.0 DURING OVERHEAD CONSTRUCTION THE CONTRACTOR SHALL PROVIDE, IF DEEMED NECESSARY BY THE ENGINEER, SAFETY NETS AND/OR OTHER SAFETY DEVICES UNDER THE STRUCTURES TO PROTECT TRAFFIC IN THE AREA OF CONSTRUCTION.
- 5.0 DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE COVERED WITH STEEL PLATES AND DELINEATED WITH WARNING FLASHERS AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER.

816 SPAN WIRE MOUNTED SIGN ATTACHMENT WITH "FIRE SIGNAL" SIGNS

THIS ITEM OF WORK SHALL CONSIST OF THE FURNISHING AND INSTALLING ON THE SPAN WIRE A 3/16" STEEL CABLE CLAMP FOR CABLE SIZES OF 1/4" TO 1/2". THIS ITEM OF WORK SHALL ALSO INCLUDE FURNISHING AND ATTACHING TO THIS CABLE CLAMP A SIGN BRACKET WITH THE FOLLOWING FEATURES:

- (1) A LOCKING STEEL SELF-LEVELING GAGE TO FACILITATE MOUNTING THE SIGN IN A VERTICAL POSITION.
- (2) A FREE SWING LINK TO ALLOW THE SIGN TO SWING FREELY ABOUT AN AXIS PARALLEL TO AND IN THE SAME PLANE AS THE AXIS OF THE MAST ARM.
- (3) A 1-1/4" x 1-1/4" x 1/8" STEEL ANGLE THE LENGTH OF THE SIGN WIDTH ATTACHED TO THE FREE SWING LINK FOR MOUNTING THE SIGN FACE. (A 3" x 4.1 LB./FT. CHANNEL IS USED FOR SIGNS MOUNTED BACK TO BACK.)

IN ADDITION THIS ITEM OF WORK SHALL INCLUDE THE FURNISHING AND INSTALLING OF TWO BACK TO BACK N-35-30 SIGNS TO THIS BRACKET ASSEMBLY. THE FLAT SHEET SIGN BLANKS SHALL BE FURNISHED IN ALUMINUM ALLOY 6061-T6 (ASTM - B209, G811A-T6) WITH MILL FINISH. THE BOLT HOLES SHALL BE 3/8" IN DIAMETER, AND MAY BE DRILLED, BLANKED, OR PUNCHED TO FINISH SIZE. MOUNTING HARDWARE, I.E., BOLTS, WASHERS, AND NUTS SHALL BE INCLUDED IN THIS BID ITEM. SIGN FACE BACKGROUND MATERIAL SHALL BE REFLECTIVE SHEETING, TYPE F. THE SIGN LEGEND AND BORDER SHALL BE SILK SCREENED BLACK. LETTERS SHALL BE 6" TYPE C. BASIS OF PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE BID PER EACH ITEM 816 SPAN WIRE MOUNTED SIGN ATTACHMENT WITH "FIRE SIGNAL" SIGNS INCLUDING CLAMP, MOUNTING BRACKET, N-35-30, EQUIPMENT AND LABOR NECESSARY TO COMPLETE INSTALLATION. SIGNS SHALL CONFORM TO 815.

816 CONCRETE FOR SIGNAL SUPPORT FOUNDATIONS

PAYMENT FOR THIS ITEM SHALL BE BASED ON PLAN DIMENSIONS (OR DIMENSIONS AS MODIFIED BY THE ENGINEER IN LIEU OF PLAN QUANTITIES) AS REQUIRED IN SUPPLEMENTAL SPECIFICATION 816.

PAYMENT FOR REINFORCING STEEL AND CONDUIT ELLS SHALL BE INCLUDED IN THE COST OF CONCRETE FOUNDATIONS FOR OVERHEAD SIGNAL SUPPORTS.

BASIS OF PAYMENT FOR THIS ITEM SHALL BE AT THE CONTRACT UNIT PRICE BID PER CUBIC YARD FOR ITEM 816 "CONCRETE FOR SIGNAL SUPPORT FOUNDATIONS" INCLUDING ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO COMPLETE INSTALLATION.

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 150 SQ. FT. OF FLOOR SPACE AND IN ADDITION TO REQUIREMENTS OF ITEM 619, HE SHALL PROVIDE AND MAINTAIN SANITARY PROVISIONS AS PER 107.06. ALL OF THE ABOVE IS INCLUDED IN THE LUMP SUM BID FOR ITEM 619, "FIELD OFFICE."

625 MID-BLOCK FIRE SIGNAL CONTROLLER WITH CABINET AND PUSHBUTTON CONTROL MECHANISM

THE CONTRACTOR SHALL FURNISH AND INSTALL A MID-BLOCK FIRE SIGNAL CONTROLLER AND PUSHBUTTON CONTROL MECHANISM AS INDICATED IN THESE PLANS. THE INDICATIONS, SEQUENCE, AND MANNER OF OPERATION SHALL BE AS FOLLOWS:

- A) THE SIGNAL INDICATION SHOWN TO TRAFFIC ON THE STREET BETWEEN EMERGENCY VEHICLE ACTUATIONS SHALL BE AN ALTERNATELY FLASHING YELLOW. (8" YELLOW LENSES)
- B) UPON ACTUATION THE SIGNAL INDICATION SHOWN TO TRAFFIC ON THE STREET SHALL BE A THREE SECOND STEADY YELLOW FOR THE PURPOSE OF VEHICLE CLEARANCE. (12" YELLOW LENSES)
- C) UPON COMPLETION OF THE CLEARANCE INTERVAL THE SIGNAL INDICATION SHOWN TO TRAFFIC ON THE STREET SHALL BE A STEADY RED AND THE SIGNAL INDICATION SHOWN TO THE FIRE STATION DRIVEWAY SHALL BE ALTERNATELY FLASHING YELLOW. (12" RED LENSES, 8" YELLOW LENSES)

THE FIRE SIGNAL CONTROL EQUIPMENT SHALL INCLUDE A FLASHING CONTROLLER, A HOLDING RELAY AND PUSHBUTTON SWITCH. THE FLASHER UNIT SHALL BE 115 VOLT, 10 AMPERE, 60 CYCLE, TWO CIRCUIT AND PROVIDE ALTERNATELY FLASHING RANGE OF 60 FLASHES PER MINUTE WITH EQUAL OFF AND ON INTERVALS.

THE PUSHBUTTON SHALL BE LOCATED IN THE FIRE STATION AS INDICATED IN THESE PLANS AND SHALL BE ACTUATED BY HAND TO START THE FLASHING OPERATION. THE HOLDING RELAY SHALL BE INSTALLED IN THE CIRCUIT AND SHALL AUTOMATICALLY TERMINATE THE FLASHING OPERATION WHEN A PREDETERMINED PERIOD OF TIME HAS ELAPSED. THE RELAY SHALL BE CAPABLE OF ADJUSTMENT TO DELIVER PERIODS OF OPERATION WITHIN A RANGE OF FROM 30 TO 90 SECONDS.

THE PUSHBUTTON SHALL BE OF TWO PIECE CONSTRUCTION CONSISTING OF A HOUSING AND A REMOVABLE COVER ASSEMBLY WITH ALL OPERATING PARTS ATTACHED. THE HOUSING AND MAJOR PARTS OF THE COVER SHALL BE CAST ALUMINUM ALLOY WITH A TENSILE STRENGTH OF NOT LESS THAN 17,000 POUNDS PER SQUARE INCH. THE COVER ASSEMBLY SHALL CONSIST OF A FLUSH MOUNTED BUTTON WITH ONE SET OF NORMALLY OPEN CONTACTS AND ALL THE NECESSARY MECHANICAL AND ELECTRICAL COMPONENTS REQUIRED FOR OPERATION. THE COVER ASSEMBLY SHALL ATTACH TO THE HOUSING WITH STAINLESS STEEL MACHINE SCREWS CREATING A WEATHERPROOF AND ELECTRIC SHOCKPROOF DESIGN. A SINGLE 1/2" THREADED OPENING SHALL BE PROVIDED IN THE HOUSING FOR CONDUIT ATTACHMENT.

THE CONTROLLER CABINET SHALL BE MANUFACTURED BY THE CONTROLLER SUPPLIER AND PREWIRED AT THE FACTORY. THE CABINET SHALL CONTAIN A FUSED DISCONNECT SWITCH.

THE CABINET DOOR SHALL BE KEYPED TO THE CITY OF CLYDE MASTER AND TWO KEYS SHALL BE DELIVERED TO THE ENGINEER BY THE CONTRACTOR.

REFER TO SHEET 12 FOR INSTALLATION DETAILS.

PAYMENT FOR ITEM 625 "MID-BLOCK FIRE SIGNAL CONTROLLER WITH CABINET AND PUSHBUTTON CONTROL MECHANISM" WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH INSTALLED, WIRED COMPLETE IN PLACE, TESTED AND ACCEPTED.

GUARANTEES AND WARRANTIES

THE CONTRACTOR SHALL WARRANT OR GUARANTEE SATISFACTORY OPERATION OF ELECTRICAL TRAFFIC CONTROL EQUIPMENT FOR A PERIOD OF 60 DAYS FOLLOWING ACCEPTANCE OF THE EQUIPMENT BY THE STATE. THE CONTRACTOR'S RESPONSIBILITY SHALL BE LIMITED TO NECESSARY REPAIRS, REPLACEMENT OF DEFECTIVE PARTS WITH PARTS EQUAL TO OR BETTER THAN THOSE ORIGINALLY SPECIFIED AND REMEDYING FAULTY INSTALLATION IN AN APPROVED MANNER; INCLUDING ALL LABOR, MATERIAL AND EQUIPMENT COSTS RELATED THERETO. THE FOLLOWING ITEMS SHALL BE PROVIDED WITH THE SPECIFIED 60 DAY GUARANTEE:

- 1) TRAFFIC SIGNAL CONTROLLERS AND ASSOCIATED CONTROL EQUIPMENT
- 2) LOOP DETECTOR AMPLIFIERS

IN ADDITION, THE MANUFACTURER'S NORMAL WARRANTIES FOR THE ABOVE EQUIPMENT AND OTHER MANUFACTURER'S EQUIPMENT FOR WHICH GUARANTEES ARE NORMALLY PROVIDED SHALL BE ASSIGNED AND DELIVERED TO THE STATE.

THE CONTRACTOR SHALL INSTALL AND HANDLE ITEMS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES, PROVIDED SUCH PROCEDURES ARE NOT IN CONFLICT WITH THE PLANS AND SPECIFICATIONS.

COSTS FOR PROVISION AND PERFORMANCE OF GUARANTEES AND WARRANTIES HEREIN DESCRIBED SHALL BE INCIDENTAL TO AND INCLUDED IN THE UNIT PRICE(S) BID FOR THE VARIOUS TRAFFIC CONTROL ITEMS.

(SEE NOTE IN PROPOSAL)

625 INTERNALLY ILLUMINATED BLANK OUT SIGN, (FIRE SIGNAL), 30" x 24"

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN INTERNALLY ILLUMINATED BLANK OUT SIGN AS INDICATED IN THESE PLANS.

THE SIGN ENCLOSURE SHALL HAVE APPROXIMATE DIMENSIONS OF 30" WIDE, 24" HIGH AND 12" DEEP. IT SHALL BE MADE OF CAST OR FORMED SHEET ALUMINUM. SHEET ALUMINUM ENCLOSURES SHALL BE WELDED AT ALL SEAMS TO PROVIDE A WATERTIGHT ENCLOSURE. EITHER THE FACE OR BACK SHALL BE HINGED TO ALLOW ACCESS TO THE INTERIOR AND BY MEANS OF GASKETS AND LATCHING DEVICES SHALL BE ABLE TO BE TIGHTLY CLOSED TO PROVIDE A WATERTIGHT ENCLOSURE. A SINGLE 1-1/2" DIAMETER OPENING SHALL BE PROVIDED IN THE TOP TO ALLOW SECURE MOUNTING USING STANDARD SIGNAL HEAD HARDWARE. MOUNTING HARDWARE INCLUDING WIRE ENTRANCE FITTING, BALANCE ADJUSTER AND SPAN WIRE CLAMP OR APPROPRIATE SIZE MAST ARM CLAMP SHALL BE INCLUDED. THE SIGN WEIGHT SHALL NOT EXCEED 50 POUNDS.

THE SIGN FACE SHALL BE 1/4" THICK TRANSLUCENT PLEXIGLASS, LEXAN OR SIMILAR MATERIAL WITH THE LEGEND REVERSE SILK SCREENED ON THE INSIDE IN A MANNER THAT, WHEN ILLUMINATED, WILL DISPLAY THE MESSAGE "FIRE SIGNAL" IN 6" HIGH, SERIES C LETTERS, AND WHEN NOT ILLUMINATED (BLANKED OUT) THE SIGN MESSAGE WILL NOT BE LEGIBLE. THE USE OF AN EXTERIOR SUNSCREEN OR SIMILAR DEVICE, FABRICATED FROM NON-RUSTING MATERIAL, AND OF SUFFICIENT STRENGTH TO WITHSTAND NORMAL WINDLOADING AND HANDLING MAY BE USED TO ASSURE THE BLANK OUT CHARACTERISTICS OF THE MESSAGE. THE LIGHT SOURCE, SUNSCREEN AND REFLECTORS SHALL BE DESIGNED TO PROVIDE A WHITE MESSAGE WHICH CAN BE READ AT A DISTANCE OF 250 FEET BY A PERSON WITH NORMAL VISION IN CONDITIONS OF SURROUNDING DARKNESS AND A BACKGROUND OF BRIGHT SKY.

THE LIGHT SOURCE SHALL OPERATE ON 120 V.A.C. 60 HZ AND REQUIRE A MAXIMUM OF 300 WATTS. THE SOURCE SHALL CONSIST OF AT LEAST TWO BULBS WIRED IN PARALLEL TO LESSEN THE LIKELIHOOD OF FAILURE AND EACH BULB SHALL HAVE A RATED LIFE OF OVER 2000 HOURS. INCANDESCENT OR FLOURESCENT SOURCES MAY BE USED. AN EIGHT POSITION BARRIER TERMINAL STRIP SHALL BE CONVENIENTLY MOUNTED IN THE ENCLOSURE FOR TERMINATING FIELD WIRING.

THE SIGN ASSEMBLY SHALL BE MOUNTED ON THE SPAN WIRE OR MAST ARM AS SPECIFIED IN THE PLANS. THE SIGN SHALL HANG VERTICALLY AND FACE APPROACHING TRAFFIC.

ILLUMINATION OF THE BLANK OUT SIGN SHALL BE ACTIVATED BY THE EMERGENCY FIRE SIGNAL PUSHBUTTON IN THE FIRE STATION AND SHALL COMMENCE ILLUMINATION CONCURRENTLY WITH THE YELLOW CLEARANCE PHASE OF BOTH THE EMERGENCY FIRE SIGNAL INSTALLATION AND THE INTERSECTION SIGNAL INSTALLATION.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH ITEM 625 "INTERNALLY ILLUMINATED BLANK OUT SIGN, (FIRE SIGNAL) 30" x 24" COMPLETE IN PLACE, WIRED, TESTED AND ACCEPTED.

MAINTENANCE OF EXISTING SIGNAL INSTALLATION(S)

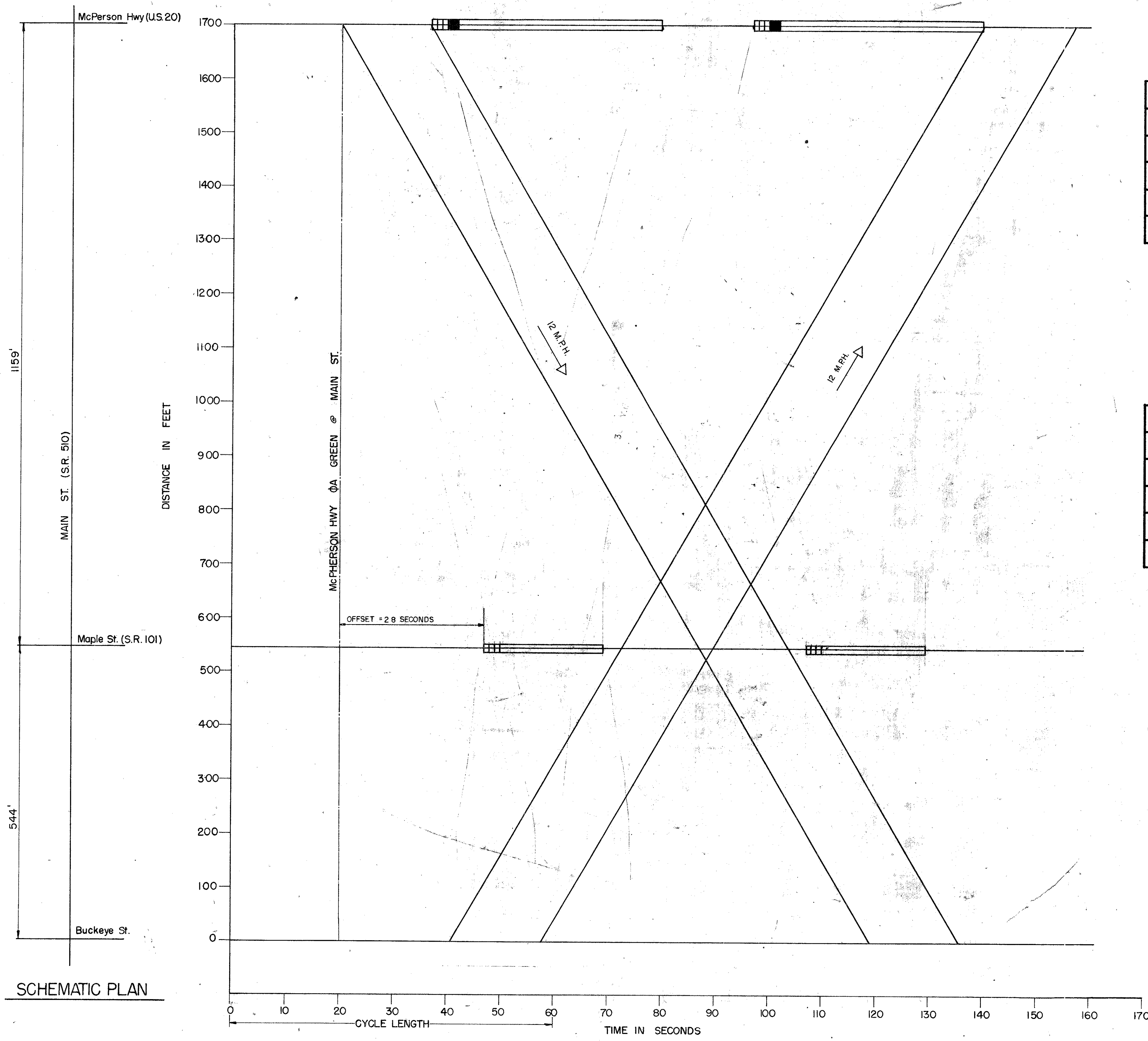
THE EXISTING TRAFFIC SIGNAL(S) SHALL BE KEPT IN OPERATION UNTIL THE NEW SIGNAL IS OPERATIONAL. IF EXISTING ITEMS ARE TO BE INCORPORATED INTO THE NEW SIGNAL, SUCH ITEMS SHALL NOT BE REINSTALLED UNTIL ALL OTHER NEW WORK, WHICH CAN BE DONE PRIOR TO THE RELOCATION WORK, IS COMPLETED. AT THIS TIME, THE EXISTING SIGNAL MAY BE TURNED OFF. WHEN NOT IN OPERATION, SIGNAL HEADS SHALL BE BAGGED. WHEN NO SIGNAL IS IN OPERATION AT THE LOCATION, TRAFFIC SHALL BE MAINTAINED THROUGH THE USE OF STOP SIGNS.

SIGNAL CONTROL OF THE INTERSECTION SHALL NOT BE INTERRUPTED DURING THE HOURS OF 6:00 A.M. TO 9:00 A.M. AND 3:00 P.M. TO 6:00 P.M. ON WEEKDAYS. SIGNALS SHALL BE INOPERATIVE NO LONGER THAN SIX (6) HOURS.

PAYMENT SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 "MAINTENANCE OF TRAFFIC."

DISTRICT 2 OHIO DEPARTMENT OF TRANSPORTATION				
NOTES AND SPECIFICATIONS				
APPROVED		DATE		
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
NONE	S.W.K.	D.E.S.		6-1-73

SAN-20-24.62
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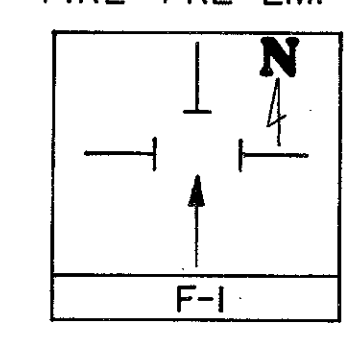


SCHMATIC PLAN

MAIN ST. - MAPLE ST. INTERSECTION						
INDICATIONS FACING	FLASH	INTERVAL				OFFSET MEASURED FROM GREEN MAPLE ST. TO GREEN MAIN ST.
		1	2	3	4	
MAIN ST.	Y	GG	YY	RR	RR	
MAPLE ST.	R	RR	RR	GG	YY	
PHASING		ΦA		ΦB		
DIAL # (60 SECOND CYCLE)		0	65	68	95	0
						28 SEC.

MAIN ST. - BUCKEYE ST. INTERSECTION						
INDICATIONS FACING	FLASH	INTERVAL				OFFSET MEASURED FROM GREEN MAPLE ST. TO GREEN BUCKEYE ST.
		1	2	3	4	
MAIN ST.	Y	GG	YY	RR	RR	
BUCKEYE ST.	R	RR	RR	GG	YY	
PHASING		ΦA		ΦB		
DIAL # (60 SECOND CYCLE)		0	58	63	95	0
						21 SEC.

FIRE PRE-EMPTION



DISTRICT 2
OHIO
DEPARTMENT OF TRANSPORTATION

MAIN STREET (S.R. 510)
SIGNAL TIMING

APPROVED	DESIGNED	DRAWN	REVIEWED	DATE
NONE				6-1-73

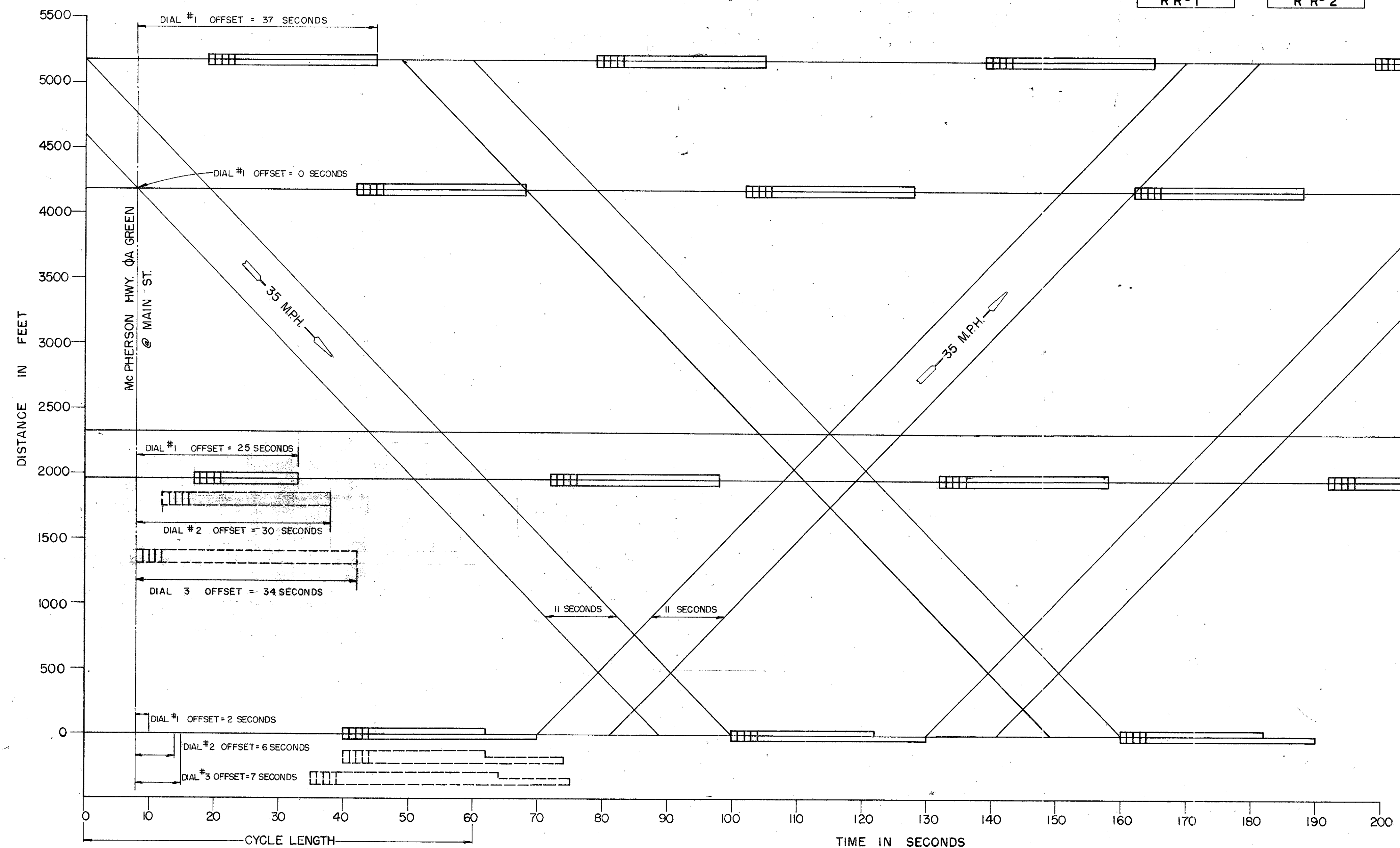
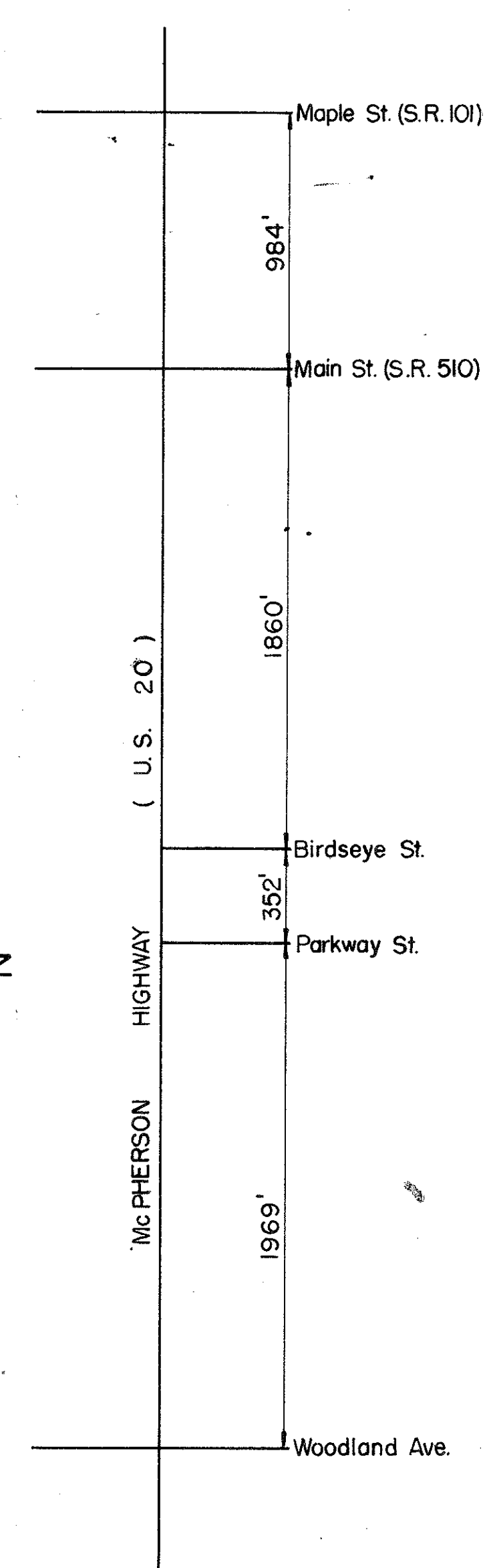
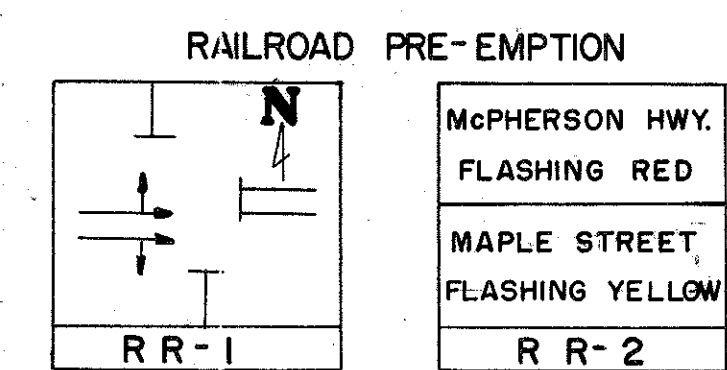
6AN-20-24.62
6AN-101-305

McPHERSON HWY - WOODLAND AVE. INTERSECTION								
INDICATIONS FACING	FLASH	INTERVALS						
		1	2	3	4	5	6	7
McPHERSON HWY (WESTBOUND)	Y	GG	GG	GG	YY	RR	RR	RR
McPHERSON HWY (EASTBOUND)	Y	RR	RR	GG	YY	RR	RR	RR
WOODLAND AVE.	R	RR	RR	RR	RR	GG	YY	RR
PHASING		ΦA LEAD		ΦA		ΦB		
DIAL #1 (60 SECOND CYCLE)		0	9	14	64	71	92	97
DIAL #2 (60 SECOND CYCLE) 6:30 - 7:00 A.M.		0	16	21	64	71	92	97
DIAL #3 (60 SECOND CYCLE) 3:00 - 3:30 P.M.		0	13	18	51	58	92	97
NIGHT OPERATION MIDNIGHT - 6:00 A.M.		FLASH						

McPHERSON HWY - PARKWAY AVE. INTERSECTION							
INDICATIONS FACING	FLASH	INTERVALS					OFFSET MEASURED FROM ΦA GREEN @ MAIN ST. TO ΦA GREEN @ PARKWAY AVE.
		1	2	3	4	5	
McPHERSON HWY	Y	GG	YY	RR	RR	RR	
PARKWAY AVE.	R	RR	RR	GG	YY	RR	
PHASING		ΦA		ΦB			
DIAL #1 (60 SECOND CYCLE)		0	65	72	92	97	25 SEC.
DIAL #2 (60 SECOND CYCLE) 7:00 - 7:30 A.M. 4:30 - 5:00 P.M.		0	56	63	92	97	30 SEC.
DIAL #3 (60 SECOND CYCLE) 3:00 - 3:30 P.M.		0	44	51	92	97	34 SEC.
NIGHT OPERATION MIDNIGHT - 6:00 A.M.		FLASH					

McPHERSON HWY - MAIN ST. INTERSECTION							
INDICATIONS FACING	FLASH	INTERVALS					OFFSET MEASURED FROM ΦA GREEN @ MAIN ST. TO ΦA GREEN @ PARKWAY AVE.
		1	2	3	4	5	
McPHERSON HWY	Y	GG	YY	RR	RR	RR	
MAIN ST.	R	RR	RR	GG	YY	RR	
PHASING		ΦA		ΦB			
DIAL #1 (60 SECOND CYCLE)		0	56	63	92	97	0 SEC.
NIGHT OPERATION MIDNIGHT - 6:00 A.M.		FLASH					

McPHERSON HWY - MAPLE ST. INTERSECTION							
INDICATIONS FACING	FLASH	INTERVALS					OFFSET MEASURED FROM ΦA GREEN @ MAIN ST. TO ΦA GREEN @ MAPLE ST.
		1	2	3	4	5	
McPHERSON HWY	Y	GG	YY	RR	RR	RR	
MAPLE ST.	R	RR	RR	GG	YY	RR	
PHASING		ΦA		ΦB			
DIAL #1 (60 SECOND CYCLE)		0	56	63	92	97	37 SEC.
NIGHT OPERATION MIDNIGHT - 6:00 A.M.		FLASH					



SCHMATIC PLAN

DISTRICT 2
OHIO
DEPARTMENT OF TRANSPORTATION

McPHERSON HIGHWAY (U.S. 20)
SIGNAL TIMING

APPROVED	DESIGNED	DRAWN	REVIEWED	DATE
NONE				6-1-73

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	T-4040 (1)

7
12

SAN-20-24.62
SAN-101-3.05

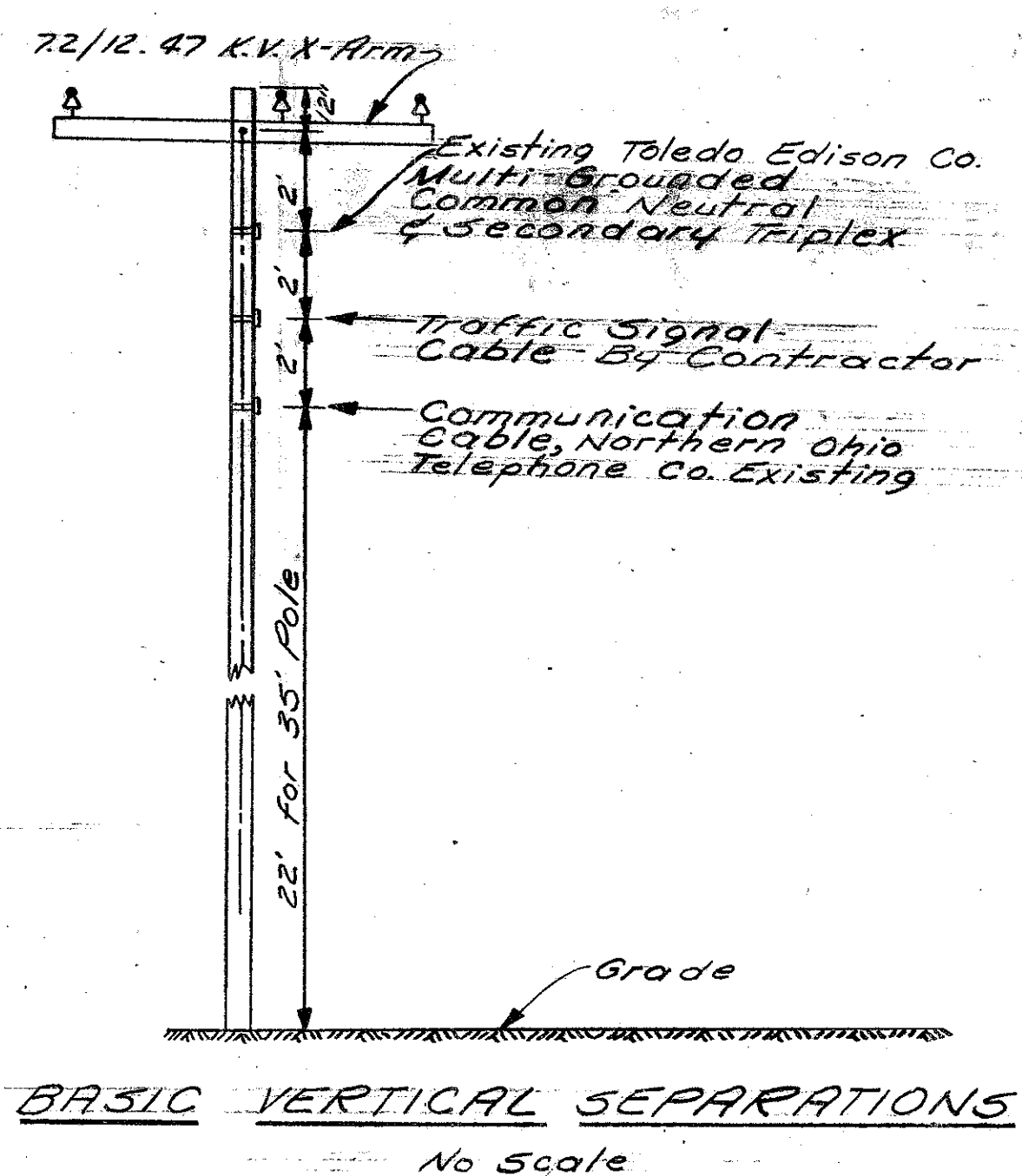
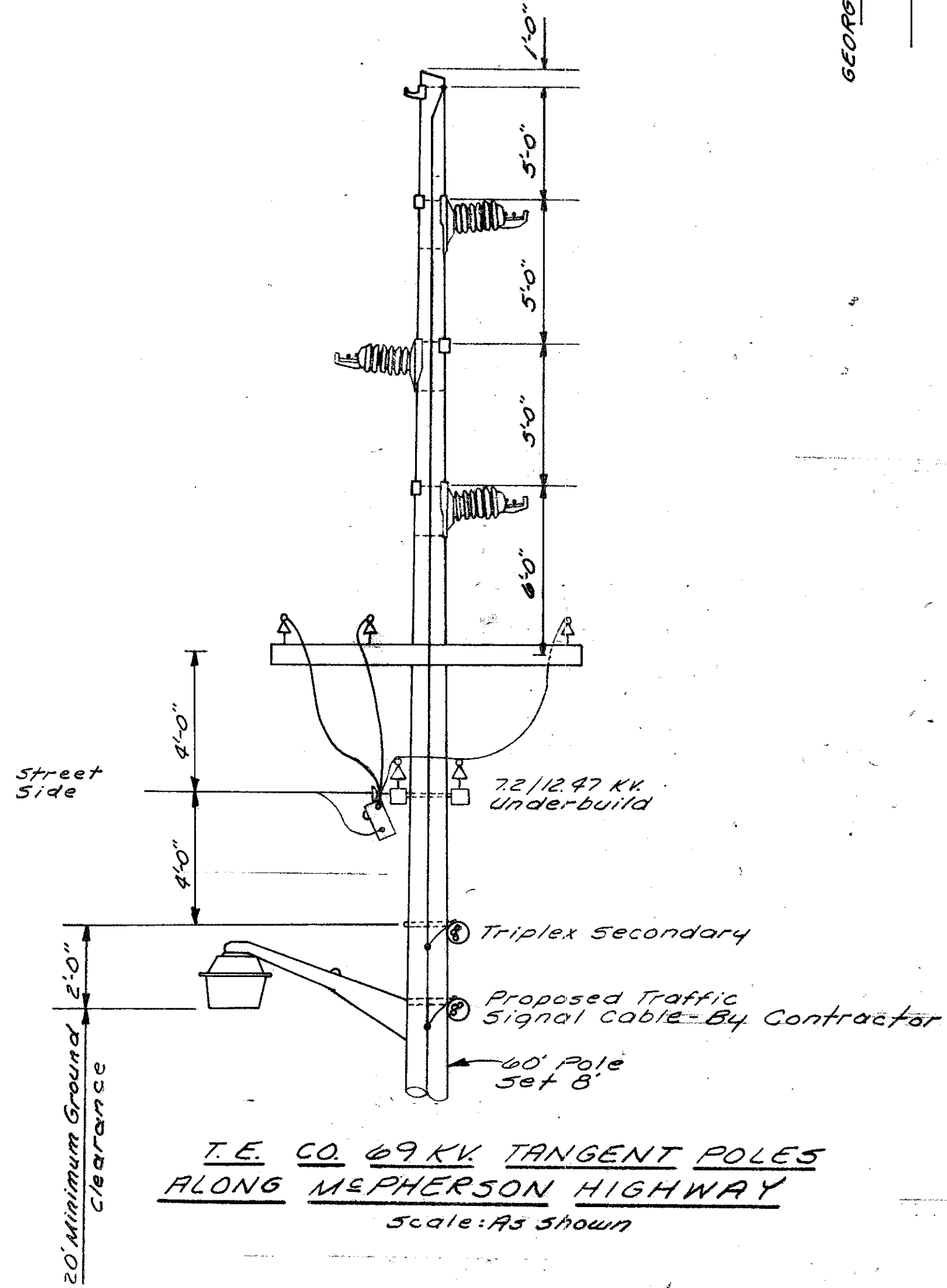
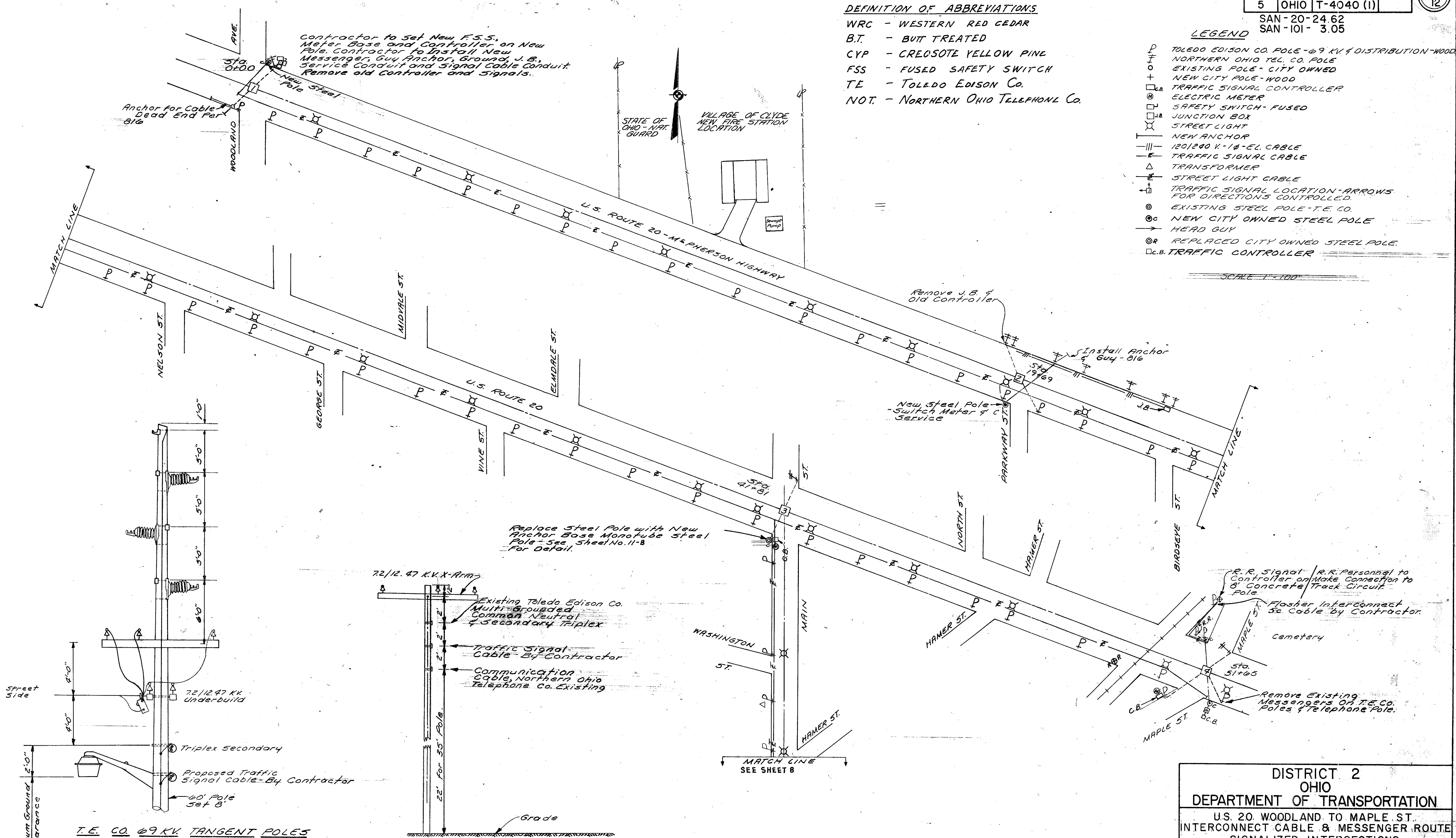
DEFINITION OF ABBREVIATIONS

- WRC - WESTERN RED CEDAR
- B.T. - BUT TREATED
- CYP - CREOSOTE YELLOW PINE
- FSS - FUSED SAFETY SWITCH
- TE - TOLEDO EDISON CO.
- NOT. - NORTHERN OHIO TELEPHONE CO.

LEGEND

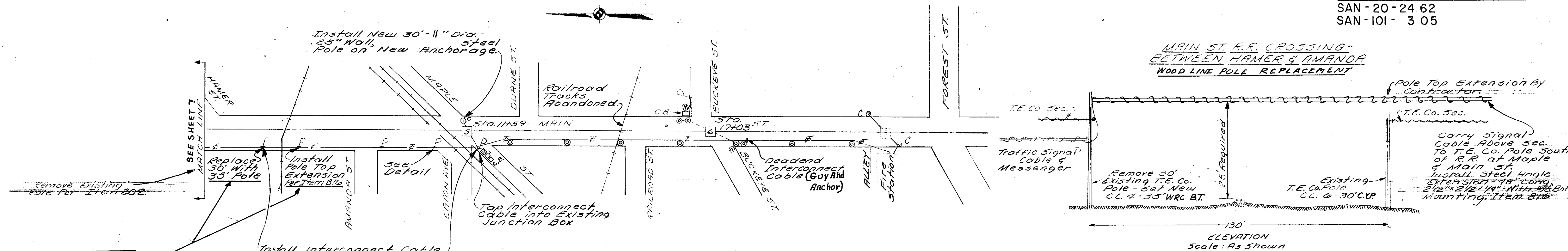
- P TOLEDO EDISON CO. POLE - 69 KV. & DISTRIBUTION - WOOD
- + NORTHERN OHIO TEL. CO. POLE
- o EXISTING POLE - CITY OWNED
- + NEW CITY POLE - WOOD
- C.B. TRAFFIC SIGNAL CONTROLLER
- ⊙ ELECTRIC METER
- ⊙ SAFETY SWITCH - FUSED
- ⊙ JUNCTION BOX
- ⊙ STREET LIGHT
- ⊙ NEW ANCHOR
- || 120/240 V. - 18 - EL. CABLE
- ⊙ TRAFFIC SIGNAL CABLE
- △ TRANSFORMER
- ⊙ STREET LIGHT CABLE
- ⊙ TRAFFIC SIGNAL LOCATION - ARROWS FOR DIRECTIONS CONTROLLED
- ⊙ EXISTING STEEL POLE - T.E. CO.
- ⊙ NEW CITY OWNED STEEL POLE
- HEAD GUY
- ⊙ R REPLACED CITY OWNED STEEL POLE
- C.B. TRAFFIC CONTROLLER

SCALE 1" = 100'



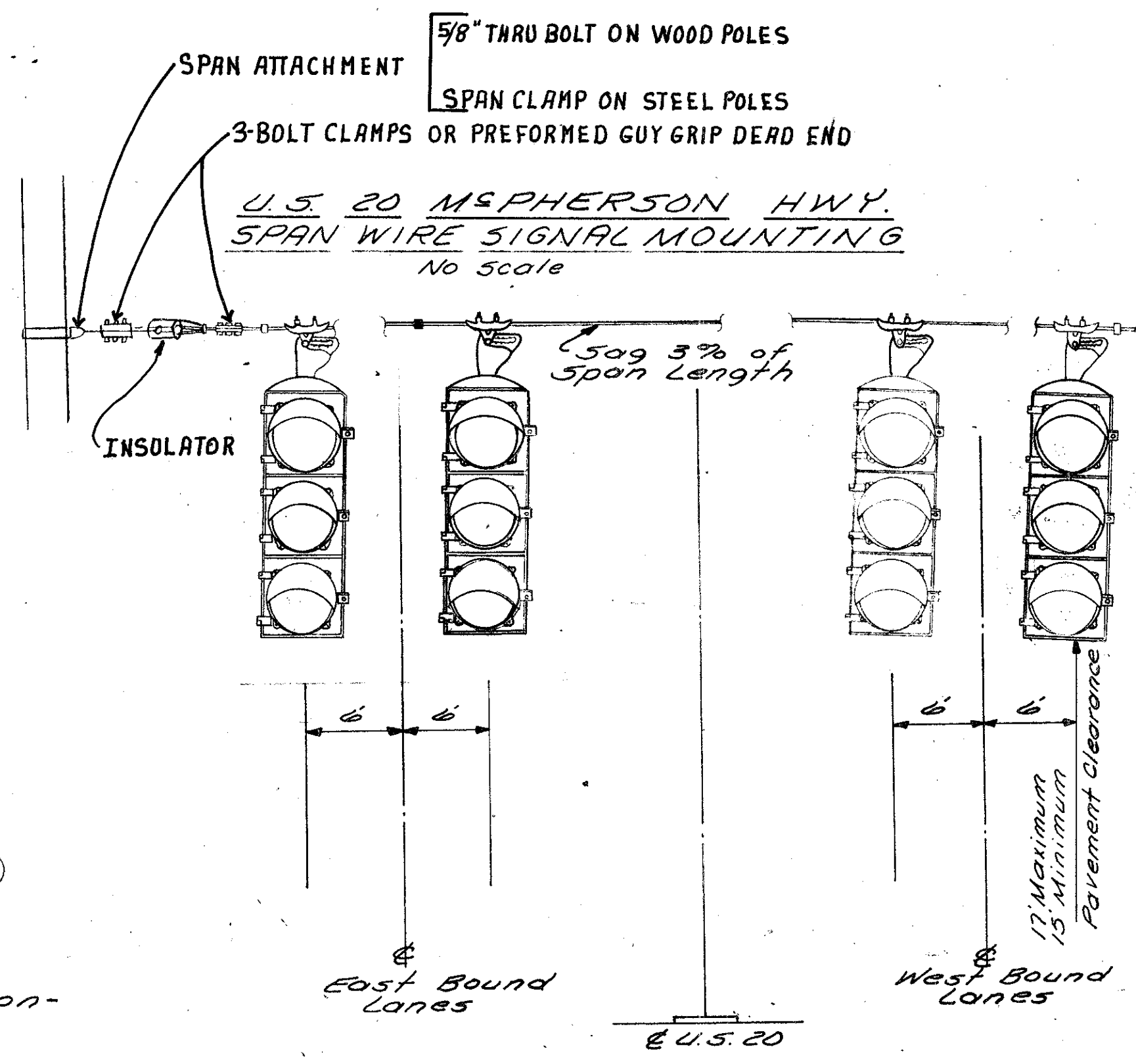
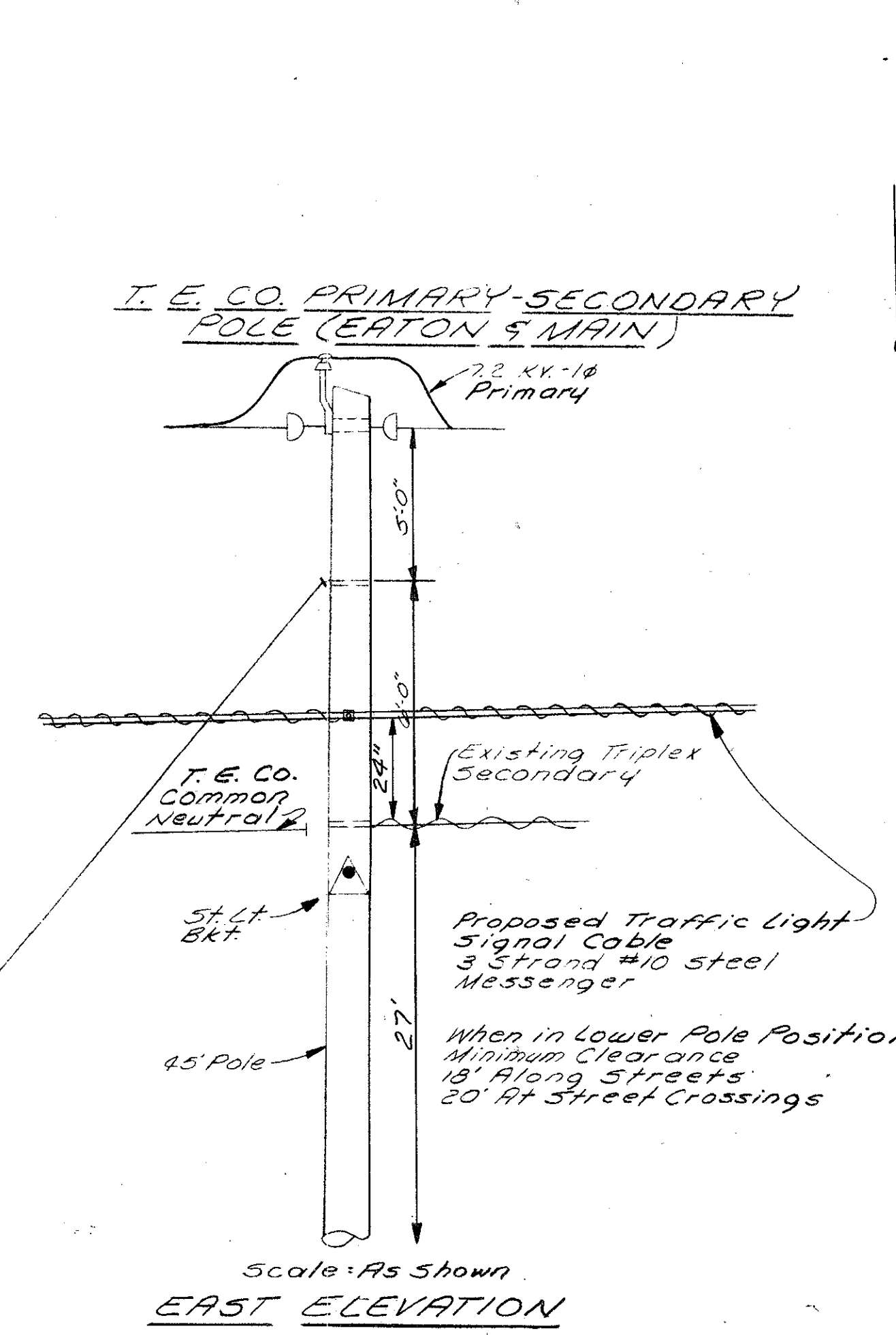
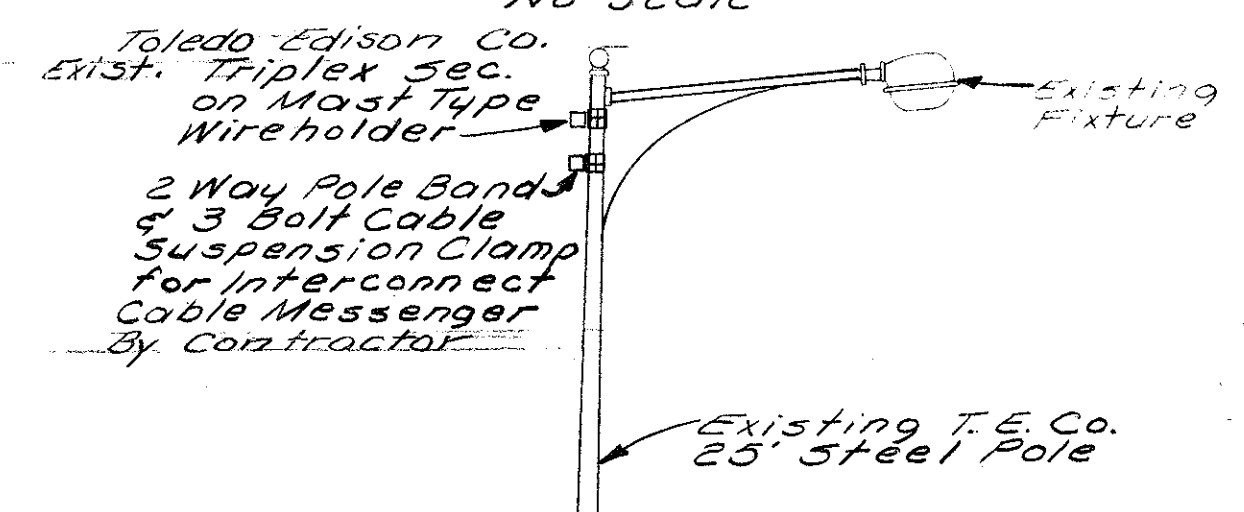
DISTRICT 2 OHIO DEPARTMENT OF TRANSPORTATION				
U.S. 20. WOODLAND TO MAPLE ST. INTERCONNECT CABLE & MESSENGER ROUTE SIGNALIZED INTERSECTIONS				
APPROVED				DATE
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
1" = 100'	S.W.K.	K.D.P.		6-1-73

SAN-20-24 62
SAN-101-3 05

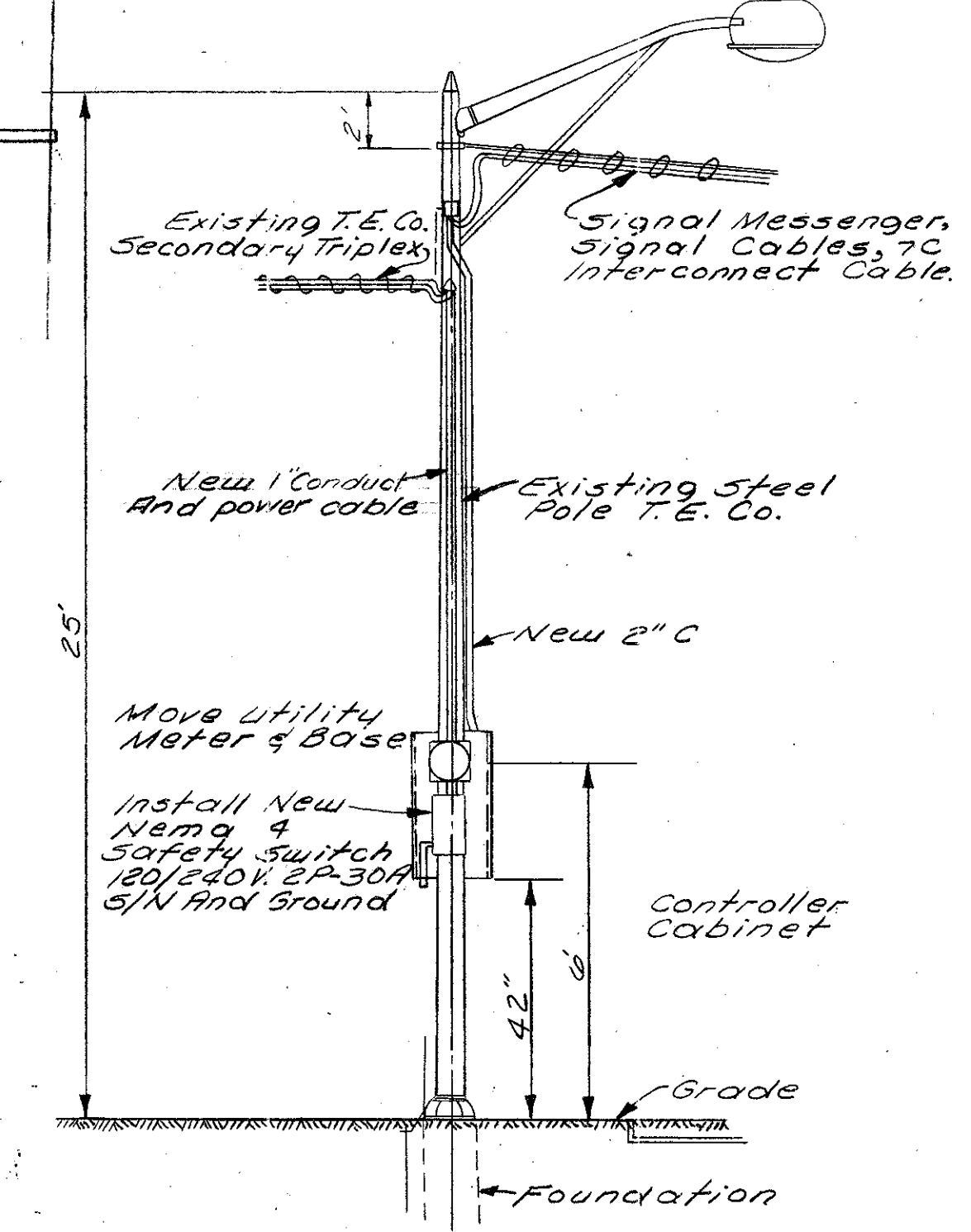


WOOD LINE POLE REPLACEMENT

EXISTING STEEL POLES MAPLE TO BUCKEYE STS.

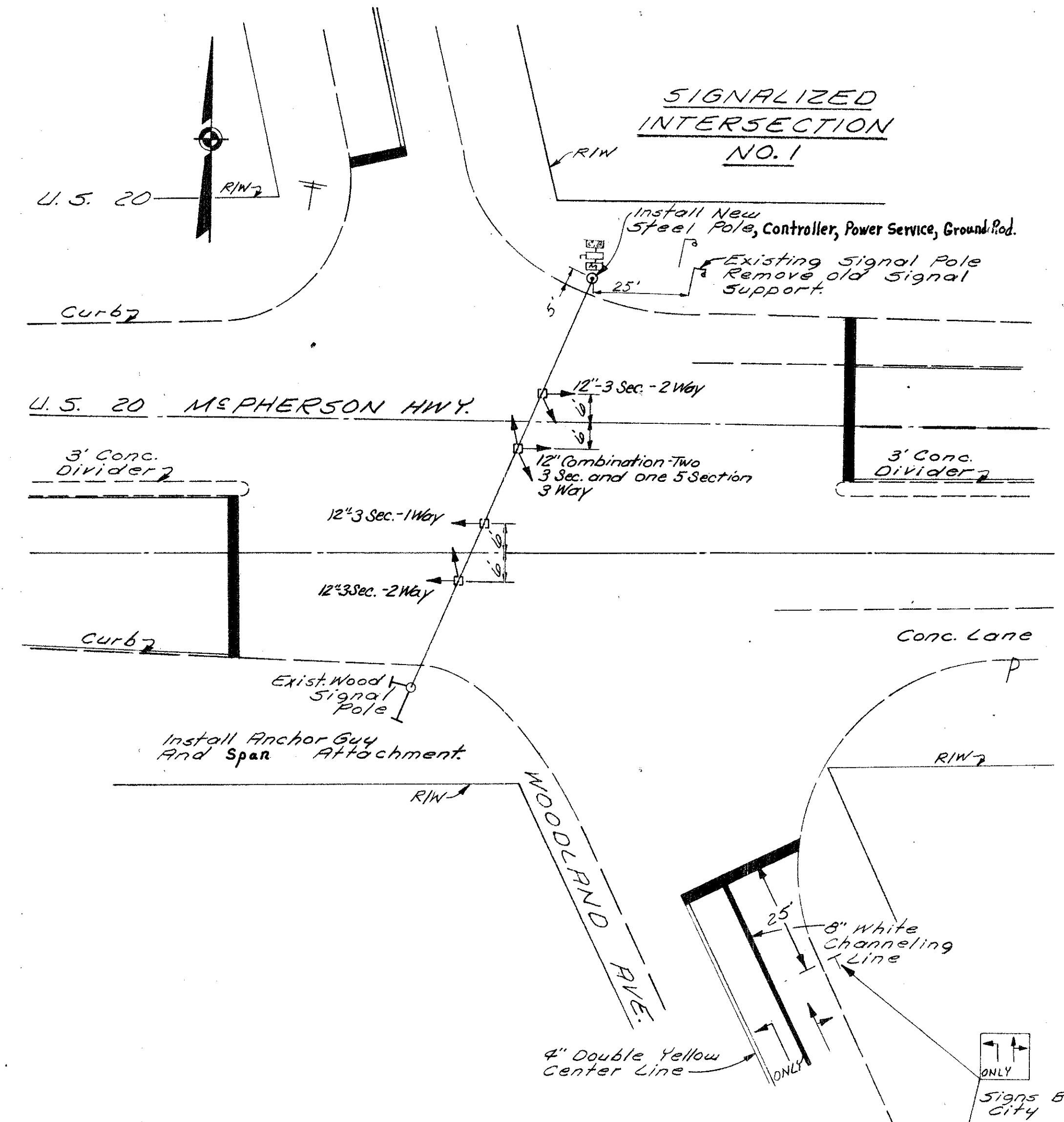


EXISTING STEEL POLE METER LOCATION

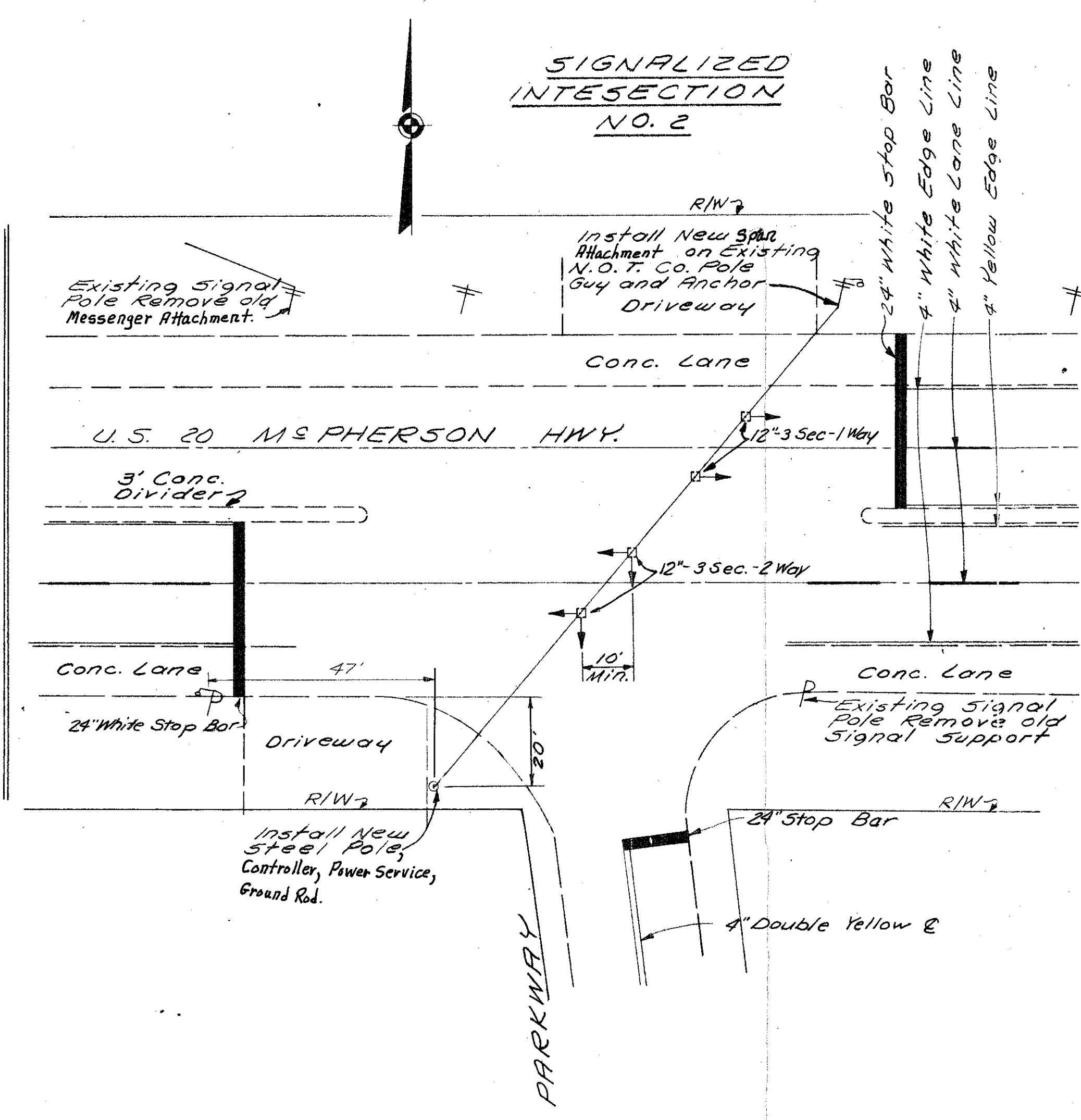
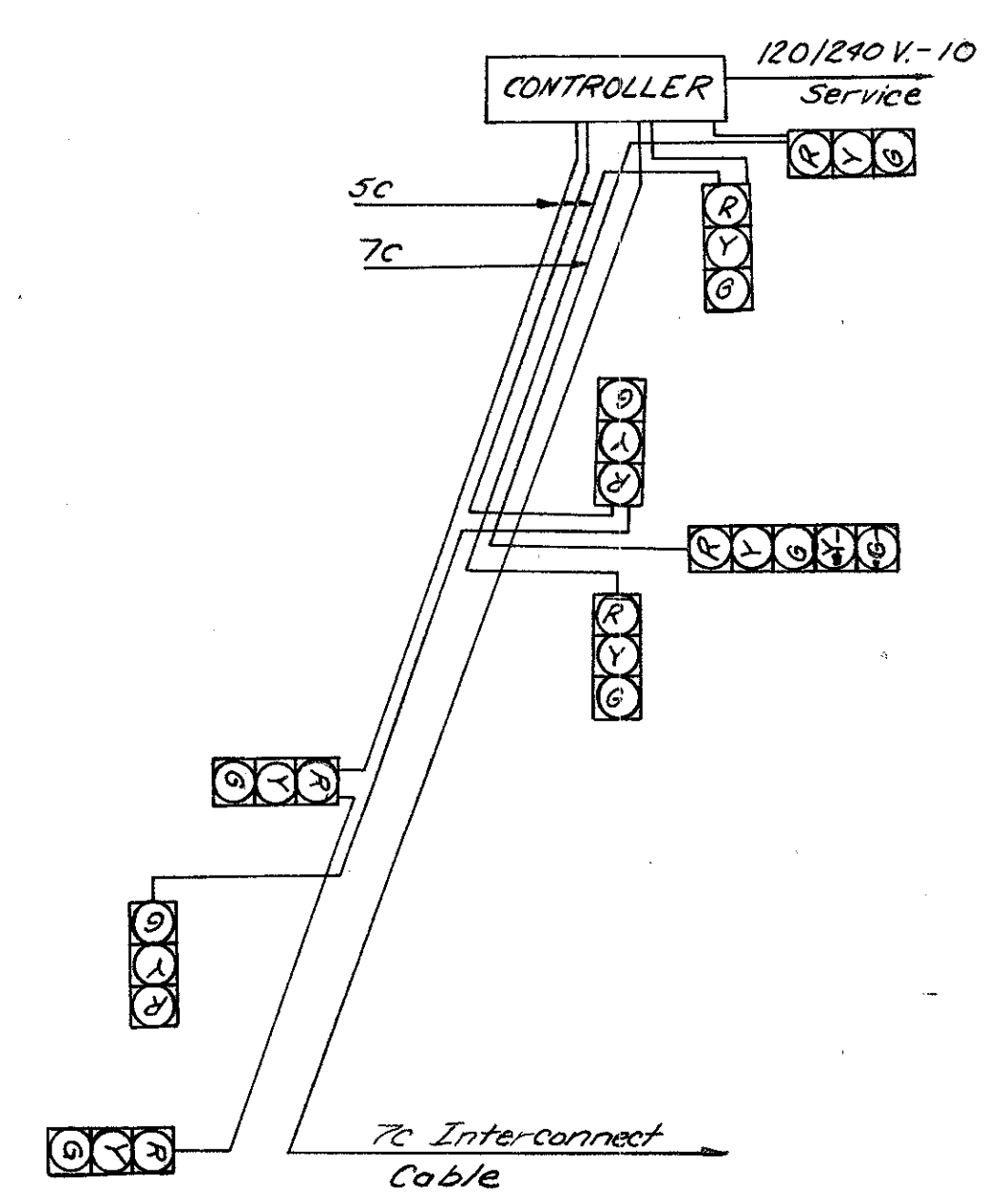


MAIN AND BUCKEYE - NORTH ELEV.

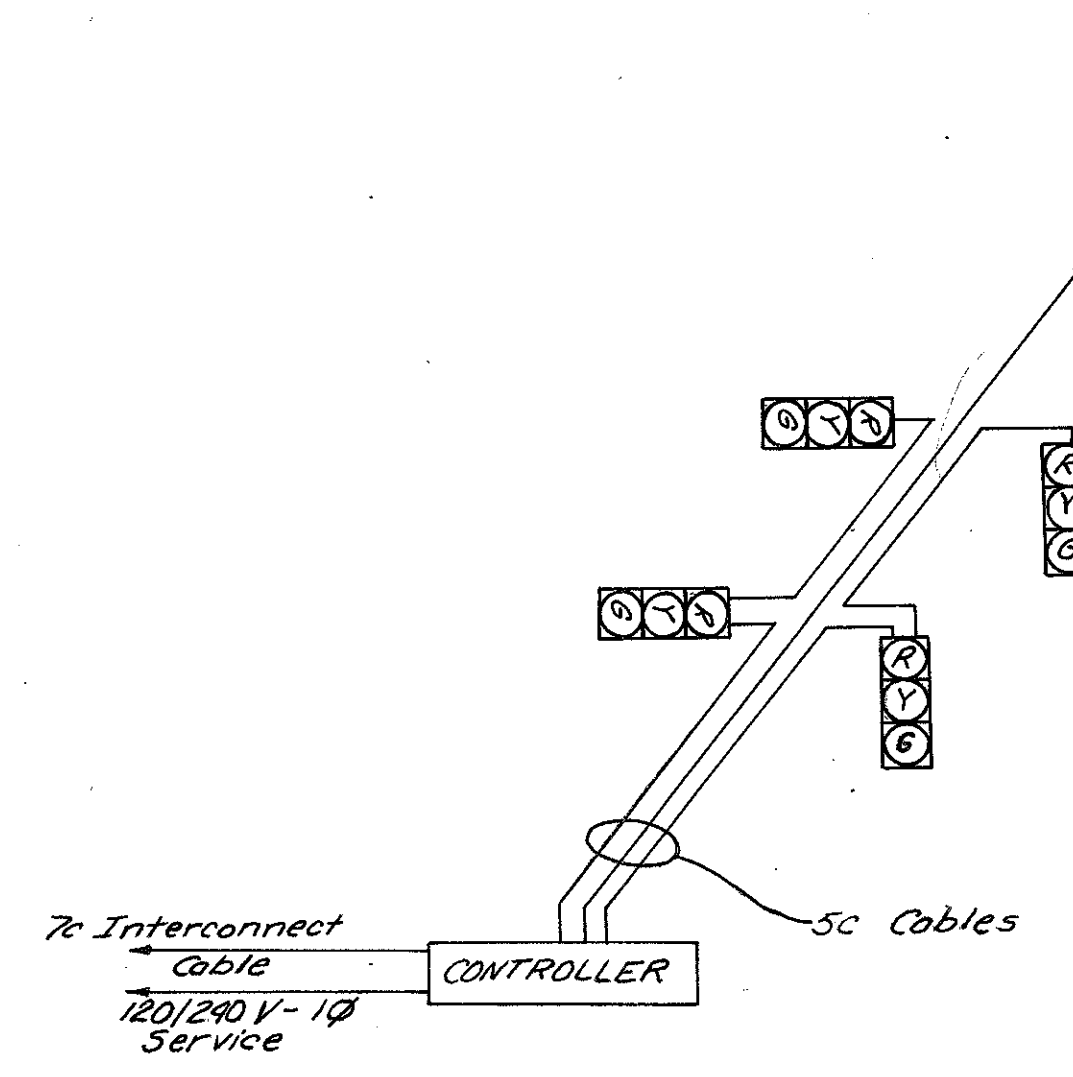
DISTRICT 2 OHIO DEPARTMENT OF TRANSPORTATION				
S R 101-(MAIN ST.) S R 510 TO FOREST ST. INTERCONNECT CABLE & MESSENGER ROUTE SIGNALIZED INTERSECTIONS				
APPROVED	DESIGNED	DRAWN	REVIEWED	DATE
NONE	S.W.K.	K.D.P.		6-1-73



CABLE SCHEMATIC



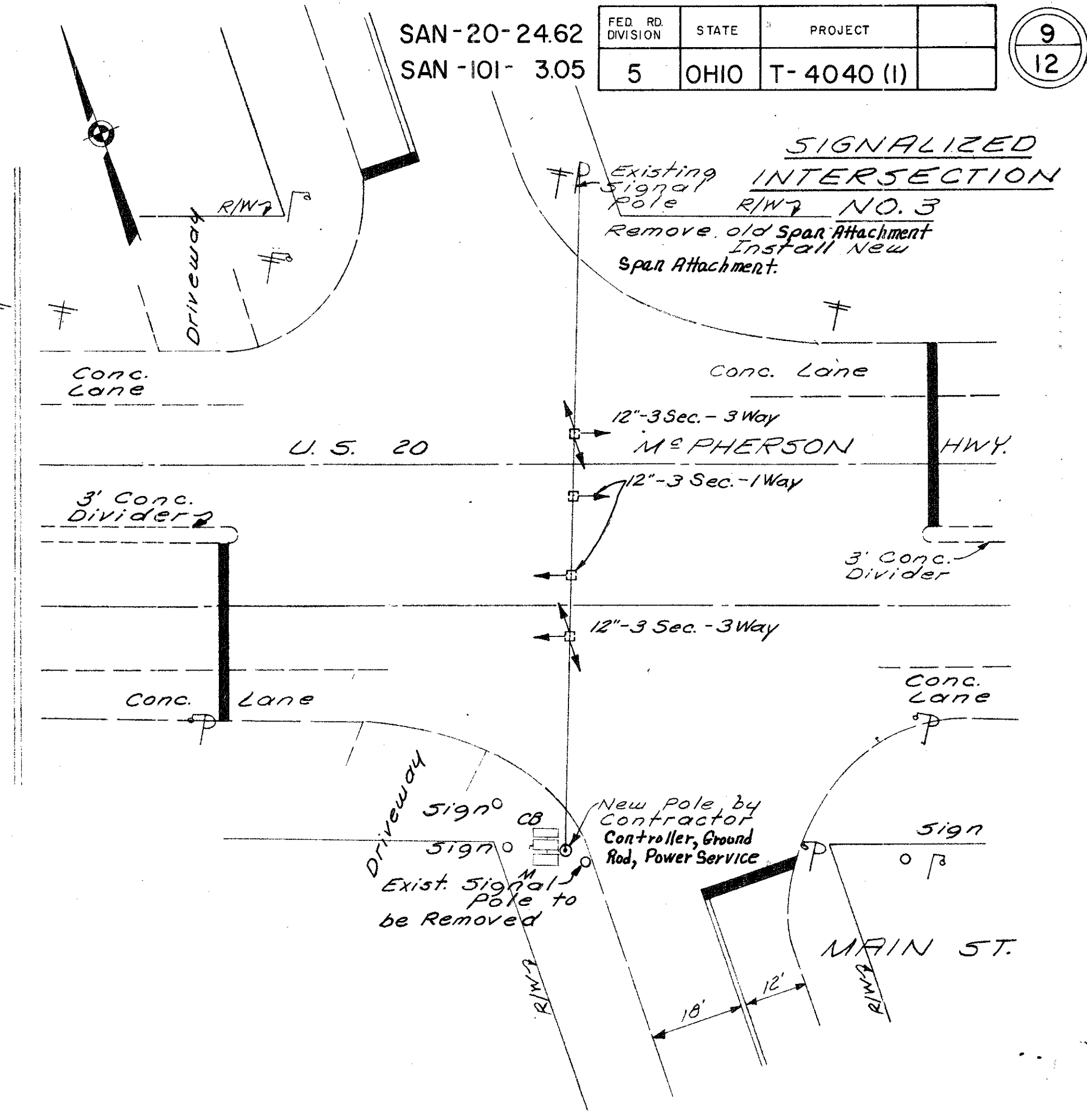
CABLE SCHEMATIC



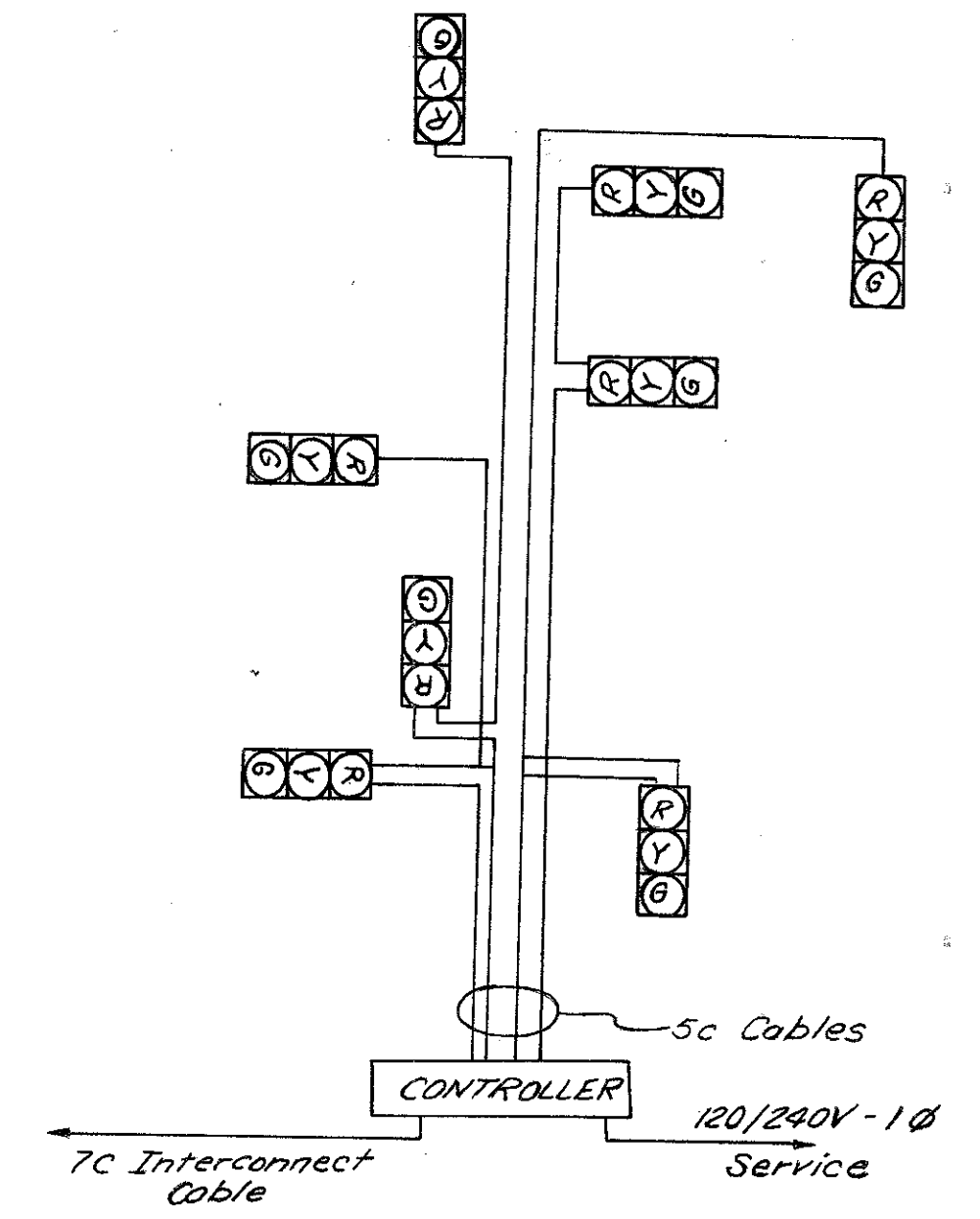
All New Steel Poles This Sheet
 Type 4-3 Ga. 2 1/2" Base O.D. 11.0" Top O.D. 7.36"

See sheet 6 For Sequence Charts
 For Intersections This Sheet.

All Pavement Marking And
 Signing By The City of Clyde.



CABLE SCHEMATIC



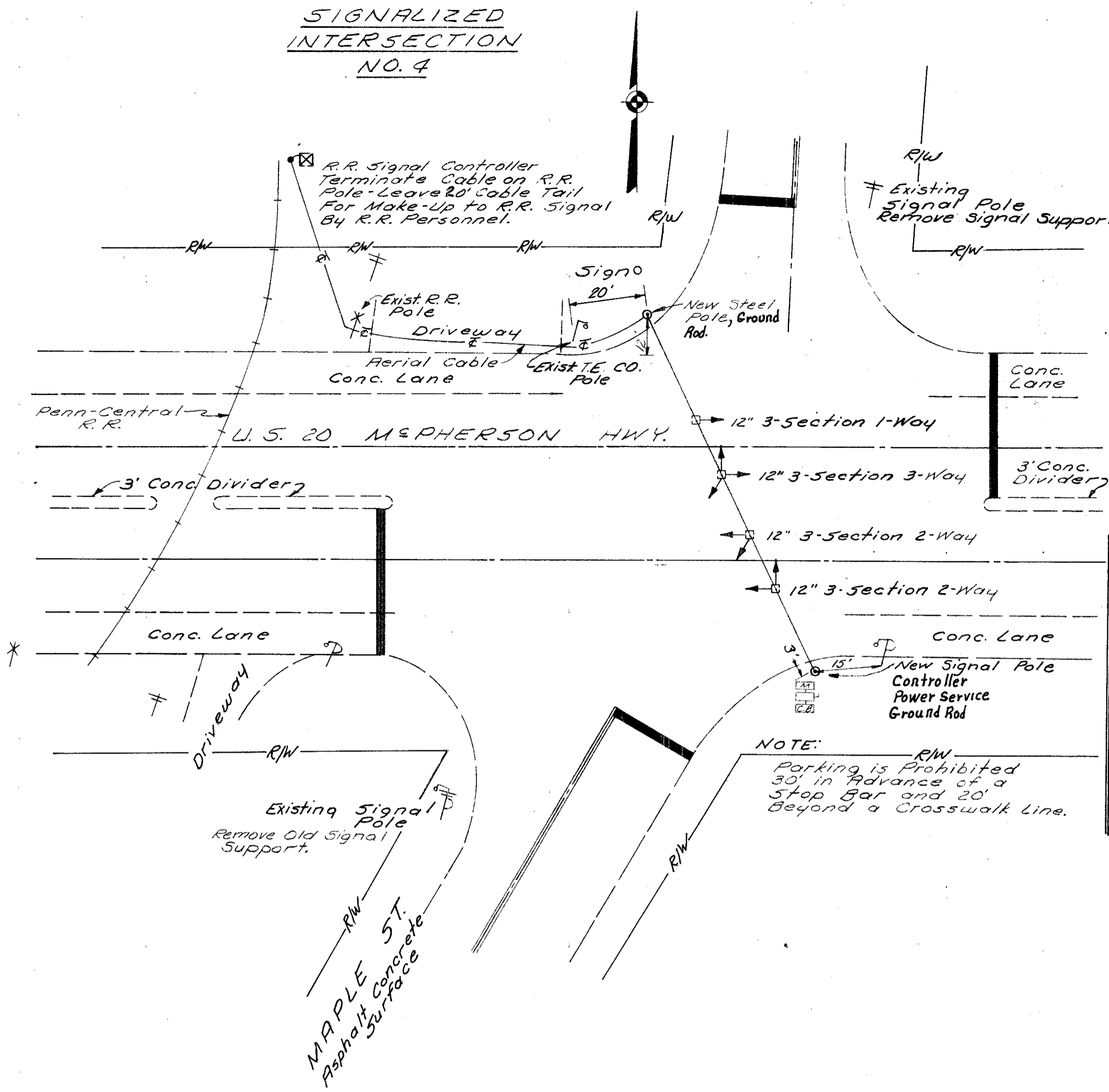
DISTRICT 2
 OHIO
 DEPARTMENT OF TRANSPORTATION

SIGNALIZED INTERSECTIONS
 CABLE CONNECTIONS

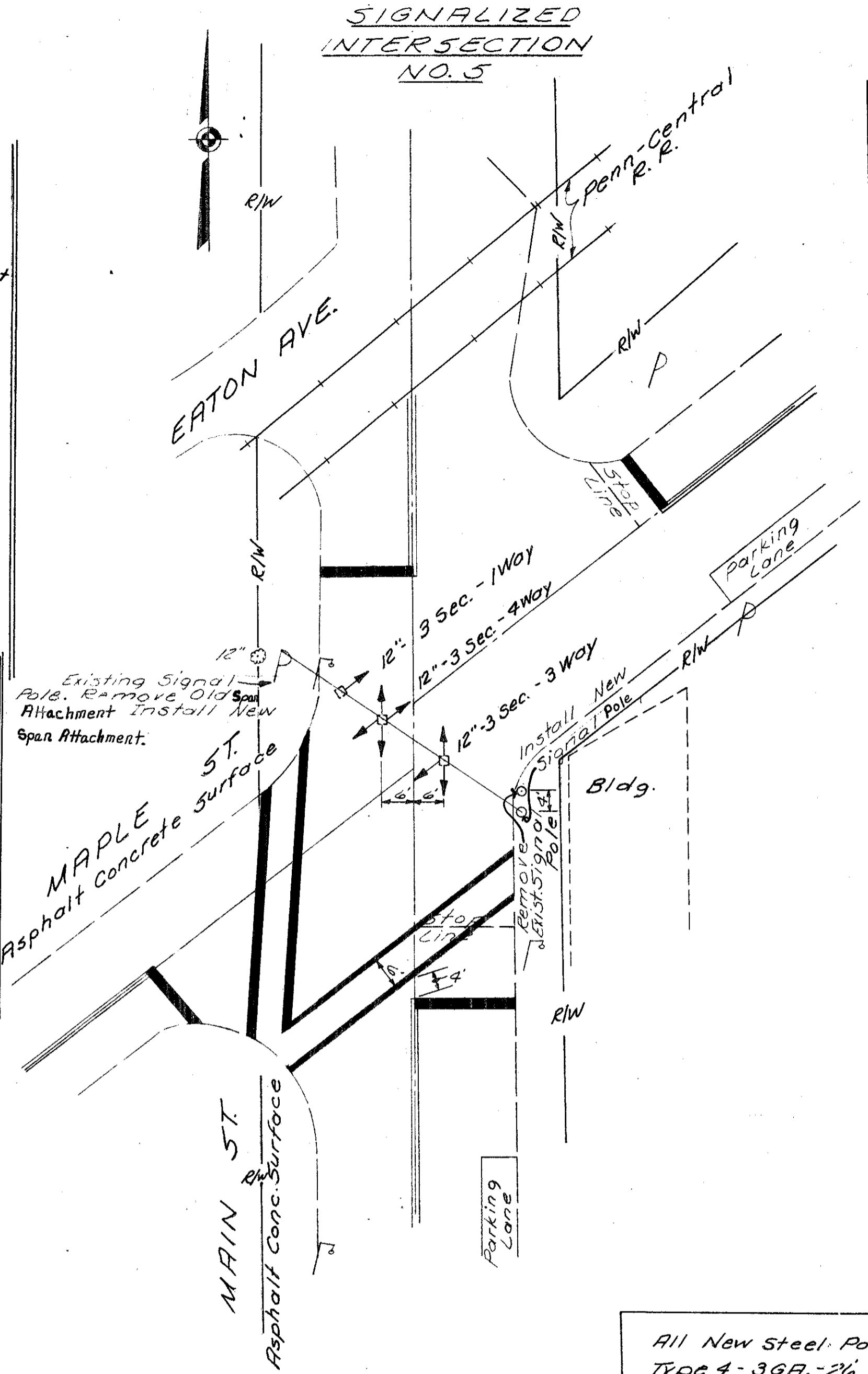
APPROVED	DATE			
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
1" = 20'	S.W.K.	K.D.P.		6-1-73

SAN-20-24.62
SAN-101-3.05

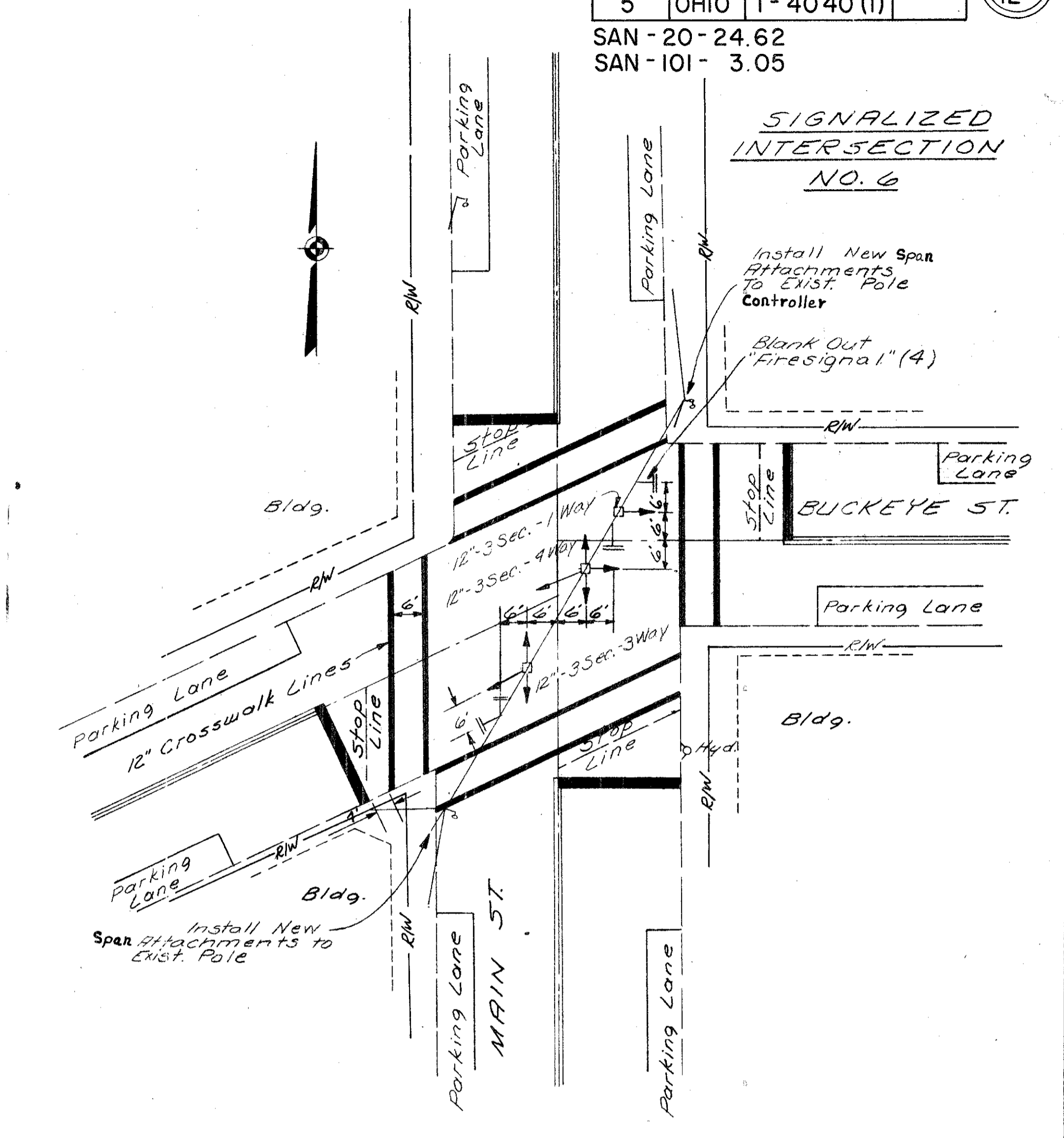
SIGNALIZED INTERSECTION NO. 4



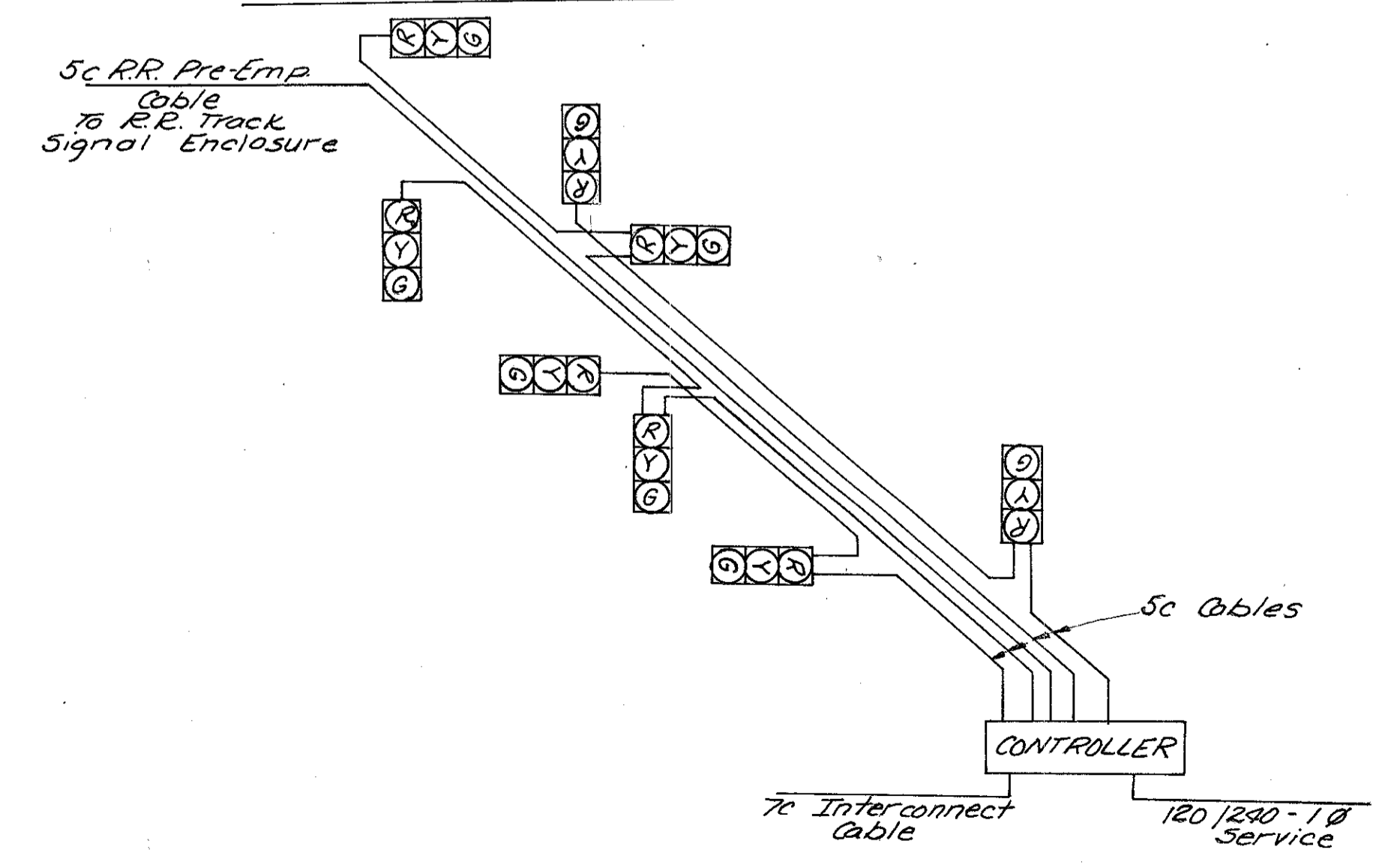
SIGNALIZED INTERSECTION NO. 5



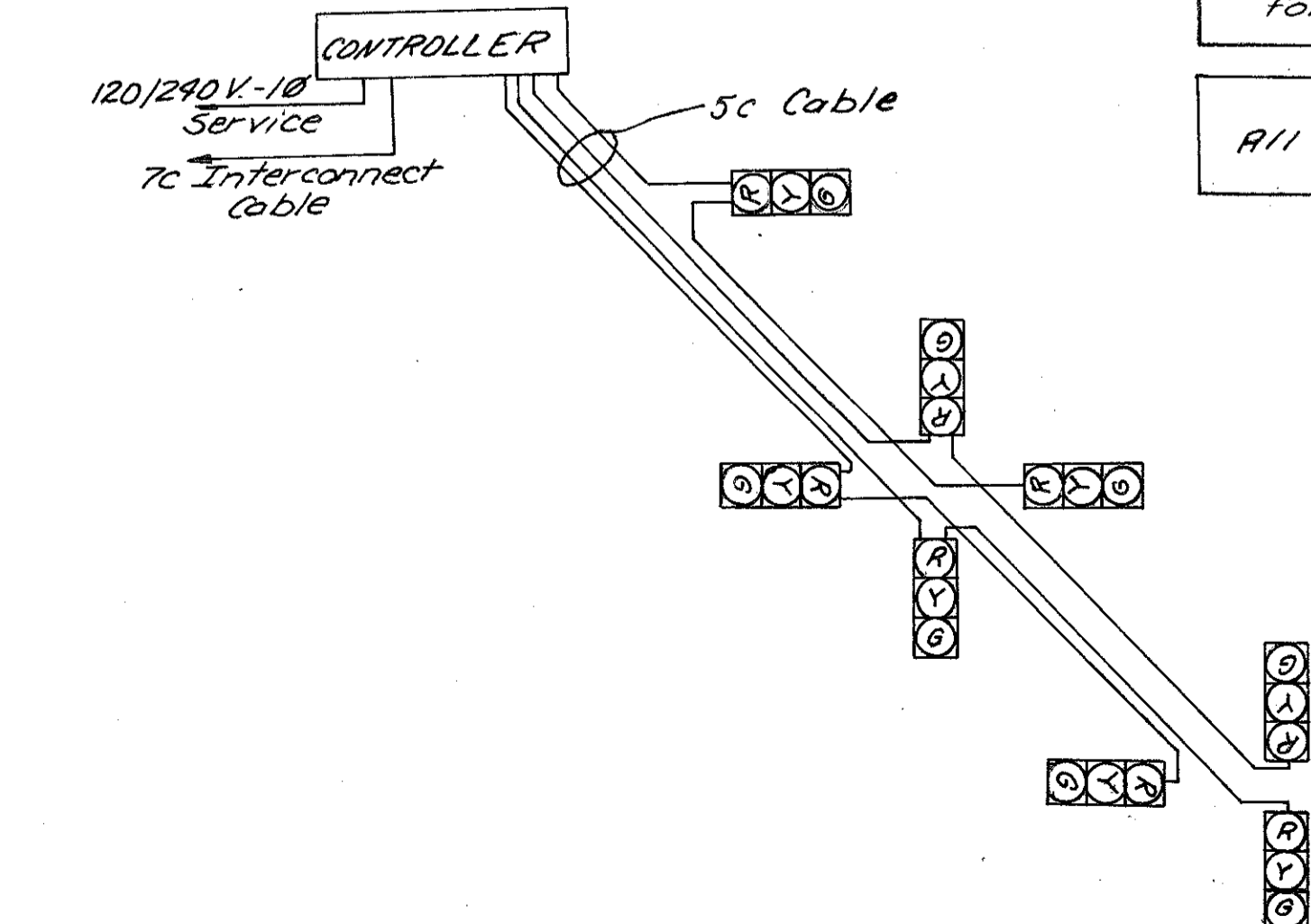
SIGNALIZED INTERSECTION NO. 6



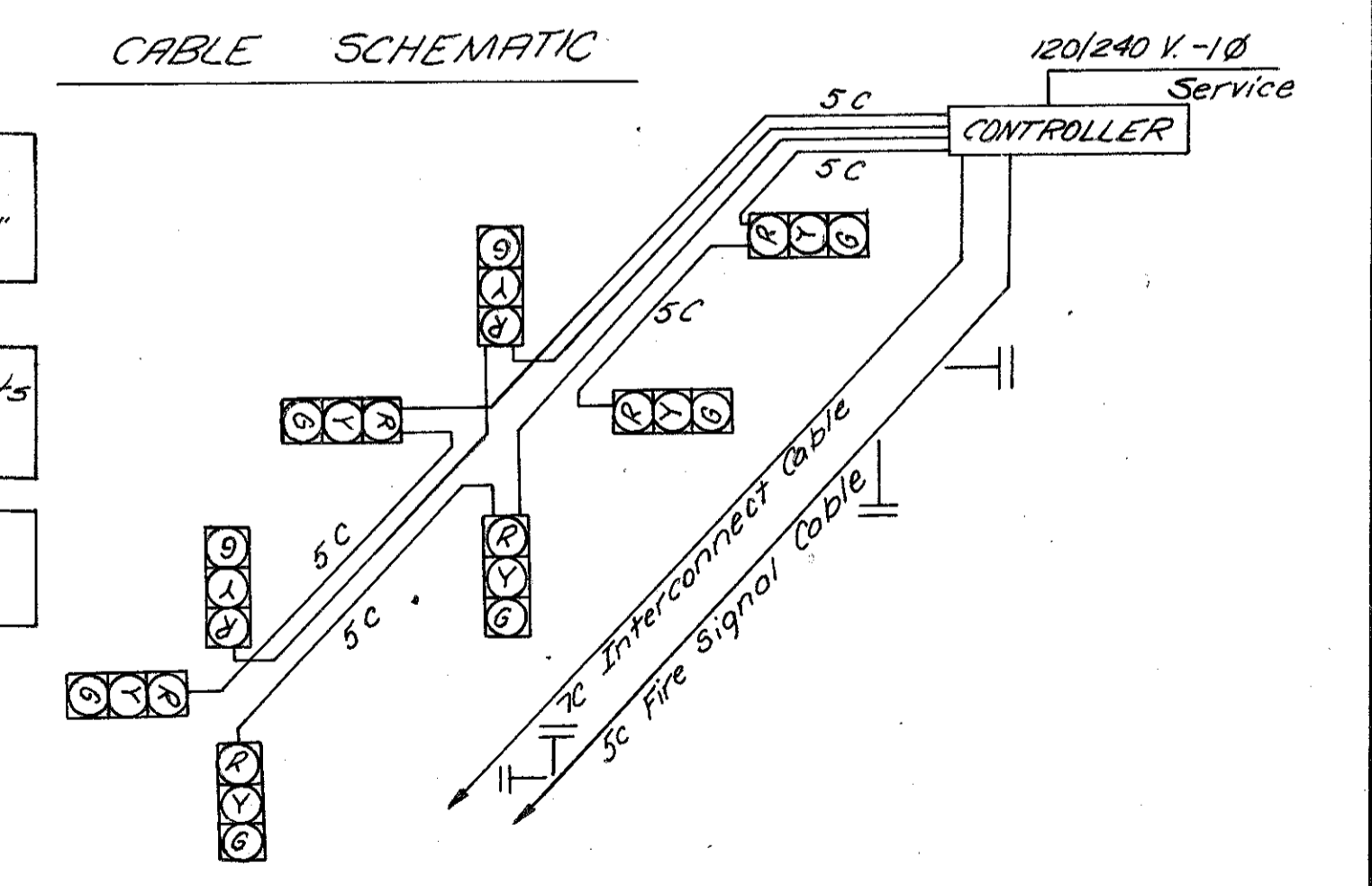
CABLE SCHEMATIC



CABLE SCHEMATIC



CABLE SCHEMATIC



- All New Steel Poles This Sheet Type 4-3GA.-2 1/2" Base O.D. 11" Top O.D. 7.36"
- See sheets 5 & 6 for Sequence Charts for Intersections this sheet.
- All Pavement Marking By City of Clyde

DISTRICT 2 OHIO DEPARTMENT OF TRANSPORTATION				
SIGNALIZED INTERSECTIONS CABLE CONNECTIONS				
APPROVED		DATE		
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
1" = 20'	SW.K.	K.D.P.		6-1-73

MESSENGER & CABLE
FINAL SAGS - MAX TENSION - 2000#

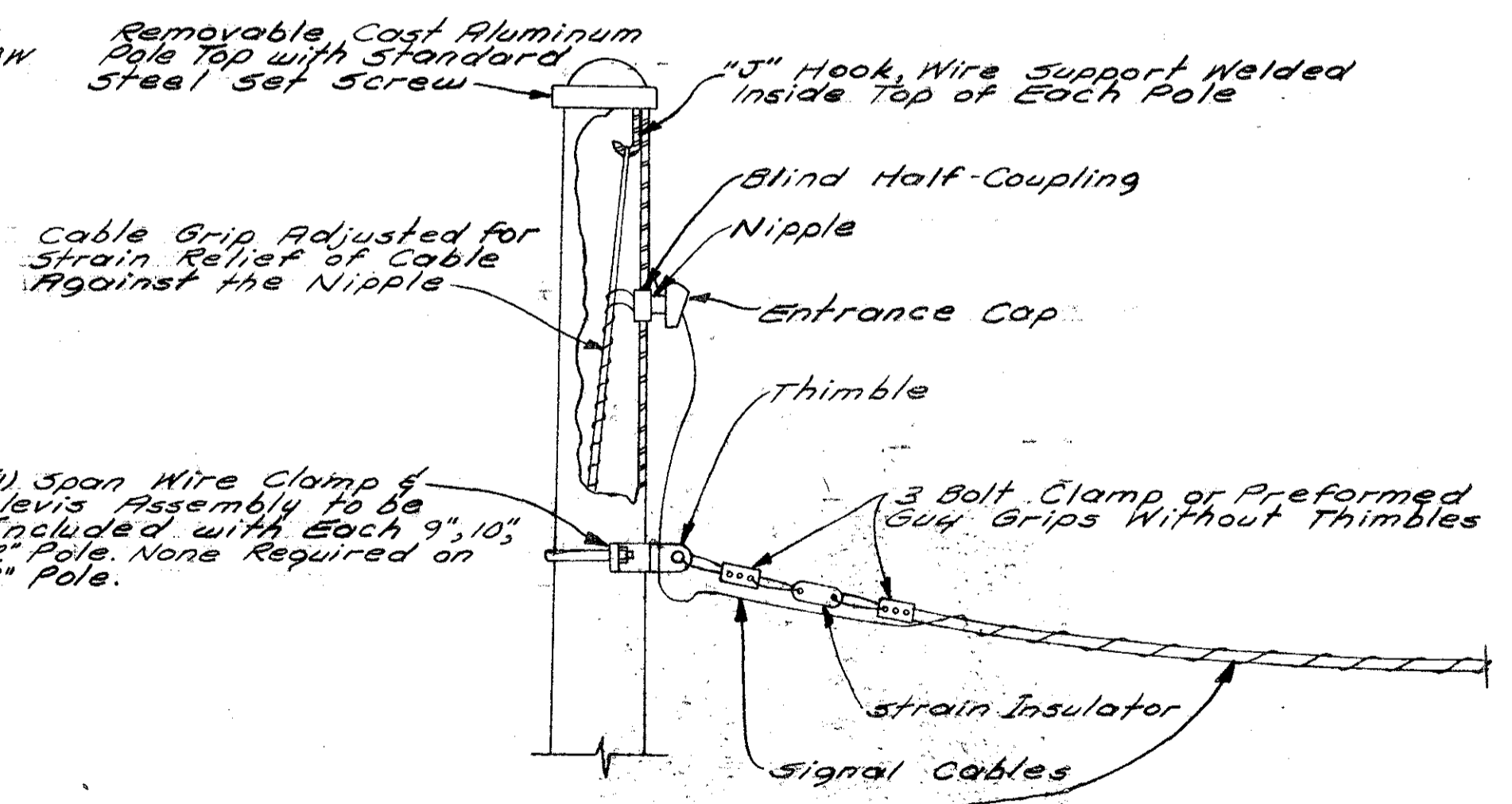
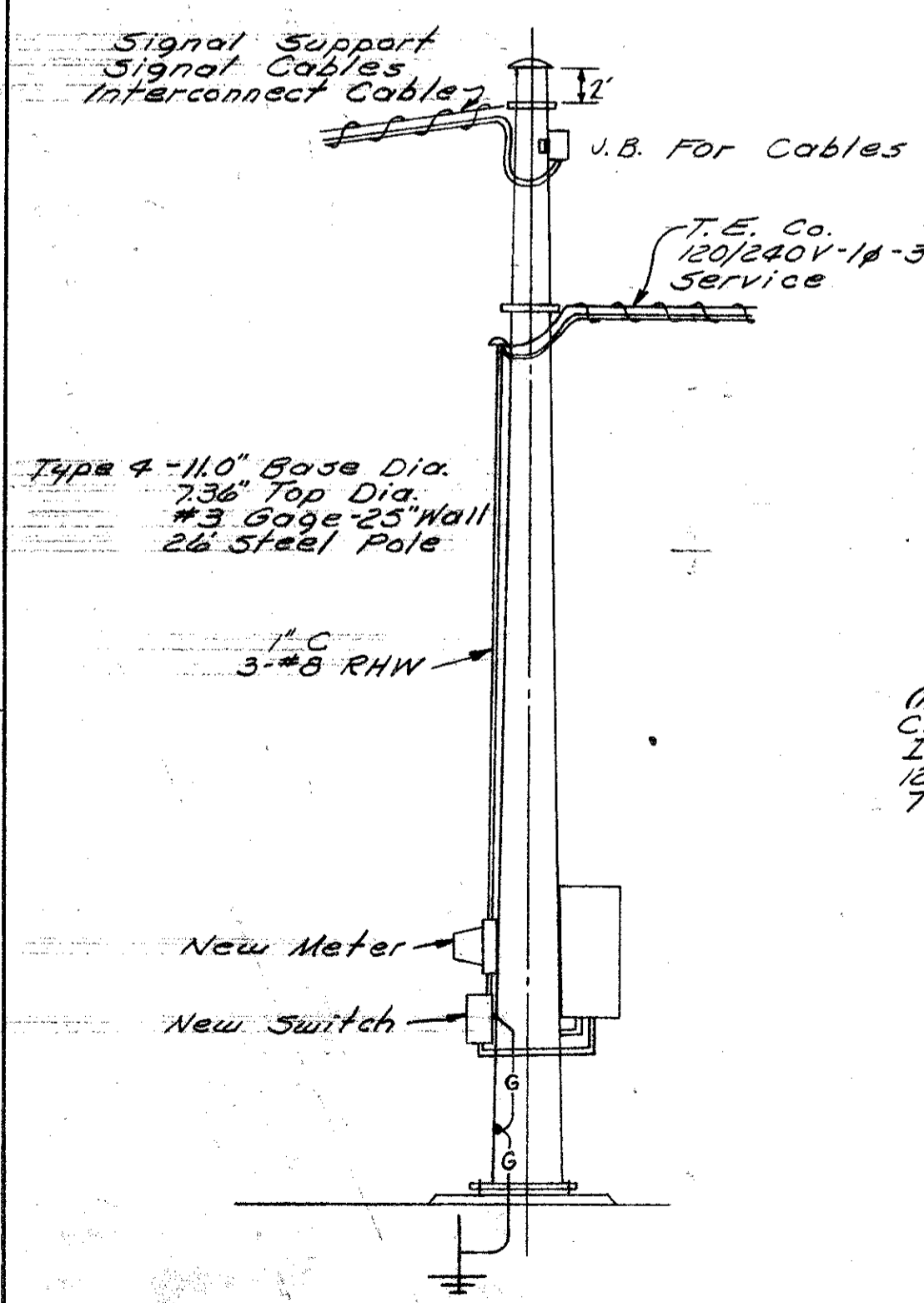
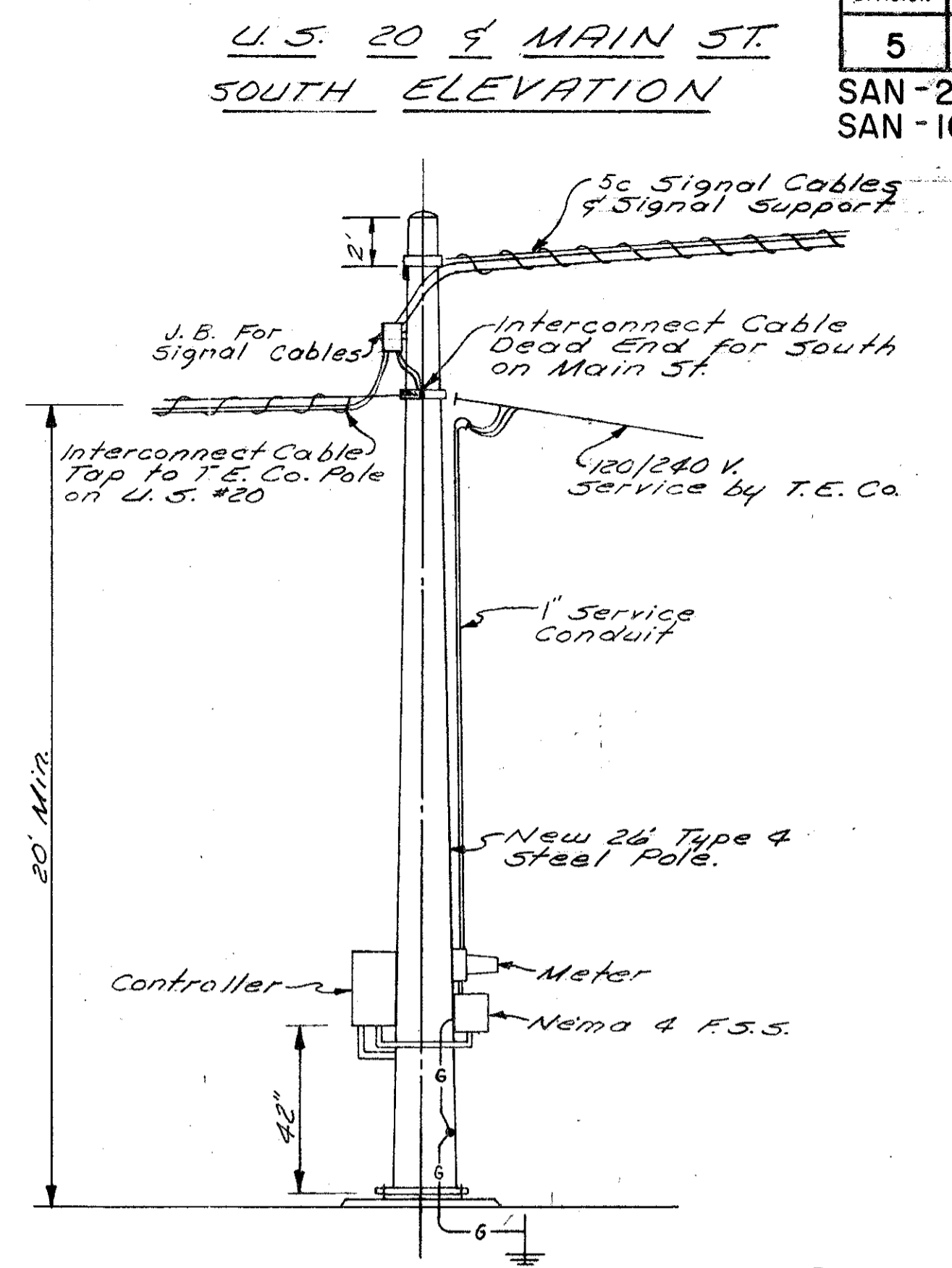
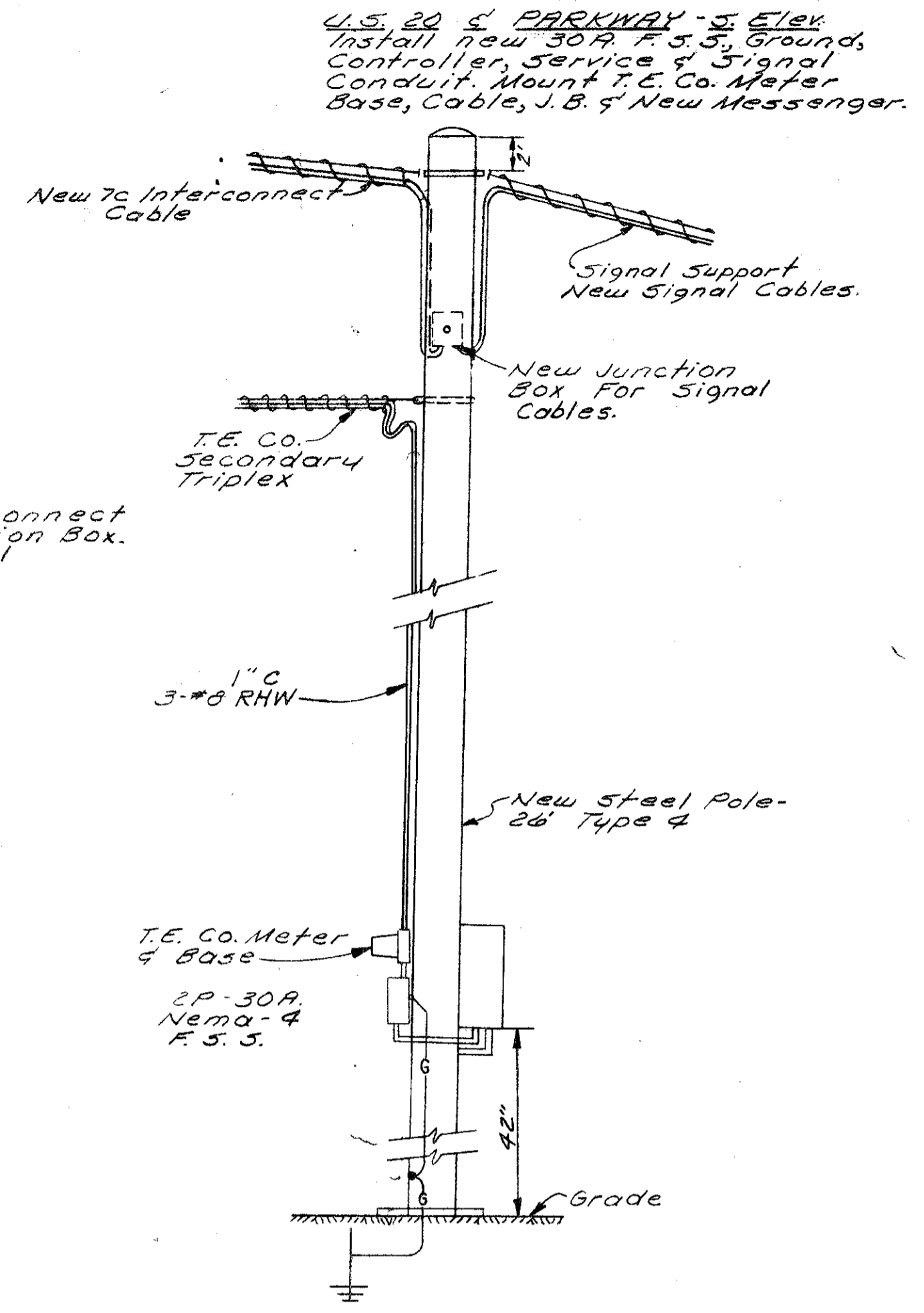
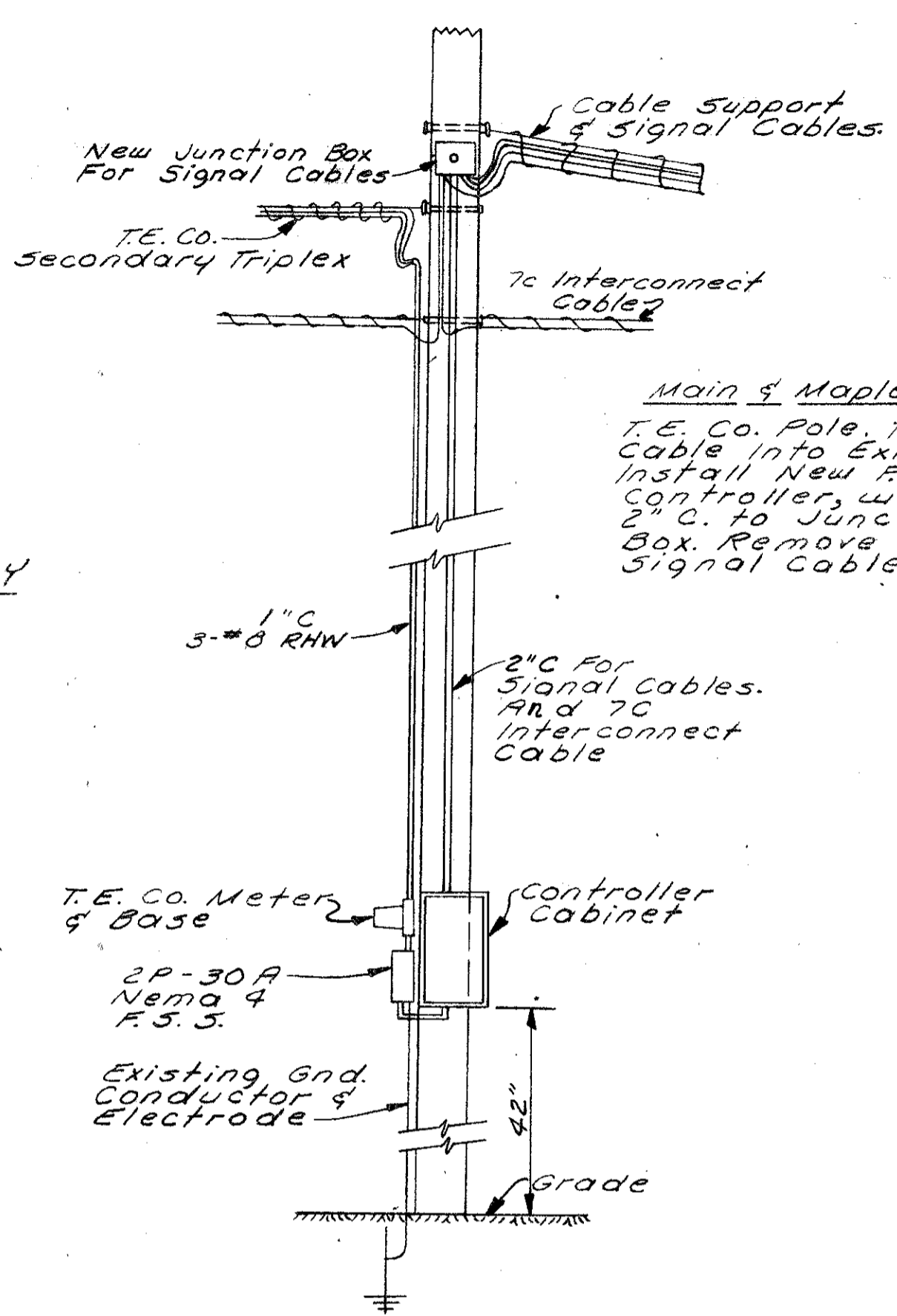
SPAN - FT.	Temperature - °F					HEAVY LOADINGS ¹
	0°	30°	60°	90°	100°	
	SAGS IN FEET					
100	.40	.47	.50	.57	.62	1.00
125	.70	.77	.80	.90	.97	1.56
150	.94	1.07	1.17	1.30	1.40	2.25
175	1.23	1.45	1.60	1.80	1.90	3.05
200	1.60	1.90	2.10	2.30	2.50	4.00
225	2.00	2.40	2.66	2.90	3.16	5.10
250	2.75	2.96	3.20	3.60	3.90	6.25

STRINGING SAGS - MESSENGER ONLY

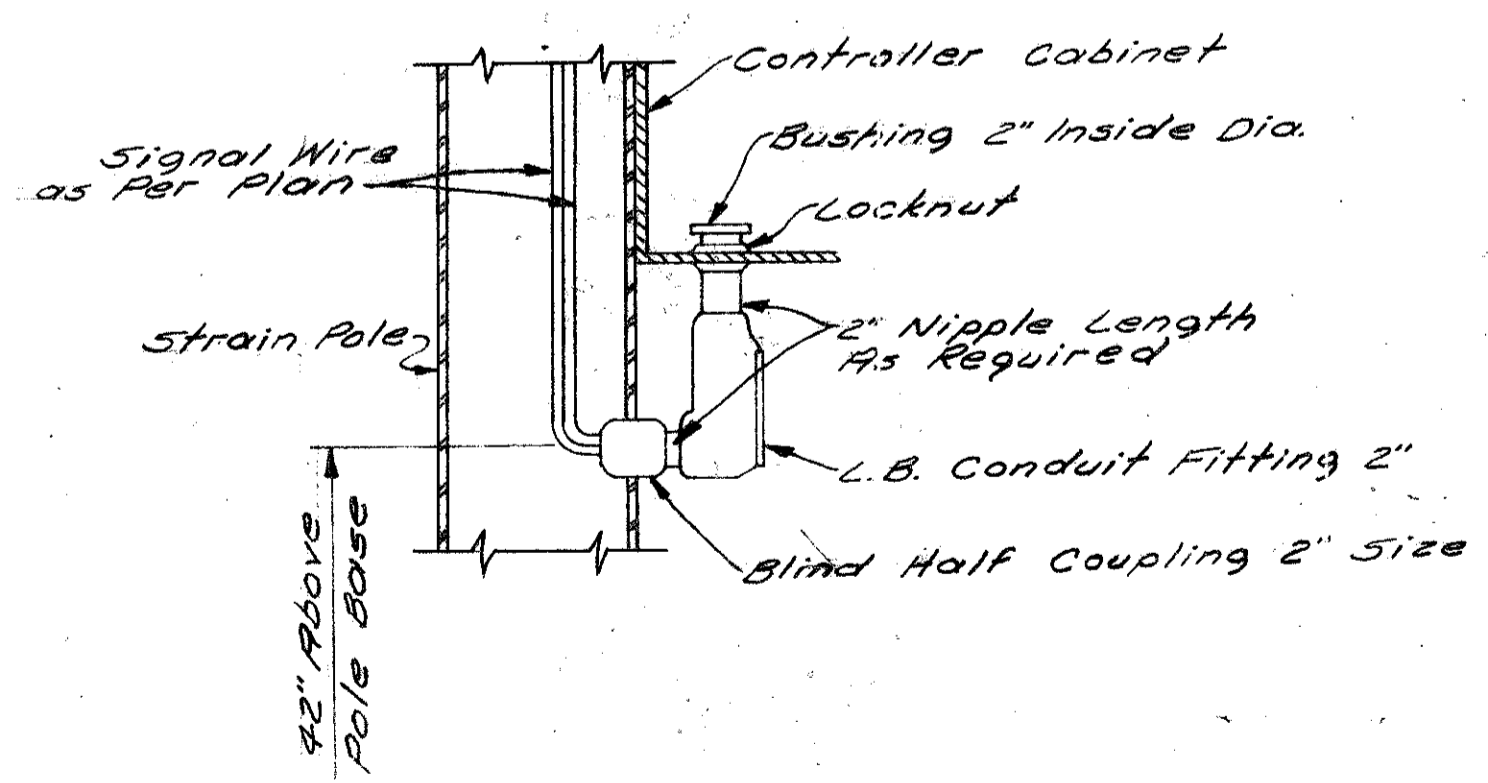
SPAN - FT.	Temperature - °F				
	0°	30°	60°	90°	100°
	SAG IN FEET				
100	.11	.14	.19	.30	.41
125	.18	.21	.29	.47	.65
150	.25	.31	.42	.67	.93
175	.35	.42	.57	.92	1.26
200	.45	.55	.75	1.20	1.65
225	.57	.72	.95	1.52	2.10
250	.72	.86	1.17	1.87	2.60

CONDUCTOR SAG TABLES

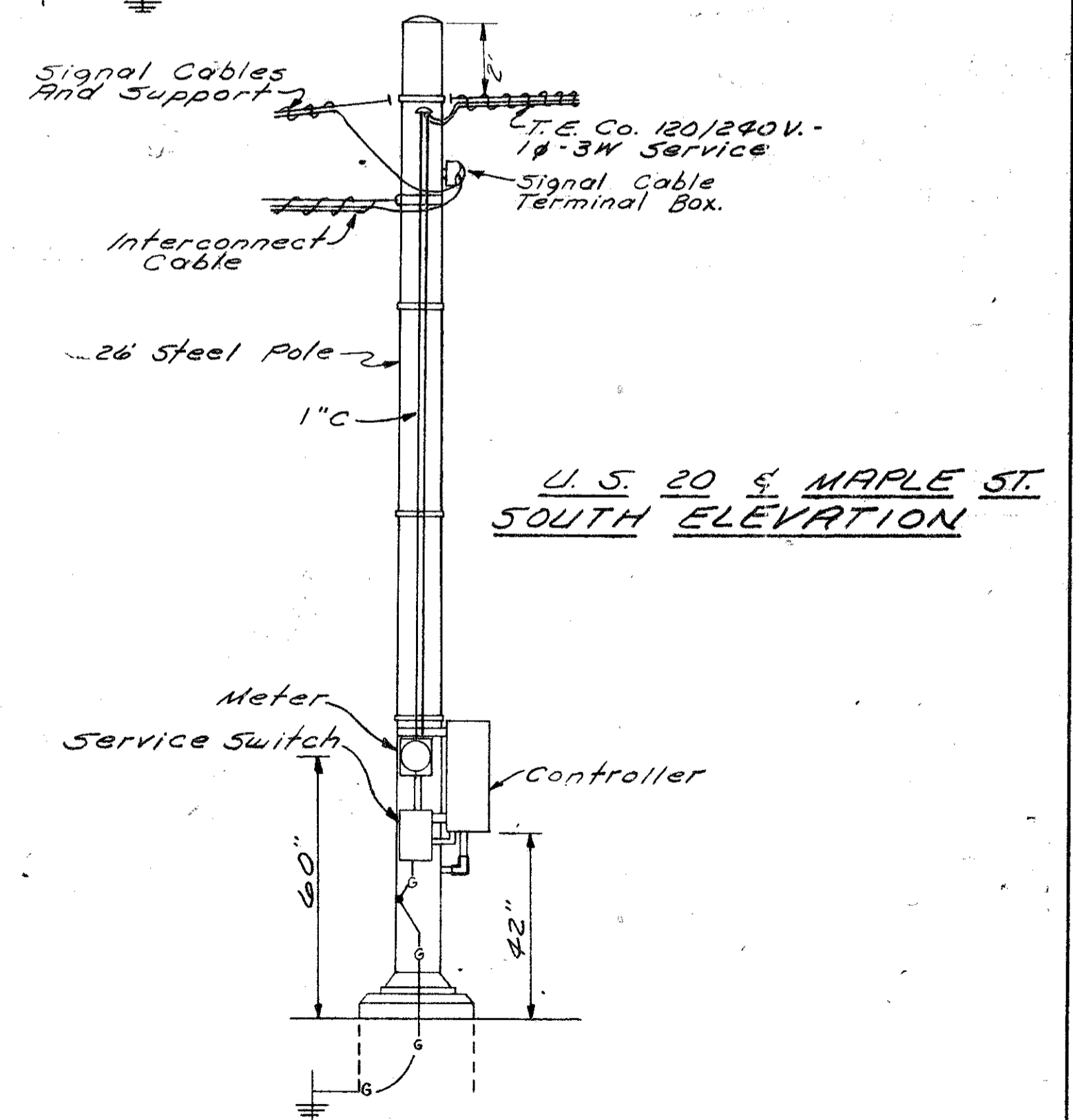
3-#10 Messenger -
4532# Breaking Load 7C-#14
Interconnect Cable



MESSENGER WIRE & SIGNAL CABLE INSTALLATION DETAIL



CONTROLLER COUPLING DETAIL



DISTRICT 2
OHIO
DEPARTMENT OF TRANSPORTATION

FOUNDATIONS - POLE DETAILS
SAG TABLES

APPROVED	DATE			
SCALE	DESIGNED	DRAWN	REVIEWED	DATE
NONE	S.W.K.	K.D.P.		6-1-73

S.R. 20 & WOODLAND AVE.
SOUTH ELEVATION

SAN-20-24.62
SAN-101-3.05

NOTES

- MATERIAL SPECIFICATIONS
- 1 TAPERED TUBEST SAE-T020 STEEL PROCESSED TO MINIMUM YIELD STRESS OF 55,000 PSI
 - 2 CAST ANCHOR BASE & HANDHOLE FRAME - ASTM-A27- GRADE 65-36
 - 3 HANDHOLE COVER PLATE - IIGA STEEL SAE-1015
 - 4 CAST ALUMINUM POLE TOP - ALUMINUM ALLOY 43
 - 5 SPAN WIRE CLAMP - LOW ALLOY HIGH STRENGTH STEEL ASTM-A242 - OR 375, LOAD PRODUCING DISTORTION 12,500 LBS DIRECT TENSION
 - 6 ALL BOLTS & NUTS LESS THAN 5/8" DIA PASSIVATED STAINLESS STEEL AISI-300 SERIES - COMMERCIAL GRADE
 - 7 ALL OTHER NUTS & BOLTS 5/8" DIA & OVER - ASTM-A307 AND GALVANIZED IN ACCORDANCE WITH ASTM-A153
 - 8 ANCHOR BASE & U-BOLTS - HIGH STRENGTH STEEL - MINIMUM YIELD STRESS 55,000 LBS SQ IN - MIN. ULTIMATE 90,000 PSI
 - 9 WELDING ROD - ASTM-A233 - CLASS E60XX OR 70XX
 - 10 GALVANIZING - WHEN SPECIFIED ASTM-A123

TRAFFIC SIGNAL POLE FOUNDATIONS

THE CONTRACTOR SHALL STAKE THE LONGITUDINAL AND LATERAL LOCATION, AND THE ELEVATION OF THE TOP OF EACH FOUNDATION SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER ELEVATION, OFFSET, AND LEVEL OF EACH FOUNDATION. THE FOUNDATION LOCATIONS MAY BE CHANGED AS DIRECTED BY THE ENGINEER, IN CASE OF SLOPE OR SUBSURFACE DIFFICULTIES. EXCAVATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 503. EXCAVATION SHALL BE TO THE DIMENSIONS SHOWN ON THE PLANS, AND SHALL BE PERFORMED BY MEANS OF AN EARTH AUGER OF THE SPECIFIED DIA UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WHERE SUBSURFACE OBSTRUCTIONS ARE ENCOUNTERED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REMOVE THE OBSTRUCTION OR TO REPLACE THE EXCAVATED MATERIAL AND RELOCATE THE FOUNDATION.

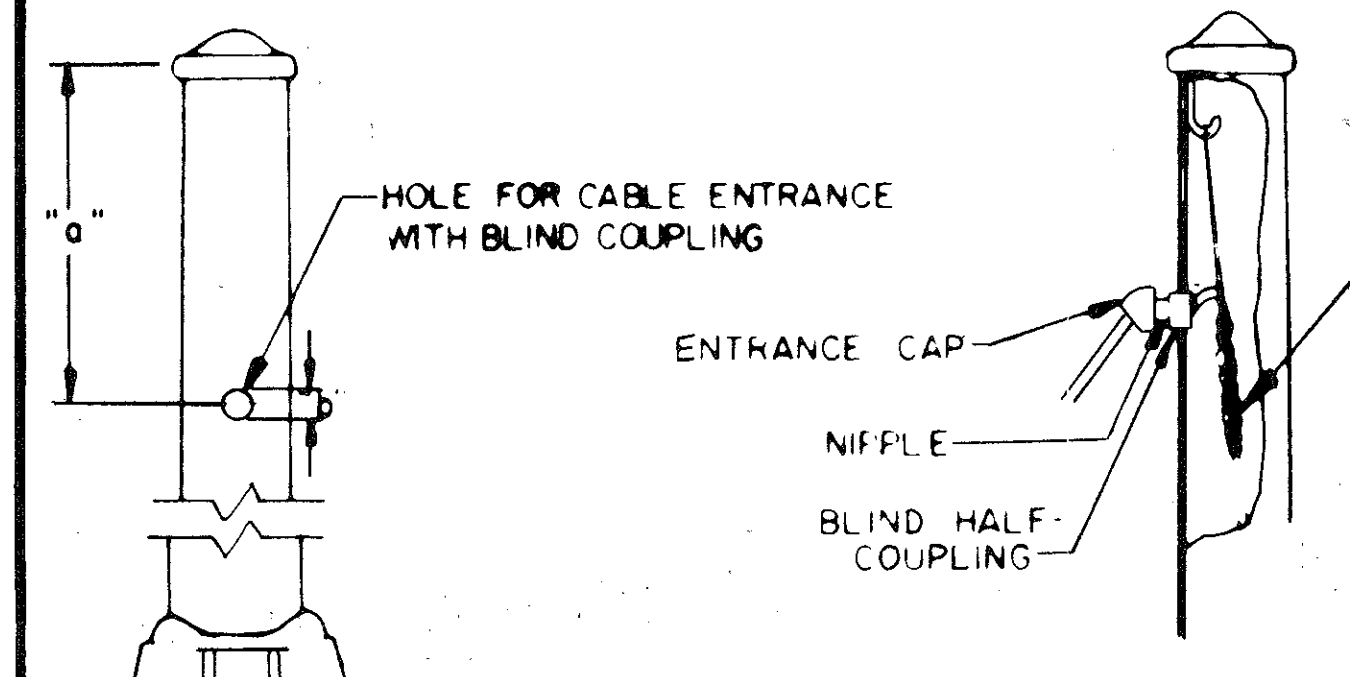
IF CAVING OF THE EXCAVATION OCCURS, THE CONTRACTOR SHALL EXCAVATE THE SPECIFIED DEPTH MAINTAINING THE SIDES AS NEARLY VERTICAL AS POSSIBLE. NO PAYMENT SHALL BE MADE FOR ANY EXCAVATION, CONCRETE, OR REINFORCING STEEL USED IN EXCESS OF THE PLAN QUANTITIES.

CONCRETE, CLASS C, SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 511, AND SHALL BE PLACED AGAINST UNDISTURBED SOIL OR COMPACTED EMBANKMENT STEEL REINFORCEMENT BARS, WHERE REQUIRED, SHALL BE POSITIONED AS SHOWN ON THE PLANS AND PLACED IN ACCORDANCE WITH ITEM 509.

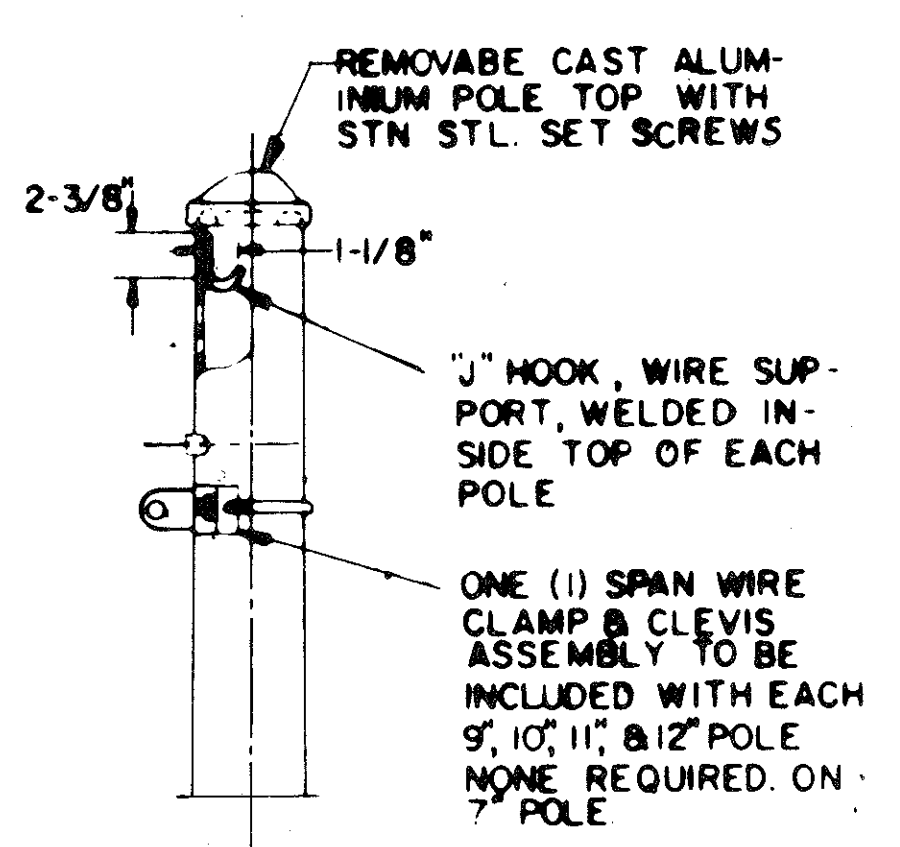
CYLINDRICAL ANCHOR BASE TYPE FOUNDATIONS FOR TRAFFIC SIGNAL POLES SHALL HAVE ANCHOR BOLTS AND CONDUIT ACCURATELY HELD IN POSITION WITH A TEMPLET WHILE CONCRETE IS PLACED. FORMS SHALL BE USED FOR THE UPPER PORTIONS OF ALL FOUNDATIONS AND NO BACKFILLING SHALL BE PERMITTED FROM THE BOTTOM TO SIX INCHES BELOW THE GRADE LEVEL. NO GROUTING OF CONCRETE SHALL BE PERMITTED BETWEEN THE FOUNDATION TOP AND THE POLE BASE.

TRAFFIC SIGNAL POLE

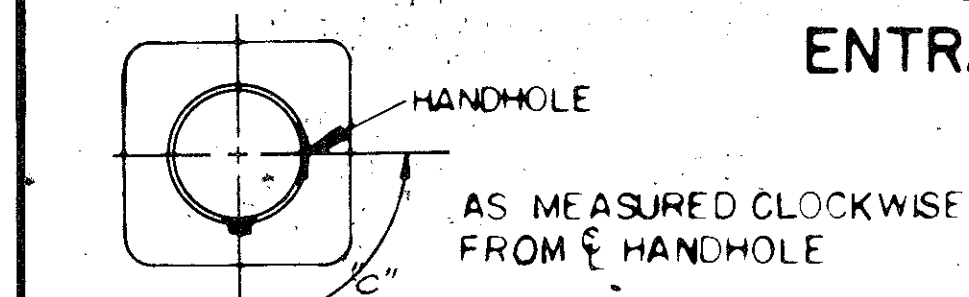
WHERE A WIRE ENTRANCE IS REQUIRED, THE SERVICE ENTRANCE HEAD SHALL BE LOCATED APPROXIMATELY 12" BELOW SPAN WIRE CLAMP.



TYPICAL CABLE STRAIN RELIEF & ENTRANCE CAP DETAILS

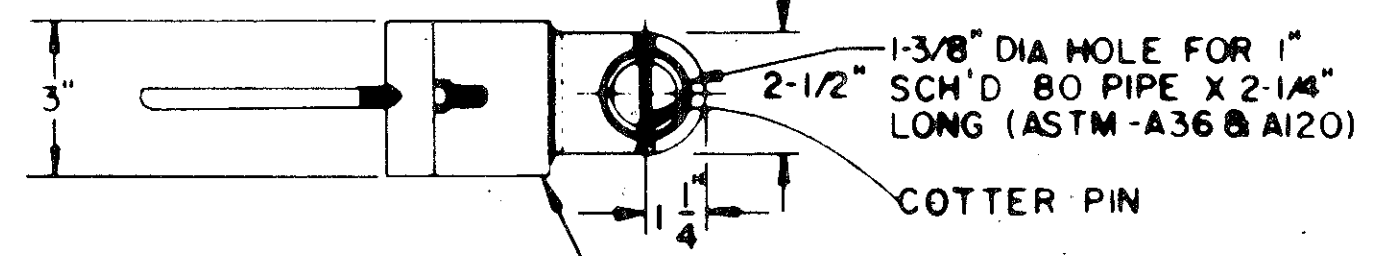
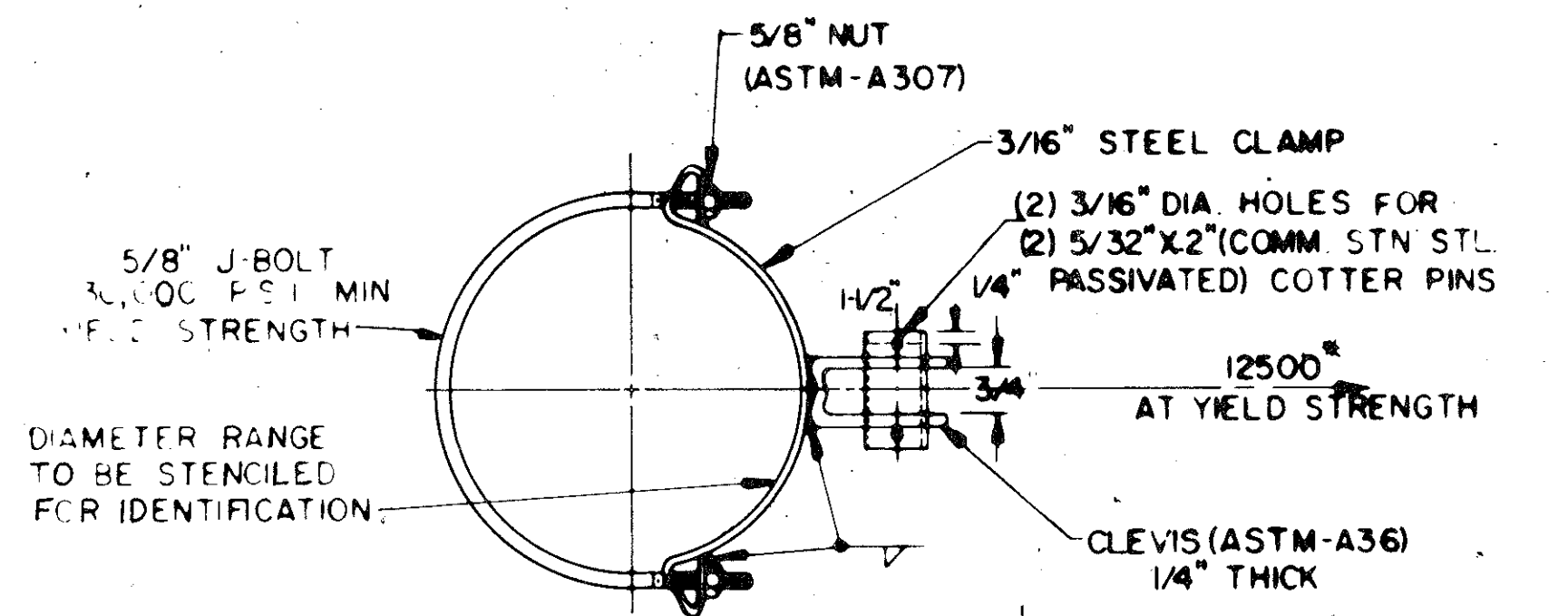


POLE TOP DETAILS



CONFIG	a	b	c
A	30"	2"	90°
B	30"	2"	180°
C	30"	2"	270°
D	48"	2"	90°
E	48"	2"	180°
F	48"	2"	270°
G	NO HOLE REQUIRED		

CABLE ENTRANCE LOCATION DETAIL



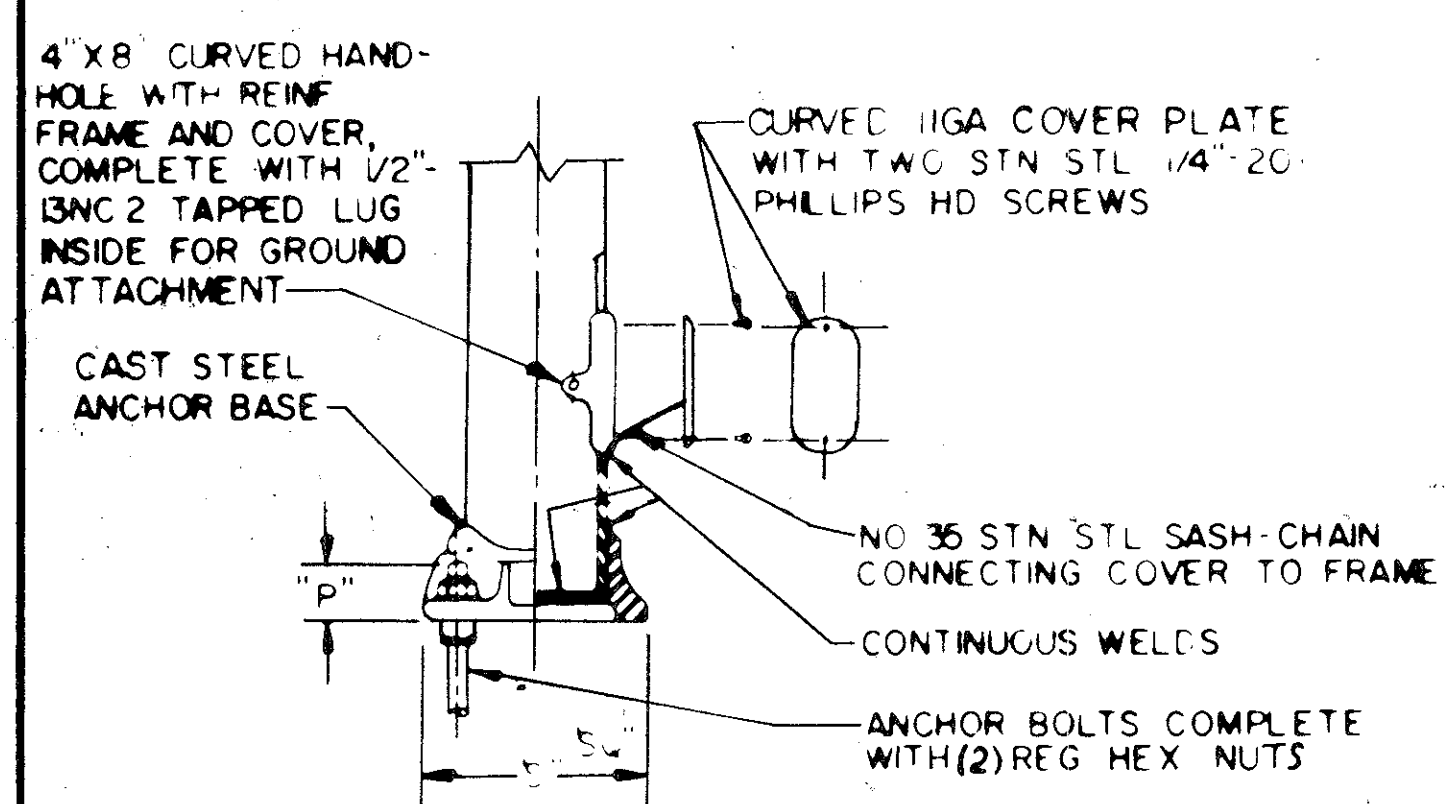
TYPE	CLAMP RANGE	
	MIN	MAX
I	31"	36"
II	36"	44"
III	44"	52"
IV	52"	58"
V	58"	68"
VI	68"	79"
VII	79"	90"
VIII	90"	101"
IX	101"	113"
X	113"	121"
XI	121"	134"
XII	134"	145"
XIII	145"	155"
XIV	155"	165"

SPAN WIRE CLAMP DETAILS

STEEL STRAIN POLE

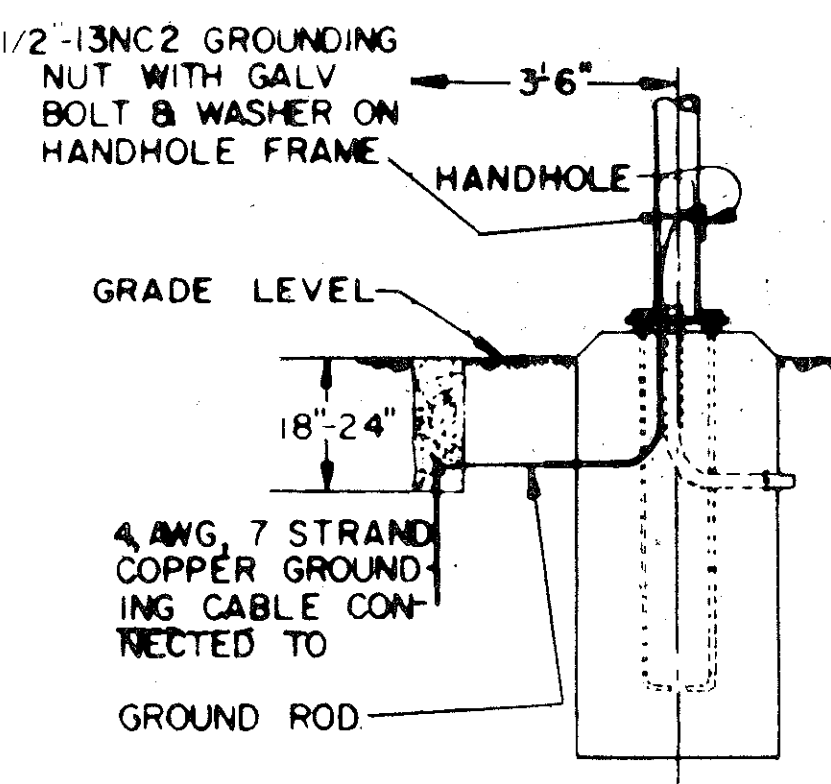
BASE TYPE	DIA.	TOP DIA.	OVERALL LENGTH	WALL THICKNESS	DESIGN DATA FOR TRANSVERSE LOAD AT 18" DOWN FROM TOP		
					LAST DEF. @ YIELD STRESS 18"	"H"	"D"
1	7.0"	4.20"	20.0'	(3 GA.) 250"	59"/100"	2135"	42" 24"
2	9.0"	5.36"	26.0'		64"/100"	2730"	54" 24"
3	10.0"	6.36"			44"/100"	3400"	54" 24"
4	11.0"	7.36"	28.0'		32"/100"	4140"	84" 30"
5	12.0"	8.36"			24"/100"	4960"	84" 36"
6	9.0"	5.08"	30.0'		84"/100"	2520"	54" 24"
7	10.0"	6.08"			54"/100"	3140"	54" 24"
8	11.0"	7.08"	30.0'		41"/100"	3650"	84" 30"
9	12.0"	8.08"			31"/100"	4590"	84" 36"
10	9.0"	4.80"	30.0'		110"/100"	2350"	54" 24"
11	10.0"	5.80"			74"/100"	2920"	54" 24"
12	11.0"	6.80"			53"/100"	3560"	84" 30"
13	12.0"	7.80"			39"/100"	4260"	84" 36"

STRAIN POLE TYPES

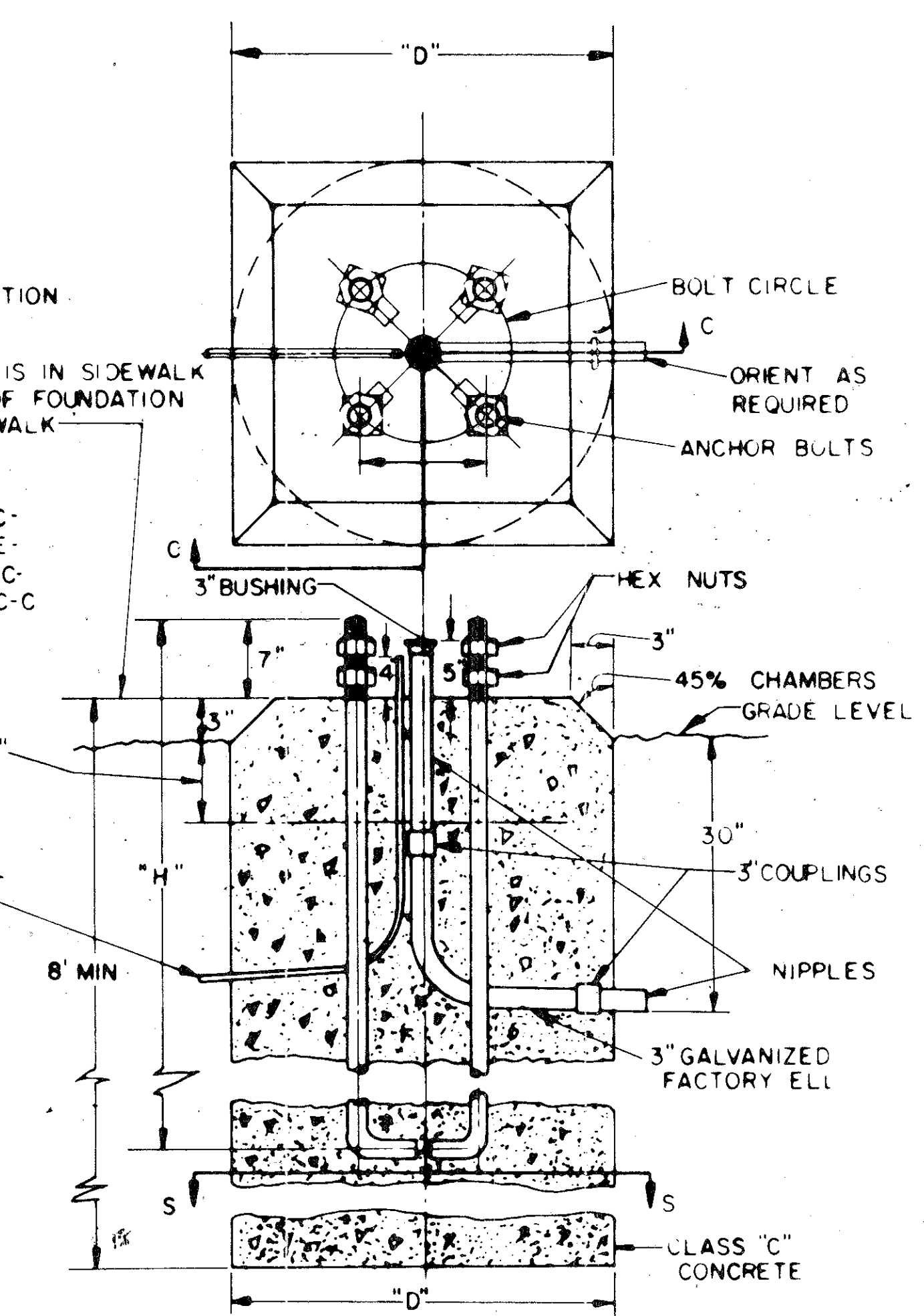
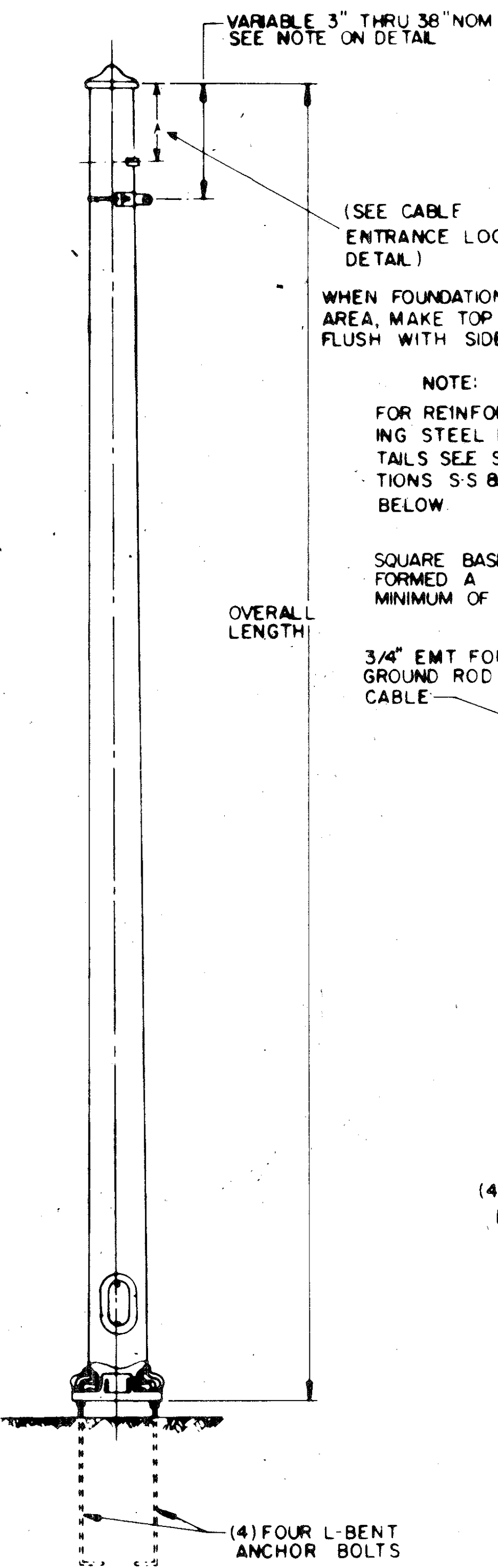


ANCHOR BASE DATA				ANCHOR BOLT DATA			
POLE DIA.	"BC"	"F"	"S"	SIZE	"L"	"T"	"G"
9"	12 1/2"	8 7/8"	12 3/4"	3"	1 1/2" X 48"	42"	8" 10"
10"	13 1/2"	9 9/16"	14 1/8"	3 3/8"	1 1/2" X 60"	54"	9" 11"
11"	15"	10 5/8"	15 5/8"	3 5/8"	1 1/2" X 90"	84"	9" 11"
12"	16"	11 5/16"	17"	4"	1 3/4" X 90"	84"	9" 11"

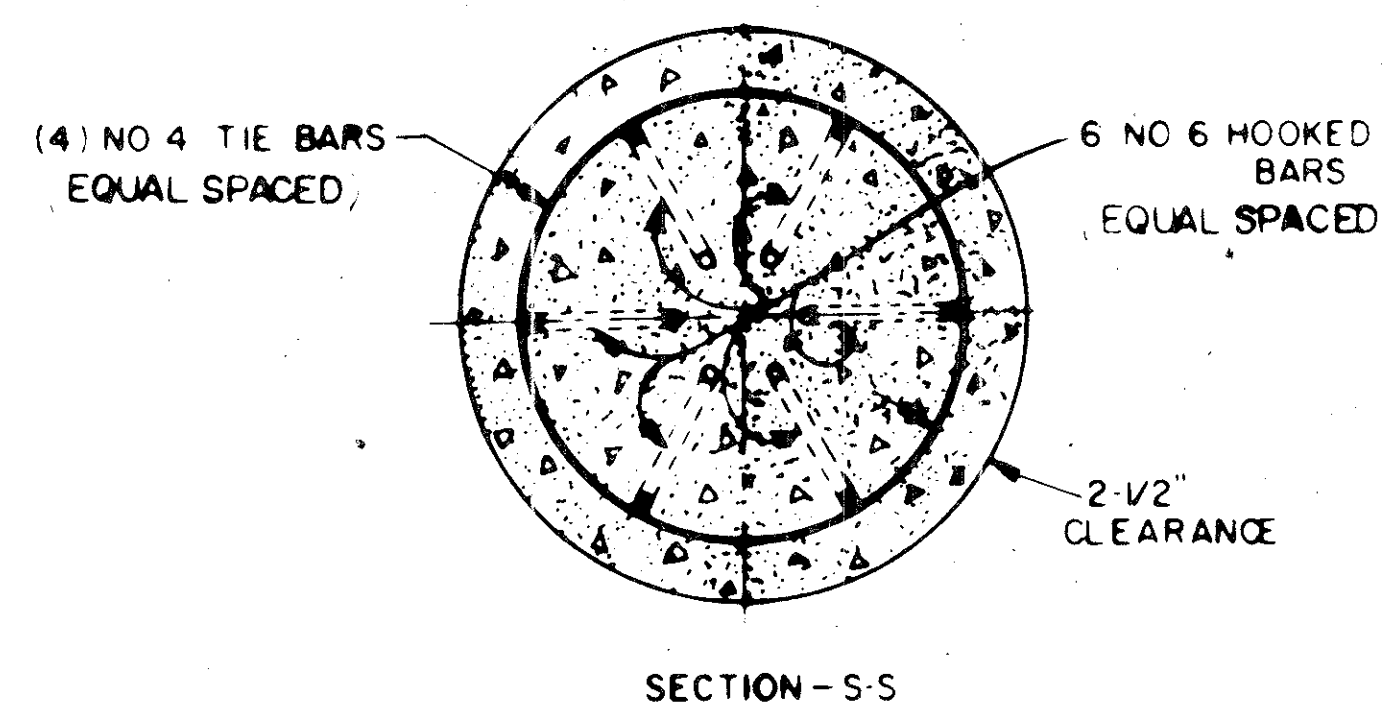
TYPICAL HANDHOLE, ANCHOR BASE & ANCHOR BOLT DETAILS



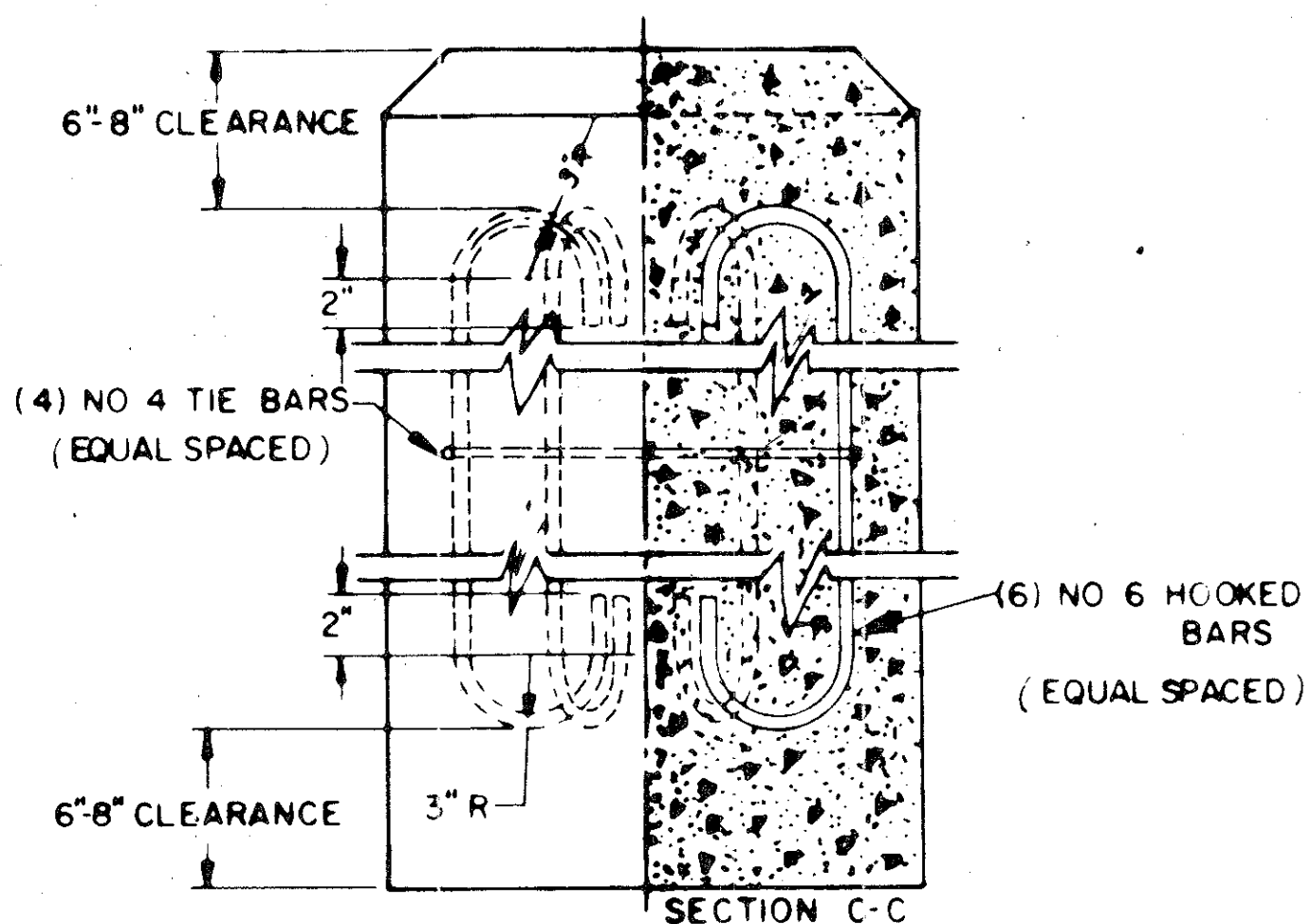
TYPICAL GROUND ROD DETAIL



TYPICAL STRAIN POLE FOUNDATION



SECTION - S-S



TYPICAL REINFORCING STEEL SECTIONS

GROUND ROD

GROUND ROD SHALL BE IN ACCORDANCE WITH TYPICAL GROUND ROD DETAIL AND TESTED IN ACCORDANCE WITH 625.22 CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BUREAU OF TRAFFIC	
OHIO DEPARTMENT OF HIGHWAYS	
STEEL STRAIN POLE & FOUNDATION DETAILS	
APPROVED _____	ENGINEER OF TRAFFIC

