City of Columbus

Department of Public Service
Division of Design and Construction

Commercial (Private) Sample Plan Sheets

OUTSIDE EDGE OF SHEET

INSIDE BORDER

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
IMPROVEMENTS OF NAME OF STREET

FROM A POINT XX' EAST OF XXXXX RD
TO A POINT XX' WEST OF XXXXX RD

PROJECT NAME

INDEX OF SHEETS

(Information and/or sheets in the plan shall be located in order indicated.)

TITLE SHEET ___#
TYPICAL SECTIONS ___#
GENERAL NOTES ___#
ESTIMATE OF QUANTITIES ___#
MAINTENANCE OF TRAFFIC (NOTES AND PLAN DETAILS ___#
STORM WATER POLLUTION PREVENTION PLAN ___#
DEMOLITION PLAN ___#
PLAN & PROFILE (STREETS) ___#
CROSS SECTIONS (NEW STREETS OR WIDENING EXISTING STREET) ___#
DETAILS ___#
STORM SEWER PROFILES ___#
SURVEY COORDINATE DATA - STORM AND WATER ___#
PAVEMENT MARKING AND SIGNING PLAN ___#
TRAFFIC SIGNAL & TRAFFIC SIGNAL INTERCONNECT ___#
LIGHTING ___#
LANDSCAPING ___#

PROJECT DESCRIPTION

GIVE BRIEF DESCRIPTION OF RIGHT-OF-WAY IMPROVEMENT.

OWNER/DEVELOPER

BUSINESS ENTITY NAME

ADDRESS CONTACT
PHONE EMAIL

BENCH MARKS

Note: a copy of the Bench Circuit shall be included with the INITIAL submittal for plan review.

VERTICAL CONTROL

Vertical control is set using (note the County or City certified) source monuments(s), based on the North American Vertical Datum of 1988 (NAVD 88).
(Provide source data detail)

BENCHMARK	DESCRIPTION	NORTHING	EASTING	ELEVATION
Source Benchmark		#####.###	#####.###	#####.###
TBM #		#####.###	#####.###	#####.###
TBM #		#####.###	#####.###	#####.###
TBM #		#####.###	#####.###	#####.###

HORIZONTAL CONTROL

Horizontal Controls are tied to Franklin County Survey Monuments, based on Ohio State Plane Coordinate System, South Zone, NAD 83 (1986 Adjustment).
(Provide source data detail)

CONTROL POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
Source Monument		#####.###	#####.###	#####.###
Source Monument		#####.###	#####.###	#####.###
# 1		#####.###	#####.###	#####.###
# 2		#####.###	#####.###	#####.###
# 3		#####.###	#####.###	#####.###

BASIS OF BEARINGS

THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD83 (1986 ADJUSTMENT). SAID BEARING ORIGINATED FROM...

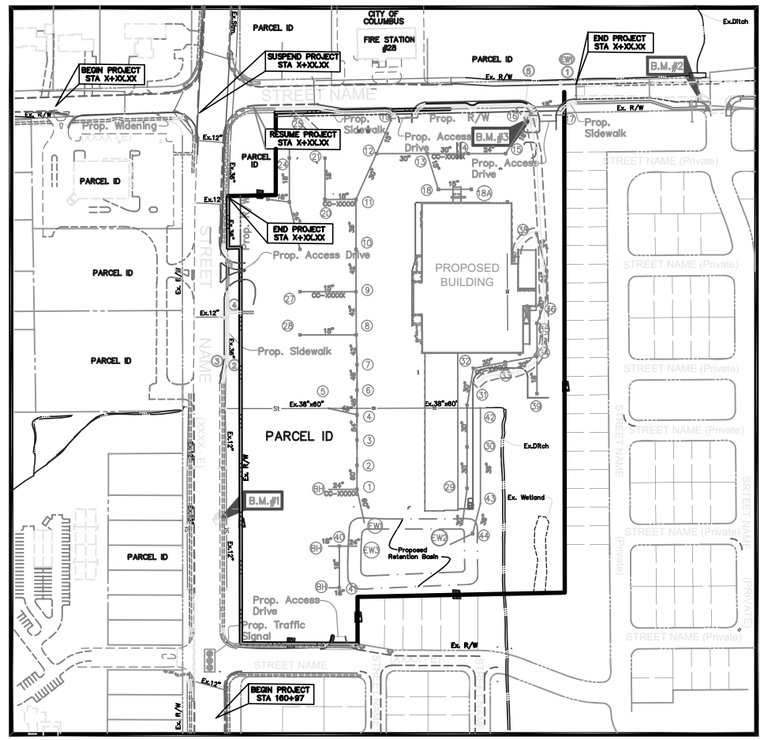
CONSULTING ENGINEER FIRM LOGO

ENGINEER'S SEAL AREA

ENGINEER

FIRM NAME
ADDRESS
CONTACT
PHONE
EMAIL

REGISTERED ENGINEER DATE



INDEX MAP

SCALE:

SITE COMPLIANCE PLAN XX345-XXX
STORM (PRIVATE) CC#XXXXX
WATER SERVICE WSP#XXXX

ZONING

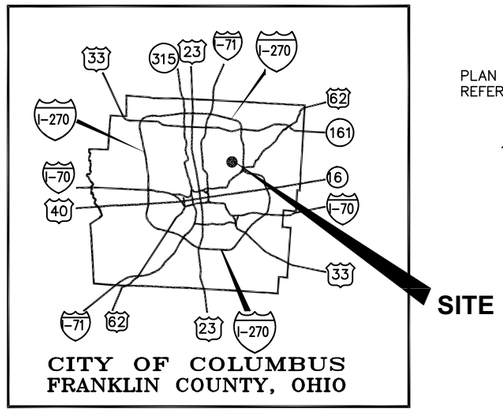
Development Name: NAME
Zoning Case Number Zxx-xxx
Zoning Address ADDRESS
City Council Ordinance Number: xxxxx-xxxxx

ODOT STANDARD CONSTRUCTION DRAWINGS			COLUMBUS STANDARD CONSTRUCTION DRAWINGS					SUPPLEMENTAL SPECIFICATIONS
MT-35.10			1441	2331	L-7001	AA-S102		SS-1551
MT-95.41			2000		L-6309	AA-S107		SS-1630
MT-101.70			2020		L-6310	AA-S133		
			2220		L-6311	AA-S120		
			2222		L-6312	AA-S126		
			2300		L-6316			
			2319		L-6637			

NORTH ARROW LOCATION

PLAN SCALE REFERENCE

HORIZONTAL SCALE IN FEET 0 10 20 30 40



LOCATION MAP

CITY OF COLUMBUS APPROVALS

CITY OF COLUMBUS SIGNATURES ON THIS PLAN SIGNIFY ONLY CONCURRENCE WITH THE GENERAL PURPOSES AND GENERAL LOCATION OF THE PROJECT. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS.

CITY ENGINEER/ADMINISTRATOR DIVISION OF DESIGN AND CONSTRUCTION DATE

ADMINISTRATOR, DIVISION OF POWER AND WATER DATE

ADMINISTRATOR, DIVISION OF SEWERAGE AND DRAINAGE DATE

DIRECTOR, DEPARTMENT OF RECREATION AND PARKS DATE

FIRE PREVENTION BUREAU, DIVISION OF FIRE DATE

REV NO	REVISION DESCRIPTION	SHEET(S)	INITIAL	DATE

Ohio Utilities Protection SERVICE
Call Before You Dig
800-362-2764 or 8-1-1
www.oups.org

Drawer Number to be placed on every plan sheet.
Assigned by City of Columbus Division of Design and Construction
Text height = 0.24"
Style = Arial (Bold)

Either for Page Numbering Style

XXXX - E

1/74

TITLE SHEET

PROJECT NAME

OUTSIDE EDGE OF SHEET

INSIDE BORDER

FILE NAME, SUBMITTAL DATE

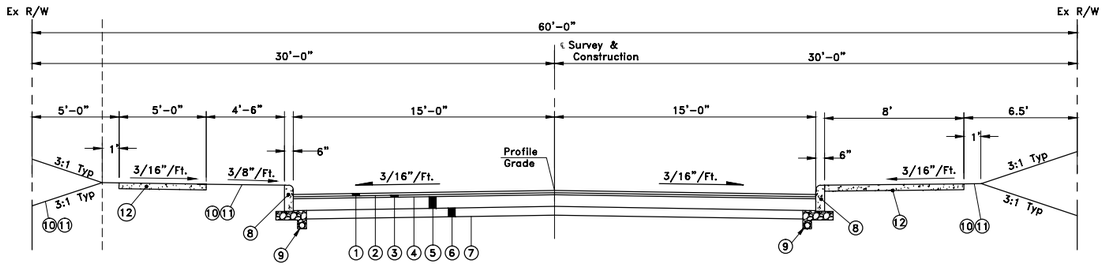
2" 1/2" 1" 1/2"

INSIDE BORDER

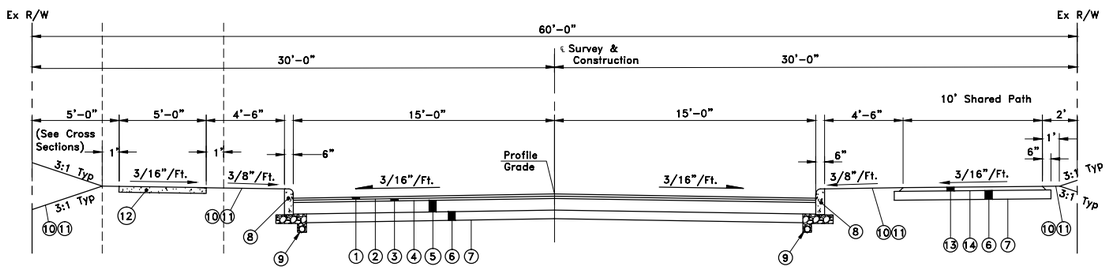
OUTSIDE EDGE OF SHEET

E-PLAN (PRIVATE DEVELOPMENT - COMMERCIAL) TITLE SHEET SIZE: 22" x 34"

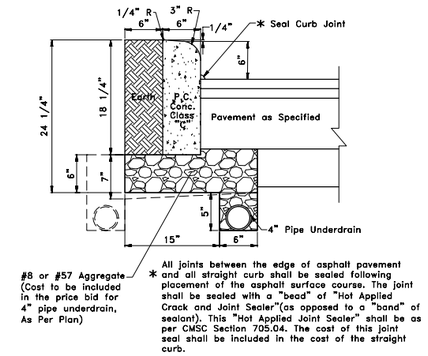
REVISED 12/2/11



TYPICAL SECTION - STREET NAME 1 (ADT = X)
Sta. 133+90.00 to Sta. 135+13.48
Not to Scale



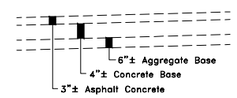
TYPICAL SECTION - STREET NAME 1 (ADT=X)
Sta. 135+13.48 to Sta. 150+01.52
Not to Scale



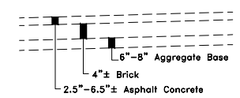
STRAIGHT 18" CONCRETE CURB W/UNDERDRAIN (STD DWG 2000)
Not to Scale

LEGEND

- * (1) Item XXX – 1 1/2" Asphalt Concrete Surface Course
- (2) Item 407 – Tack Coat, Bituminous
- * (3) Item XXX (Item 402) – 1 1/2" Asphalt Concrete Intermediate Course
- (4) Item 407 – Tack Coat Bituminous
- (5) Item 305 – 8" Portland Cement Concrete Base
- (6) Item 304 – 6" Aggregate Base
- (7) Item 204 – Subgrade Compaction
- (8) Item 609 – Straight 18" Concrete Curb
- (9) Item 605 – 4" Pipe Underdrain
- (10) Item 659 – Seeding and Mulching
- (11) Item 653 – Topsoil Furnished & Placed
- (12) Item 608 – 4"/8" Concrete Walk
- (13) Item XXX – 2 1/2" Asphalt Concrete
- (14) Item 408 – Prime Coat, Bituminous
- (15) Item 304 – 8" Aggregate Berm
- (16) Item 408 – Prime Coat, Bituminous
- (17) Item 409 – Seal Coat, Bituminous
- (18) Item 254 – Pavement Planing, (Varies–1–1/2" Typ.)
- (19) Item 617 – Compacted Aggregate, Type A, As Per Plan

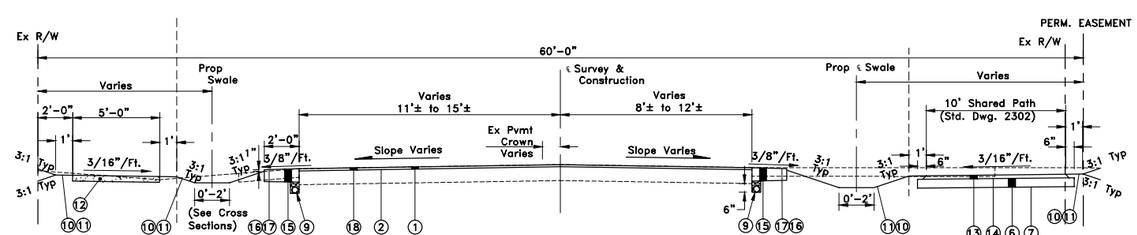


EXISTING PAVEMENT COMPOSITION
STREET NAME 1
Sta. 118+00 to Sta. 125+00
Not to Scale



EXISTING PAVEMENT COMPOSTIION
STREET NAME 1
Sta. 133+00 to Sta. 139+50
Not to Scale

* Note to Consultant: Refer to City of Columbus Pavement Design Policies and Standard Drawings for pavement design.



TYPICAL SECTION - STREET NAME 1 (ADT=X)
Sta. 155+02.29 to Sta. 155+79.84
Not to Scale

CALCULATED
CHECKED

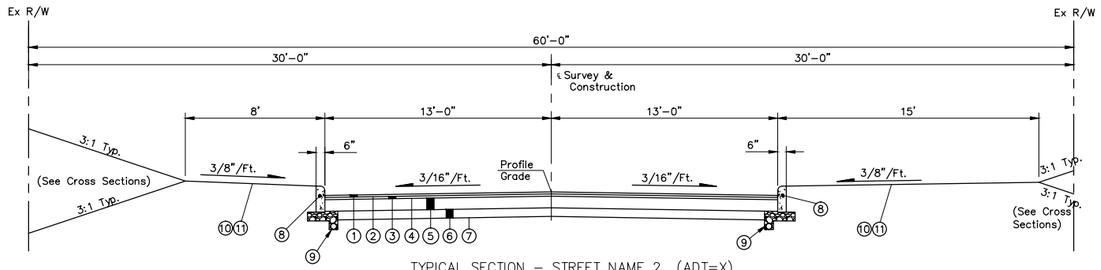
TYPICAL SECTIONS & DETAILS

PROJECT NAME

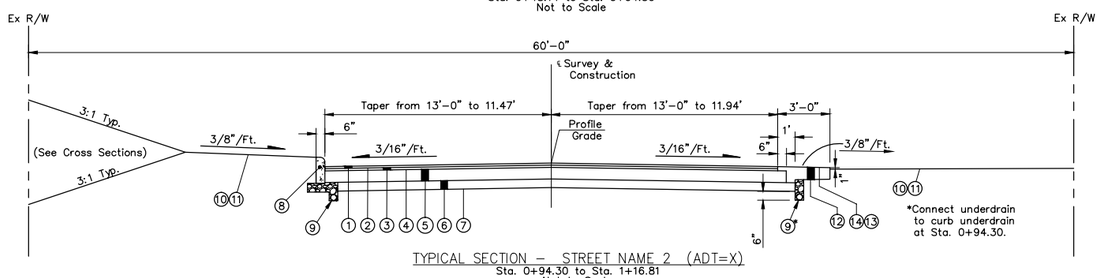
X
XX

XXXX–E

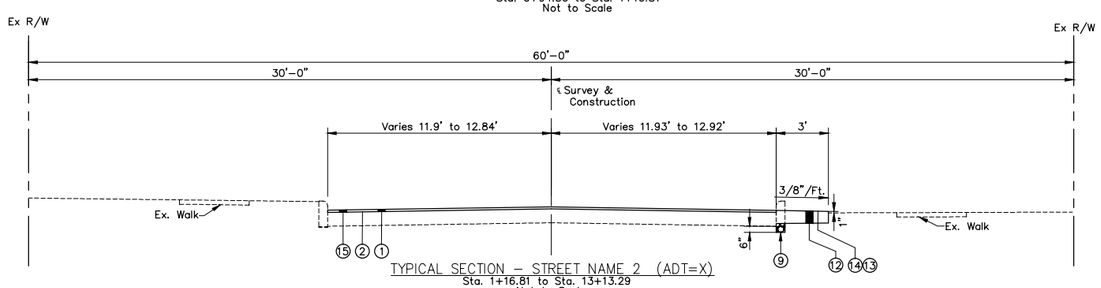
REVISED 12/2/11



TYPICAL SECTION – STREET NAME 2 (ADT=X)
Sta. 0+48.14 to Sta. 0+94.30
Not to Scale



TYPICAL SECTION – STREET NAME 2 (ADT=X)
Sta. 0+94.30 to Sta. 1+16.81
Not to Scale

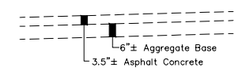


TYPICAL SECTION – STREET NAME 2 (ADT=X)
Sta. 1+16.81 to Sta. 13+13.29
Not to Scale

LEGEND

1. Item XXX – 1 1/2" Asphalt Concrete Surface Course
2. Item 407 – Tack Coat, Bituminous (0.10 Gal./Sq. Yd.)
3. Item XXX – 1 1/2" Asphalt Concrete Intermediate Course
4. Item 407 – Tack Coat, Rubber
5. Item 305 – 8" Portland Cement Concrete Base
6. Item 304 – 6" Aggregate Base
7. Item 204 – Subgrade Compaction
8. Item 609 – Straight 18" Concrete Curb
9. Item 605 – 4" Pipe Underdrain
10. Item 659 – Seeding and Mulching
11. Item 653 – Topsoil Furnished & Placed
12. Item 304 – 8" Aggregate Berm
13. Item 408 – Prime Coat, Bituminous
14. Item 409 – Seal Coat, Bituminous and Cover Aggregate
15. Item 254 – Pavement Planing, (Varies 1 1/2" Typ.)
16. Item 609 – Curb and Gutter
17. Item 608 – 4" Concrete Walk
18. Item 202 – Remove Existing Curb and Gutter

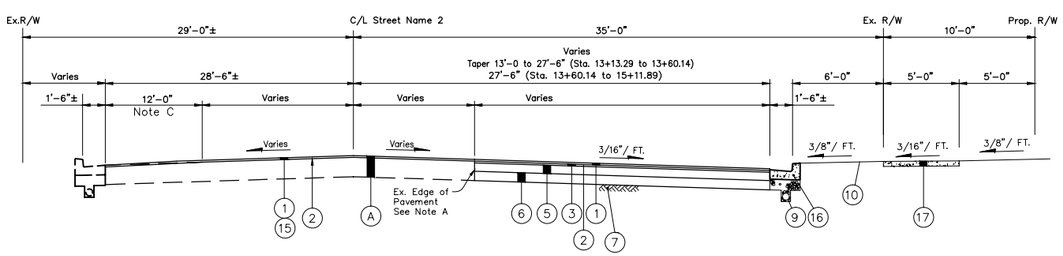
A. Existing Pavement



EXISTING PAVEMENT COMPOSITION
STREET NAME 2
Sta. 0+00 to Sta. 13+25
Not to Scale

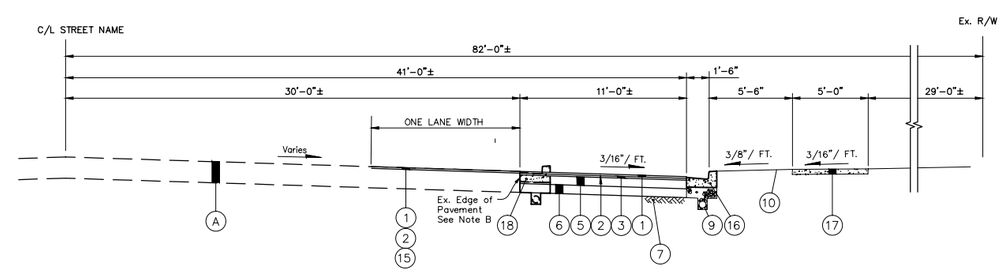
Note: Existing pavement composition is based on limited field information. No additional payment shall be made for removal if thickness or composition of pavement differs from that shown.

*Note to Consultant: Refer to City of Columbus Pavement Design Policies and Standard Drawings for pavement design.



TYPICAL SECTION – STREET NAME 2 (ADT=X)

STA. 13+13.29 to STA. 15+11.89 (RIGHT)



TYPICAL SECTION – STREET NAME 2 (ADT=X)
Not To Scale
STA. 16+01.42 to STA. 16+83.67 (RIGHT)

Note A:
Existing Pavement Edge to be Sawcut as Required to Provide a Smooth Clean Edge as Directed by the Engineer. (Maintain 2'–0" Min. Widening Section)

Note B:
At Sections Requiring Removal of Existing Curb, Sawcut to Maintain a Smooth Clean Edge as Directed by the Engineer. (Maintain 2'–0" Min. Widening Section)

Note C:
Mill Existing Asphalt Pavement along the Existing Curb & Gutter to Provide a Minimum of 1 1/2" Depth for the Final Overlay Section.

CALCULATED
CHECKED

TYPICAL SECTIONS

PROJECT NAME

XXXX–E

X
XX

REVISED 12/2/11

SECTION 1- GENERAL NOTES
REQUIRED

1.0 REFERENCE SPECIFICATIONS-
THE CITY OF COLUMBUS CONSTRUCTION AND MATERIALS SPECIFICATIONS 2002, (CMSC), INCLUDING ALL SUPPLEMENTS THERETO, SHALL GOVERN ALL CONSTRUCTION ITEMS THAT ARE A PART OF THE PLANS UNLESS NOTED OTHERWISE.

ANY MODIFICATION TO THE WORK AS SHOWN ON THESE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL BY THE CITY ENGINEER/ADMINISTRATOR, DIVISION OF DESIGN AND CONSTRUCTION, CITY OF COLUMBUS.

APPROVAL OF THIS PLAN IS CONTINGENT UPON ALL EASEMENTS REQUIRED FOR CONSTRUCTION OF THE IMPROVEMENT WORK, BE SECURED BY THE OWNER.

1.2 INSPECTION-
INSPECTION ON THIS PROJECT SHALL BE PROVIDED BY REPRESENTATIVES OF THE CITY OF COLUMBUS.

PRIOR TO CONSTRUCTION, THE DEVELOPER SHALL ENTER INTO A CONSTRUCTION AGREEMENT, POST SURETY AND DEPOSIT INSPECTION FEES WITH THE CITY OF COLUMBUS PUBLIC SERVICE DEPARTMENT FOR THE TOTAL ESTIMATED COSTS OF CONSTRUCTION IN ACCORDANCE WITH COLUMBUS CITY CODE SECTION 901.01.

THE CONTRACTOR SHALL NOTIFY THE CITY OF COLUMBUS DIVISION OF DESIGN AND CONSTRUCTION (614) 645-0433 AND DIVISION OF SEWERS AND DRAINS (614) 645-7102 AT LEAST 24 HOURS PRIOR TO CONSTRUCTION.

1.3 PERMITS-
THE CONTRACTOR IS TO OBTAIN ALL NECESSARY PERMITS. AN ORIGINAL PERMIT WITH RED SIGNATURES SHALL BE KEPT ONSITE AT ALL TIMES.

WHEN EXCAVATING WITHIN COLUMBUS PUBLIC RIGHT OF WAY LIMITS, THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FROM CITY OF COLUMBUS, DIVISION OF PLANNING AND OPERATIONS - PERMIT OFFICE, BY CALLING (614) 645-3039 BETWEEN THE HOURS OF 8:00AM AND 4:00PM MONDAY - FRIDAY.

1.4 UTILITIES-
THE IDENTITY AND LOCATION OF EXISTING UNDERGROUND UTILITIES LOCATED IN AND AROUND THE CONSTRUCTION AREA HAVE BEEN SHOWN AND LABELED ON THE PLANS BY USING INFORMATION PROVIDED BY THE RESPECTIVE UTILITY OWNERS. THE CITY OF COLUMBUS OR THE CONSULTING ENGINEER WILL NOT ASSUME RESPONSIBILITY FOR THE ACCURACY OF LOCATION OR DEPTH OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THE PLAN.

SUPPORT AND PROTECTION OF ALL UTILITIES AND APPURTENANCES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COSTS FOR THE REPAIR AND RESTORATION OF EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CITY OF COLUMBUS UTILITIES WILL ONLY LOCATE AND MARK MAIN LINE FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL SERVICE LATERAL AND LINES. COSTS ASSOCIATED WITH THE ABOVE WORK AND RESPONSIBILITIES SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS ITEMS.

PRIOR TO EXCAVATION, THE CONTRACTOR SHALL GIVE A 48-HOUR NOTICE TO THE OHIO UTILITIES PROTECTION SERVICE (OUPS) BY CALLING (800) 362-2764. A 48-HOUR NOTICE SHALL BE GIVEN TO THE OWNERS OF UNDERGROUND UTILITIES SHOWN ON THE PLANS WHO ARE NOT MEMBERS OF A REGISTERED UNDERGROUND PROTECTION SERVICE.

LISTED BELOW ARE UTILITY COMPANIES THAT HAVE FACILITIES LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT AND SUBSCRIBE TO OUPS.

**********CONSULTANT:** PLEASE LIST THE NAMES, ADDRESSES, AND PHONE NUMBERS OF THE UTILITY COMPANIES WITH FACILITIES LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT AND SUBSCRIBE TO OUPS.**********

THE FOLLOWING CITY OF COLUMBUS UTILITIES MAY BE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT AND DO NOT SUBSCRIBE TO A REGISTERED UNDERGROUND PROTECTION SERVICE:

CITY OF COLUMBUS
DEPARTMENT OF TECHNOLOGY
90 W. BROAD ST.
COLUMBUS, OH 43215
TELEPHONE- (614) 645-1501
FAX- (614) 645-6627

DIVISION OF PLANNING AND OPERATIONS
TRAFFIC MAINTENANCE
1820 17TH AVE.
COLUMBUS, OH 43219
TELEPHONE- (614) 645-7393
FAX- (614) 645-5967

CITY OF COLUMBUS
COMMUNICATIONS DIVISION
220 GREENLAWN AVE.
COLUMBUS, OH 43223
TELEPHONE- (614) 645-7334 EXT. 125
FAX- (614) 645-6588

1.5 EMERGENCY PROVISIONS-
THE CONTRACTOR SHALL PROVIDE TO THE CITY OF COLUMBUS PROJECT REPRESENTATIVE A LIST OF 24 HOUR EMERGENCY TELEPHONE NUMBERS (IN WRITING) PRIOR TO THE START OF CONSTRUCTION.

1.6 SECURING EXCAVATIONS & TRENCHES FOR NON-WORKING HOURS-
EXCAVATIONS AND TRENCHES OVER 24 INCHES DEEP SHALL BE SECURELY PLATED OR BACKFILLED DURING NON-WORKING HOURS.

1.7 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 OF THESE WORK LIMITS.

1.8 MISCELLANEOUS WORK ITEMS-
THE CONTRACTOR SHALL PERFORM ALL ITEMS OF WORK CALLED FOR ON THE PLANS, FOR WHICH NO SPECIFIC METHOD OF PAYMENT IS PROVIDED. THE COST OF THESE ITEMS SHALL BE INCLUDED IN THE PRICE BID FOR THE PROJECT IMPROVEMENT.

1.9 BENCHMARKS AND SURVEY MONUMENTS-
DO NOT DISTURB ANY FRANKLIN COUNTY CERTIFIED BENCHMARKS (VERTICAL AND/OR HORIZONTAL) LOCATED WITHIN THE WORKING LIMITS OF THE PROJECT. CONTRACTOR SHALL CONTACT THE FRANKLIN COUNTY SURVEY DEPARTMENT (614) 462-3026, PRIOR TO CONSTRUCTION , TO COORDINATE THE PROPER PROCEDURES FOR THE RESETTING, RELOCATION, OR REPLACEMENT OF ANY FRANKLIN COUNTY CERTIFIED BENCHMARK OR SURVEY MONUMENT.

1.10 COMPACTION TESTING AT UTILITY CROSSINGS-
PRIOR TO CONSTRUCTION OF THE PUBLIC ROADWAY, SOIL TESTS SHALL BE MADE ON ALL OPEN CUT UTILITY TRENCHES WHICH CROSS THE PROPOSED PAVEMENTS OR WHICH LIE SUCH THAT THE PROPOSED PAVEMENTS ARE LOCATED WITHIN ANY PART OF THE INFLUENCE LINE OF SAID TRENCH. WHERE SAID RESULTS INDICATE THAT THE TRENCH BACKFILL DOES NOT MEET THE COMPACTION REQUIREMENTS OF CMSC 912, ALL BACKFILL MATERIAL SHALL BE REMOVED, REPLACED, AND RE-TESTED UNTIL COMPLIANCE IS ACHIEVED.

SECTION 2 - GENERAL NOTES
INCLUDE 'IF APPLICABLE'

2.0 PRE-CONSTRUCTION CONFERENCE- (NOT APPLICABLE TO PRIVATE DEVELOPMENT PROJECTS)

2.1 SAW CUTTING IS INCLUDED-
THE COST OF SAW CUTTING FOR THE REMOVAL OF PAVEMENT, CURB, WALKS, ETC. SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 202 WORK ITEMS. SAW CUTTING IS REQUIRED TO PROVIDE SMOOTH STRAIGHT EDGES FOR REMOVAL PURPOSES.

2.2 NEW CURB RADIUS-
INTERSECTION CORNERS OR HORIZONTAL CURVES SHALL MATCH THE EXISTING RADIUS UNLESS NOTED OTHER WISE.

2.3 COTA- SIGNS AND/OR BUS STOPS-
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL CONTACT SENIOR SERVICE PLANNER OF THE CENTRAL OHIO TRANSIT AUTHORITY (COTA) @ PH- (614) 308-4373 OR FAX- (614) 275-5933 TO COORDINATE PROPER BUS MOVEMENTS THROUGH OR AROUND THE JOB SITE DURING THE PROJECT. THIS WILL INCLUDE, BUT NOT BE LIMITED TO, THE TEMPORARY RELOCATION OR REMOVAL OF COTA SIGNS AND/OR BUS STOP LOCATIONS.

2.4 COTA- BUS SHELTERS/PADS-
THE CONTRACTOR SHALL NOTIFY SENIOR SERVICE PLANNER OF COTA @ PH- (614) 308-4373 OR FAX- (614) 275-5933 A MINIMUM OF TWO WEEKS PRIOR TO THE REQUIRED REMOVAL OF A BUS SHELTER. COTA WILL DISASSEMBLE THE SHELTER AND THEN REINSTALL IT ONCE THE NEW CONCRETE SLAB IS IN PLACE. CONTRACTOR SHALL CONSTRUCT THE SLAB AS DIRECTED BY THE PLANS OR OTHER CONTRACT DOCUMENTS. ALL CONCRETE SLAB WORK SHALL BE PAID AS PER ITEM SPECIAL, REMOVE AND REPLACE BUS SHELTER SLAB, WITH THE CONTRACT UNIT PRICE PER EACH. THIS PAY ITEM SHALL INCLUDE ALL EXCAVATION AND REMOVAL WORK, EXPANSION JOINT MATERIAL, ITEM 608 - 6" CONCRETE WALK, AND ANY OTHER WORK AS REQUIRED OR DIRECTED BY THE ENGINEER.

2.5 GAS SERVICE VALVES ADJUSTED TO GRADE-
THE CONTRACTOR SHALL CONTACT COLUMBIA GAS (614) 460-2244 TO COORDINATE THE ADJUSTMENT OF GAS SERVICE VALVES.

2.6 COLUMBIA GAS DAMAGE PREVENTION CENTER-
FOR INFORMATION CONCERNING COLUMBIA GAS LINES OR EQUIPMENT, OR IF DAMAGE OCCURS TO GAS LINES OR EQUIPMENT, THE CONTRACTOR CAN CALL THE COLUMBIA GAS DAMAGE PREVENTION CENTER @ (614) 280-7372 OR TOLL FREE @ (866) 632-6243.

2.7 NEW PIPE CONNECTION TO AN EXISTING SEWER STRUCTURE-
WHERE THE PLANS PROVIDE FOR NEW PIPE TO BE CONNECTED TO AN EXISTING SEWER/STRUCTURE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CREATING AN OPENING AT THE PROPER SIZE, ALIGNMENT, AND ELEVATION FOR THE CONNECTION. THE OPENING SHALL BE MADE LARGE ENOUGH TO RECEIVE AND JOIN THE PROPOSED PIPE PER CMSC ITEM 604.

NO DIRECT PAYMENT SHALL BE MADE. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 901-_ PIPE WITH TYPE _ BEDDING.

2.8 CONCRETE WALKS-
ALL EXISTING CONCRETE SIDEWALKS BEING REPLACED WITH NEW CONCRETE SIDEWALKS SHALL BE REMOVED AT AN EXISTING JOINT AND REPLACED PER STANDARD DRAWING 2300. INSTALL EXPANSION JOINT WHERE NEW CONCRETE ADJOINS EXISTING SIDEWALK.

ALL EXISTING CONCRETE SIDEWALKS NOT SCHEDULED FOR REPLACEMENT BUT BEING CROSSED BY THE INSTALLATION OF TRAFFIC ITEMS, ELECTRICAL CONDUIT, PIPING, ETC. SHALL BE FULLY REMOVED AT AN EXISTING JOINT AND REPLACED PER STANDARD DRAWING 2300 UNLESS NOTED OTHERWISE.

PAYMENT SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 608- CONCRETE WALK.

SECTION 3 -GENERAL NOTES
INCLUDE 'AS PER PLAN' ITEMS AS APPLICABLE

AN 'AS PER PLAN' ITEM IS A STANDARD PAY ITEM WHOSE REQUIREMENTS NEED TO BE MODIFIED FROM THAT WHICH IS DEFINED IN THE CMSC OR SUPPLEMENTAL SPECIFICATIONS. EACH 'AS PER PLAN' ITEM SHALL HAVE A CORRESPONDING PLAN NOTE(S) OR PLAN DETAIL(S) OR COMBINATION. CLEARLY SPECIFY THE DEVIATIONS FROM THE STANDARD ITEM IF AN ITEM IS 'AS PER PLAN.' THE 'AS PER PLAN' TEXT SHALL BE INSERTED AT THE END OF THE ITEM DESCRIPTION.

EXAMPLES:

3.0 WALK REMOVED 'AS PER PLAN'
THE EXISTING SIDEWALK SHALL BE REMOVED IN ACCORDANCE WITH THE PROPOSED SIDEWALK DETAILS. REMOVAL SHALL BE IN CONFORMANCE WITH CMSC SECTION 202. REFERENCE THE PLANS FOR LOCATIONS. THICKNESS' OF EXISTING WALKS VARY FROM 4" TO 8". NO SEPARATE PAYMENT SHALL BE MADE FOR REMOVAL OF THE VARIOUS THICKNESS' OF THE WALKS ENCOUNTERED. ANY SAW CUTTING NECESSARY TO REMOVE SIDEWALKS SHALL BE INCLUDED. PAYMENT SHALL BE PER SQUARE FOOT AND SHALL INCLUDE ALL NECESSARY TOOLS, LABOR, AND MATERIALS.

3.1 PAVEMENT PLANING 'AS PER PLAN'
UNDER THIS ITEM, ASPHALT SHALL BE MILLED FROM DESIGNATED STREETS TO A MINIMUM 1" DEPTH (TYPICAL 1.5"), OR AS INDICATED WITHIN THESE PLANS. PLANING DEPTHS INDICATED MAY BE ADJUSTED IN THE FIELD AT THE ENGINEER'S DISCRETION. INCREASED OR DECREASED PAVEMENT PLANING THICKNESS SHALL BE PERFORMED AT NO ADDITIONAL COST. ALL STREET PLANING SHALL MAINTAIN THE EXISTING CROWN. IF THE CROWN IS REMOVED AS A RESULT OF THE CONTRACTOR'S ERROR OR WITHOUT THE ENGINEER'S PRIOR APPROVAL, NO ADDITIONAL ASPHALT ABOVE THE PLAN QUANTITY FOR EACH SHEET SHALL BE PAID.

THE CONTRACTOR SHALL LOCATE ALL EXISTING LOOP DETECTORS PRIOR TO PLANING. IN THE EVENT A LEAD-IN CABLE IS DAMAGED, THE CONTRACTOR SHALL REPAIR. NO SEPARATE PAYMENT SHALL BE MADE FOR LOOP DETECTOR REPAIRS.

CALCULATED
CHECKED

GENERAL NOTES

PROJECT NAME

XXXX-E

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SECTION - 4 GENERAL NOTES
INCLUDE 'ITEM SPECIAL' AS APPLICABLE

A 'SPECIAL' ITEM IS AN ITEM THAT DOES NOT EXIST IN THE STANDARD DRAWINGS, THE CMSC, OR SUPPLEMENTAL SPECIFICATIONS. IT SHALL BE CREATED BY MEANS OF CORRESPONDING PLAN NOTES, PLAN DETAILS, OR A COMBINATION THEREOF WHICH CLEARLY SPECIFIES ALL ASPECTS OF THE ITEM. IF AN ITEM IS A 'SPECIAL' THE WORD 'SPECIAL' SHALL BE INSERTED IN THE ITEM COLUMN.

EXAMPLES:

4.0 STONE CURB TO BE REMOVED AND SALVAGED
THE CONTRACTOR SHALL REMOVE, SALVAGE, AND DELIVER TO THE CITY OF COLUMBUS THE STONE (SANDSTONE, GRANITE) CURBING FROM THE EXISTING STREETS AS DIRECTED BY THE PLAN. THE CURB SECTIONS SHOWN ON THE PLANS TO BE SALVAGED SHALL BE CAREFULLY REMOVED WITHOUT NECESSARY DAMAGE AND CLEANED FOR RE-USE. STRAIGHT CURB SECTIONS TO BE SALVAGED SHALL BE AT LEAST FOUR FEET IN LENGTH. CURVED SECTIONS OF ANY LENGTH SHALL BE SALVAGED. ALL CLEANED CURB SECTIONS SHALL BE STACKED (NO MORE THAN FOUR HIGH) AND SECURELY FASTENED OR BOXED ONTO PALLETS.

WHEN THE CURBING HAS BEEN SECURED ONTO PALLETS, THE CONTRACTOR SHALL TRANSPORT IT TO THE CITY OF COLUMBUS, DIVISION OF PLANNING AND OPERATIONS - 25TH AVE. STREET MAINTENANCE YARD. THE CONTRACTOR SHALL CALL THE MAINTENANCE YARD MANAGER @ (614) 645-8120 AT LEAST TWO WEEKS IN ADVANCE TO MAKE ARRANGEMENTS FOR DELIVERY. PAYMENT FOR THIS WORK SHALL BE MADE AFTER THE CURBING HAS BEEN DELIVERED TO THE 25TH AVE MAINTENANCE YARD.

THE COST FOR ALL WORK REQUIRED TO REMOVE, CLEAN, SALVAGE, AND DELIVER CURBING SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM SPECIAL - CURB REMOVED FOR STORAGE - L.F.

4.1 ASPHALT CONCRETE PATCHING
THIS ITEM IS TO BE USED AS DIRECTED BY THE ENGINEER, WHEREVER AND WHENEVER IT BECOMES NECESSARY, IN THE OPINION OF THE ENGINEER, TO ALLEVIATE HAZARDOUS SITUATIONS, SUCH AS MANHOLE CASTINGS, VALVE CASTINGS, AND OTHER HAZARDOUS CONDITIONS THAT MAY EXIST. EACH SEPARATE AND DISTINCT AREA WHICH REQUIRES THIS ITEM WILL BE PAID AS
ITEM SPECIAL - ASPHALT CONCRETE PATCHING.

4.2 BRICK PAVERS, COMPLETE
ALL BRICK PAVERS SHALL BE SOLID CONCRETE PAVING UNITS CONFORMING TO ASTM C936.

CONCRETE BASE
ALL WORK FOR THE CONCRETE BASE SHALL CONFORM TO ITEM 608, EXCEPT THE 608 REQUIREMENTS FOR EDGING OUTSIDE EDGES AND CONTROL JOINTS AT FIVE FOOT INTERVALS SHALL BE WAIVED.

NEOPRENE MODIFIED ASPHALT ADHESIVE
FURNISH NEOPRENE - MODIFIED ASPHALT ADHESIVE THAT CONTAINS TWO PERCENT NEOPRENE, GRADE WMI, OXIDIZED ASPHALT WITH A 150 DEGREE SOFTENING POINT (77 PENETRATION), AND 10 PERCENT LONG FIBERIZED INERT MATERIAL AS SUPPLIED BY BELOW (OR APPROVED EQUAL):

SEIDEL COMPANY INC.
11 MARKET SQUARE
NEWBURYPORT, MA 01950
(614) 649-6740

HASTINGS PAVEMENT CO., INC.
410 LAKEVILLE RD
LAKE SUCCESS, NY 11042
(516) 379-3500

BITUMINOUS SETTING BED
FURNISH ASPHALT CEMENT CONFORMING TO ASTM D3381, VISCOSITY GRADE AC-10 OR AC-20. FURNISH FINE AGGREGATE OF NATURAL SAND AND/OR STONE SAND, COMPOSED OF HARD, TOUGH, DURABLE, UNCOATED PARTICLES, FREE FROM CLAY, SILT, ORGANIC MATERIAL OR OTHER DELETERIOUS SUBSTANCES. ENSURE THE SAND IS UNIFORMLY GRADED WITH ALL MATERIAL PASSING THE NO. 4 SIEVE AND MEETING THE REQUIREMENTS OF ASTM C136. COMBINE THE DRIED FINE AGGREGATE WITH HOT ASPHALT CEMENT AND MIX, HEAT TO APPROXIMATELY 300 DEGREES FAHRENHEIT AT AN ASPHALT PLANT. PROVIDE AN APPROXIMATE PORTION OF MATERIALS OF SEVEN PERCENT ASPHALT CEMENT AND 93 PERCENT FINE AGGREGATE. PROVIDE EACH TO APPORTION BY WEIGHT TO 140 POUNDS OF ASPHALT CEMENT AND 1860 POUNDS OF FINE AGGREGATE. PAYMENT FOR ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR
ITEM SPECIAL - BRICK PAVER COMPLETE - S.F.

4.3 STRAIGHT 18" GRANITE CURB
ITEM 609 - STRAIGHT 18" GRANITE CURB, (STREET NAME 1) REFERENCE THE TYPICAL SECTION DETAILS AND THE LANDSCAPING DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON MATERIALS AND CONSTRUCTION OF STRAIGHT 18" GRANITE CURB. GRANITE CURBING SHALL BE GRAND MAHOGANY AND SHALL MATCH THE EXISTING GRANITE CURBING. THE CURB SHALL BE SAWN FACED, WITH A SAWN AND FLAMED TOP. ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR CONSTRUCTION SHALL BE INCLUDED IN THE UNIT COSTS TO THE ITEM SPECIAL - STRAIGHT 18" GRANITE CURB, (STREET NAME 1).

ITEM 609 - STRAIGHT 18" GRANITE CURB, (STREET NAME 2) REFERENCE THE TYPICAL SECTION DETAILS AND THE LANDSCAPING DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON MATERIALS AND CONSTRUCTION OF STRAIGHT 18" GRANITE CURB. GRANITE CURBING SHALL BE GRAND MAHOGANY AND SHALL MATCH THE EXISTING GRANITE CURBING. THE CURB SHALL BE SAWN FACED, WITH A SAWN AND FLAMED TOP. ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR CONSTRUCTION SHALL BE INCLUDED IN THE UNIT COSTS TO THE ITEM SPECIAL - STRAIGHT 18" GRANITE CURB, (STREET NAME 2).

SECTION 5 - GENERAL NOTES
INCLUDE PROJECT SPECIFIC NOTES AS APPLICABLE

A PROJECT SPECIFIC NOTE IS A 'CUSTOM' NOTE THAT IS UNIQUE TO EACH INDIVIDUAL PLAN. IT IS TYPICALLY USED TO CONVEY INFORMATION AND/OR DETAIL CONCERNING WORK ASSOCIATED WITH THE PROJECT.

EXAMPLE:

5.0 SOILS INVESTIGATION
GEOTECHNICAL REPORTS HAVE BEEN PREPARED FOR THIS PROJECT. COPIES OF THESE REPORTS MAY BE OBTAINED FROM THE DIVISION OF DESIGN AND CONSTRUCTION.

SECTION 6 - GENERAL NOTES
INCLUDE DEPARTMENT / AGENCY NOTES AS APPLICABLE

EXAMPLE:

6.0 DIVISION OF POWER AND WATER (DOPW) (P)
DIVISION OF POWER AND WATER (P) MAY HAVE UNDERGROUND STREET LIGHTING IN THE PROJECT AREA. THE CONTRACTOR IS REQUIRED TO CONTACT OUPS PRIOR TO CONDUCTING ACTIVITY WITHIN THE CONSTRUCTION AREA. THE DOPW (P) DISPATCH OFFICE NUMBER IS (614) 645-7627.

LEGEND

EXISTING CONDITIONS

CENTERLINE SURVEY
CENTERLINE EXIST. DRIVE
EDGE OF PAVEMENT
CURB
BERM
EDGE OF ASPHALT DRIVE/PARKING LOT
EDGE OF GRAVEL DRIVE/PARKING LOT
CONC. WALK
BRICK WALK/DRIVE
FENCE
GUARDRAIL
EX. R/W — RIGHT-OF-WAY
PROPERTY LINE
LOT LINE (SAME OWNER BOTH SIDES)
RAILROAD RIGHT-OF-WAY
STORM (18" AND UNDER)
SANITARY
WATER
GAS
TELEPHONE (UNDERGROUND)
ELECTRIC
CATV
BUILDING
CANOPY

CONC. WALL
STONE WALL
ROCK
TREELINE
TREES
BUSHES
HEDGE/SHRUB
STUMP
CONC. PAD
WOOD POST
POST/BOLLARD
MB — MAILBOX
FLAGPOLE
PARKING BLOCK
SIGNS
BIRDBATH
HANDRAIL
STEPS

SURVEY SYMBOLS

IRON PIN FND./METAL BAR FND.
PK NAIL FND.
M — RIGHT-OF-WAY MON. FND.
PK NAIL SET/TRAVERSE DRILL HOLE
MAG NAIL SET
IRON ROD FND./RR SPIKE FND.
BENCHMARK
B-1 — SOIL BORING
IRON PIN SET
RR SPIKE SET

ABBREVIATIONS

1"WS ..... 1" WATER SERVICE
1"SS ..... 1" SANITARY SERVICE
1"GS ..... 1" GAS SERVICE
1"RD ..... 1" ROOF DRAIN
OHE ..... OVERHEAD ELECTRIC
OHT ..... OVERHEAD TELEPHONE
UGT ..... UNDERGROUND TELEPHONE
CATV ..... CABLE TELEVISION

(PA) ..... PREVIOUSLY ABANDONED
(ENC) ..... ENCROACHMENT TO REMAIN UNLESS OTHERWISE DIRECTED BY THE ENGINEER-IN-CHARGE
(ENC-TBR) ..... ENCROACHMENT TO BE REMOVED BY THIS PROJECT
(DND) ..... DO NOT DISTURB
(TBA) ..... TO BE ABANDONED (SEE NOTE BELOW)
(TBR) ..... TO BE REMOVED
(TBRL) ..... TO BE RELOCATED BY THIS PROJECT
(TBRO) ..... TO BE REMOVED (BY OTHERS)

(TBRLO) ..... TO BE RELOCATED BY OTHERS
(REM) ..... REMOVE
(REC) ..... RECONSTRUCT
(REB) ..... REBUILD
(R&R) ..... REMOVE & REPLACE
(APP) ..... AS PER PLAN
(ATG) ..... ADJUST TO GRADE
(ATGO) ..... ADJUST TO GRADE BY OTHERS
(RTG) ..... RECONSTRUCT TO GRADE
(RTGO) ..... RECONSTRUCT TO GRADE BY OTHERS

NOTE: STORM SEWERS INDICATED (TBA) SHALL BE FILLED IN PLACE UNLESS OTHERWISE SHOWN.

PROPOSED LAYOUT

CENTERLINE CONSTRUCTION
CENTERLINE PROP. DRIVE
EDGE OF PAVEMENT
BACK OF CURB
FACE OF CURB
CONC. WALK/ASPH. BIKEPATH
RIGHT-OF-WAY
WORK LIMITS
PROP. 30" STM — STORM (24" AND LARGER)
PROP. 12" STM — STORM (18" AND SMALLER)
WATER

PROPOSED FIRE HYDRANT
WATER VALVE
AIR RELEASE VALVE (WATER)
2 — STM. MH
2 — SAN. MH
2 — CURB INLET
2 — CATCH BASIN
2 — STM. MH TYPE A W/CURB INLET TOP
2 — STM. MH TYPE B W/CURB INLET TOP

DETECTABLE WARNING

EXISTING UTILITY SYMBOLS

STM. MH
STM. MH (OPEN GRATE)
CURB & GUTTER INLET
CURB INLET
SAN. MH
WATER VALVE
TB — TEL. BOOTH
E — ELEC. PULLBOX
GROUND LIGHT
GUY ANCHOR
FIRE HYDRANT
GAS VALVE
CATCH BASIN
G — GAS METER
TEL. MH
T — TEL. PEDESTAL

TELEPHONE POLE
TELEPHONE LIGHT POLE
TELEPHONE ELECTRIC LIGHT POLE
TELEPHONE ELECTRIC POLE
ELECTRIC POLE
LIGHT POLE

XXXX-E

CALCULATED
CHECKED

GENERAL NOTES

PROJECT NAME

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REVISED 12/2/11

ESTIMATE OF QUANTITIES

NOTE: These quantities have been provided as an estimate to the scope of work. The Contractor shall be solely responsible to evaluate the complete project as detailed in the notes, plans, and specifications and procedure necessary for the completion of the plan improvements and submit the total project cost accordingly.

ITEM	QUANTITY	UNIT	DESCRIPTION
			STREET
201	Lump	Sum	Clearing and Grubbing
202	464	Lin. Ft.	Curb & Gutter Removed & Disposed of
202	253	Lin. Ft.	Concrete Curb Removed & Disposed of
202	354	Sq. Ft.	Walk Removed & Disposed of
202	180	Sq. Yd.	Asphalt Pavement Removed & Disposed of
202	65	Sq. Yd.	Concrete Pavement Removed & Disposed of
203	Lump	Sum	Excavation Including Embankment
203	1065	Sq. Yd.	Subgrade Compaction
204	5	Hour	Proof Rolling (Contingency)
254	1195	Sq. Yd.	Pavement Planing
301	379	Tons	Bituminous Aggregate Base
304	230	Cu. Yd.	Crushed Aggregate Base
305	236	Sq. Yd.	9" Portland Cement Concrete Base – Arterial
305	1090	Sq. Yd.	7" Portland Cement Concrete Base – Arterial
402	120	Tons	Asphalt Concrete
404	455	Tons	Asphalt Concrete
407	140	Gal.	Bituminous Tack Coat
413	706	Lin. Ft	Crack Seal, Hot Applied
452	27	Sq. Yd.	8" Portland Cement Concrete Pavement
601	5.5	Sq. Yd.	6" Concrete Paved Gutter
604	1	Each	Endwall – Precast (AA–S169) (1–12")
604	2	Each	Curb & Gutter Inlet, to be Reconstructed w/ Solid MH Cover
604	1	Each	Manhole, Type B, Class E
604	1	Each	Manhole, to be Reconstructed as Curb Inlet Manhole (AA–S121)
604	3	Each	Curb & Gutter Inlet (AA–S125)
604	1	Each	24" Diameter Catch Basin (AA–S131)
604	1	Each	Manhole, Adjusted to Grade (Storm)
605	2535	Lin. Ft	4" Pipe Underdrain
608	6500	Sq. Ft.	Concrete Sidewalk
608	10	Each	Curb Ramps
609	1730	Lin. Ft.	Special 8" Concrete Curb & Gutter
609	90	Lin. Ft.	Standard Concrete Curb & Gutter
609	485	Lin. Ft.	Straight 18" Concrete Curb
609	1597	Lin. Ft.	Saw Cutting Existing Curb
612	9	Sq. Yd.	6" Concrete Traffic Island
614	Lump	Sum	Maintenance of Traffic
624	Lump	Sum	Mobilization
659	2500	Sq. Yd.	Permanent Seeding and Mulching within R/W
660	155	Sq. Yd.	Sodding
703	1	Cu. Yd.	No. 57 Aggregate – Compacted
			No. 1 & No. 2 Aggregate

ITEM	QUANTITY	UNIT	DESCRIPTION
			STREET (con't)
807	4	Each	Valve Boxes, Adjusted to Grade
809	1	Each	Fire Hydrant, to be Relocated
810	1	Each	Fire Hydrant Extension
901	30	Lin. Ft.	12" Storm Pipe, R.C.P. 706.02 Class IV, with Type 1 Bedding
901	5	Lin. Ft.	12" Storm Pipe with Type 1 Bedding
1551	10	Each	Detectable Warning
			PAVEMENT MARKING & SIGNING
621	97	Each	Raised Pavement Markers
630	332	Lin. Ft.	Ground Mounted Support, No. 3 Post
630	139.5	Sq. Ft.	Signs, Flat Sheet, Type G
630	3	Each	Removal of Existing Signs
644	Lump	Sum	Removal of Existing Pavement Markings
644	2766	Lin. Ft.	5" Centerline – Solid (Double Yellow)
644	240	Lin. Ft.	20" Stop Line (White)
644	331	Lin. Ft.	20" Transverse Line (Yellow)
644	2223	Lin. Ft.	10" Channelizing Line (White)
644	734	Lin. Ft.	5" Dashed Lane Line (White)
644	0	Lin. Ft.	5" Solid & Dashed Line (White)
644	264	Lin. Ft.	5" Edge Line (White)
644	1000	Lin. Ft.	10" Crosswalk Line (White)
644	25	Each	Arrow On Pavement (White)
644	12	Each	Word On Pavement (72" White)
647	14	Each	Reboundable Traffic Post, (Yellow) Installed
			SEDIMENT & EROSION CONTROL
207	780	Lin. Ft.	Sediment Fence
207	Lump	Sum	Existing Sediment Fence Maintained As Per Plan
207	2	Each	Dandy Bag
207	16	Each	Beaver Dam
207	Lump	Sum	Existing Sediment Control Maintained As Per Plan
659	Lump	Sum	Seeding & Mulching
			LIGHTING
1000	2	Each	Light Pole Foundation, Removal, As Per Plan (MIS–23)
1000	2	Each	Foundation Reinforced 8', As Per Plan (MIS–81)
1000	836	Lin. Ft.	Street Light Circuit, #4AWG 5KV Cable (MIS–14)
1000	2	Each	Street Light Standard Relocation, As Per Plan (MIS–107)
1000	252	Lin. Ft.	2" Conduit, In Open Areas (MIS–15)
1000	1	Each	Pullbox, Medium Duty, 13"x24" (MIS–4)
1000	133	Lin. Ft.	2" Conduit, Under Street Pavement (MIS–17)
1000	2	Each	Clean and Relamp HPS Luminaires (MIS–68)
1000	1	Lump	System Removal, Existing Underground (MIS–75)

ITEM	QUANTITY	UNIT	TRAFFIC SIGNAL & INTERCONNECT
202	54	Lin. Ft.	Conduit Removed
202	1	Each	Removal of Existing Signal Cable
625	2	Each	Remove and Reset Pull Box
625	802	Lin. Ft.	Conduit, 2", 725.05, As Per Plan
625	45	Lin. Ft.	Conduit, 3", 725.05, As Per Plan
625	127	Lin. Ft.	Conduit, 2", 725.04, Jacked or Drilled
625	206	Lin. Ft.	Conduit, 3", 725.05, Jacked or Drilled
625	1,196	Lin. Ft.	Encased Interconnect Conduit Bank, 2–3", TC–2, SCH 40, As Per Plan
625	802	Lin. Ft.	Trench, As Per Plan
625	6	Each	Ground Rod, As Per Plan
625	5	Each	Pullbox, 725.08, 27" Round Concrete, As Per Plan
625	9	Each	Pullbox, As Per Plan
625	48	Lin. Ft.	No. 4 AWG, 600 Volt Distribution Cable, As Per Plan
625	583	Lin. Ft.	No. 8 AWG, 600 Volt Distribution Cable, As Per Plan
630	1	Each	Signs, As Per Plan
632		Each	Conduit Riser, 2" Diameter
632		Each	Vehicular Signal Head, LED, 3 Section, 12" Lens, 1 Way, As Per Plan
632	1	Each	Vehicular Signal Head, LED, 5 Section, 12" Lens, 1 Way, As Per Plan
632	1	Each	Vehicular Signal Head Removed For Storage
632	8	Each	Pedestrian Signal Head, As Per Plan
632		Each	Pedestrial Push Button
632	26	Each	Detector Loop, As Per Plan
632	3	Each	Loop Detector Unit, As Per Plan
632	2,123	Lin. Ft.	Loop Detector Lean in Cable, IMSA–50
632	1	Each	Microwave Unit, As Per Plan
632		Each	Covering Vehicular Signal Head, As Per Plan
632		Each	Covering of Pedestrian Signal Head, As Per Plan
632		Each	Covering of Pedestrian Pushbutton, As Per Plan
632	1	Each	Sleeve for Anchor Base Foundation, As Per Plan
632		Lin. Ft.	Signal Cable, 7–Conductor, No. 14 AWG
632	772	Lin. Ft.	Signal Cable, 9–Conductor, No. 14 AWG
632		Lin. Ft.	Messenger Wire, 7 Strand, 3/8" Diameter with Accessories
632	4	Each	Strain Pole Foundation, As Per Plan
632		Lin. Ft.	Power Cable, 3 Conductor, CU, #8 AWG, As Per Plan
632		Each	Strain Pole, Type TC–81.10, Anchor Base, (Des. 5, 30'), As Per Plan
632	1,563	Lin. Ft.	Interconnect Cable, 6 Pair, #19 AWG, PE–BJFA, As Per Plan
633	1	Each	Cabinet Foundation
633		Each	Controller Unit, TS2/A2, W/Cabinet, 8 Phase, P44, Base, As Per Plan
633	1	Each	Controller Work Pad
Special	1	Lump	Unwarranted Traffic Signal Actions

HORIZ. SCALE

NTS

CALCULATED

CHECKED

ESTIMATE OF QUANTITIES

PROJECT NAME

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REVISED 12/2/11

A. TEMPORARY TRAFFIC CONTROL ITEMS

1. ALL TEMPORARY TRAFFIC CONTROL (TTC) DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (OMUTCD), (CURRENT EDITION). COPIES ARE AVAILABLE FROM THE OHIO DEPARTMENT OF TRANSPORTATION, OFFICE OF CONTRACTS, 1980 WEST BROAD STREET, COLUMBUS, OHIO, 43216. **NOTE:** ALL DEVICES SHALL COMPLY, FOR CONDITION AND LOCATION, WITH THE CURRENT EDITION OF THE NCHRP 350 CRASH TESTING GUIDELINES.
2. CONSTRUCTION OPERATIONS SHALL **NOT** BEGIN UNTIL ALL TRAFFIC CONTROL IS IN PLACE AND APPROVED BY THE DIVISION OF DESIGN AND CONSTRUCTION INSPECTOR. IF THE CONTRACTOR DOES NOT COMPLY WITH THE STANDARDS, INCLUDING THE INSTALLATION OF TEMPORARY PAVEMENT MARKINGS AND THE REMOVAL OF CONFLICTING TRAFFIC CONTROLS, THEIR PERMIT SHALL BE REVOKED AND ALL WORK SHALL BE TERMINATED. TEMPORARY PAVEMENT MARKINGS TO INCLUDE, BUT NOT LIMITED TO, CHANNELIZING LINES, EDGE LINES, AND CENTERLINES SHALL BE INSTALLED AND MAINTAINED ON ALL CONSTRUCTION OPERATIONS LASTING A MINIMUM OF 14 CALENDAR DAYS OR AS DIRECTED BY THE TEMPORARY TRAFFIC CONTROL COORDINATOR OR THE PROJECT ENGINEER.
3. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE INSTALLED A MINIMUM OF 7 DAYS PRIOR TO THE CLOSURE OF A ROADWAY. THE MESSAGE SHALL ADVISE THE MOTORISTS OF THE DATES, TIMES, AND DURATION OF THE CLOSURE. THE PCMS SHALL REMAIN IN PLACE FOR 7 DAYS AFTER THE START OF THE CLOSURE.
4. THE CONTRACTOR SHALL GIVE ADVANCE NOTIFICATION (WRITTEN AND VERBALLY) TO THE TEMPORARY TRAFFIC CONTROL COORDINATOR AT 645-6269 OR 645 5845, THE COLUMBUS PAVING THE WAY PROGRAM COORDINATOR AT 645-7283 OR 645 6016, AND THE PROJECT ENGINEER, INFORMING THEM OF ALL UPCOMING MAINTENANCE OF TRAFFIC CHANGES ON A WEEKLY BASIS. NOTIFICATION SHALL INCLUDE, BUT NOT LIMITED TO, WHAT, WHERE, WHEN, AND HOW PEDESTRIAN AND VEHICULAR TRAFFIC WILL BE AFFECTED, AND THE TEMPORARY TRAFFIC CONTROL PROCEDURES THE CONTRACTOR IS PLANNING TO USE. THE TYPE OF TRAFFIC CHANGES SHALL DETERMINE THE LENGTH OF ADVANCE NOTIFICATION REQUIRED:

TYPE OF CHANGE	ADVANCE NOTIFICATION NEEDED
DETOURS / ROAD CLOSURES	30-DAY NOTIFICATION PRIOR TO CLOSURE
LANE CLOSURE LASTING TWO WEEKS OR MORE	2-WEEKS
LANE CLOSURES LESS THAN TWO WEEKS	3-DAYS
LANE CLOSURE OF TWO DAYS OR LESS	1-DAY
ANY OTHER UNFORESEEN IMPACTS TO TRAFFIC SHALL BE IMMEDIATELY REPORTED AS THEY OCCUR	

5. A TTC PLAN (TTCP) INCLUDING PEDESTRIAN CONTROL SHALL BE SUBMITTED TO THE TTC COORDINATOR AT 645-6269 OR 645-5845 AT THE PRE-CONSTRUCTION MEETING OR A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE BEGINNING OF WORK. COPIES OF THE APPROVED TTCP SHALL BE GIVEN TO THE PROJECT ENGINEER AND KEPT ON SITE ALONG WITH THE STREET CLOSURE / OCCUPANCY PERMIT.
6. TYPE C STEADY-BURN OR TYPE D 360-DEGREE STEADY BURN WARNING LIGHTS SHALL BE REQUIRED ON ALL BARRICADES, DRUMS, AND SIMILAR TRAFFIC CONTROL DEVICES IN USE AT NIGHT. ONLY 42" REFLECTORIZED CHANNELIZING DEVICES (CONES) SHALL BE PERMITTED FOR NIGHTTIME WORK WITH THE APPROVAL OF THE TTC COORDINATOR AT 645-6269 OR 645-5845 PER ODOT STANDARDS.
7. A FLASHING ARROW PANEL (48" x 96"-TYPE C) SHALL BE USED IN LANE CLOSURES AS PER THE OHIO MANUAL (OMUTCD).
8. ALL TRENCHES WITHIN THE ROAD RIGHT OF WAY SHALL BE BACKFILLED OR SECURELY PLATED PER (CITY OF COLUMBUS GENERAL POLICY ON STEEL PLATE USAGE DATES 11/15/2006 AND 2007 STD. DWG. 1441) DURING NON-WORKING HOURS.
9. ACCESS FOR PEDESTRIAN AND VEHICULAR TRAFFIC TO ALL ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
10. ALL EXISTING TRAFFIC LANES SHALL BE OPEN TO TRAFFIC AT ALL TIMES ON:_____.
11. ALL TRAFFIC LANES SHALL BE FULLY OPEN TO TRAFFIC FROM 6:00 A.M. TO 9:00 A.M. AND 4:00 P.M. TO 6:00 P.M., OR 6:00 A.M. TO 9:00 A.M. AND 3:00 P.M. TO 6:00 P.M. IN THE COLUMBUS BUSINESS DISTRICT AREA, MONDAY THROUGH FRIDAY ON _____. ____ LANE (S) MAY BE CLOSED TO TRAFFIC DURING WORKING HOURS.
12. ONE-WAY _____ LANE (S) OF TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON _____.
13. TWO-WAY TWO-LANE (ONE-LANE EACH DIRECTION) SHALL BE MAINTAINED AT ALL TIMES BY USE OF EXISTING, PROPOSED, OR TEMPORARY PAVEMENT PER FIGURE 6H-32 TYPICAL APPLICATION 32 (TA-32) OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
14. TWO-WAY ONE-LANE TRAFFIC MAY BE MAINTAIN DURING CONSTRUCTION OPERATIONS ON _____, PER FIGURE 6H-10 (TA-10) OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
15. _____ MAY BE CLOSED BETWEEN _____ AND _____ FOR A MAXIMUM OF _____ HOUR (S)/ DAY (S) BETWEEN THE HOURS OF _____ AND ____ PER FIGURE 6H-20 (TA-20) OF THE OMUTCD AND/OR APPROVED BY THE DIVISION OF DESIGN AND CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS IN PROVIDING A DETOUR INCLUDING THE REMOVAL AND REINSTALLATION OF ANY CONFLICTING TRAFFIC CONTROL AND/OR ANY NECESSARY TRAFFIC SIGNAL WORK.
16. A TEMPORARY DIVERSION SHALL BE PROVIDED AND MAINTAINED IN GOOD CONDITION ON _____ DURING THE PERIOD OF WORK. ALL SUCH DIVERSIONS SHALL BE IN ACCORDANCE WITH THE OMUTCD.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND SAFE MOVEMENT OF PEDESTRIAN THROUGH, AROUND, OR DETOURED AWAY FROM THE CONSTRUCTION SITE. TRAFFIC CONTROL FOR PEDESTRIAN MOVEMENT SHALL BE AS PER FIGURES 6H-28 (TA-28) AND 6H-29 (TA-29) OF PART VI OF THE OMUTCD. ALL SIDEWALK DIVERSIONS AND TEMPORARY MID-BLOCK CROSSINGS SHALL BE PRE-APPROVED BY THE PROJECT ENGINEER OR THE TEMPORARY TRAFFIC CONTROL COORDINATOR.
18. THE DIVISION OF PLANNING AND OPERATIONS WILL REMOVE OR COVER ALL PARKING METER HEADS PUT OUT OF SERVICE BY THIS CONTRACT. THERE IS A $60.00 CHARGE FOR THE REMOVAL AND RE-INSTALLATION OF EACH METER. IN ADDITION, A DAILY METER FEE WILL BE CHARGED FOR ALL ENFORCEMENT HOURS FOR EACH METER TAKEN OUT OF SERVICE. THESE CHARGES WILL BE COLLECTED FROM THE CONTRACTOR IN ADVANCE WITH THE ISSUANCE OF THE STREET OCCUPANCY / EXCAVATION PERMIT FROM THE DIVISION OF PLANNING AND OPERATIONS' PERMIT OFFICE. (645-7497) THE MANAGER OF PARKING SERVICES SUPPORT (645-7890) SHALL BE NOTIFIED A MINIMUM OF FORTY-EIGHT (48) HOURS (EXCLUDING SAT. SUN.,& HOLIDAYS) PRIOR TO THE BEGINNING OF WORK. CALL 645-8376 IF UNABLE TO MAKE CONTACT THROUGH THE PRIOR PHONE NUMBER.
19. TEMPORARY "EMERGENCY NO PARKING" SIGNS SHALL BE INSTALLED AT 50' INTERVALS C/C MINIMUM BY USE OF ANY OF THE FOLLOWING ITEMS: EXISTING SIGN POSTS, EXISTING UTILITY POLES, DRUMS AND/OR 42"CONES AND REMOVED BY THE CONTRACTOR IN AREAS WITH NO PARKING METERS. THE SIGNS SHALL HAVE THE INSTALLATION DATE, WORKING DATES, AND HOURS OF RESTRICTION SHOWN ON EACH SIGN. THESE SIGNS CAN BE OBTAINED FROM THE DIVISION OF PLANNING AND OPERATIONS' PERMIT OFFICE. THE POLICE DIVISION REQUIRES THE "EMERGENCY NO PARKING" SIGNS TO BE POSTED A MINIMUM OF SEVENTY-TWO (72) HOURS PRIOR TO ANY VEHICLES BEING TOWED. WITHIN TWENTY-FOUR (24) HOURS OF POSTING, THE CONTRACTOR SHALL SUPPLY THE DIVISION OF DESIGN AND CONSTRUCTION WITH A WRITTEN RECORD OF POSTED LOCATIONS (FAX 645-3298).
20. TRAFFIC OPERATIONS' PERSONNEL SHALL LOCATE AND MARK ALL UNDERGROUND TRAFFIC CONTROL CABLES. THE TRAFFIC OPERATIONS SHOP SHALL BE NOTIFIED 645-7393 (FAX 645-5967) AT LEAST FORTY-EIGHT (48) HOURS (EXCLUDING SATURDAY & SUNDAY) PRIOR TO THE BEGINNING OF ANY WORK WITH 450 FEET OF ANY SIGNALIZED INTERSECTION (S) OR WITHIN ANY POSTED AREA WHERE THE DIVISION HAS UNDERGROUND CABLE. THE SIGNAL OPERATION ENGINEER (645-6418) SHALL BE NOTIFIED SIX (6) WEEKS IN ADVANCE FOR SIGNAL REVISION OR POLE RELOCATIONS.
21. NO EXCAVATION SHALL BE MADE WITHIN FIVE (5) FEET OF ANY POLE THAT SUPPORTS TRAFFIC SIGNAL DISPLAYS OR SIGNS BY MAST ARMS OR SIGNAL SPAN. EXCAVATION WITHIN EIGHT (8) FEET, BUT MORE THAN FIVE (5) FEET SHALL REQUIRE ADDITIONAL SUPPORT (DOWN GUY, HEAD GUY, BASE GUY, ETC.). THE CONTRACTOR SHALL CONTACT SIGNAL OPERATION PERSONNEL AT 645-0423 (CELL 419-4501) AT LEAST FORTY-EIGHT 48 HOURS (EXCLUDING SATURDAY & SUNDAY) PRIOR TO BEGINNING OF SUCH EXCAVATION SO THAT THE CITY CAN APPROVE THE STABILIZATION SETUP BY THE CONTRACTOR. IF UNABLE TO MAKE CONTACT THROUGH ABOVE NUMBERS, CALL 645-7393. STABILIZATION WILL BE DONE BY THE CONTRACTOR AT THE OWNERS' / CONTRACTING AGENCY'S EXPENSE.
22. WHEN ANY TRAFFIC CONTROL DEVICE, CONDUIT, OR CABLE IS DAMAGED, THE CONTRACTOR SHALL NOTIFY SIGNAL OPERATION PERSONNEL AT 645-0423 (CELL 451-4501) BETWEEN 7:00 A.M. AND 4:00 P.M., MONDAY THROUGH FRIDAY. IF UNABLE TO MAKE CONTACT THROUGH THE OTHER NUMBERS, CALL 645-7393.
23. THE ROADWAY SHALL **NOT** BE OPENED TO NON-CONSTRUCTION TRAFFIC UNTIL THE CRITICAL PERMANENT TRAFFIC CONTROL ARE IN PLACE, OR UNTIL TEMPORARY TRAFFIC CONTROLS APPROVED BY THE ENGINEER, ARE INSTALLED. THE CRITICAL PERMANENT TRAFFIC CONTROL ARE **STOP, YIELD**, **ONE-WAY**, **DO NOT ENTER, AND RESTRICTED TURN SIGNS.** OTHER CRITICAL SIGNS MAY BE NOTED ON THE PLANS AS WELL. THE CONTRACTOR ASSUMES ALL LIABILITY FOR THE PREMATURE REMOVAL OF TEMPORARY TRAFFIC CONTROLS.
24. THE ROADWAY OR ANY SECTION OF ROADWAY SHALL NOT BE OPENED TO NON-CONSTRUCTION TRAFFIC UNTIL ALL TEMPORARY , NON-REFLECTIVE, BLACKOUT TAPE HAS BEEN COMPLETELY REMOVED FROM NON-CONFLICTING PERMANENT PAVEMENT MARKINGS FOR THAT AREA OF THE ROADWAY, OR UNLESS OTHERWISE DIRECTED IN WRITING BY THE ENGINEER. THIS IS SUPPLEMENTAL TO THE CMS-614.11F, AND SHALL BE PAID FOR THROUGH THE 614-LUMP SUM.
25. THE CONTRACTOR SHALL MAINTAIN ALL PERMANENT TRAFFIC CONTROLS NOT IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROLS THROUGHOUT THIS PROJECT. PERMANENT TRAFFIC CONTROLS MAY BE TEMPORARILY RELOCATED OR COVERED, AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL ASSUME ALL LIABILITY FOR MISSING, DAMAGED, OR IMPROPERLY PLACED SIGNS.
26. ANY WORK DONE BY THE DIVISION OF PLANNING AND OPERATIONS, INCLUDING INSTALLATION, RELOCATION, REMOVAL AND/OR REPLACEMENT OF TEMPORARY TRAFFIC CONTROL DEVICES AS RESULT OF WORK DONE BY THE CONTRACTOR OR AS A RESULT OF NEGLIGENCE OF THE CONTRACTOR, SHALL BE AT THE CONTRACTORS' EXPENSE.
27. WHENEVER YELLOW CENTERLINES OR TURN-LANE LINE ARE PAVED OVER, REMOVED, OR OTHERWISE UNSERVICEABLE, THE CONTRACTOR SHALL INSTALL CLASS II TEMPORARY STRIPING (MINIMUM 4' LONG SEGMENTS). TEMPORARY PAINT SHALL BE USED ON ALL MILLED SURFACES. TEMPORARY TAPE SHALL BE USED ON ALL FINAL COURSES OF ASPHALT. PAINT OR TAPE MAY BE USED ON ALL INTERMEDIATE COURSES OF ASPHALT. IF APPROVED BY THE ENGINEER, DRUMS WITH STEADY BURNING TYPE C OR TYPE D 360 DEGREE WARNING LIGHTS AND "KEEP RIGHT" SIGNS MAY BE SUBSTITUTED FOR CENTERLINE MARKINGS.
28. CLASS II TEMPORARY STRIPING (MINIMUM 4' LONG SEGMENTS) SHALL BE AS PER ITEM 614-WORK ZONE PAVEMENT MARKINGS AND SHALL BE PLACED WITH ONE (1) FOOT LONGITUDINAL TOLERANCE OF THE PERMANENT STRIPE (S). ALL STRIPING NOT TO WITHIN ONE (1) FOOT TOLERANCE SHALL BE REMOVED AND REPLACED IN THE PROPER LOCATION BY THE CONTRACTOR. CLASS II TEMPORARY STRIPING SHALL BE OF THE APPROPRIATE COLOR AND SPACED AT A MAXIMUM OF FORTY (40) FEET CENTER TO CENTER.
29. ITEM 614 - MAINTAINING TRAFFIC

ALL COSTS THAT CONSIST OF MAINTAINING AND PROTECTING VEHICULAR AND PEDESTRIAN TRAFFIC ACCORDING TO THE LATEST EDITION OF THE CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (OMUTCD), AND PER THE REQUIREMENTS DESIGNATED IN THE PLAN INCLUDING ALL LAW ENFORCEMENT OFFICER (LEO) AND FLAGGER HOURS SHALL BE INCLUDED IN THE LUMP SUM ITEM 614.

IN ADDITION TO THE REQUIREMENTS HEREIN, AND THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, A UNIFORMED LAW ENFORCEMENT OFFICER (LEO) SHALL BE PROVIDED FOR CONTROLLING TRAFFIC UNDER THE FOLLOWING CONDITIONS:

- WORK WITHIN A SIGNALIZED INTERSECTION, DEFINED AS THE AREA BOUNDED BY THE REAR X-WALK LINES
- WHEN FLAGGING WITHIN THE INTERSECTION OF TWO ARTERIAL ROADWAYS
- WHEN SPECIFIED IN THE MAINTENANCE OF TRAFFIC PLAN OR AS DIRECTED BY THE PROJECT ENGINEER

A LAW ENFORCEMENT OFFICER (LEO) WITH PATROL CAR SHALL BE REQUIRED ONLY WHEN DIRECTED BY THE CITY. THE OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

A FLAGGER SHALL BE UTILIZED TO ASSIST IN CONTROLLING TRAFFIC WHILE EQUIPMENT IS ENTERING OR EXITING AN INTERSECTION OR WORK ZONE. THE CONTRACTOR MAY UTILIZE HIS OWN OR LEO UNDER PAY ITEM 614 MAINTAINING TRAFFIC, LUMP SUM.

FLAGGERS AND LEO'S SHALL BE EQUIPPED ACCORDING TO THE STANDARDS FOR FLAGGING TRAFFIC CONTAINED IN THE OMUTCD. FLAGGING OPERATIONS PERFORMED BY LEO'S OR DESIGNATED FLAGGERS SHALL ONLY BE PERMITTED AS LONG AS ALL TRAFFIC CONTROL IS IN PLACE ACCORDING TO FIGURE 6H-10 (TA-10) IN THE OHIO MANUAL.

IF THE CONTRACTOR WISHES TO UTILIZE LEOS' FOR TRAFFIC CONTROL OTHER THAN FOR THE REQUIRED IN THE PLANS, THEY DO SO AT THEIR OWN EXPENSE. THE CONTRACTOR SHALL MAKE ARRANGEMENT THROUGH THE COLUMBUS POLICE DIVISION AT (614) 645-4795.

LEO'S SHALL BE CONSIDER TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH EMPLOYED BY THE CONTRACTOR, THE CITY REPRESENTATIVE SHALL HAVE CONTROL OVER THEIR PLACEMENT.

IF A SAFETY HAZARD DEVELOPS, A LEO MAY BE ASSIGNED BY THE COLUMBUS SAFETY AND SERVICES DIRECTOR AT THE CONTRACTOR'S EXPENSE.

ITEM 614 - LAW ENFORCEMENT OFFICER (LEO) WITH PATROL CAR, AS PER PLAN

IN ADDITION TO THE LEO AND FLAGGER HOURS INCLUDED IN ITEM 614 MAINTAINING TRAFFIC, LUMP SUM; THE FOLLOWING QUANTITIES HAVE BEEN CARRIED FORWARD TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER OR AN ACCEPTABLE REPRESENTATIVE OF THE CITY OF COLUMBUS. THE CONTRACTOR SHALL BE PAID FOR THIS BID ITEM ONLY IF DIRECTED BY THE ENGINEER.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR, AS PER PLAN - _____ HOURS

ITEM 614 - LAW ENFORCEMENT OFFICER (LEO) WITHOUT PATROL CAR, AS PER PLAN

IN ADDITION TO LEO AND FLAGGER HOURS INCLUDED IN THE ITEM 614 MAINTAINING TRAFFIC, LUMP SUM; THE FOLLOWING QUANTITIES HAVE BEEN CARRIED FORWARD THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER OR AN ACCEPTABLE REPRESENTATIVE OF THE CITY OF COLUMBUS. THE CONTRACTOR SHALL BE PAID FOR THIS BID ITEM ONLY IF DIRECTED BY THE ENGINEER.

ITEM 614, LAW ENFORCEMENT OFFICER WITHOUT PATROL CAR, AS PER PLAN - _____ HOURS

B. EXISTING PERMANENT TRAFFIC CONTROL ITEMS

1. ALL OVERHEAD CABLE, DOWN GUYS OR BACK GUYS SHALL NOT BLOCK ANY PORTION OF A TRAFFIC SIGNAL, TRAFFIC CONTROL SIGN, OR OTHER TRAFFIC CONTROL DEVICE SUCH THAT VISIBILITY OR OPERATION OF THE TRAFFIC CONTROL DEVICE IS IMPAIRED.
2. THE ROADWAY SHALL NOT BE OPENED TO NON-CONSTRUCTION TRAFFIC UNTIL THE CRITICAL PERMANENT TRAFFIC CONTROLS ARE IN PLACE, OR UNTIL TEMPORARY TRAFFIC CONTROLS APPROVED BY THE ENGINEER, ARE INSTALLED. THE CRITICAL PERMANENT TRAFFIC CONTROLS ARE STOP, YIELD, ONE WAY, DO NOT ENTER AND RESTRICTED TURN SIGNS. OTHER CRITICAL SIGNS MAY BE NOTED ON THE PLAN AS WELL. THE CONTRACTOR ASSUMES ALL LIABILITY FOR THE PREMATURE REMOVAL OF TEMPORARY TRAFFIC CONTROLS.
3. ALL PERMANENT PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS AS SHOWN ON THIS PLAN SHALL BE INSTALLED BY THE CONTRACTOR AT THE PROJECTS EXPENSE. THE PROJECT ENGINEER SHALL BE NOTIFIED TO DIRECT APPROPRIATE PERSONNEL A MINIMUM OF FORTY-EIGHT (48) HOURS (EXCLUDING SAT. & SUN.) PRIOR TO THE INSTALLATION OF PERMANENT MARKING TO INSPECT AND APPROVE THE PAVEMENT MARKING LAYOUT PRIOR TO PLACING THE PERMANENT MARKINGS.
4. ANY WORK DONE BY THE DIVISION OF PLANNING AND OPERATIONS, INCLUDING INSTALLATION, RELOCATION, REMOVAL AND/OR REPLACEMENT OF PERMANENT TRAFFIC CONTROL DEVICES AS A RESULT OF WORK DONE BY THE CONTRACTOR OR AS A RESULT OF NEGLIGENCE OF THE CONTRACTOR, SHALL BE AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REINSTALLATION AND/OR REPLACEMENT OF ALL PERMANENT TRAFFIC CONTROL DEVICES DAMAGED OR REMOVED DURING CONSTRUCTION. PERMANENT TRAFFIC CONTROL NO LONGER IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE REPLACED IMMEDIATELY.
6. PERMANENT STRIPING OR CLASS I TEMPORARY STRIPING SHALL BE INSTALLED NO LATER THAN FOURTEEN (14) CALENDAR DAYS AFTER THE FINAL PAVING COURSE IS COMPLETED. THE PAVING CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE STRIPING CONTRACTOR TO INSURE THE PERMANENT STRIPING IS INSTALLED WITHIN THE FOURTEEN (14) CALENDAR DAY LIMIT.
7. IF THE DIVISION OF PLANNING AND OPERATIONS IS TO INSTALL PERMANENT STRIPING, THE PROJECT ENGINEER SHALL BE NOTIFIED TO DIRECT APPROPRIATE PERSONNEL A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE APPLICATION OF THE FINAL COURSE OF PAVEMENT.

NOTE #8 INSTRUCTIONS:
INSERT NOTE WHEN; WORKING NEAR A LOCATION WHERE TRAFFIC LOOP DETECTION AND/OR ITS LEAD IN CABLES COULD BE INADVERTENTLY DAMAGED. *CONTINGENCY ITEMS AND ESTIMATED QUANTITIES SHALL ONLY BE INCLUDED AS DIRECTED BY THE PLAN REVIEWER* . LOOP DETECTION AND/OR ITS LEAD IN CABLES BEING DESTROYED OR ELSE RENDERED INOPERATIVE DUE TO TYPICAL CONSTRUCTION ACTIVITIES SHALL BE QUANTIFIED IN THE GENERAL SUMMARY AND SIGNAL SUMMARY AND SHOWN AS REMOVED AND REPLACED. NOTE #8 IS NOT REQUIRED FOR THIS OPERATION UNLESS THE AFOREMENTIONED REQUIREMENT IS MET.

8. AT ANY LOCATION WHERE THE CONTRACTOR DAMAGES DETECTORS AND/OR THEIR LEAD IN CABLES THE CONTRACTOR SHALL REPLACE THEM. AT ANY LOCATION WHERE DETECTION IS CHANGED FROM MAG PROBE UNTIS TO LOOPS, THE CONTRACTOR SHALL REPLACE THE PROBE LEAD-IN WITH LOOP LEAD-IN CABLE. ALL REPAIRS TO DETECTION SHALL BE COMPLETED WITHIN 21 DAYS FROM DAMAGE TO DETECTION ON A PER INTERSECTION BASIS . IF THE 21 DAY REPAIR REQUIREMENT CANNOT BE SATISFIED AT ANY LOCATION WHERE THE CONTRACTOR DAMAGES DETECTORS AND/OR THEIR LEAD-IN CABLES, THE CONTRACTOR, AT THE DIRECTION OF SIGNAL OPERATION PERSONNEL, MAY BE REQUIRED TO INSTALL TEMPORARY MICROWAVE DETECTION OR TEMPORARY LOOP DETECTION. ANY CONTRACTOR FAILING TO COMPLY WITH THESE GUIDELINES SHALL BE SUBJECT TO PENALTY TO THE SUM OF $100.00 PER DAY FOR EACH DAY BEYOND THE 21 DAY REPAIR PERIOD ON A PER INTERSECTION BASIS, UNTIL CONDITIONS ARE MET TO THE SATISFACTION OF SIGNAL OPERATIONS PERSONNEL. THIS PENALTY DEDUCTION SHALL BE SPECIFIC TO EACH SIGNALIZED INTERSECTION EFFECTED BY THIS PROJECT AND SEPARATE FROM ANY LIQUIDATED DAMAGES FOR THE PROJECT AS A WHOLE. THE WORK TO INSTALL THE DETECTION SHALL CONFORM TO ODOT STANDARD DRAWING TC-82.10 (DATED 4/19/02 OR LATER) AND TO THE CURRENT STATE OF OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS WITH THE FOLLOWING PROVISIONS:

A) THE CONTRACTOR SHALL PROVIDE THE DIVISION OF DESIGN AND CONSTRUCTION'S INSPECTOR, PRIOR TO THE COMMENCEMENT OF WORK, THE IMSA (INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION) CERTIFICATION PAPERS FOR ALL SIGNAL TECHNICIANS WORKING ON THIS PROJECT.

B) LOCATION OF THE REPLACEMENT DETECTION SHALL BE FIELD MARKED OR DIMENSIONED DRAWINGS SHALL BE SUBMITTED TO THE INSPECTION SERVICES SECTION BY DIVISION OF DESIGN AND CONSTRUCTION SECTION PERSONNEL. LOCATION OF FINAL PAVEMENT MARKINGS OR THE MARKINGS THEMSELVES SHALL BE CLEARLY INDICATED ON THE ASPHALT PRIOR TO DETECTOR LOCATIONS BEING MARKED. THE CONTRACTOR SHALL LAYOUT THE LOOPS ON THE PAVEMENT IF DRAWINGS ARE SUBMITTED. IF DRAWINGS HAVE NOT BEEN PROVIDED, CONTACT SIGNAL OPERATIONS PERSONNEL AT 645-0423 (CELL 419-4501) AT LEAST TWO WORKING DAYS PRIOR TO NEEDING THE LOCATION MARKED. IF UNABLE TO MAKE CONTACT THROUGH THE ABOVE NUMBERS, CALL 645-7393.

C) THE SAW SLOT DEPTH FOR LOOP WIRE INSTALLATION SHALL BE FOUR (4) INCHES WITH SIX (6) INCHES AT THE CONDUIT ENTRANCE. IF ADVERSE PAVEMENT CONDITIONS WARRANT, DEPTH MAY BE INCREASED TO SIX (6) INCHES THROUGHOUT AND SHALL BE DETERMINED BY THE DIVISION OF DESIGN AND CONSTRUCTION INSPECTOR.

D) EACH LOOP SHALL HAVE ITS OWN CONDUIT FROM EDGE OF PAVEMENT TO PULL BOX UNLESS SPECIFIED OTHERWISE BY THE DIVISION OF DESIGN AND CONSTRUCTION INSPECTOR.

E) THE PULL BOX ASSEMBLY SHALL BE RATED AS MEDIUM TO HEAVY DUTY, TO BE INSTALLED IN CONCRETE WALKWAYS, AND SHALL HAVE ALL STAINLESS STEEL HARDWARE. THE PULL BOX COVER SHALL HAVE THE WORD "TRAFFIC" ON IT. THE COVER SHALL BE BOLTED TO THE BOX AND SHALL BE EITHER POLYMER CONCRETE OR STEEL PLATE. THE COVER PLUS HOUSING AS A UNIT SHALL BE RATED TO WITHSTAND A MINIMUM 20,000 LB. STATIC LOAD OVER A 10" x 10" AREA AS PER ASTM C-857. THE BOX DEPTH SHALL BE 18 INCHES MINIMUM TO 30 INCHES MAXIMUM. IF THE PROJECT DOES NOT SPECIFY 713.08 CONCRETE PULL BOXES, THE SUPPLIED ASSEMBLIES SHALL BE AS FOLLOWS: CDR SYSYTEMS MODEL SA32-1015-18, OR SYNERTECH MODEL 11" x 18". SIX (6) INCHES OF #4 AGGREGATE SHALL BE PLACED AT THE BOTTOM OF THE PULL BOX. NO CONDUIT SHALL PROTRUDE MORE THAN THREE (3) INCHES INSIDE THE PULL BOX. CONDUIT ELLS OR EXTENSIONS MAY BE USED TO ALIGN THE CONDUIT WITH THE HOUSING. THE COST FOR EXTENSIONS OR ELLS IF NEEDED SHALL BE INCIDENTAL TO THE PER UNIT PRICE.

F) WHEN A PULL BOX IS NOT USED, THE SOLDERED SPLICE SHALL BE MADE IN AN ANCHOR BASE STRAIN POLE OR A CONDUIT RISER SPECIFIED BY THE DIVISION OF PLANNING AND OPERATIONS' REPRESENTATIVE, EXCEPT WHERE A CONTROLLER CABINET IS MOUNTED ON THAT POLE IN WHICH CASE THE LOOP WIRE SHALL BE ROUTED DIRECTLY INTO THE CABINET.

G) THE CONTRACTOR SHALL NOT MAKE ANY WIRING CONNECTIONS OR ADJUSTMENTS INSIDE THE CONTROLLER CABINET. WHEN SUCH CONNECTIONS ARE REQUIRED, THE CONTRACTOR SHALL NOTIFY THE TRAFFIC OPERATIONS SHOP 645-7393, MONDAY THROUGH FRIDAY, 8:00 A.M. TO 4:00 P.M., TO SCHEDULE **CITY** FORCES FOR MAKING THE ACTUAL CONNECTIONS. THE CONTRACTOR SHALL BE AVAILABLE AT THE AGREED TIME. THE CONTRACTOR SHALL BE BILLED FOR ANY TIME THAT **CITY** FORCES ARE REQUIRED TO WAIT FOR THE CONTRACTOR'S WORK TO BE COMPLETED.

H) CONDUIT PLACED IN "RIGHT OF WAY" AREAS BEARING NO TRAFFIC FOR DETECTOR LEAD IN SHALL BE ODOT ITEM 725.051, ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS, LATEST EDITION. CONDUIT PLACED UNDER A ROADWAY OR IN AREAS THAT MAY BEAR TRAFFIC SHALL BE ODOT ITEM 725.04, SIZES AND TYPE TO BE DETERMINED BY THE DIVISION OF PLANNING AND OPERATIONS' REPRESENTATIVE. ALL CONDUITS SHALL BE PLACED AT A MINIMUM DEPTH OF TWENTY-FOUR (24) INCHES.

I) LOOP WIRE SHALL BE IDENTIFIED WITH A PLASTIC TAG (WBLT, EBRT, ECT.) AT THE SPLICE POINT OR AT ENTRANCE TO THE CABINET IF LEAD-IN CABLE IS NOT USED.

J) THE ITEMS AND ESTIMATED QUANTITIES FOR THE OF THE DIVISION OF PLANNING AND OPERATIONS' DETECTION ITEMS SHALL BE INCLUDED IN THESE PLANS WHEN DIRECTED BY THE PLAN REVIEWER. THESE ESTIMATES ARE FOR THE PURPOSE OF BIDDING THE PROJECT. THE FOLLOWING IS A LIST OF THE ITEMS AND QUANTITIES PROJECTED FOR USE IN DETECTOR REPLACEMENT FOR THIS PROJECT:

ITEM	QUANTITY	UNIT	ITEM DESCRIPTION
202		SF	WALK REMOVED
608		SF	4" CONCRETE WALK
632		LF	CONDUIT RISER, 1 OR 2 INCH DIA.
625		LF	CONDUIT 1, 1 ½, OR 2 INCH DIA.
625		LF	TRENCH
625		EACH	PULL BOX, AS PER PLAN
632		EACH	DETECTOR LOOP
632		LF	LOOP DETECTOR LEAD-IN CABLE
632		LF	LASH / UNLASH CABLE

THE CONTRACTOR SHALL NOTIFY SIGNAL OPERATIONS' PERSONNEL AT 645-0423 (CELL 419-4501) AFTER ALL LOOPS HAVE BEEN INSTALLED AT EACH INTERSECTION. IF UNABLE TO MAKE CONTACT THROUGH THE ABOVE NUMBER CALL, 645-7393. THE DIVISION OF PLANNING AND OPERATIONS SHALL INSPECT ALL SENSORS AND TEST AS NECESSARY. THE CONTRACTOR SHALL REPLACE ALL LOOPS NOT MEETING SPECIFICATIONS.

N

HORIZ. SCALE
50 0 25
50

CALCULATED | CHECKED

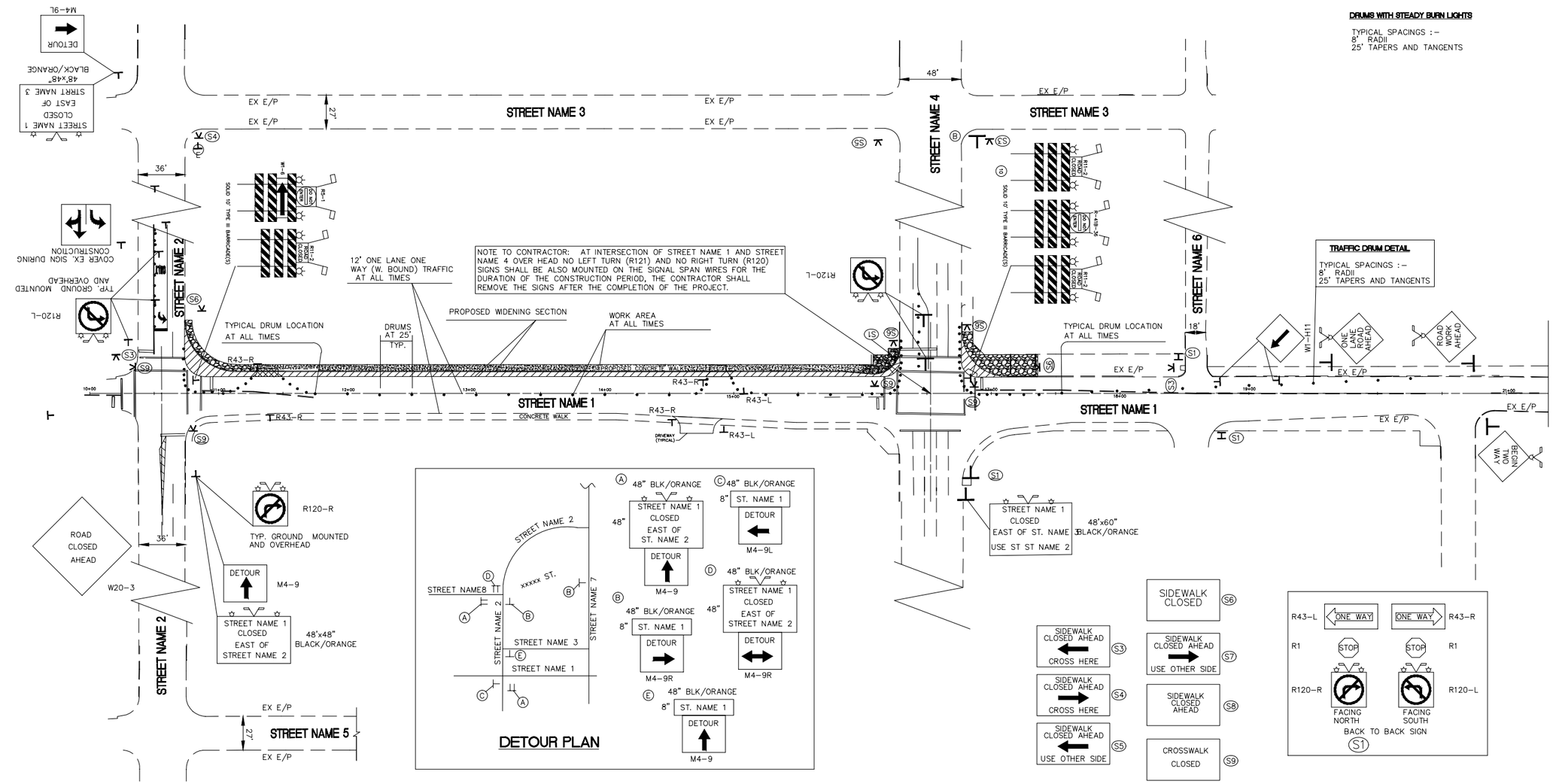
MAINTENANCE OF TRAFFIC NOTES

PROJECT NAME

X
XX

XXXX–E

REVISED 12/2/11



CONSTRUCTION STAGING: STAGE 2

CONSTRUCTION OF NEW PAVEMENT ON THE NORTH SIDE OF STREET NAME 1.

1. THE ERECTION OF THE TEMPORARY SIGNS AND TRAFFIC MARKINGS.
2. THE CONSTRUCTION OF THE NEW WIDENING SECTION ON THE NORTH SIDE OF STREET NAME 1 AND THE CONSTRUCTION/RELOCATION OF ALL UNDERGROUND UTILITIES AND CONDUITS.
3. THE FINAL PAVING OF THE ENTIRE PROJECT WIDTH AND LENGTH
4. THE SEEDING AND MULCHING OF THE ENTIRE SITE.
5. THE FINAL STRIPING AND SIGNING OF THE ENTIRE PROJECT
6. THE CONSTRUCTION OF THE NEW SIGNAL AT THE INTERSECTION OF STREET NAME 1 AND STREET STREET NAME 4, AND THE SIGNAL AT THE INTERSECTION OF STREET NAME 1 AND STREET NAME 2.
7. THE CONTRACTOR SHALL PERFORM FINAL CLEANING AND REMOVE ALL EQUIPMENT FROM SITE
8. THE CONTRACTOR SHALL COMPLY WITH THE FINAL PUNCH LIST PREPARED BY THE CITY'S INSPECTOR.
9. THE CLOSE-OUT OF THE PROJECT.
10. PAYMENT FOR MAINTENANCE OF TRAFFIC (NOT INCLUDING MOBILIZATION, PERMANENT SIGNING AND STRIPING) SHALL BE INCLUDED IN THE LUMP SUM ITEM 614 MAINTENANCE OF TRAFFIC.
11. CONTRACTOR TO FURNISH AND INSTALL DRUMS TO CLOSE THE SOUTH BOUND LEFT LANE OF STREET NAME 4 AT ALL TIMES.

HORIZ. SCALE

CALCULATED | CHECKED

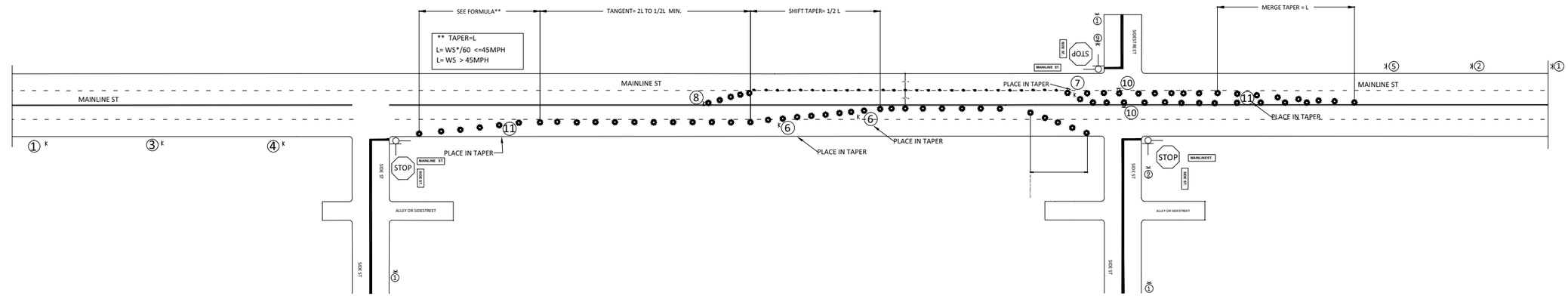
MAINTENANCE OF TRAFFIC

PROJECT NAME

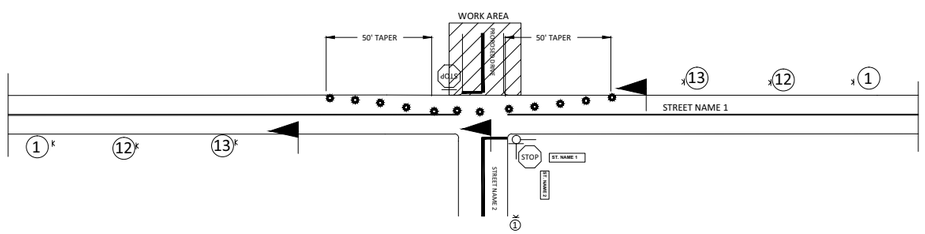
XXXX-E

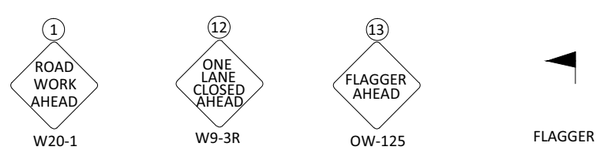
X/XX

Revised 12/2/11

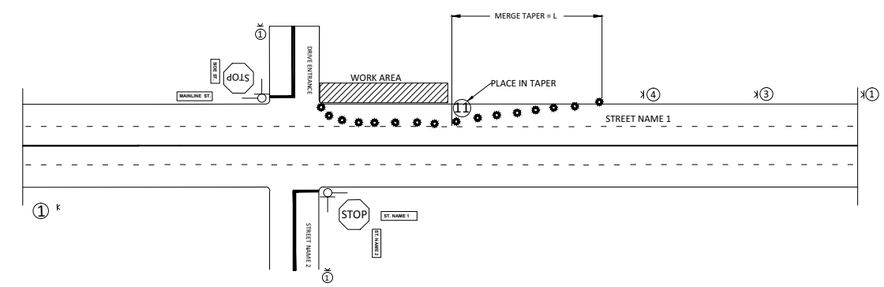


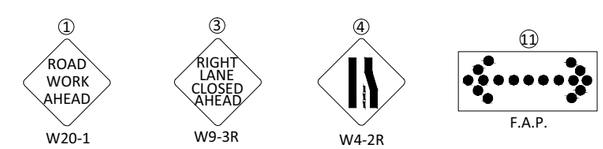
EXISTING 4 LANE - 2 WAY to 2 LANE - 2 WAY Using LANE CLOSURE PLUS SHIFT ACROSS CENTERLINE





TWO-WAY ONE-LANE (FLAGGING) OPERATION





RIGHT LANE CLOSURE

** TAPER=L
L= WS*/60 <=45MPH
L= WS > 45MPH

* SIGN SPACING
<= 45mph - 100'
> 45mph - 350'

NOTES

1. 1st Sign in closure series is placed *100'/350' from first drum.
2. **Maintain 200' clearance from existing signage whenever possible**
3. **Install Type A Low-Intensity Flashing warning lights on signs as directed by the OMUTCD Part 6 Section 6F-78, current edition for night work only.**
4. **Remove or cover conflicting signage located within or 250' leading into workzone.**

*** THIS DRAWING IS *NOT* A COC STANDARD DRAWING. THIS IS A WORKING DRAWING TO PROVIDE GUIDANCE ON THE SETUP OF LANE CLOSURES AND SHIFTS FROM 4-LANE TWO-WAY TO TWO-LANE TWO-WAY. THE OMUTCD, COC MANUALS, STD. DRAWINGS, AND TYPICALS SHALL SUPERCEDE THIS DRAWING.**

HORIZ. SCALE 50 0 25

CALCULATED

CHECKED

MAINTENANCE OF TRAFFIC

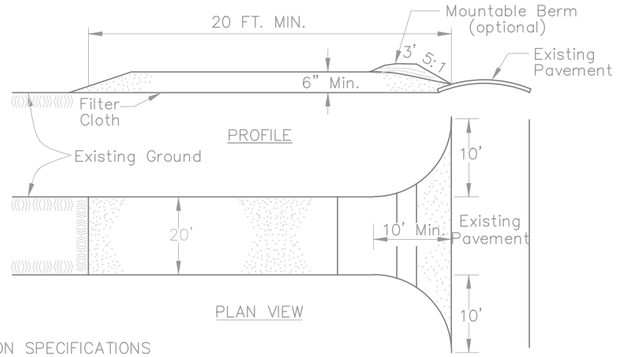
PROJECT NAME

XXXX–E

X/XX

Revised 12/2/11

STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATIONS

1. Stone Size – Use 2 inch stone, or reclaimed or recycled concrete equivalent.
2. Length – As required.
3. Thickness – Not less than six (6) inches.
4. Width – Twenty (20) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth – will be placed over the entire area prior to placing of stone.
6. Surface Water – All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance – The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public right–of–way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights–of–way must be removed immediately.
8. Washing – Wheels shall be cleaned to remove sediment prior to entrance onto public right–of–ways. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

Sediment and Erosion Control Quantities

Item	Quantity	Unit	Description
207	3	Each	Catch Basin Protection
207	44	Each	Inlet Protection
207	1	Each	Filter Fabric Fence for Catch Basins

LEGEND

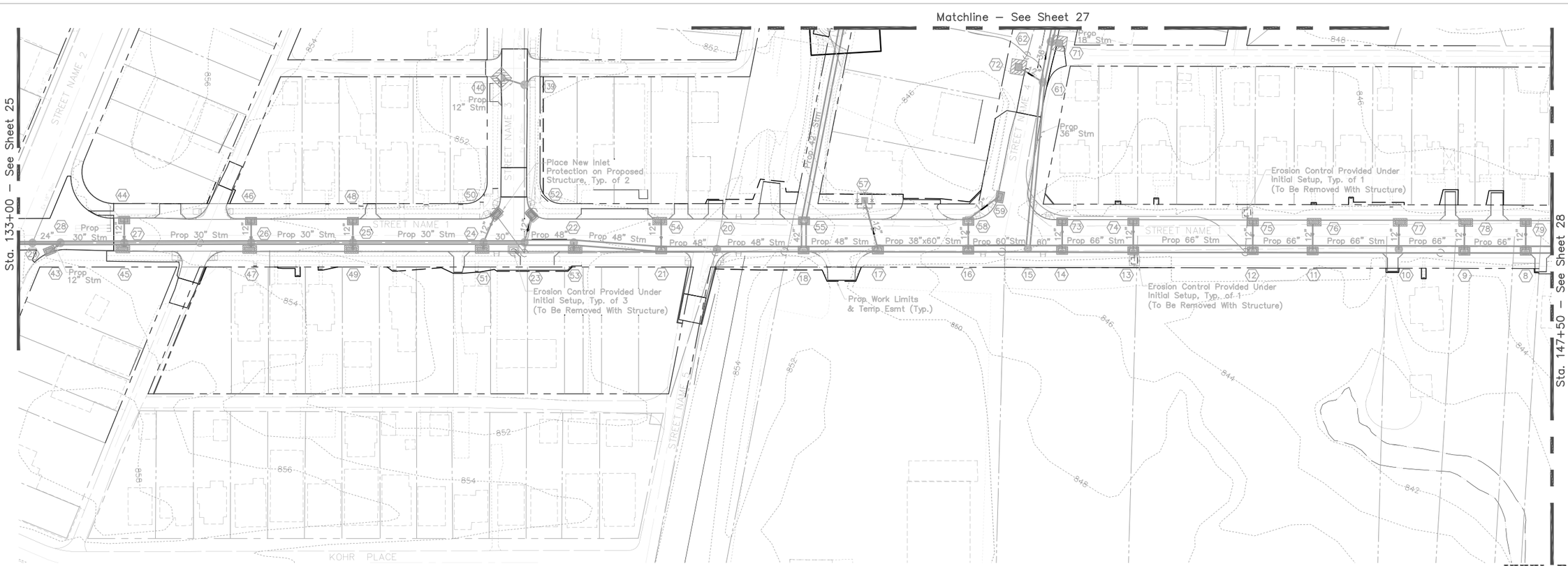
- Catch Basin Protection
- Inlet Protection
- Filter Fabric Fence
- Structure Number
- Perimeter Filter Fabric Fence
- Stabilized Construction Entrance
- Concrete Washout

Note A: The Contractor shall be responsible for maintaining on–site drainage at all times during construction. No separate payment shall be made for maintaining drainage.

Note B: Structures 45, 47, 49, 51, 53, 54, 76, 77, & 78 are double inlets and require two curb bags.

Construction Sequence

1. Install required sediment fence and inlet protection on existing inlets as shown on Phase 1 Plan.
2. Install utilities and storm sewers. Provide inlet protection.
3. Construct proposed street and utilities.
4. Stabilize the disturbed areas per temporary and permanent seeding requirements.
5. Remove storm sewer inlet protection.



HORIZ. SCALE 50 0 25 50

CALCULATED

CHECKED

STORM WATER POLLUTION PREVENTION PLAN

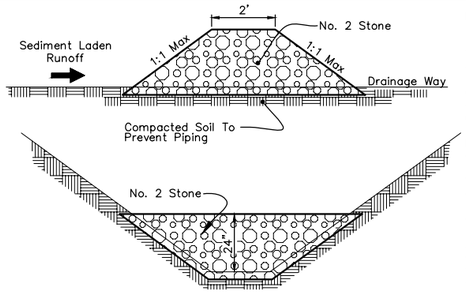
PROJECT NAME

X / XX

XXXX–E

REVISED 12/2/11

ROCK CHECK DAM



MAINTENANCE:

Aggregate check dams shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.

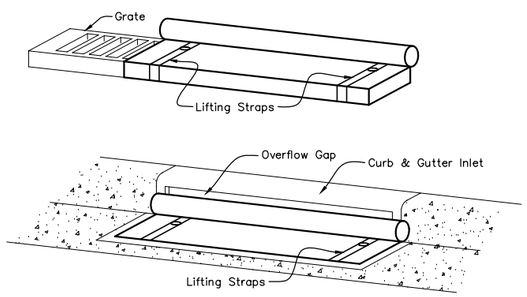
Close attention shall be paid to the repair of damaged check dams, end runs and undercutting beneath dams.

Necessary repairs to check dams shall be accomplished promptly.

Sediment deposits should be removed after each rainfall. They must be removed when the level of deposition reaches approximately one–half the height of the barrier.

Any sediment deposits remaining in place after the aggregate is no longer required shall be dressed to conform to the existing grade, prepared and seeded.

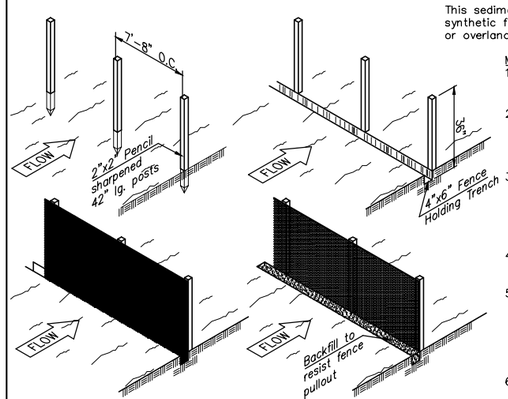
CURB INLET PROTECTION WITH GRATE



MAINTENANCE:
With a stiff bristle broom sweep silt and other debris off surface after each event.

USE FOR INLETS:
6–9, 11–14, 16–18, 21, 37–41, 43–54, 58, 59, 68–70, 73–81, 84, 85, 87–93, 95, 97–103, 126, 127, 129, 131, 150

SEDIMENT FENCE



FABRIC PROPERTIES	VALUES	TEST METHOD
Grab Tensile Strength	90 lb. Minimum	ASTM 1682
Mullen Burst Strength	190 psi Minimum	ASTM 3786
Slurry Flow Rate	0.3 gal./min./f^2 Max	
Equivalent Opening Size	40–80	U.S. Std. Sieve CW–02215
Ultraviolet Radiation Stability	90% Minimum	ASTM–G–26

Note: The use of straw wattles has proven to be a versatile and effective ESC BMP, especially in residential settings. Straw wattles may be substituted for silt fence in linear installations. See detail, Sheet 27.

SILT FENCE:

This sediment barrier utilizes standard strength or extra strength synthetic filter fabrics. It is designed for situations in which only sheet or overland flows are expected.

MATERIAL PROPERTIES ARE:

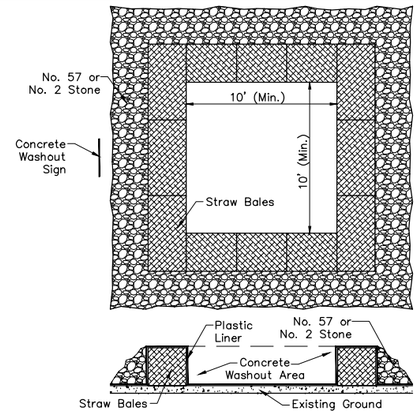
1. The height of a silt fence shall not exceed 36 inches (higher fences may impound volumes of water sufficient to cause failure of the structure).
2. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum of a 6 inch overlap, and securely sealed.
3. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). Wood posts will be a minimum of 32" long When extra strength fabric is used without the wire support fence, post spacing shall not exceed 6 feet.
4. A trench shall be excavated approximately 4 inches wide and 6 inches deep along the line of posts and upslope from the barrier.
5. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least 1–inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.
6. The standard strength filter fabric shall be stapled or wired to the fence, and 8 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
7. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of Item No. 6 applying.
8. The trench shall be backfilled and soil compacted over the filter fabric. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.
9. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
10. To prevent water ponded by the silt fence from flowing around the ends, each end shall be constructed upslope so that the ends are at a higher elevation.

MAINTENANCE:
Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one–half the height of the barrier.

Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

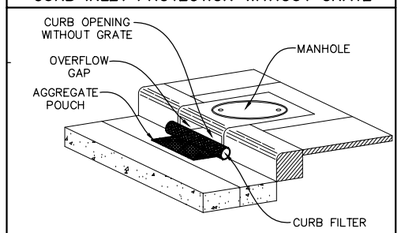
CONCRETE WASHOUT AREA



Concrete trucks shall utilize areas to washout trucks. Accumulated concrete shall be removed from the site and disposed of properly.

As an alternative, contractor shall use a roll off box with liner.

CURB INLET PROTECTION WITHOUT GRATE



MAINTENANCE:
Remove all accumulated sediment and debris from the surface and vicinity of the unit after each storm event.

If using optional oil absorbents, remove and replace absorbents when they near saturation.

USE FOR INLETS:
Existing (See sheet 24)

CONTRACTOR RESPONSIBILITY: Details have been provided on the plans in an effort to help the Contractor provide erosion and sedimentation control. The details shown on the plan shall be considered a minimum. Additional or alternate details may be found in the O.D.N.R. Manual "Rainwater and Land Development". The Contractor shall be solely responsible for providing necessary and adequate measures for proper control of erosion and sediment runoff from the site along with proper maintenance and inspection in compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity.

Prior to Construction Operations in a particular area, all sedimentation and erosion control features shall be in place. Field adjustments with respect to locations and dimensions may be made by the Engineer.

The Contractor shall place inlet and channel protection for erosion control immediately after construction of the inlets or channels which are not tributary to a sediment basin or dam.

It may become necessary to remove portions of the barrier during construction to facilitate the grading operations in certain areas. However, the barrier shall be in place in the evening or during any inclement weather.

The limits of seeding and mulching are as shown within the plans. Those areas disturbed outside the seeding limits shall be seeded and mulched at the Contractor's expense.

"Temporary seeding" No area for which grading has been completed or where a denuded area will remain idle for more than 21 days shall be left unseeded for longer than 7 days. If permanent seed is not applied at this time, temporary seeding shall be done at the following rates:

March 1 to August 15
Seed: Oats 2 lbs./1,000 Sq.Ft.
Fertilizer: (12:12:12) 25 lbs./1,000 Sq.Ft.
Mulch: (Straw or Hay) 2 tons/acre

August 15 to November 1
Seed: Annual Rye 2 lbs./1,000 Sq.Ft.
Fertilizer: (12:12:12) 25 lbs./1,000 Sq.Ft.
Mulch: (Straw or Hay) 2 tons/acre

November 1 to March 1
Mulch (ONLY): (Straw or Hay) 2 tons/acre

"Permanent seeding" shall be done between March 15 and September 15. If seeding is done between September 15 and March 15, it shall be classified as "Temporary Seeding." Permanent seed shall be 40% Kentucky Bluegrass, 40% Creeping Red Fescue, 20% Annual Ryegrass. Permanent seeding shall consist of fertilizing, watering and seeding rates indicated under Item 659. Seeding shall be applied within two (2) days after final grading or following seed bed preparation.

Rates of application of Item 659:
Seed: 4 lbs./1,000 Sq.Ft.
Fertilizer: (12:12:12) 20 lbs./1,000 Sq.Ft.
Mulch: Straw (Hay) 2 tons/acre (3 tons/acre)

MAINTENANCE: It is the Contractor's responsibility to maintain the sediment control features used on this project. The site shall be inspected periodically and within 24 hours of a significant rainfall. Records of these inspections shall be kept and made available to jurisdictional agencies if requested. Any sediment or debris which has reduced the efficiency of a structure shall be removed immediately. Should a structure or feature become damaged, the Contractor shall repair or replace at no additional cost to the Owner. Not all details shown on this sheet may be required for this project. Reference Sediment Control Plan.

The cost for temporary channels, sediment dams, sediment basins, and other appurtenant earthmoving operations shall be included in the price bid for erosion and sedimentation control quantities.

Not all details shown on this sheet may be required for this project.

The Contractor shall be responsible to ensure that off–site tracking of sediments by vehicles and equipment is minimized. All such off–site sediment shall be cleaned up daily. Construction of stabilized construction entrances are a part of that responsibility.

Street Cleaning (on an as–needed basis) ir required through the duration of this construction project. This includes sweeping, power cleaning and (if necessary) manual removal of dirt or mud in the street gutters.

The Contractor shall be responsible to ensure that no solid or liquid waste is discharged into stormwater runoff. Sediment–laden water shall be filtered through the use of sediment filtering fences or sedimentation basins prior to discharge to surface waters. Concrete trucks will not be allowed to wash out or discharge surplus concrete into or alongside rivers, streams, and creeks or into natural or man–made channels or swales leading thereto. Concrete truck wash water and surplus concrete shall be confined to areas approved by the Engineer; after solidifying, these waste materials shall be removed from the site.

ALL EROSION & SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DIRECTION OF THE CITY OF COLUMBUS AND/OR OHIO EPA.

SEDIMENT AND EROSION CONTROL QUANTITIES

ITEM	TOTAL QUANTITY							UNIT	
	24	25	26	27	28	29	TOTAL		
207	-	-	-	-	225	3350	3575	LIN. FT.	PERIMETER FILTER FABRIC FENCE
207	-	4	3	-	1	-	8	EACH	INLET PROTECTION
207	-	6	44	3	23	-	76	EACH	CATCH BASIN PROTECTION
207	16	-	1	-	15	4	36	EACH	FILTER FABRIC CATCH BASIN PROTECTION
207	-	-	-	7	2	2	11	EACH	ROCK CHECK DAM
207	-	-	-	-	-	1	1	EACH	STABILIZED CONSTRUCTION ENTRANCE
207	-	-	-	-	-	1	1	EACH	CONCRETE WASHOUT AREA

PLAN DESIGNER: NAME
ADDRESS
PHONE

OWNER: City of Columbus
Division of Sewerage & Drainage
1250 Fairwood Ave.
Columbus, Ohio 43206

PROJECT DESCRIPTION: The project consists of approximately 2,100 feet of roadway reconstruction, 700 feet of sidewalk / shared use path addition (beyond roadway reconstruction area), 4,500 feet of storm sewer replacement / installation (beyond roadway reconstruction and sidewalk / path installation areas), 1,100 feet of ditch regrading, 1,100 feet of stream restoration and the establishment of a regional detention basin. The roadway reconstruction and sidewalk / path installation areas include replacements or additions of storm sewers, waterlines, traffic signals, and street lighting.

EXISTING SITE CONDITIONS: The entire project Corridor discharges directly to the Linden Ditch (Argyle Ditch). Storm water reaches Linden Ditch via existing storm sewer systems.

RECEIVING STREAM: Alum Creek

ADJACENT AREAS: The project corridor is located within a residential area and commercial area.

CRITICAL AREAS: Work will occur in existing stream channels in the area of the proposed detention basin and box culvert at Parkwood Avenue.

EROSION AND SEDIMENT MEASURES: Erosion and sediment will be controlled by the use of inlet protection at storm sewer inlets and the use of construction techniques to minimize the disturbance along the existing channel. To the extent practical, "clean water" from the upstream watershed will be diverted around the in–stream construction activities and sediment–laden water from the construction area will be filtered prior to being released to the downstream channel.

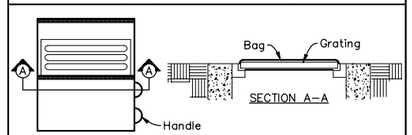
PERMANENT STABILIZATION: All disturbed areas shall be seeded and mulched. Geotextile reinforcement of earthen embankment is specified when in vicinity of channel banks. Hardened, non–erodible materials area also specified for channel bank reinforcement.

MAINTENANCE: All erosion control devices are to be inspected by the construction superintendent daily and after rainfalls. Any damaged facilities are to be replaced / repaired immediately as may be necessary.

CONSTRUCTION: The Contractor shall provide a schedule of operations to the City. Sedimentation and erosion control features shall be placed and maintained in accordance with this schedule.

SITE: City of Columbus
Project Engineer:
Phone:

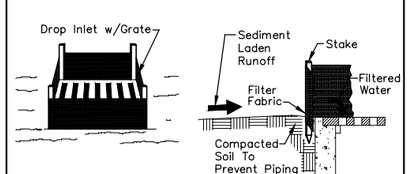
CATCH BASIN PROTECTION



MAINTENANCE:
With a stiff bristle broom or square point shovel remove silt & other debris off surface after each event.

USE FOR CATCH BASINS:
71, 72, 133, 134, 136, 138, 140

FILTER FABRIC CATCH BASIN PROTECTION



USE FOR CATCH BASINS:
57, 104, 105, 110–117, 119, 121–123, 145–148, Existing (See sheets 24 & 28)

SPECIFIC APPLICATION:
This method of inlet protection is applicable where the inlet drains a relatively flat area (slopes no greater than 5 percent) where sheet or overland flows (not exceeding 0.5 cfs) are typical. This method shall not apply to inlets receiving concentrated flows, such as in street and highway medians.

HORIZ. SCALE
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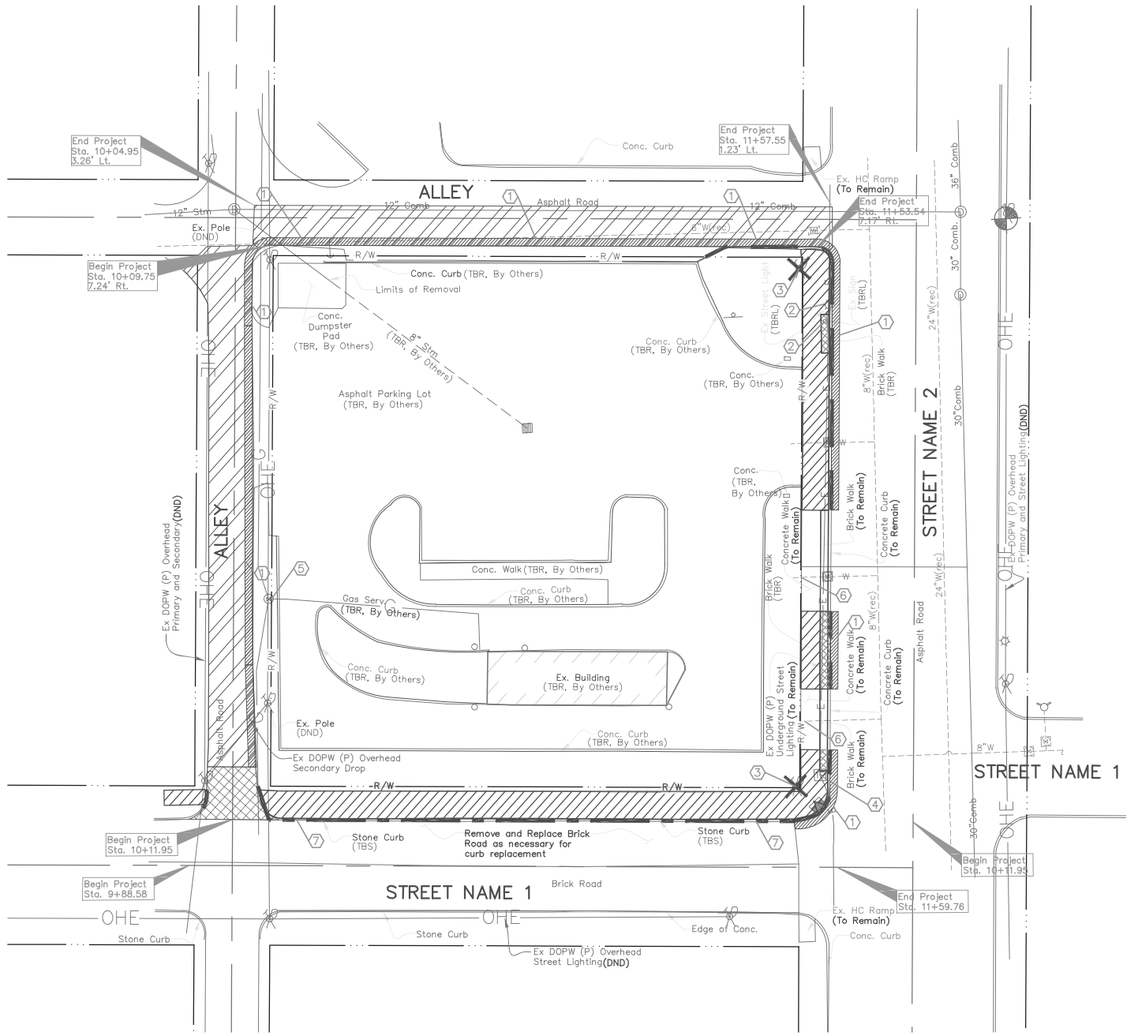
STORM WATER POLLUTION PREVENTION PLAN

PROJECT NAME

X
XX

XXXX–E

REVISED 12/2/11



RIGHT-OF-WAY DEMOLITION PLAN

Scale: 1" = 20'

LEGEND

Wood Pole, To Be Removed	
Concrete Curb, To Be Removed	
Stone Curb, To Be Removed	
Concrete Walk, To Be Removed	
Brick Walk, To be Removed (Bricks to be Salvaged)	
2' Sawcut and Pavement Repair Per Detail A, Sheet X.	
1 1/4" Pavement Mill and Overlay	
Remove Existing Pavement, Brick, & Base	
Item to be Removed	TBR
Do not Disturb	DND
Item to be Relocated	TBRL
Item to be Salvaged	TBS
Item to be Removed by Site Demolition Contractor	(TBR, By Others)

NOTES

1. Existing storm sewers, sanitary sewers, and waterlines shall be protected and remain in place undisturbed unless specifically listed for abandonment and/or removal on the demolition plan.
2. Adjust all castings to top of finish grade.
3. The Contractor shall obtain all necessary permits prior to demolition.
4. It shall be the responsibility of the Contractor to remove all debris associated with this demolition, not pre-assigned for return to a specific organization, off-site prior to project completion. In no instance shall material be buried on the site.
5. Sawcut and remove existing concrete sidewalks and curb to the nearest joint. Connect proposed concrete to existing concrete with expansion joint material as needed.
6. The Contractor is responsible for the restoration of adjacent properties or structures that may become damaged as a result of demolition.
7. Any existing pavement disturbed beyond the work shown on the plans shall be repaired or replaced in accordance with Item 252 and City of Columbus Standard Drawing 1441 at the Contractors expense.
8. Protect all existing site features to remain. Repair any damages to the satisfaction of the owner at no additional cost.

CODED NOTES

1. Sawcut existing pavement at limits of demolition with neat, straight lines.
2. Refer to Improvement Plan, Sheet X for locations of Relocated Street Sign and Light Pole.
3. Wood Pole, To be Removed.
4. Existing Pull Box, To be Adjusted to Grade.
5. Existing Gas service to be cut and plugged at R/W. Refer to CC-XXXXX.
6. Existing water service to be cut and plugged at the corporation stop by others. Refer to water service plan WSP-XXX.
7. The contractor shall remove, salvage and deliver to the City of Columbus the stone (Sandstone, Granite, etc.) curbing from the existing City streets as indicated by this plan. The curb sections shown on the plans to be salvaged shall be carefully removed from the existing street without unnecessary damage and cleaned for re-use.

   Straight curb sections to be salvaged shall be at least 4 feet in length. Curved sections of any length shall be salvaged. All undamaged and cleaned curb sections shall be stacked (no more than 4 high) and securely fastened or boxed onto pallets. When the curbing has been secured to pallets the Contractor shall transport it to the City of Columbus, Divisions of Planning and Operations' 25th Avenue Maintenance Yard.

   Contractor must call the Maintenance Yard Manager at (614) 645-8120 at least two weeks in advance to make arrangements for the delivery. Payment for this work shall be made after the undamaged curbing has been delivered to the 25th Avenue Maintenance Yard. The cost for all work required to remove, clean, salvage, and deliver curbing shall be included in the unit bid price for Item 202 - Curb Removed for Storage, as per the plans and paid for by the Linear Foot.

HORIZ. SCALE
20 0 10 20

CALCULATED
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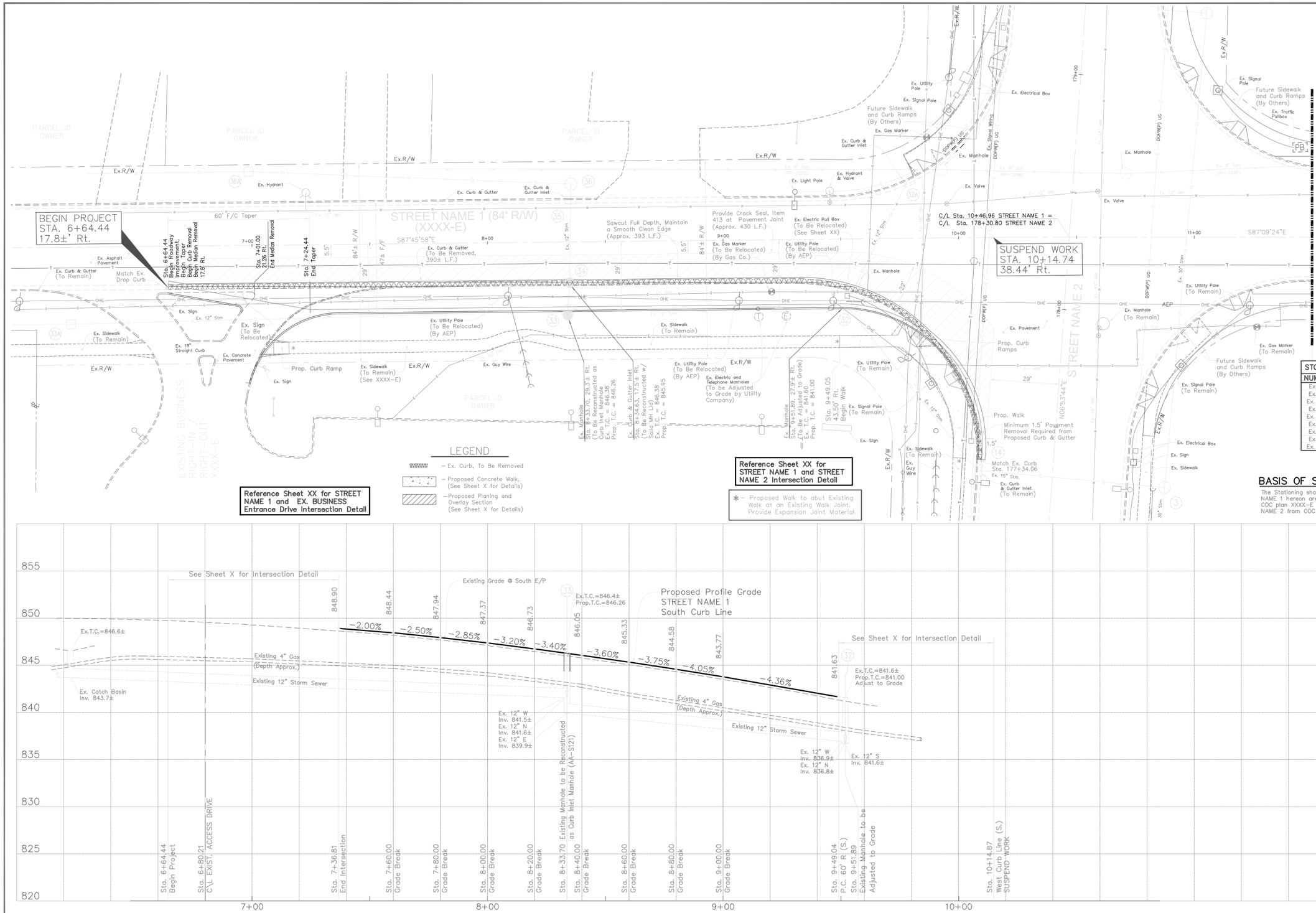
DEMOLITION PLAN

PROJECT NAME

XXXX-E

X
XX

Revised 12/2/11



STORM SEWER STRUCTURE TABLE		
NUMBER	NORTHING	EASTING
Ex. 14	740777.0864	1853588.1569
Ex. 32	740849.9482	1853536.2199
Ex. 32A	740901.5101	1853565.1443
Ex. 33	740853.1851	1853418.0613
Ex. 33A	740858.0112	1853207.3056
Ex. 34	740864.9631	1853419.4542
Ex. 35	740900.7942	1853421.6432
Ex. 36	740906.8512	1853422.0509
Ex. 36A	740918.9910	1853285.6782

BASIS OF STATIONING

The Stationing shown for STREET NAME 1 hereon are based on the COC plan XXXX-E and for STREET NAME 2 from COC plan XXXX-E.

HORIZ. SCALE 20 0 10 20

CALCULATED

CHECKED

PLAN & PROFILE

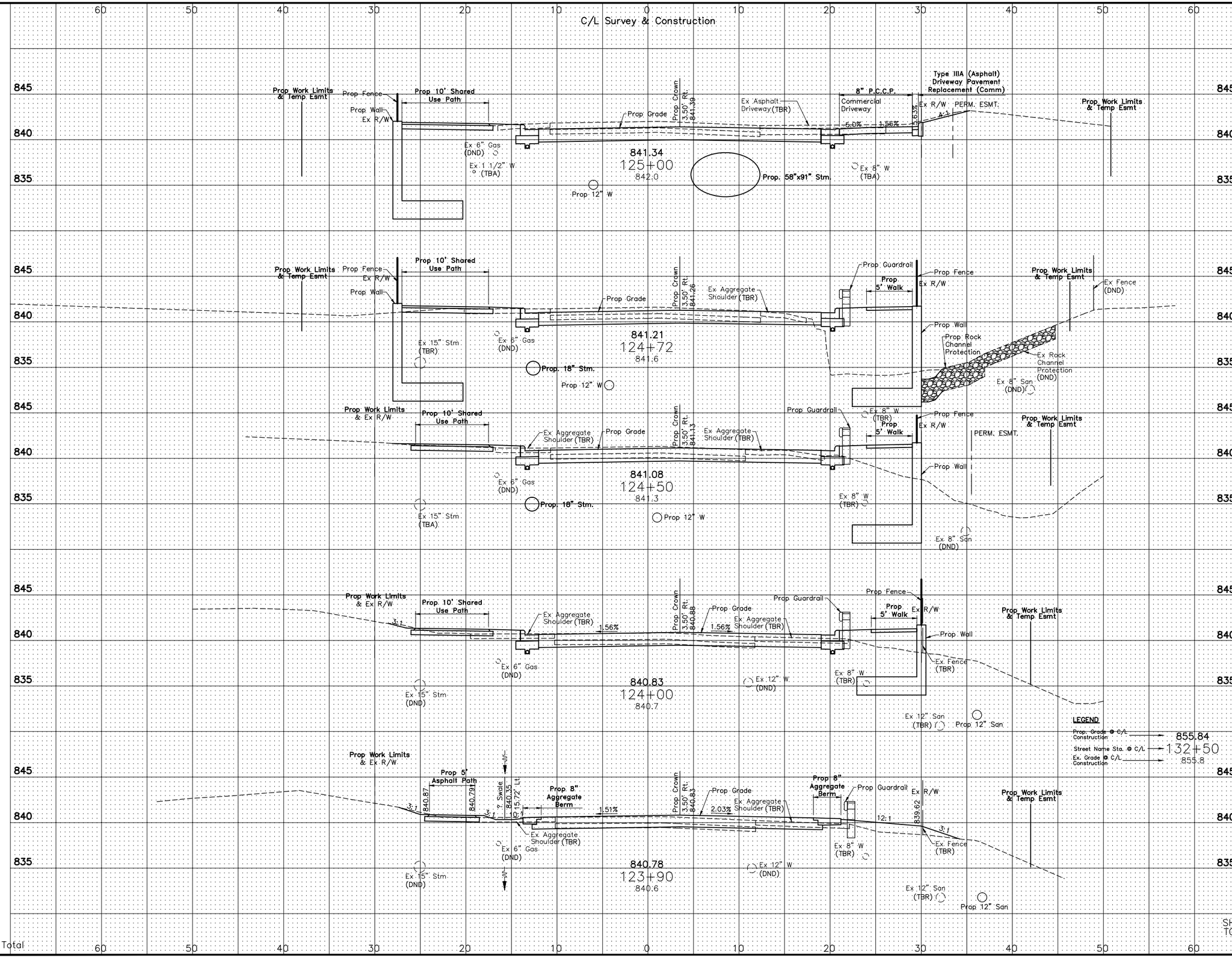
PROJECT NAME

X / XX

XXXX-E

Revised 12/2/11

SEEDING END WIDTH	SEEDING YDS.
31	63 <3> Lt (35) Rt
39	135 (7) Rt <14> Rt
31	86 <15> Rt
29	167 <34> Rt
33	34
	377 Total



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
82	29		
		73	49
58	66		
		48	35
59	20		
		104	36
53	19		
		18	6
43	11		
		66	16
SHEET TOTAL		309	142

HORIZ. 5 0 2.5 — VERTICAL SCALE 5 0 2.5

CALCULATED

CHECKED

STREET NAME 1 CROSS SECTIONS
STA. 123+50 TO STA. 125+00

PROJECT NAME

X
XX

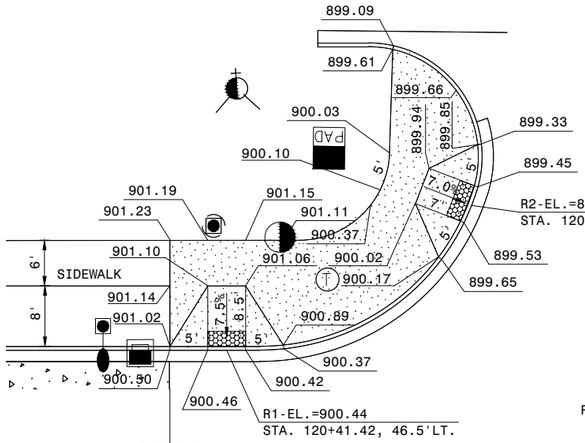
XXXX-E

REVISED 12/2/11

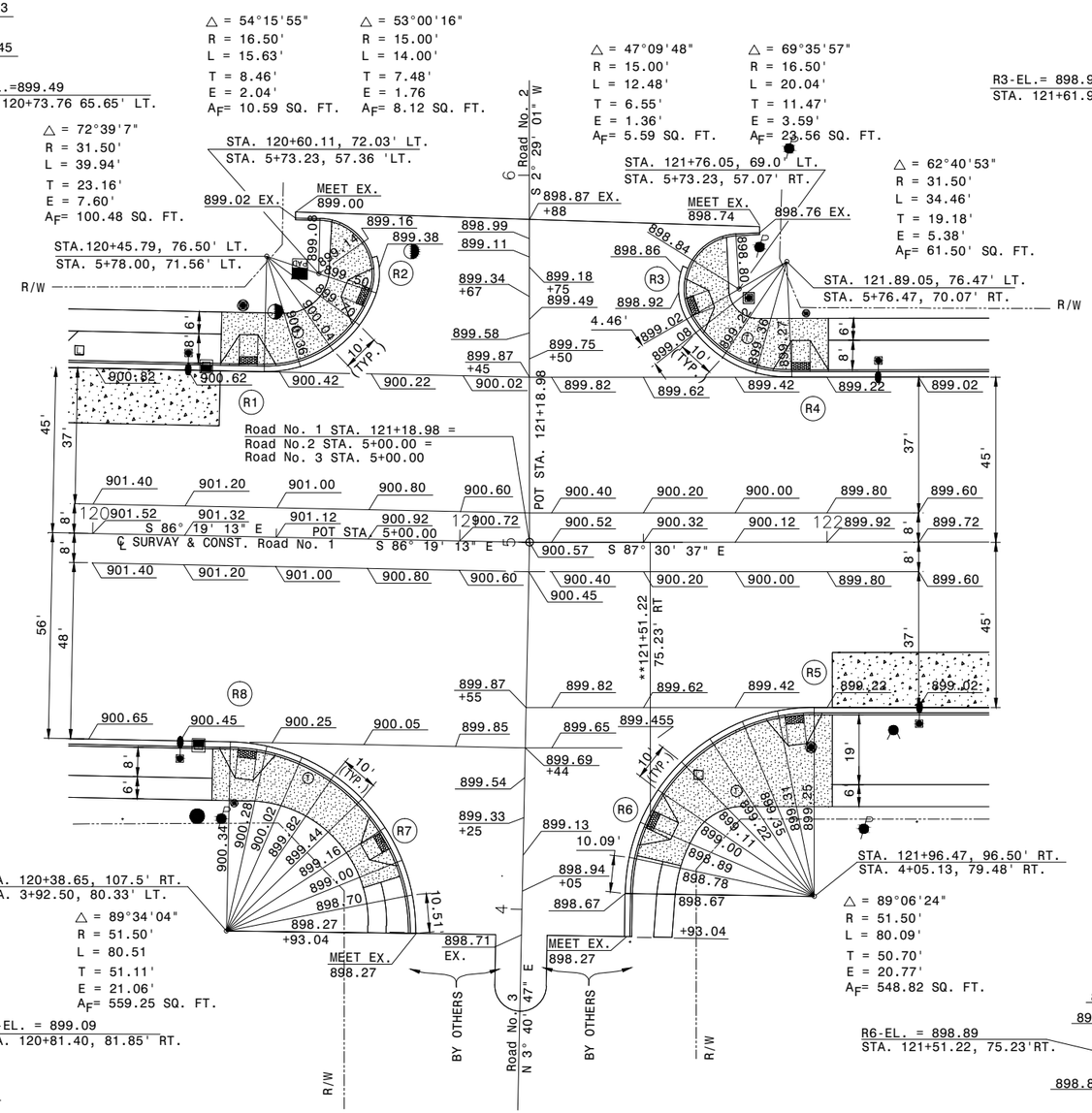
NOTES:

1.** CENTERLINE OF RAMP SHALL BE SET WITH STATION/OFFSET; PROJECT LINE PERPENDICULAR TO CENTERLINE OF ROAD TO ARRIVE AT THE RAMP CENTERLINE STATION.

2. 8" WALK SHALL BE PLACED AT THE INTERSECTIONS OF ARTERIAL ROADWAYS PER STD DWG 2303

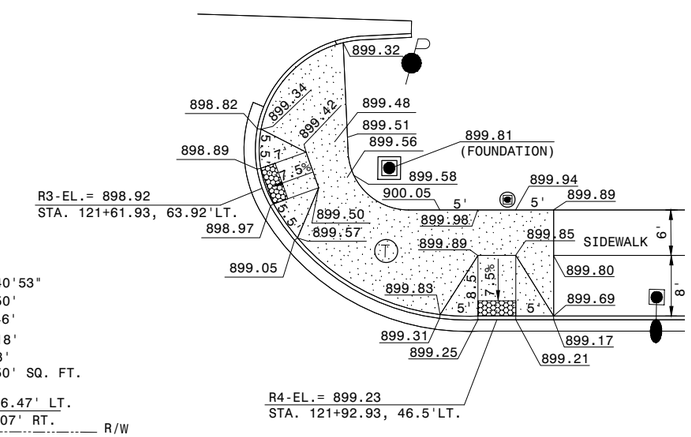


SCALE 1" = 10'



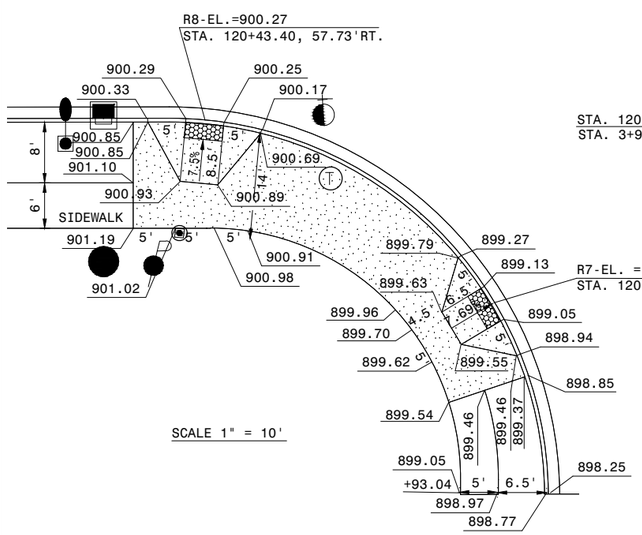
Road No. 1 AT Road No. 2/Road No. 3.

SCALE 1" = 20'

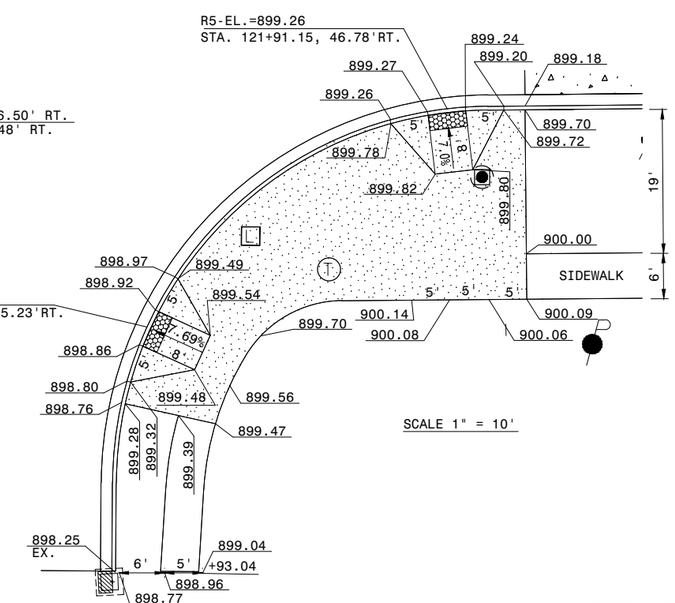


SCALE 1" = 10'

** FINAL FOUNDATION ELEVATION DETERMINED BY SIDEWALK PLACEMENT. SEE DETAIL ON SHEET 252.



SCALE 1" = 10'



SCALE 1" = 10'

NOTE:

THE SHOWN ELEVATIONS ALONG THE CURB AND CURB AND GUTTER, REPRESENTS EDGE OF PAVEMENT ELEVATIONS.

HORIZ. SCALE

50 0 25 50

CALCULATED

CHECKED

INTERSECTION & CURB RAMP DETAILS

PROJECT NAME

XXXX-E

X
XX

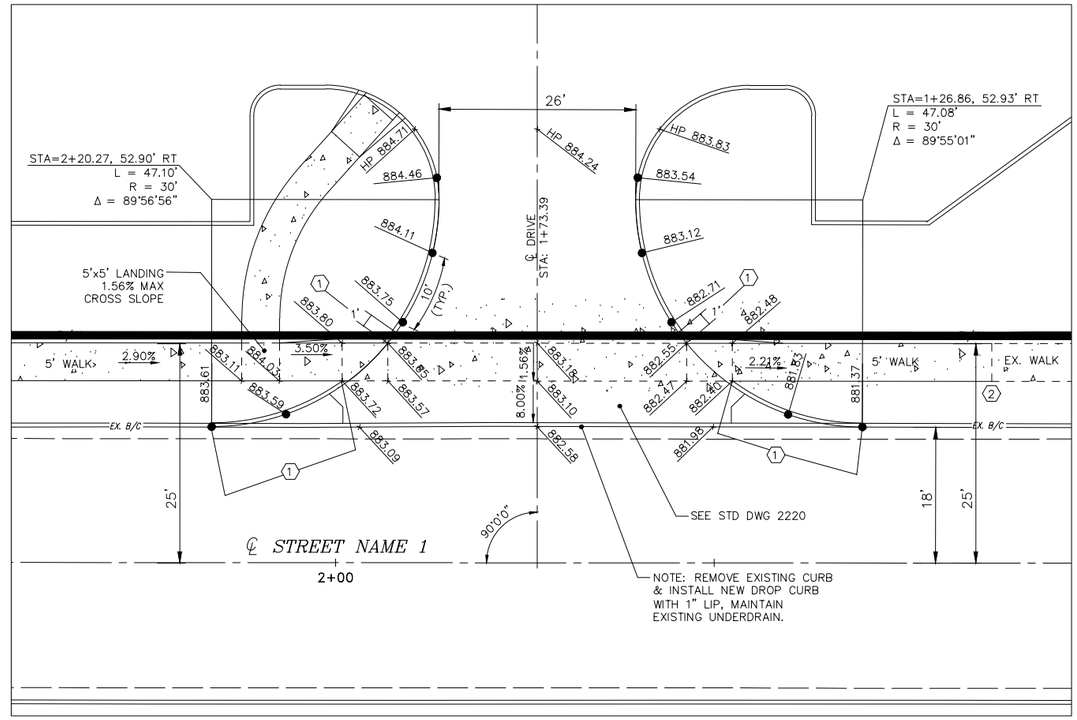
Revised 12/2/11

LEGEND

NOTES:
ALL SPOT ELEVATIONS SHOWN ALONG THE CURB REPRESENT THE BOTTOM OF CURB ELEVATION.

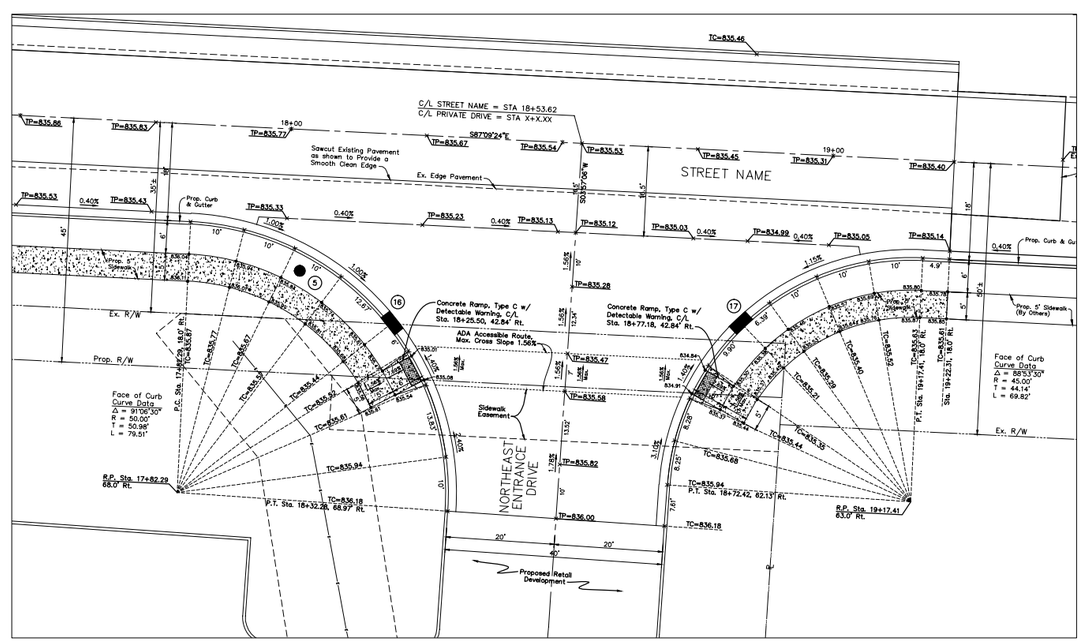
CONCRETE

KEYED NOTES:
1. TAPER CURB FROM 6" TO 0" IN DISTANCE SHOWN
2. SAWCUT EXISTING SIDEWALK AT NEAREST JOINT & INSTALL EXPANSION JOINT



Drive designed as Commercial Drive per Std Dwg 2220 (drop curb w/ 1" lip)

DETAIL – DRIVE STREET NAME 1 @ STATION 1+73.39



Drive designed as a Private Street (No drop curb)

DETAIL – DRIVE STREET NAME 1 @ STATION 18+53.62

CALCULATED ABC
CHECKED ABC

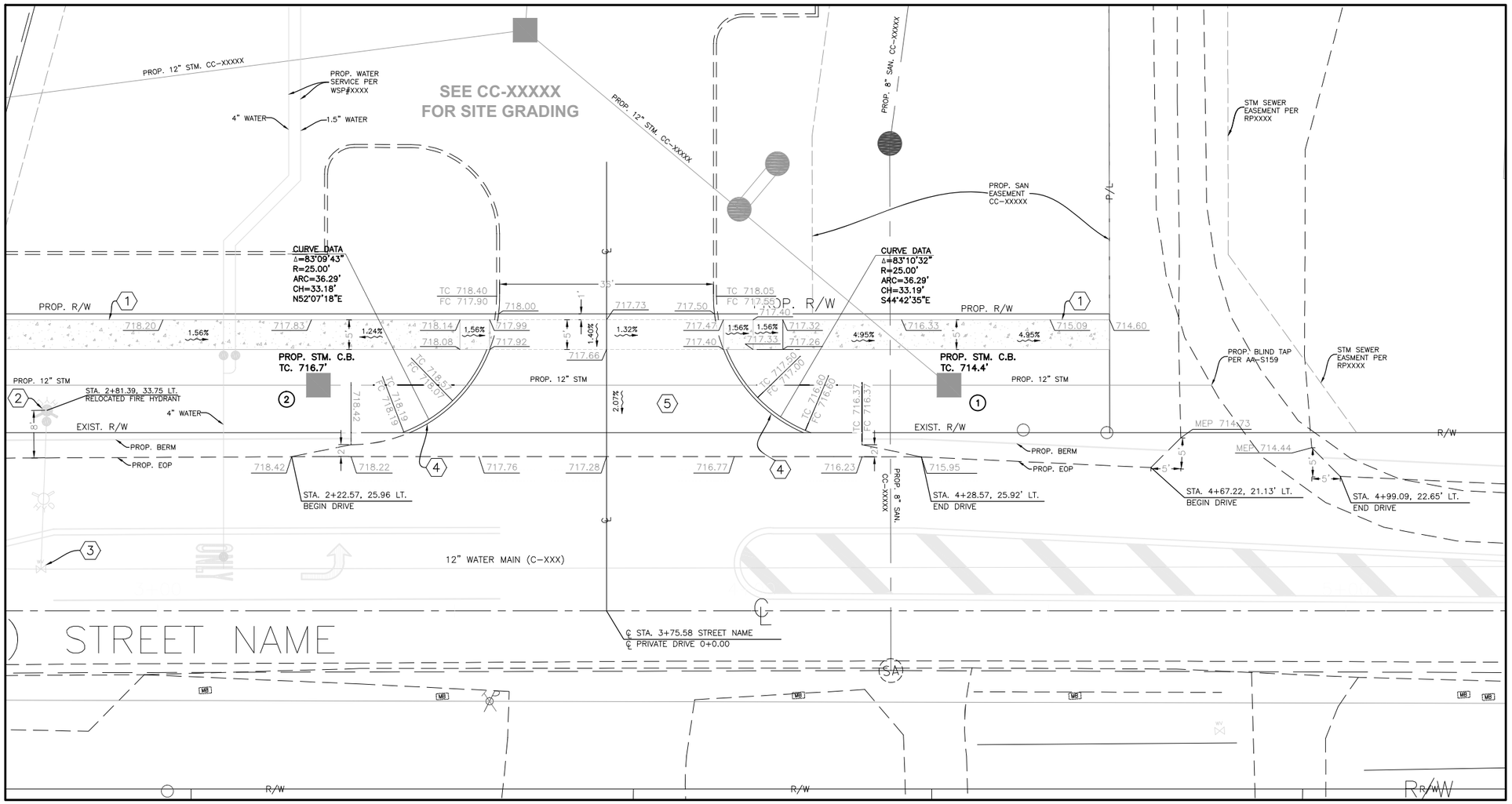
DETAIL–DRIVE
CURBED_STREET

PROJECT NAME

XXXX–E

X
XX

Revised 12/2/11



PROPOSED STORM STRUCTURES				
REFERENCE SHEET	NO.	STATION	OFFSET	DESCRIPTION
17	1	4+33.22	38.0' LT	CATCH BASIN, AA-S133
17	2	3+27.08	38.0' LT	CATCH BASIN, AA-S133

DETAIL - DRIVE - STREET NAME
@ ℄ STA. 3+75.58

SCALE: 1"=10'

KEYED NOTES

1. PROPOSED STANDARD SIDEWALK PER STD DWG 2300.
2. PROPOSED FIRE HYDRANT (TYPE 'A'). CONTRACTOR TO REUSE EXISTING FIRE HYDRANT IF PERMITTED BY DOPW (WATER).
3. EXISTING WATER VALVE. ADJUST TO GRADE.
4. TAPER CURB FROM 6" TO 0" OVER 10'.
5. PAVEMENT BUILDUP FOR DRIVE PER STD DWG 2221.
   ITEM 404 – 1 ¼"
   ITEM 402 – 1 ¾"
   ITEM 301 – 6" (2 LIFTS @ 3" EACH)
   ITEM 304 – 6"

STANDARD ABBREVIATIONS	
XXX.XX	= PROPOSED PAVEMENT GRADE ELEVATION
TC XXX.XX / FC XXX.XX	= PROPOSED TOP OF CURB/FACE OF CURB ELEVATION
METC XXX.XX	= MEET EXISTING TOP OF CURB
MEP XXX.XX	= MEET EXISTING PAVEMENT
EX XXX.XX	= EXISTING GRADE
EX XXX.XX(TC)	= EXISTING TOP OF CURB GRADE

LEGEND

SA	EXIST. SANITARY MANHOLE
ST	EXIST. STORM MANHOLE
	EXIST. CATCH BASIN
GV	EXIST. GAS VALVE
WV	EXIST. WATER VALVE
	EXIST. FIRE HYDRANT
	EXIST. POWER POLE
	EXIST. LIGHT POLE
	EXIST. GUY POLE
	EXIST. TRAFFIC SIGN
	EXIST. TRAFFIC LIGHT
OTL OEL	EXIST. OVERHEAD ELECTRIC/TELEPHONE LINE
EX GAS	EXIST. GAS LINE
Ex San	EXIST. SANITARY LINE
Ex Storm	EXIST. STORM LINE
Ex Water	EXIST. WATER LINE

HORIZ. SCALE 50 0 25 50

CALCULATED

CHECKED

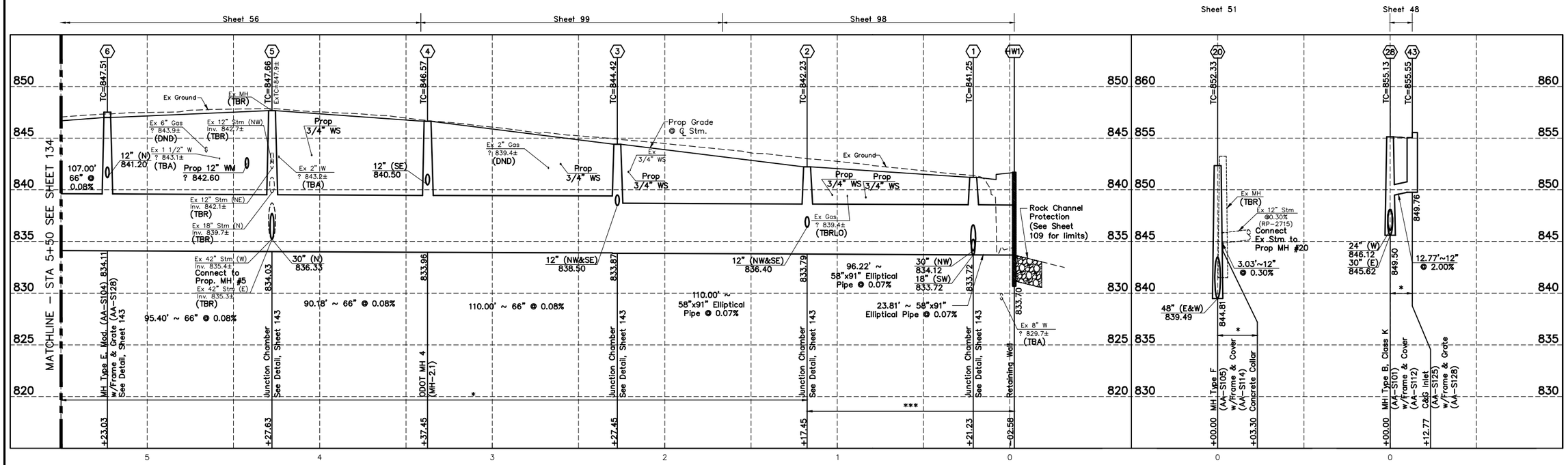
DETAIL – DRIVE
UNCURBED STREET

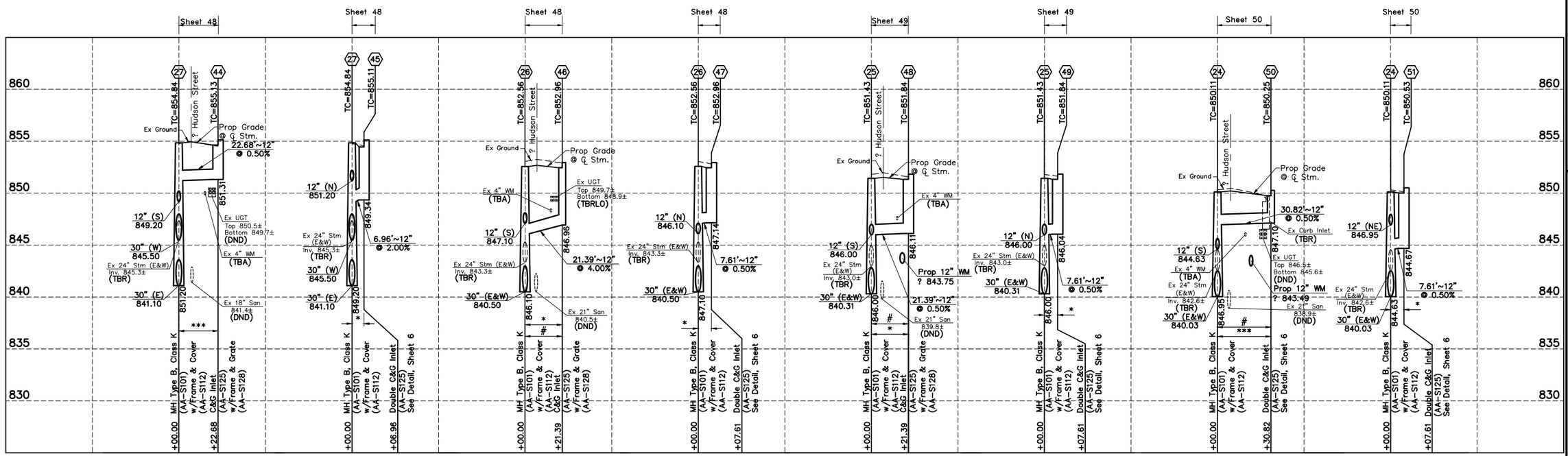
PROJECT NAME

XXXX–E

X/XX

Revised 12/2/11





NOTE: For Curb & Gutter Inlets, TC = Top of Curb = Top of Casting

* Compacted Granular Backfill Per Item 912
** Backfill Per Item 911
*** Concrete Encasement Per Item 910
\# Watertight joints per 901.15 and place trench dams per 901.11

HORIZ. 30 0 30 — VERTICAL SCALE 5 0 5 / 15 / 2.5

CALCULATED

CHECKED

STORM SEWER PROFILES

PROJECT NAME

XXXX–E

X / XX

REVISED 12/2/11

STORM SEWER COORDINATE DATA							
PROPOSED					AS BUILT		
PHASE	STRUCTURE	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION
1	HW1	765443.1428	1868084.5487	XXX.XX			
	1	765463.1414	1868119.1381	XXX.XX			
	2	765515.8380	1868140.5214	XXX.XX			
	3	765623.4468	1868144.0679	XXX.XX			
	4	765641.4017	1868016.9000	XXX.XX			
	5	765744.2256	1868022.9199	XXX.XX			
	6	765854.9803	1868029.4042	XXX.XX			
	7	765950.8717	1868035.0182	XXX.XX			
	8	766068.6700	1868041.9149	XXX.XX			
	9	766234.4419	1868051.6202	XXX.XX			
	10	766227.4869	1868170.4167	XXX.XX			
	11	766296.3689	1868174.4495	XXX.XX			
	12	766387.2134	1868179.7681	XXX.XX			
	13	766394.1684	1868060.9715	XXX.XX			
	14	766551.8983	1868070.2060	XXX.XX			
2	15	766645.0399	1868075.6591	XXX.XX			
	16	766745.6008	1868080.9619	XXX.XX			
	17	766851.6598	1868083.0556	XXX.XX			
1	18	765453.6270	1868144.5450	XXX.XX			
	19	765442.5894	1868173.5139	XXX.XX			
	20	765387.2464	1868171.8527	XXX.XX			
	21	765622.4240	1868161.5380	XXX.XX			
	22	765620.6121	1868192.4850	XXX.XX			
	23	765846.5320	1868174.6587	XXX.XX			
	24	765844.7202	1868205.6057	XXX.XX			
	25	766214.9569	1868196.2285	XXX.XX			
	26	766213.1450	1868227.1755	XXX.XX			
	27	766294.8201	1868200.9042	XXX.XX			
	28	766293.0083	1868231.8512	XXX.XX			
2	29	766752.6450	1868833.2432	XXX.XX			
	30	766758.9864	1868724.9287	XXX.XX			
	31	766760.7982	1868693.9817	XXX.XX			
	32	766761.8650	1868675.7609	XXX.XX			
	33	766768.4254	1868563.7047	XXX.XX			
	34	766826.3468	1868566.7439	XXX.XX			
	35	766777.8152	1868403.3220	XXX.XX			
	36	766837.9665	1868402.4935	XXX.XX			
	37	766943.0988	1868403.6609	XXX.XX			
	38	766723.1954	1868831.5190	XXX.XX			
	39	766692.2484	1868829.7072	XXX.XX			
	40	767113.2193	1868697.0844	XXX.XX			
	41	766732.9559	1868664.8045	XXX.XX			
	42	766702.0089	1868662.9927	XXX.XX			
	43	766732.5518	1868402.2517	XXX.XX			
	44	766702.8258	1868411.0473	XXX.XX			
	45	766845.1246	1868280.2281	XXX.XX			
1	Ex 4	765278.0020	1867824.6270	XXX.XX			
	46	765276.6194	1867844.5792	XXX.XX			
	47	765325.3081	1867876.0976	XXX.XX			
	EW1	765356.7696	1867896.4641	XXX.XX			
	Ex 2	765374.4739	1867690.9458	XXX.XX			
	48	765501.2345	1867710.4558	XXX.XX			
	HW2	765509.1319	1867762.5710	XXX.XX			

STORM SEWER DATA				
PHASE	STRUCTURE	DIRECTION	DISTANCE	SIZE
1	HW1-1	N 59°57'53" E	39.95'	36"
	1-2	N 22°05'11" E	56.87'	36"
	2-3	N 01°53'16" E	107.67'	30"
	3-4	N 81°57'49" W	128.43'	30"
	4-5	N 03°21'02" E	103.00'	30"
	5-6	N 03°21'02" E	110.94'	30"
	6-7	N 03°21'02" E	96.06'	30"
	7-8	N 03°21'02" E	118.00'	30"
	8-9	N 03°21'02" E	166.06'	30"
	9-10	S 86°38'58" E	119.00'	24"
	10-11	N 03°21'02" E	69.00'	24"
	11-12	N 03°21'02" E	91.00'	24"
	12-13	S 86°38'58" E	119.00'	24"
	13-14	N 03°21'02" E	158.00'	18"
2	14-15	N 03°21'02" E	93.30'	15"
	15-16	N 03°01'07" E	100.70'	15"
	16-17	N 01°07'51" E	106.08'	15"
1	1-18	S 69°28'12" E	27.13'	18"
	18-19	S 69°28'12" E	31.00'	15"
	19-20	S 01°43'10" W	55.37'	12"
	3-21	N 86°38'58" W	17.50'	12"
	21-22	S 86°38'58" E	31.00'	12"
	6-23	S 86°40'17" E	145.50'	12"
	23-24	S 86°38'58" E	31.00'	12"
	10-25	S 64°06'23" E	28.69'	12"
	25-26	S 86°38'58" E	31.00'	12"
	11-27	S 86°38'58" E	26.50'	15"
	27-28	S 86°38'58" E	31.00'	12"
2	Ex 3B-29	N 86°38'58" W	17.00'	36"
	29-30	N 86°38'58" W	108.50'	36"
	30-31	N 86°38'58" W	31.00'	36"
	31-32	N 86°38'58" W	18.25'	36"
	32-33	N 86°38'58" W	112.25'	36"
	33-34	N 03°00'13" E	58.00'	30"
	33-35	N 86°38'58" W	160.66'	30"
	35-36	N 00°47'21" W	60.16'	24"
	36-37	N 00°38'10" E	105.14'	24"
	29-38	S 03°21'02" W	29.50'	12"
	38-39	S 03°21'02" W	31.00'	12"
	32-40	N 03°28'23" E	352.00'	15"
	32-41	S 20°45'23" W	30.92'	12"
	41-42	S 03°21'02" W	31.00'	12"
	35-43	S 01°21'16" W	45.28'	12"
	43-44	S 16°28'58" E	31.00'	12"
	36-45	N 86°38'58" W	122.47'	12"
1	Ex 4-46	S 86°02'09" E	20.00'	24"
	46-47	N 32°55'01" E	58.00'	18"
	47-EW1	N 32°55'01" E	37.48'	12"
	Ex 2-48	N 8°44'59" E	128.25'	18"
	48-HW2	N 81°22'59" E	52.71'	12"

* Horizontal Reference Datum = NAD 83 (1986 Adj.) (Ohio South Zone)

HORIZ. SCALE

CALCULATED

CHECKED

STORM SURVEY COORDINATE DATA

PROJECT NAME

XXXX-E

X
XX

REVISED 12/2/11

STREET NAME 1

See Sheet 48		PROPOSED				AS-BUILT		
REF	ITEM	STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION
1	16"x12" Tapping Sleeve & Valve	133+39.09	733790.2523	1837620.9458	850.9±			
2	22.5° Bend (Horiz)	133+44.72	733787.6374	1837626.4294	850.90			
3	3/4" WS (Short)	134+30.00	733782.5933	1837712.0123	849.23			
4	Grade Break Use Joint Defl (Vert)	134+70.00	733780.2664	1837751.4926	848.45			
5	Grade Break Use Joint Defl (Vert)	135+00.00	733778.5013	1837781.4406	848.45			
6	3/4" WS (Long)	135+23.00	733777.1246	1837804.7991	848.13			

See Sheet 49		STREET NAME 1						
1	3/4" WS (Short)	135+38.00	733776.2543	1837819.5648	847.92			
2	3/4" WS (Long)	135+57.00	733775.1396	1837838.4785	847.65			
3	12"x6" Anchor Tee	135+70.00	733774.3827	1837851.3194	847.47			
4	22.5° Bend (Horiz)	135+75.00	733744.0886	1837856.3107	847.40			
5	3/4" WS (Short)	135+87.00	733768.4036	1837868.0326	845.59			
6	3/4" WS (Long)	135+95.00	733766.3149	1837872.3390	844.38			
7	22.5° Bend (Horiz)	135+99.14	733762.6854	1837879.8227	843.75			
8	1" WS (Short)	136+20.00	733761.4581	1837900.6464	843.75			
9	3/4" WS (Long)	136+28.00	733760.9878	1837908.6271	843.75			
10	1" WS (Short)	136+58.00	733759.2194	1837938.6304	843.75			
11	3/4" WS (Long)	136+68.00	733758.6283	1837948.6596	843.75			
12	3/4" WS (Short)	136+85.00	733757.6335	1837965.1008	843.75			

See Sheet 50		STREET NAME 1						
1	3/4" WS (Long)	137+34.00	733754.7202	1838014.9676	843.75			
2	12"x8" Tee	137+66.16	733752.8585	1838046.5550	843.75			
3	45° Bend (Vert)	137+71.35	733752.5534	1838051.7322	843.75			
4	45° Bend (Vert)	137+75.00	733752.3386	1838055.3759	840.10			
5	45° Bend (Vert)	137+85.38	733751.7279	1838065.7379	840.10			
6	45° Bend (Vert)	137+90.00	733751.4561	1838070.3499	844.72			
7	3/4" WS (Long)	137+99.00	733750.9074	1838079.6586	844.86			
8	12" Valve w/ Cols. Std HD Valve Box	138+04.32	733750.6132	1838084.6500	844.95			
9	3/4" WS (Long)	138+21.00	733749.6170	1838101.5536	845.21			
10	3/4" WS (Short)	138+83.00	733745.9658	1838163.5023	846.19			
11	3/4" ARO w/ Ferrule Box	138+95.00	733745.2783	1838175.1680	846.38			
12	22.5° Bend (Vert)	139+00.00	733744.9841	1838180.1593	846.46			
13	22.5° Bend (Vert)	139+05.00	733744.6899	1838185.1507	844.39			
14	22.5° Bend (Vert)	139+10.14	733744.3875	1838190.2818	844.39			
15	22.5° Bend (Vert)	139+15.00	733744.1015	1838195.1333	846.40			

See Sheet 51		STREET NAME 1						
1	3/4" WS (Short)	139+37.00	733742.7819	1838217.5239	846.40			
2	12"x8" Anchor Tee	139+88.00	733739.8062	1838268.0106	846.40			
3	45° Bend (Vert)	140+16.96	733738.1026	1838296.9167	846.40			
4	45° Bend (Vert)	140+24.56	733737.6554	1838304.5035	838.80			
5	Horiz Bend Use Joint Defl	140+29.56	733737.3607	1838309.5042	838.80			
6	45° Bend (Vert)	140+50.42	733736.0896	1838330.3388	838.80			
7	45° Bend (Vert)	140+57.28	733735.6719	1838337.1861	845.66			
8	45° Bend (Vert)	141+00.00	733733.0704	1838379.8268	844.23			
9	45° Bend (Vert)	141+03.63	733732.8494	1838383.4501	840.60			
10	45° Bend (Vert)	141+09.32	733732.5029	1838389.1295	840.60			
11	45° Bend (Vert)	141+15.00	733732.1570	1838394.7990	842.95			
12	3/4" ARO w/ Ferrule Box	141+20.00	733731.8525	1838399.7897	842.78			

See Sheet 52		STREET NAME 1						
1	11.25° Bend (Vert)	142+12.27	733726.2337	1838491.8885	839.70			
2	12"x8" Tee	142+17.55	733725.9123	1838497.1561	838.71			
3	2" WS (Long)	142+21.00	733725.7293	1838500.1506	837.76			
4	11.25° Bend (vert)	142+46.46	733724.1517	1838526.0150	832.90			
5	45° Bend (Vert)	142+61.30	733723.2480	1838540.8275	832.90			
6	45° Bend (Vert)	142+65.00	733723.0227	1838544.5206	836.60			
7	12" Valve w/ Cols. Std HD Valve Box	142+74.09	733722.4692	1838553.5937	836.60			

See Sheet 53		STREET NAME 1						
1	12"x6" Anchor Tee	143+32.00	733718.9427	1838611.3963	836.60			

STREET NAME 1

See Sheet 54		PROPOSED				AS-BUILT		
REF	ITEM	STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION
1	3/4" WS (Long)	146+20.00	733701.4045	1838898.8684	836.60			
2	12"x6" Anchor Tee	146+82.00	733697.6297	1838960.7421	836.60			

See Sheet 55		STREET NAME 1						
1	22.5° Bend (Vert)	147+27.50	733694.8587	1839006.1623	836.60			
2	22.5° Bend (Vert)	147+32.67	733694.5439	1839011.3227	838.74			
3	3/4" WS (Long)	147+73.00	733692.0777	1839051.7456	839.34			
4	3/4" WS (Short)	147+76.00	733691.9172	1839054.3773	839.39			
5	3/4" WS (Long)	147+87.00	733691.2235	1839065.7475	839.56			
6	22.5° Bend (Vert)	147+98.73	733690.5211	1839077.2601	839.73			
7	22.5° Bend (Vert)	148+02.50	733690.2916	1839081.0231	838.17			
8	22.5° Bend (Vert)	148+07.50	733689.9871	1839086.0138	838.17			
9	22.5° Bend (Vert)	148+12.50	733689.6826	1839091.0045	840.24			

STREET NAME 1

See Sheet 56		PROPOSED				AS-BUILT		
REF	ITEM	STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION
1	3/4" WS (Long)	148+63.00	733686.6249	1839141.1242	841.01			
2	22.5° Bend (Vert)	149+02.05	733684.2294	1839180.3883	841.59			
3	22.5° Bend (Vert)	149+09.50	733683.7758	1839187.8245	838.50			
4	22.5° Bend (Vert)	149+14.50	733683.4713	1839192.8152	838.50			
5	22.5° Bend (Vert)	149+21.86	733683.0231	1839198.3050	841.55			
6	12" Valve w/ Cols. Std HD Valve Box	149+75.58	733679.7519	1839200.1616	841.55			
7	12"x12" Tee	149+96.47	733678.4798	1839274.6319	841.55			
8	12" Valve w/ Cols. Std HD Valve Box	150+09.96	733677.6595	1839288.0974	841.55			
9	12"x8" Tee	150+16.88	733677.2394	1839284.9992	841.55			
10	12" Valve w/ Cols. Std HD Valve Box	150+37.00	733676.0168	1839315.0866	841.55			
11	12"x6" Anchor Tee	150+66.00	733674.2551	1839344.0311	841.55			
12	3/4" WS (Short)	151+06.00	733671.8240	1839383.9748	841.55			

See Sheet 58		STREET NAME 1						
1	3/4" WS (Short)	151+50.00	733669.1293	1839428.2486	841.55			
2	3/4" WS (Long)	151+56.00	733668.8085	1839433.5193	841.55			
3	22.5° Bend (Vert)	151+56.96	733668.7290	1839434.8250	841.55			
4	22.5° Bend (Vert)	151+65.00	733668.2406	1839442.8502	838.22			
5	22.5° Bend (Vert)	151+70.00	733667.9368	1839447.8410	838.22			
6	22.5° Bend (Vert)	151+76.62	733667.5346	1839454.4487	840.96			
7	3/4" WS (Short)	151+81.00	733667.2853	1839458.5446	840.88			
8	3/4" ARO w/ Ferrule Box	151+82.09	733667.2023	1839459.9086	840.84			
9	3/4" WS (Short)	152+23.00	733664.7126	1839500.8136	839.92			
10	22.5° Bend (Vert)	152+48.26	733663.1823	1839525.9564	839.35			
11	22.5° Bend (Vert)	152+54.00	733662.8336	1839531.6858	836.97			
12	22.5° Bend (Vert)	152+59.00	733662.5299	1839536.6766	836.97			
13	22.5° Bend (Vert)	152+66.11	733662.0979	1839543.7734	839.91			
14	3/4" ARO w/ Ferrule Box	152+71.11	733661.7942	1839548.7642	839.89			
15	3/4" WS (Short)	152+76.00	733661.5015	1839553.5721	839.87			

See Sheet 59		STREET NAME 1						
1	3/4" WS (Short)	153+41.00	733657.5526	1839618.4521	839.55			
2	22.5° Bend (Vert)	153+61.11	733656.3265	1839638.5980	839.44			
3	3/4" WS (Short)	153+66.00	733656.0055	1839643.8720	837.41			
4	22.5° Bend (Vert)	153+67.00	733655.9686	1839644.4771	837.00			
5	22.5° Bend (Vert)	153+72.00	733655.6649	1839649.4678	837.00			
6	22.5° Bend (Vert)	153+79.73	733655.1953	1839657.1836	840.20			
7	3/4" WS (Short)	154+31.00	733652.0978	1839708.0749	840.20			
8	3/4" WS (Short)	154+65.00	733649.9910	1839742.6891	840.20			
9	12"x6" Anchor Tee	154+70.00	733649.7112	1839747.2868	840.20			
10	12" Valve w/ Cols. Std HD Valve Box	154+85.00	733648.7999	1839762.2591	840.20			
11	11.25° Bend (Vert)	154+94.97	733648.1942	1839772.2107	840.20			
12	11.25° Bend (Vert)	155+00.00	733647.8886	1839777.2314	841.20			

See Sheet 60		STREET NAME 1						
1	45° Bend (Horiz)	155+07.59	733647.4275	1839784.8074	841.20			
2	12"x8" Reducer	155+07.59	733647.4275	1839784.8074	841.20			
3	45° Bend (Horiz)	155+11.00	733650.6211	1839788.4149	841.20			

See Sheet 95		STREET NAME 2						
1	11.25° Bend (Horiz)	0+11.45	733729.5072	1838497.0996	838.71			
2	22.5° Bend (Vert)	0+23.02	733740.7054	1838499.9960	838.71			
3	22.5° Bend (Vert)	0+26.38	733743.9584	1838500.8374	837.32			
4	Grade Break Use Joint Defl (Vert)	0+32.36	733749.7479	1838502.3348	837.32			
5	12"x6" Anchor Tee	0+51.00	733767.7940	1838507.0025	837.81			
6	3/4" WS (Short)	0+62.00	733778.1749	1838509.6875	838.09			
7	22.5° Bend (Vert)	0+68.62	733784.8526	1838511.4147	838.26			
8	22.5° Bend (Vert)	0+74.05	733790.1096	1838512.7744	840.51			
9	8" Valve w/ Cols. Std Valve Box	0+94.30	733809.7145	1838517.8452	841.39			
10	45° Bend (Horiz)	1+04.00	733819.1054	1838520.2742	841.88			
11	45° Bend (Horiz)	1+13.50	733825.9238	1838531.8504	842.3±			

See Sheet 97		STREET NAME 2						
1	11.25° Bend (Horiz)	124+09.85	733188.2520	1839174.2390	833.50			
2	3/4" ARO w/Fer. Box	124+17.00	733195.2520	1839174.2508	833.50			

See Sheet 98		STREET NAME 3						
1	3/4" WS (Long)	124+39.31	733218.5452	1839174.2901	833.50			
2	11.25° Bend (Vert)	124+69.63	733249.7232	1839174.3428	833.50			
3	11.25° Bend (Horiz & Vert)	124+81.64	733259.5442	1839174.3594	831.60			
4	22.5° Bend (Vert)	124+90.64	733270.6834	1839177.0502	831.60			
5	22.5° Bend (Vert)	124+98.90	733278.7125	1839178.9898	835.02			
6	12"x6" Anchor Tee	125+50.00	733328.3838	1839190.9887	835.02			
7	11.25° Bend (Vert)	125+68.37	733346.2402	1839195.3022	835.02			
8	11.25° Bend (Vert)	125+73.50	733351.2267	1839190.5068	834.00			
9	22.5° Bend (Vert)	125+78.50	733356.0869	1839197.6809	834.00			
10	22.5° Bend (Vert)	125+85.23	733362.6288	1839199.2612	836.79			

STREET NAME 2

See Sheet 98		PROPOSED				AS-BUILT		
REF	ITEM	STATION	NORTHING	EASTING	ELEVATION	NORTHING	EASTING	ELEVATION
1	3/4" WS (Long)	124+39.31	733218.5452	1839174.2901	833.50			
2	11.25° Bend (Vert)	124+69.63	733249.7232	1839174.3428	833.50			
3	11.25° Bend (Horiz & Vert)	124+81.64	733259.5442	1839174.3594	831.60			
4	22.5° Bend (Vert)	124+90.64	733270.6834	1839177.0502	831.60			
5	22.5° Bend (Vert)	124+98.90	733278.7125	1839178.9898	835.02			
6	12"x6" Anchor Tee	125+50.00	733328.3838	1839190.9887	835.02			
7	11.25° Bend (Vert)	125+68.37	733346.2402	1839195.3022	835.02			
8	11.25° Bend (Vert)	125+73.50	733351.2267	1839190.5068	834.00			
9	22.5° Bend (Vert)	125+78.50	733356.0869	1839197.6809	834.00			
10	22.5° Bend (Vert)	125+85.23	733362.6288	1839199.2612	836.79			

See Sheet 99		STREET NAME 2						
1	3/4" WS (Short)	126+78.00	733452.4154	1839220.9507	838.64			
2	22.5° Bend (Vert)	126+78.32	733453.1160	1839221.1199	838.65			
3	22.5° Bend (Vert)	126+83.50	733458.1512	1839222.3362	836.50			
4	22.5° Bend (Vert)	126+88.50	733463.0114	1839223.5103	836.50			
5	22.5° Bend (Vert)	126+94.46	733468.8048	1839224.9098	838.97			
6	3/4" WS (Short)	127+19.00	733492.5485	1839230.6455	839.46			

See Sheet 56		STREET NAME 2						
1	Grade Break Use Joint Defl (Vert)	128+21.01	733591.8165	1839254.6253	841.50			
2	3/4" WS (Long)	128+62.00	733632.8658	1839264.5415	841.50			
3	12" Valve w/ Cols. Std HD Valve Box	128+68.00	733637.4937	1839265.6594	841.50			
4	11.25° Bend (Vert)	128+73.00	733642.3529	1839266.8333	841.50			
5	11.25° Bend (Vert)	128+78.53	733647.7283	1839268.1318	842.60			
6	11.25° Bend (Vert)	128+89.52	733658.4110	1839270.7124	842.60			
7	11.25° Bend (Vert)	128+94.80	733663.5434	1839271.9522	841.55			
8	11.25° Bend (Horiz)	129+04.88	733673.3384	1839274.3183	841.55			
9	8" Valve w/ Cols. Std HD Valve Box	129+30.77	733696.0493	1839296.1845	841.55			
10	22.5° Bend (Vert)	129+75.00	733740.6123	1839298.9927	841.55			
11	3/4" WS (Long)	129+80.00	733746.2412	1839299.3474	839.43			
12	22.5° Bend (Vert)	129+82.48	733748.0775	1839299.4631	838.40			
13	22.5° Bend (Vert)	129+87.48	733753.0676	1839299.7775	838.40			
14	22.5° Bend (Vert)	129+95.00	733760.5727	1839300.2505	841.55			

See Sheet 100		STREET NAME 2						
1	3/4" WS (Short)	130+50.00	733815.6172	1839303.7191	841.55			
2	2" WS (Long)	130+68.00	733833.8632	1839304.8688	841.55			
3	8" Valve w/ Cols. Std HD Valve Box	130+90.00	733855.3847	1839306.2250	841.55			
4	45° Bend (Horiz)	131+00.00	733865.3649	1839306.8539	841.55			
5	45° Bend (Horiz)	131+13.18	733877.6899	1839320.8367	843.0±			

See Sheet 50		STREET NAME 4						
1	8" Valve w/ Cols. Std HD Valve Box	0+23.50	733765.3369	1838047.2905	843.75			
2	45° Bend (Horiz)	0+35.90	733777.7191	1838048.0203	843.75			
3	8"x6" Reducer	0+38.73	733780.7024	1838045.3691	843.75			
4	45° Bend (Horiz)	0+40.90	733783.0046	1838043.3231	845.8±			

* Horizontal Reference Datum = NAD 83 (1986 Adj.) (Ohio South Zone)

LEGEND

ARO	Air Release Outlet
WS	Water Service
HD	Heavy Duty
Horiz	Horizontal
Vert	Vertical
Defl	Deflection

HORIZ. 10 0 10
VERTICAL SCALE 5 0 5 5 2.5

CALCULATED
CHECKED

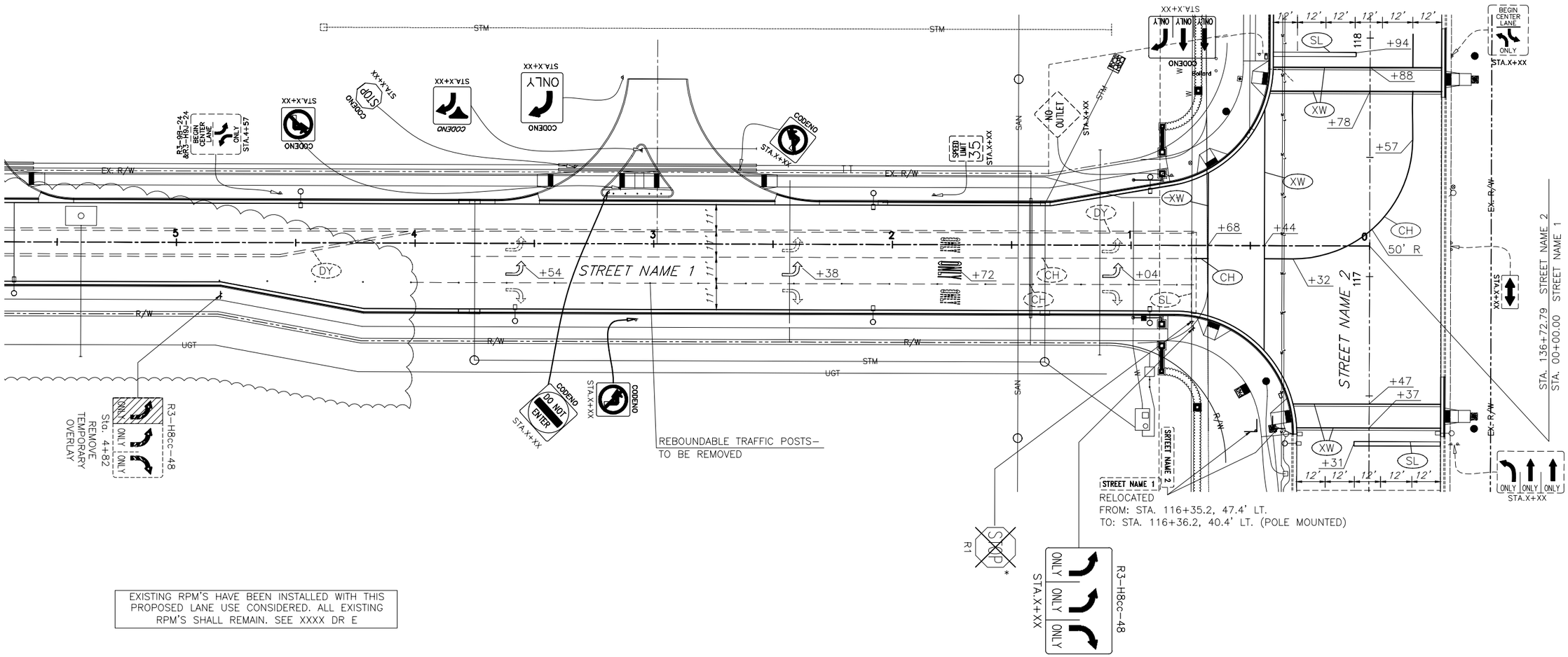
WATERLINE SURVEY COORDINATE DATA

PROJECT NAME

XXXX-E

X/XX

REVISED 12/2/11



EXISTING RPM'S HAVE BEEN INSTALLED WITH THIS PROPOSED LANE USE CONSIDERED. ALL EXISTING RPM'S SHALL REMAIN. SEE XXXX DR E

LEGEND

- (CH) PROPOSED PAVEMENT MARKINGS
- (DY) EXISTING PAVEMENT MARKINGS (TO REMAIN)
- PROPOSED SIGN
- EXISTING SIGN

LINE SPECIFICATIONS

WE	EDGE LINE, WHITE	SL	STOP LINE, 20" WHITE
YE	EDGE LINE, YELLOW	XW	CROSSWALK LINE, 10" WHITE
LL	LANE LINE, 5" YELLOW	WT	TRANSVERSE LINE, 20" WHITE
DY	CENTER LINE, 5" SOLID DOUBLE (5")	YT	TRANSVERSE LINE, 20" YELLOW
		WCM	CURB MARKING, WHITE
		YCM	CURB MARKING, YELLOW
CSD	CENTER LINE, 5" SOLID & DASHED (5")	WIM	ISLAND MARKING, WHITE
		YIM	ISLAND MARKING, YELLOW
		WD	DOTTED LINE, 4" WHITE
CD	CENTER LINE, 5" DASHED SINGLE	YD	DOTTED LINE, 4" YELLOW
CH	CHANNELIZING LINE, 10" WHITE	RM	REMOVAL OF PAVEMENT MARKINGS

SUB–SUMMARY OF TRAFFIC CONTROL ITEMS

ITEM NUMBER	QUANTITY	UNIT	ITEM DESCRIPTION	REFERENCE SHEET
202	43	EA	RAISED PAVEMENT MARKER REMOVED	
621	52	EA	RPM	
630	112	LF	GROUND MOUNTED SUPPORT, NO 3 POST, AS PER PLAN	
630	32.5	SF	SIGN, FLAT SHEET, TYPE G, AS PER PLAN	5
630	5	EA	REMOVAL OF GROUND MOUNTED SUPPORT AND DISPOSAL	
630	3	EA	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE	
644	164	LF	CENTER LINE, 5", SOLID DOUBLE	
644	868	LF	CHANNELIZING LINE	
644	64	LF	STOP LINE	
644	380	LF	CROSSWALK LINE	
644	11	EA	LANE ARROW	
644	4	EA	WORD ON PAVEMENT	
644	133	LF	DOTTED LINE, 4"	
644	1171	LF	REMOVAL OF PAVEMENT MARKINGS	
644	3	EA	REMOVAL OF PAVEMENT MARKINGS	

HORIZ. SCALE 20 0 10 20

CALCULATED

CHECKED

PAVEMENT MARKING AND SIGNING

PROJECT NAME

GENERAL

THESE SPECIFICATIONS, TOGETHER WITH THE ACCOMPANYING PLANS ARE INTENDED TO DESCRIBE THE TYPE, SIZE AND LOCATION OF THE PRODUCTS AND MATERIALS TO BE PROVIDED AND INSTALLED UNDER THE VARIOUS BID ITEMS RELATED TO TRAFFIC CONTROL. THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC CONTROL DEVICES AND RELATED MATERIALS IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS, AS WELL AS THE XXXX CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE CITY OF COLUMBUS AND THE STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE OHIO DEPARTMENT OF TRANSPORTATION. THESE SPECIFICATIONS SET FORTH THE MINIMUM PERFORMANCE AND OPERATING REQUIREMENTS OF THE TRAFFIC CONTROL ITEMS REFERRED TO HEREIN.

EXISTING UTILITIES

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE OBTAINED FROM THE OWNERS OF THE UTILITIES AS REQUIRED BY THE OHIO REVISED CODE SECTION 153.64

THE TRANSPORTATION DIVISION OR THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OR THE DEPTHS OF THE UNDERGROUND FACILITIES SHOWN ON THESE PLANS. SUPPORT, PROTECTION, AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE COST OF THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR THE VARIOUS ITEMS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AND THE FOLLOWING UTILITIES SO THEIR RESPECTIVE UTILITIES CAN BE MARKED. THE PROJECT ENGINEER SHALL NOT AUTHORIZE THE START OF ANY SIGNAL UNDERGROUND WORK UNTIL ALL UTILITIES HAVE BEEN MARKED.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AND THE UTILITIES NAMED BELOW SO THEIR RESPECTIVE FACILITIES CAN BE MARKED PRIOR TO CONSTRUCTION.

UTILITY	OWNER	TELEPHONE
Telephone Facilities*	AT&T ATTN. MR. TOM ZIOMEK MANAGER OSPE 111 NORTH 4TH STREET COLUMBUS, OHIO 43215	PHONE: (614) 223-7162 FAX: (614) 223-5579 TZ7315@SBC.COM
Cable Facilities	INSIGHT COMMUNICATIONS ATTN. MR. PAUL SIEMER DIRECTOR OF CONSTRUCTION 3770 EAST LIVINGSTON AVENUE COLUMBUS, OHIO 43227	PHONE: (614) 501-9432 EXT-207 FAX: (614) 501-9513 SIEMER.P@INSIGHT-COM.COM
	WIDE OPEN WEST ATTN. JAYTEE NOVARIA CONSTRUCTION SUPERVISOR 3675 CORPORATE DRIVE COLUMBUS, OHIO 43231	PHONE: (614) 948-4653 FAX: (614) 948-4620 JNOVARIA@WIDEOPENWAST.COM
Electric Facilities	AEP- AMERICAN ELECTRIC POWER (TRANSMISSION) ATTN. TINA HAIRSTON 700 MORRISON ROAD GAHANNA, OHIO 43230	PHONE: (614) 552-1801 FAX: (614) 552-1818 TLHAIRSTON@AEP.COM
	AEP- AMERICAN ELECTRIC POWER (DISTRIBUTION) ATTN. MR. ROD SLONEKER ENGINEERING LIAISON COORDINATOR 850 TECH CENTER DRIVE GAHANNA, OHIO 43230	PHONE: (614) 883-6817 FAX: (614) 883-6868 RISLONEKER@AEP.COM
	City of Columbus Attn. Jeff Holmes Business Manager (Divison of Power & Water-Power) 3568 Indianola Avenue Columbus, Ohio 43214	PHONE: (614) 645-7627 FAX: (614) 645-7150 JHOLMES@COLUMBUS.GOV
Gas Facilities	COLUMBIA GAS OF OHIO ATTN. MR. SCOTT BAKER SENIOR ENGINEER 920 W. GOODALE BOULEVARD COLUMBUS, OHIO 43212	PHONE: (614) 460-2338 CELL: (614) 989-1325 SBBAKER@NISOURCE.COM
Water Facilities	CITY OF COLUMBUS ATTN. BOB ARNOLD, P.E. DESIGN ENGINEER (DIV. OF POWER&WATER-WATER) 910 DUBLIN ROAD COLUMBUS, OHIO 43215	PHONE: (614) 645-7788 FAX: (614) 645-0220 RJARNOLD@COLUMBUS.GOV
Sanitary Sewer & Storm Sewer	CITY OF COLUMBUS (DIV. OF SEWERAGE & DRAINAGE) 910 DUBLIN ROAD COLUMBUS, OHIO 43215	PHONE: (614) 645-7102 FAX: (614) 645-3242

* - EXISTING UNDERGROUND TELEPHONE CONDUIT WAS PLACED IN 1953 AND IS FRAGILE. IF DAMAGED, CONTRACTOR SHOULD CALL CONNIE HORNE AT (614) 223-6985 OR ROGER RADER AT (614) 256-1290 IMMEDIATELY FOR REPAIRS

THE FOLLOWING CITY OF COLUMBUS UTILITIES ARE LOCATED WITHIN THE WORK LIMITS OF THE PROJECT AND DO NOT SUBSCRIBE TO A REGISTERED UNDERGROUND PROTECTION SERVICE:

CITY OF COLUMBUS
DIV. OF PLANNING & OPERATIONS
1820 E. 17TH AVE.
COLUMBUS, OHIO 43219
TELEPHONE 645-7393
FAX 645-5967

CITY OF COLUMBUS
DEPT. OF TECHNOLOGY
90 W. BROAD STREET
COLUMBUS, OHIO 43215
TELEPHONE 645-1501
FAX 645-6627

CITY OF COLUMBUS
COMMUNICATIONS DIVISION
220 GREENLAWN AVENUE
COLUMBUS, OHIO 43223
TELEPHONE 645-7344
EXT. 125
FAX 645-6588

FAX ALL REQUESTS TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.

Call before you Dig
1-800-362-2764
OHIO Utilities Protection Service
Call Before You Dig

FOR THE DIVISION OF POWER AND WATER

THE DIVISION OF POWER AND WATER (POWER), CITY OF COLUMBUS, OHIO, HAS UNDERGROUND PRIMARY AND STREET LIGHTING IN THE PROJECT AREA. THE CONTRACTOR IS HEREBY REQUIRED TO CONTACT THE DIVISION OF POWER AND WATER BY FAX (614) 645-7150 FORTY-EIGHT HOURS PRIOR TO CONDUCTING ANY ACTIVITY WITHIN THE CONSTRUCTION AREA. THE DOPW DISPATCH OFFICE NUMBER IS: (614) 645-7627 (VOICE).

ANY REQUIRED RELOCATION, SUPPORT, PROTECTION, OR RELATED ACTIVITY CONCERNED WITH THE CITY'S ELECTRICAL FACILITIES IS TO BE PERFORMED SOLELY BY THE CONTRACTOR UNDER THE DIRECTION OF DIVISION OF POWER AND WATER (DOPW) PERSONNEL AND AT THE EXPENSE OF THE PROJECT. DOPW SHALL MAKE ALL FINAL CONNECTIONS TO DOPW'S EXISTING ELECTRICAL SYSTEM AT THE EXPENSE OF THE PROJECT. THE CONTRACTOR SHALL USE MATERIAL AND MAKE REPAIRS TO A CITY OF COLUMBUS STREET LIGHTING SYSTEM BY FOLLOWING THE DIVISION OF POWER AND WATER'S "MATERIAL AND INSTALLATION SPECIFICATIONS" (MIS) AND THE CITY OF COLUMBUS "CONSTRUCTION AND MATERIAL SPECIFICATIONS" (CMS). ANY NEW OR RE-INSTALLED UNDERGROUND STREETLIGHT SYSTEM SHALL REQUIRE TESTING AS REFERRED TO IN SECTION 1000.18 OF THE CMS MANUAL.

THE CONTRACTOR SHALL CONFORM TO THE DIVISION OF POWER AND WATER'S POLICIES FOR CONTRACTOR SAFETY AND HOLD CARD SYSTEM (MIS-95), COPIES OF WHICH ARE AVAILABLE FROM THE DIVISION OF POWER AND WATER. IF YOU HAVE ANY QUESTIONS, CALL CHRIS VOGEL (614) 645-6963 OR MIHAI ORBOCEA (614) 645-6851 FOR LIGHTING. IF ANY ELECTRIC FACILITY BELONGING TO THE DIVISION OF POWER AND WATER IS DAMAGED IN ANY MANNER BY THE CONTRACTOR, ITS AGENTS, SERVANTS, OR EMPLOYEES, AND REQUIRES EMERGENCY REPAIRS, THE DIVISION OF POWER AND WATER SHALL MAKE ALL NECESSARY REPAIRS, AND THE EXPENSE OF SUCH REPAIRS AND OTHER RELATED COSTS SHALL BE PAID BY THE CONTRACTOR TO THE DIVISION OF POWER AND WATER, CITY OF COLUMBUS, OHIO.

PLAN AND SPECIFICATION COMPLIANCE

THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC SIGNAL DEVICES IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS, THE 2008 ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS AND ITS SUPPLEMENTAL SPECIFICATIONS, OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND THE "TC" STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE ODOT OFFICE OF TRAFFIC ENGINEERING (SUPPLEMENTS THE PLAN SPECIFICATIONS). THE CITY OF COLUMBUS, TRANSPORTATION DIVISION, SHALL DETERMINE WHETHER THE SUPPLIED ITEMS MEET OR EXCEED THESE SPECIFICATIONS.

TRAFFIC SIGNAL CONTROL EQUIPMENT SHALL MEET OR EXCEED THE STANDARDS SPECIFIED IN THE FOLLOWING DOCUMENTS.
(a) SPECIFICATIONS LISTED IN THIS PLAN;
(b) APPLICABLE SECTIONS OF NEMA STANDARDS PUBLICATION NO. TS2-1998 AND/OR TS1-1989;
(c) XXXX CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS 625, 632, 633, 725, 732 & 733; OTHER CITY OF COLUMBUS DRAWINGS AND SUPPLEMENTALS.
(d) 2010 ODOT CMS 625,632,633,725,732 & 733; OTHER ODOT DRAWINGS AND SUPPLEMENTALS.

IN CASE OF A CONFLICTING SPECIFICATION STATEMENT, THE SPECIFICATION DOCUMENT HIERARCHY SHALL BE IN THE ORDER LISTED FROM (a), HIGHEST, TO (d), LOWEST.

GROUNDING AND BONDING

The requirements of the ODOT Construction and Material Specifications (C&MS) and the HL and TC series of Standard Construction Drawings are modified as follows:

1. All metallic parts containing electrical conductors shall be permanently joined to form an Effective Ground Fault Current Path back to the grounded conductor in the power service disconnect switch.
   - I. Provide an equipment grounding conductor in metallic conduits (725.04) in addition to the conductors specified and bond the conduit to this grounding conductor.
   - II. When an equipment grounding conductor is required in plastic conduit (725.05), the installation shall include a separate equipment grounding conductor in addition to the conductors specified.
   - III. Metallic conduit carrying the loop wires from in the pavement to the pull box splice location will only be bonded at the pull box end, and will not contain an equipment grounding conductor.
   - IV. Metal pull box lids shall be bonded by attachment of the equipment grounding conductor to the frame diagonal as provided on HL-30.11.
   - V. If multiple conduit runs begin and end at the same points, only one equipment grounding conductor is required.
   - VI. The messenger wire at signalized intersections will be used as the conductive path from corner to corner if conduit is not provided under the roadway. When conduit connects the corners of an intersection, an equipment grounding conductor shall be used in the conduit.

2. Conduits.
   - a. The 725.04 conduit shall have grounding bushings installed at all termination points. The bushing material shall be compatible with galvanized steel conduit and the grounding lug material shall be compatible for use with copper wire. Threaded or compression type bushings may be used.
   - b. The 725.05 conduit shall have the inside and outside diameters of the conduit deburred at all termination points.
   - c. Both ends of metallic conduit shall be bonded to the equipment grounding conductor.
   - d. Metallic conduit may be bonded to metallic boxes through the use of conduit fittings UL approved for this type of connection, with the box bonded to the equipment grounding conductor.

ITEM 632 STRAIN POLE FOUNDATION, AS PER PLAN

THE ANCHOR BASE POLE FOUNDATION SIDES SHALL BE ORIENTATED PARALLEL TO THE SIDEWALK OR BACK-OF-CURB OR EDGE-OF-PAVEMENT AS SHOWN ON THE SIGNAL PLANS. THE TOP OF THE FOUNDATION SHALL BE FLUSH WITH ANY ADJACENT SIDEWALK OR CONCRETE AREA EXCEPT WHERE THE GROUND RISES STEEPLY BEHIND THE SIDEWALK OR CONCRETE AREA. THEN THE BACK SIDE OF THE FOUNDATION SHALL MATCH THE GROUND SLOPE AND THE STREET SIDE OF THE FOUNDATION SHALL BE ABOVE THE SIDEWALK OR CONCRETE AREA AND COMPLETELY OUT OF THE SIDEWALK OR CONCRETE AREA. A MINIMUM OF TWO 2" CONDUIT ELLS, USED OR UNUSED, SHALL BE INSTALLED IN EACH POLE FOUNDATION. SEE POLE ORIENTATION CHART FOR ANGULAR POSITION. THE ANCHOR BOLTS AND CONDUIT ELLS ARE INCIDENTAL TO THIS ITEM. THE POLE FOUNDATION TOP SHALL BE EDGED USING A 1/2" SIDEWALK EDGER AND NOT CHAMFERED.

PAYMENT SHALL BE AS PER ITEM 632.

ITEM 632 SLEEVE FOR ANCHOR BASE FOUNDATION, AS PER PLAN

A GALVANIZED CORRUGATED PIPE OR A CARDBOARD-LIKE CONCRETE FORM WITH THE SAME DIAMETER AND DEPTH DIMENSIONS AS THE SPECIFIED FOUNDATION SHALL BE USED AT THE DISCRETION OF THE PROJECT ENGINEER OR AS CALLED FOR IN THE PLANS. THE SLEEVE SHALL BE MEASURED AS A COMPLETE UNIT INSTALLED AND PROPERLY BACKFILLED. BACKFILL SHALL BE A COMPACTABLE GRANULAR MATERIAL THAT IS COMPACTED IN 4" LIFTS OR CONTROLLED DENSITY FILL RATED AT 150 PSI.

PAYMENT SHALL BE PER EACH.

ITEM 632 STRAIN POLE, TYPE TC-81.10, ANCHOR BASE, (BY SIZE), AS PER PLAN

STRAIN POLES SHALL BE MANUFACTURED BY UNION METAL OR VALMONT ONLY. THE POLES SHALL BE GALVANIZED, THEN COATED WITH A SEMI-GLOSS, DARK BRONZE POWDER COATING FINISH. THE GALVANIZING SHALL BE PROPERLY PREPARED SO THE POWDER COATING WILL ADHERE TO THE GALVANIZING.

THE POLE SHAFT SHALL:

1. BE MADE OF WELDABLE GRADE, HOT ROLLED COMMERCIAL QUALITY CARBON STEEL FORMED WITH A BASE DIAMETER AND HEIGHT AS PER PLAN.
2. BE CONTINUOUSLY TAPERED FROM THE POLE BOTTOM TO THE POLE TOP AT A RATE OF 0.14 INCH PER FOOT.
3. BE CONSTRUCTED WITH ONE (1) LONGITUDINAL AUTOMATICALLY, ELECTRICALLY WELDED SEAM.
4. BE CONSTRUCTED USING A CONTINUOUS NON-OVERLAPPING TAPERED TUBE.
5. CONFORM TO ASTM-A572 GRADE 55 OR ASTM-A595 GRADE A (55,000 PSI MINIMUM YIELD STRENGTH AFTER FABRICATION) OR ASTM-A572 GRADE 65 AS PER PLAN DESIGN REQUIREMENTS.
6. HAVE 1 OR 2 HANDHOLES, AS PER PLAN DESIGN, EACH COMPLETE WITH A COVER, A RECTANGULAR OR ELLIPTICAL REINFORCED FRAME, AND A STAINLESS STEEL FASTENER FOR THE COVER. THE FASTENER SHALL BE FLUSH WITH THE HANDHOLE SURFACE. THE HANDHOLES SHALL BE LOCATED AS PER PLAN.
   - A) THE TOP HANDHOLE SHALL HAVE A MINIMUM INSIDE OPENING OF 4" X 6" AND BE SIMILAR IN DESIGN TO THE BOTTOM HANDHOLE EXCEPT THAT NO GROUNDING PROVISION IS REQUIRED.
   - B) THE BOTTOM HANDHOLE SHALL HAVE A MINIMUM INSIDE OPENING OF 5" X 8". A GROUNDING BOLT CAPABLE OF ACCEPTING FOUR (4) #4 AWG AND TWO (2) #8 AWG COPPER GROUNDING WIRE LUGS SHALL BE ATTACHED TO THE POLE FRAME.
7. HAVE A REMOVABLE POLE CAP ATTACHED EITHER BY A MINIMUM OF 3 STAINLESS STEEL SET SCREWS OR BY A STAINLESS STEEL THROUGH BOLT.
8. HAVE 1 OR 2 WELDED CABLE SUPPORT HOOKS ('J' OR 'C' HOOKS) LOCATED ON THE INSIDE OF THE POLE.
9. BE TELESCOPED THROUGH A BASE PLATE THAT HAS A BOLT PATTERN AS PER PLAN.

THE POLE BASE PLATE SHALL:

1. BE FABRICATED FROM ASTM-A36 STEEL (36K PSI) OR ASTM-A42 STEEL (42K PSI) AS PER PLAN DESIGN REQUIREMENTS.
2. TELESCOPE THE POLE SHAFT AND BE WELDED TO THE POLE BY MEANS OF 2 CONTINUOUS WELDS--ONE ON THE INSIDE OF THE BASE PLATE AT THE END OF THE POLE SHAFT AND THE OTHER ON THE OUTSIDE AT THE TOP OF THE BASE PLATE. ALL INSIDE WELDS SHALL BE VOID OF SHARP EDGES. ALL OUTSIDE WELDS SHALL BE ROLLED OR GROUND SMOOTH.
3. CONFORM TO THE BOLT PATTERN AS PER PLAN.

ANCHOR BOLTS SHALL HAVE ROLLED THREADS FOR ALL POLE DESIGNS UP TO AND INCLUDING D11. CUT THREADS ARE TO BE USED FOR 2.5" DIAMETER BOLTS OR LARGER. THE BOLTS CAN BE A36/M55 FOR DESIGN 7 OR SMALLER POLES. FOR LARGER POLES THE ANCHOR BOLTS SHALL MEET ODOT REQUIREMENTS OR BE AS SPECIFIED BY THE MANUFACTURER. BOLT-NUT COVERS SHALL BE INSTALLED.

EACH ANCHOR BOLT SHALL:

1. CONFORM TO ASTM-F1554 GRADE 105.
2. BE GALVANIZED PER ASTM-A153.
3. COME WITH 2 HEX NUTS MEETING ASTM-F563 GRADE DH, ANSI B18.2.2 AND SHALL HAVE ANSI B1.1 CLASS 2 UNC ROLLED THREADS. A WASHER AND LOCKWASHER SHALL ALSO BE PROVIDED. HARDWARE SHALL BE HD GALVANIZED PER ASTM-A153.
4. HAVE DIMENSIONS AS PER PLAN.

STRAIN POLE STRUCTURE SURFACES SHALL BE PREPARED FOR GALVANIZING BY USING A SOLVENT CLEANING METHOD TO REMOVE DIRT, OIL, DUST, GREASE AND ANY OTHER CONTAMINANT THAT WILL REDUCE THE ADHESION OF THE GALVANIZING. MILL SCALE, RUST OR ANY OTHER FOREIGN MATERIAL NOT REMOVED BY SOLVENTS SHALL BE REMOVED USING MECHANICAL METHODS (PER STEEL STRUCTURES PAINTING COUNCIL, SSPC-VIS-1-67.). MANUFACTURER RECOMMENDED ABRASIVE TECHNIQUES SHALL BE USED TO PROVIDE THE PROPER PROFILE FOR ADHERENCE TO ASTM A123 GALVANIC COATING.

THE STRAIN POLE STRUCTURE SHALL THEN BE COATED AS PER PLAN. EACH COATING LAYER SHALL BE PROPERLY CURED BEFORE THE APPLICATION OF THE NEXT COAT. MINIMUM DRY THICKNESS MEASUREMENTS FOR STEEL SHALL CONFORM TO SECTION SSPC-PA2-82, STEEL STRUCTURES PAINTING COUNCIL.

ALL STRUCTURAL STEEL PRODUCTS SHALL BE GALVANIZED ON THE INTERIOR AND EXTERIOR SURFACES AS PER ASTM A123. THE EXTERIOR SURFACE OF ALL STRUCTURAL STEEL AND ALUMINUM PRODUCTS SHALL BE PROPERLY PREPARED FOR THE APPLICATION OF AN EXTERIOR COATING. THE COATING COLOR ON BOTH STEEL AND ALUMINUM PRODUCTS SHALL MATCH EACH OTHER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT BOTH PRODUCT MANUFACTURERS MATCH COATING COLORS SO THAT AN EXCELLENT LOOKING END PRODUCT IS ACHIEVED.

ALL EXTERIOR SURFACES OF THE STRAIN POLE STRUCTURE, ALL BOLT COVERS, ALL ATTACHMENT HARDWARE, ALL WIRE ENTRANCES, ALL SPAN WIRE CLAMPS, ALL HANDHOLE COVERS, BRACKETS, POLE CAPS AND TRAFFIC PEDESTAL STRUCTURES SHALL HAVE A COATING APPLIED TO THEM. EXTERIOR SURFACES OF ALL BOLT AND SCREW FASTENERS, WASHERS, NUTS, AND OTHER ATTACHMENT HARDWARE SHALL HAVE A COATING APPLIED TO THEM. FASTENER THREADS SHALL NOT BE CLOGGED WITH COATING MATERIAL.

THE EXTERIOR COATING FOR ALL ITEMS LISTED IN THE PREVIOUS PARAGRAPH SHALL:

1. MEET FEDERAL STANDARD #595B AND CONFORM TO COLOR #20040.
2. BE APPLIED OVER PROPERLY PREPARED GALVANIZING MATERIAL ON STEEL PRODUCTS AND OVER PROPERLY PREPARED ALUMINUM FOR ALUMINUM PRODUCTS.

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3. HAVE A MINIMUM 5-YEAR REPAIR WARRANTY OF COATING DELAMINATION, BLISTERING, OR CORROSION. POWDER COATED UNION METAL STRUCTURES SHALL HAVE THE THOMARIOS COATING WARRANTY REVISION DATE JULY 17, 2007. POWDER COATED VALMONT STEEL STRUCTURES SHALL BE COATED WITH FINISH SPECIFICATION F-573 DATED APRIL 11, 2007, WHICH INCLUDES EPOXY POWDER PRIME COAT AND PENTABOND POWDER FINISH COAT.

ALL COATED ITEMS SHALL BE SHIPPED IN A MANNER SELECTED BY THE MANUFACTURER, WHICH WILL PROTECT MATERIAL FROM DAMAGE DURING DELIVERY. MATERIALS DAMAGED IN TRANSIT SHALL BE REPAIRED OR REPLACED. ALL COSTS ASSOCIATED WITH CORRECTING DAMAGED MATERIAL SHALL BE BORNE BY THE CONTRACTOR.
PAYMENT SHALL BE AS PER ITEM 632.

ITEM 632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN
ALL REMOVED ITEMS SHALL REMAIN THE PROPERTY OF THE CITY OF COLUMBUS WITH THE EXCEPTION OF FOUNDATIONS, SIGNAL CABLE, MESSENGER WIRE AND CONDUIT. THE CONTRACTOR SHALL PROPERLY DISPOSE OF THOSE ITEMS ONLY AND DELIVER THE OTHER REMOVED ITEMS TO THE TRANSPORTATION DIVISION TRAFFIC MAINTENANCE SHOP AT 1820 EAST 17TH AVENUE; COLUMBUS, OHIO 43219. THE CONTRACTOR SHALL CONTACT THE CITY OF COLUMBUS, TRANSPORTATION DIVISION, TRAFFIC MAINTENANCE MANAGER (614-645-7393) TWENTY-FOUR (24) HOURS, NOT INCLUDING SATURDAY OR SUNDAY, IN ADVANCE TO SCHEDULE DELIVERY. NO ITEM WILL BE ACCEPTED WITHOUT FOLLOWING THIS PROCEDURE. THE TRAFFIC MAINTENANCE MANAGER SHALL INSPECT THE CONDITION OF ALL SALVAGED ITEMS BEING PRESENTED FOR DELIVERY. NO ITEM DAMAGED BY THE CONTRACTOR WILL BE ACCEPTED, AND NO ITEM SHALL BE CONSIDERED DELIVERED UNTIL THE TRAFFIC MAINTENANCE MANAGER ISSUES A RECEIPT TO THE CONTRACTOR ACKNOWLEDGING ACCEPTANCE OF DELIVERY.

EMBEDDED POLES SHALL BE REMOVED IN THEIR ENTIRETY BY PULLING. ALL CONCRETE SHALL BE REMOVED FROM REMOVED EMBEDDED POLES.

FOUNDATIONS
EXISTING TRAFFIC SIGNAL SUPPORT FOUNDATIONS SHALL BE REMOVED IN THEIR ENTIRETY. REMOVAL OF THE ENTIRE FOUNDATION SHALL BE INCIDENTAL TO THIS ITEM OF WORK. NO ADDITIONAL COMPENSATION SHALL BE AWARDED FOR THIS WORK.

REMOVED CONDUIT, FOUNDATION, SIGNAL CABLE AND MESSENGER WIRE SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ITEM 632. REMOVE CABLE AND ANY MESSENGER WIRE BACK TO ITS TERMINUS POINT. ALL EXISTING UNUSED SIGNAL CABLE SHALL BE REMOVED FROM UNDERGROUND CONDUITS.
PAYMENT SHALL BE AS PER ITEM 632.

ITEM 632 POWER CABLE, 3-CONDUCTOR, #6 AWG, AS PER PLAN
AT THE INTERSECTION OF HUDSON STREET/JOYCE AVENUE, POWER SHALL BE SUPPLIED BY THE AMERICAN ELECTRIC POWER COMPANY (AEP), SHALL BE 120VAC, AND SHALL BE FROM THE APPROXIMATE LOCATION AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL CONTACT AEP AND MAKE ARRANGEMENTS FOR THE CONNECTION OF POWER TO THE CONTROLLER CABINET. CONTACT GREG ZORICH (614-883-7935) A MINIMUM OF FOUR (4) WORK WEEKS PRIOR TO THE NEED FOR POWER.
PAYMENT SHALL BE AS PER ITEM 632.

ITEM 633 CABINET FOUNDATION, AS PER PLAN
THE PROPOSED TRAFFIC SIGNAL CABINET FOUNDATION SHALL BE AS DETAILED ON THE POLE FABRICATION AND ORIENTATION DETAILS SHEET.
PAYMENT SHALL BE AS PER ITEM 633.

ITEM 633 CONTROLLER UNIT, TYPE TS-2/A2, WITH CABINET (P44), TYPE TS-1, AS PER PLAN
IN ADDITION TO THE OTHER REQUIREMENTS OF ODOT 633 & 733, THE CONTROLLER (TS2, TYPE 2/TS1 COMPATIBLE) SHALL BE ECONOLITE ASC/3-210 MODEL OR EAGLE GENESIS EPAC 3108-M40 MODEL. THE TS1 CABINET ASSEMBLY SHALL BE COMPLETELY WIRED (INCLUDES ALL PANELS & HARNESSES) FOR COAXIAL SYSTEM OPERATION AND FOR THE PHASE OPERATION, DETECTION, AND ALL ADDITIONAL DEVICES AS CALLED FOR IN THE PLANS. THE COLUMBUS MUTCD FLASH CIRCUITRY SHALL BE INSTALLED AS A PANEL MOUNTED, CABINET ASSEMBLY ITEM. THE CABINET ASSEMBLY SHALL MEET ALL CITY STANDARDS AS SET FORTH BETWEEN THE SUPPLIERS AND THIS DIVISION. CONTACT THE TRANSPORTATION DIVISION'S ELECTRONIC SYSTEMS SUPERVISOR FOR DETAILS (614-645-7933).

THE LOOP DETECTOR UNIT SHALL BE A SOLID STATE, 2 CHANNEL, SHELF MOUNTED INTERSECTION DEVELOPMENT CORPORATION (IDC) MODEL 921-2TCSS-1, OR RENO A&E MODEL T-210-SS.

IN ADDITION TO THE OTHER SPECIFICATION DOCUMENTS, THE CABINET ASSEMBLY SHALL MEET THE FOLLOWING SPECIFICATIONS.

(A) ALL LABELS SHALL BE PERMANENTLY SECURED TO THE CABINET. PLASTIC LABEL MAKER TAPE IS NOT CONSIDERED TO BE PERMANENT. CROY TYPE LABELS ARE ACCEPTABLE.
(B) IN LIEU OF A LAMP ASSEMBLY, A DOOR MOUNTED FLEX LIGHT THAT ILLUMINATES THE ENTIRE BACK PANEL SHALL BE INSTALLED. THE 120 VAC, CONVENIENCE OUTLET ASSEMBLY (GFI TYPE) SHALL BE MOUNTED ON THE RIGHT CABINET SIDE PANEL NEAR THE DOOR HINGE AREA AND FACE THE DOOR OR THE CENTER INTERIOR PORTION OF THE CABINET. THE OUTLET & FLEX LIGHT ASSEMBLIES SHALL NOT INTERFERE WITH THE REMOVAL OR INSTALLATION OF ANY EQUIPMENT.
(C) LOAD SWITCHES SHALL BE EDI MODEL 510 WITH LIGHTS PERMANENTLY LABELED AS R, Y, G OR A, B, C. A LOAD SWITCH SHALL BE PROVIDED FOR EACH BACK PANEL LOAD SWITCH SOCKET POSITION WHETHER USED OR UNUSED. ALL LOAD SWITCHES SHALL REST IN A SUPPORT RACK. LOAD SWITCH POSITIONS 5-8 (4PH) OR 9-12 (8PH) SHALL BE USED FOR EITHER A PEDESTRIAN OR OVERLAP LOAD SWITCH UNLESS SPECIFIED OTHERWISE.
(D) LIGHTNING PROTECTION DEVICES SUCH AS ITT, SURRESTOR, GENERAL ELECTRIC, OR APPROVED EQUAL (AS DETERMINED BY THE COLUMBUS TRANSPORTATION DIVISION) SHALL BE PROVIDED.
(E) THE MAIN CABINET DOOR LOCK (CCL ENCLOSURE LOCK 15481RS) SHALL HAVE A LOCK KEYHOLE COVER AND SHALL BE KEYED TO THE CITY OF COLUMBUS MASTER, # 2 KEY (1R 6380). THE POLICE PANEL DOOR LOCK (CCL ENCLOSURE LOCK # R357SGS) SHALL HAVE A LOCK KEYHOLE COVER AND SHALL BE SUPPLIED WITH A R4266 KEY.
(F) THE NEMA 3R CABINET SHALL BE MADE BY APX ENCLOSURES, CALIFORNIA CHASSIS. EAGLE OR ECONOLITE. IT SHALL BE OF STANDARD SIZE AND SHALL BE SUPPLIED WITH A COMPLETE BACK PANEL AS PER PLAN. THE CABINET MATERIAL SHALL BE 5052 MARINE GRADE, 0.125 INCH THICK ALUMINUM SHEETING WITH A 32 HARDNESS IN ITS NATURAL COLOR AND SHALL BE PAINTED WHITE ON THE INSIDE. THE INSIDE OF THE CABINET SHALL BE TREATED WITH A THREE (3) STAGE IRON PHOSPHATE COATING AND A ZINC CHROMATE PRIMER COATING. A BAKED WHITE ALKALI ENAMEL FINISH SHALL THEN BE APPLIED. ALL COATINGS SHALL BE PROPERLY DRIED AND APPLIED SUCH THAT THE INSIDE WHITE PAINT WILL NOT PEEL FOR A GUARANTEED PERIOD OF TWO (2)YEARS. ALL EXTERIOR SEAMS SHALL BE EITHER CONTINUOUSLY WELDED, TACK WELDED, SEALED WITH A 15 TO 20 YEAR SILICONE SEALER, AND/OR OVERLAPPED SUCH THAT WATER DOES NOT ENTER THE CABINET. ALL CABINET EDGES SHALL BE SMOOTH (FREE OF ANY SHARP EDGES). THE CABINET DOOR FRAME OPENING SHALL BE DOUBLE-FLANGED ON ALL FOUR SIDES. THE CABINET DOOR SHALL BE HINGED USING A HEAVY GAUGE CONTINUOUS HINGE THAT HAS A STAINLESS STEEL HINGE PIN. THE HINGE SHALL BE BOLTED TO THE CABINET SO THE DOOR CAN BE REMOVED. THE BOLTS AND NUTS SHALL BE MADE OF STAINLESS STEEL, TAMPERPROOF AND SECURELY FASTENED TO PREVENT VIBRATIONS FROM LOOSENING THE NUTS. THE DOOR, SEALED WITH A NEOPRENE GASKET, SHALL BE EQUIPPED WITH A THREE (3) POINT LATCHING MECHANISM AND A HANDLE WHICH CAN BE PADLOCKED. THE DOOR SHALL BE DESIGNED SUCH THAT THE DOOR CAN BE LOCKED IN AN OPEN POSITION AT 90, 135, AND 180 DEGREES TO THE CABINET FACE (NOMINAL VALUES). THE POLICE DOOR AND MAIN CABINET DOOR SHALL HAVE A KEYHOLE COVER. BOLT PATTERN SHALL CONSIST OF AN ANCHOR BOLT POSITIONED IN EACH CABINET CORNER. THE M36 CABINET SIZE SHALL BE 50"H X 36"W X 17"D WITH A DOOR OPENING OF 39" H X 33.5" W. THE P44 CABINET SIZE SHALL BE 55"H X 44"W X 26"D WITH A DOOR OPENING OF 44" H X 41.5" W.
(G) A THYRECTOR SURGE PROTECTOR WITH A RMS INPUT OF 150 VOLTS AND INPUT PEAK OF 210 VOLTS SHALL BE PROVIDED IN ADDITION TO ANY LIGHTNING PROTECTION DEVICE. THE THYRECTOR SHALL BE PLACED ACROSS THE INPUT AC POWER LINE.
(H) A 35 AMP LINE FILTER SHALL BE SUPPLIED AND SHALL BE MOUNTED ON THE POWER DISTRIBUTION PANEL.
(I) TWO (2) CIRCUIT SOLID STATE FLASHER, EDI MODEL 810, RATED AT 15 AMPS (MINIMUM) PER CIRCUIT SHALL BE PROVIDED (NEMA TYPE 3).
CIRCUIT 1 SHALL CONTROL THE MAINLINE FLASHING SIGNAL INDICATIONS.
CIRCUIT 2 SHALL CONTROL THE SIDE STREET FLASHING SIGNAL INDICATIONS.

(J) ONE (1) 30 AMP 2 POLE CIRCUIT BREAKER, LABELED AS "MAIN", SHALL BE WIRED AS THE MAIN POWER DISTRIBUTION BREAKER. A SECOND CIRCUIT BREAKER, LABELED AS "PED" AND RATED AT 10 AMPS, 1 POLE SHALL BE SUPPLIED FOR THE PEDESTRIAN SIGNAL LOAD ONLY. THE PEDESTRIAN SIGNAL BREAKER SHALL BE WIRED IN SERIES WITH BUT AFTER THE MAIN POWER BREAKER. A THIRD CIRCUIT BREAKER, LABELED AS "AUX" AND RATED AT 15 AMPS, 1 POLE SHALL SUPPLY A SEPARATE BRANCH OF AC+ POWER TO THE VENTILATING FAN, CONVENIENCE GFI' OUTLET AND LIGHT SO THAT THEY MAY OPERATE INDEPENDENTLY OF THE MAIN POWER BREAKER. THE POWER TO THE FAN AND LIGHT SHALL ALSO BE INTERRUPTED BY THE GFI' OUTLET. ALL BREAKERS SHALL BE MOUNTED SIDE-BY-SIDE ON THE POWER DISTRIBUTION PANEL.
(K) ALL CONTROLLER MS CONNECTOR HARNESSES SHALL HAVE A CONDUCTOR FOR EACH PLUG PIN EXCEPT THE REMOTE RESET FUNCTION FOR THE CONFLICT MONITOR. THE CONTROLLER AND CONFLICT MONITOR MS HARNESS CONDUCTORS SHALL BE CONNECTED TO A BACK PANEL TERMINAL STRIP WHICH IS ACCESSIBLE FROM THE FRONT OF THE PANEL. DETECTOR UNIT HARNESS CONDUCTORS SHALL BE CONNECTED TO A LEFT SIDE CABINET MOUNTED TERMINAL STRIP. OTHER EQUIPMENT SHALL BE CONNECTED AS APPROPRIATE.
(L) THE CABINET ASSEMBLY SHALL CONTAIN ALL PEDESTRIAN SIGNAL CIRCUITRY FOR EACH NEMA DEFINED THROUGH PHASE.
(M) A POLICE DOOR MOUNTED SIGNAL SHUTDOWN SWITCH WITH SWITCH POSITIONS LABELED AS "SIG ON" AND "SIG OFF" SHALL BE INSTALLED.
(N) A POLICE DOOR MOUNTED SIGNAL-FLASH SWITCH WITH SWITCH POSITIONS LABELED AS "ON SIG" AND "ON FLASH" SHALL NOT ONLY PLACE THE SIGNALS ON FLASH BUT ALSO STOP-TIME THE CONTROLLER UNIT. A RUN/STOP-TIME SWITCH WITH SWITCH POSITIONS LABELED AS "CONT. RUN" AND "STOP-TIME" SHALL BE INSTALLED ON THE INSIDE OF THE CABINET DOOR. THE RUN/STOP-TIME SWITCH SHALL ALLOW THE CONTROLLER UNIT TO TIME NORMALLY BUT KEEP THE SIGNALS ON FLASH. THE SIGNAL-FLASH SWITCH SHALL NOT RETURN THE SIGNALS TO NORMAL OPERATION UNLESS THE RUN/STOP-TIME SWITCH IS RESET TO THE STOP TIME POSITION SO THE SIGNAL-FLASH SWITCH CAN AGAIN STOP-TIME THE CONTROLLER UNIT. THE SIGNAL-FLASH SWITCH SHALL NOT REMOVE POWER TO THE CONTROLLER UNIT OR ITS AUXILIARY EQUIPMENT.
(O) A POLICE DOOR MOUNTED AUTO-MANUAL TRANSFER SWITCH WITH SWITCH POSITIONS LABELED AS "AUTO" AND "MANUAL" SHALL BE INSTALLED. A MANUAL PUSH BUTTON CONTROL SHALL NOT BE INSTALLED UNLESS SPECIFIED, BUT WIRING FOR A PUSH BUTTON CONTROL SHALL BE PROVIDED UP TO THE POINT WHERE THE PUSH BUTTON WOULD HAVE BEEN CONNECTED.
(P) A CONTROLLER SHUTDOWN SWITCH WITH SWITCH POSITIONS LABELED AS "CONT ON" AND "CONT OFF" AND A COORDINATED/FREE SWITCH WITH SWITCH POSITIONS LABELED AS "COORD" AND "FREE" SHALL BE INSTALLED INSIDE THE CABINET NEXT TO THE RUN/STOP-TIME SWITCH. A COORDINATED/FREE SWITCH SHALL NOT BE REQUIRED IF THE CONTROLLER HAS A BUILT-IN COORD/FREE SWITCH.
(Q) AFTER A NEMA DEFINED POWER INTERRUPTION THE CONFLICT MONITOR SHALL CAUSE THE INTERSECTION SIGNALS TO FLASH AS PER PLAN FOR 10 SECONDS BEFORE THE INITIALIZED CONTROLLER UNIT TAKES CONTROL OF THE INTERSECTION SIGNALS. THE CONFLICT MONITOR SHALL BE EDI MODEL SERIES SSM LE AND SHALL CONTAIN SUFFICIENT CHANNELS AS CALLED FOR IN THESE PLANS.
(R) THE CONFLICT MONITOR SHALL BE CONNECTED DIRECTLY TO THE FIELD TERMINALS. USING JUMPERS OR LINKS ON THE BACK PANEL TO FORM A CIRCUIT FOR THE CONFLICT MONITOR SHALL NOT BE ACCEPTABLE.
(S) THE CONFLICT MONITOR SETTINGS FOR MINIMUM YELLOW TIMING ON ALL CHANNELS SHALL BE SET AT THREE AND ONE HALF (3.5) SECONDS.
(T) THE WATCH DOG TIMER SHALL CAUSE THE CONTROLLER TO GO INTO A FLASH OPERATION IF A MICROPROCESSOR FAILURE IS DETECTED.
(U) ALL BACK PANEL HARDWARE SHALL BE MOUNTED WITH SCREWS. ALL SCREWS SHALL BE COMPLETELY SCREWED DOWN. RIVETS OR OTHER NON-REMOVABLE FASTENERS ARE NOT ACCEPTABLE.
(V) WIRE CONNECTIONS ON THE BACK PANEL SHALL BE MADE WITH CRIMP TERMINALS AND THREADED FASTENERS. TELEPHONE TYPE KNIFE CONNECTORS (SOLDERED OR OTHERWISE) ARE NOT ACCEPTABLE.
(W) ALL WIRES FASTENED TO THE LOAD SWITCH AND FLASHER PLUGS SHALL BE SOLDERED IN PLACE.
(X) THE BACK PANEL AND POWER DISTRIBUTION PANEL SHALL HAVE SILK SCREENED TERMINAL/SOCKET FUNCTION IDENTIFICATION LABELS SUCH AS AC COM, PHASE 3 GREEN, 115 VAC, SIGNAL BUS, ETC.
REFERENCE NUMBERS SHALL NOT BE ACCEPTABLE IN LIEU OF FUNCTION LABELS BUT THEY CAN SUPPLEMENT THEM. ADDITIONAL TERMINAL BLOCKS AND AUXILIARY PANELS SHALL USE SILK SCREENED REFERENCE NUMBERS TO IDENTIFY TERMINAL CONNECTIONS.
(Y) ALL TERMINAL STRIPS IN CLOSE PROXIMITY OF SHELF MOUNTED CONTROL DEVICE EQUIPMENT SHALL BE COVERED WITH NON-CONDUCTIVE MATERIAL TO PREVENT ACCIDENTAL CONTACT WITH THE DEVICES. ALL TERMINAL STRIPS SHALL BE READILY ACCESSIBLE WITHOUT REMOVAL OF ANY EQUIPMENT.
(Z) THE CABINET SHALL HAVE TWO (2) NON-VENTED (SOLID) SHELVES SPACED AT LEAST 9" APART. BOTH SHELVES SHALL HAVE A WIDTH OF 13" AND THE BACK EDGE OF THE SHELF SHALL BE LIPPED WITH THE LIP POINTING UP. THE FRONT EDGE OF THE SHELF SHALL BE LIPPED WITH THE LIP POINTING DOWN. ALL LIP EDGES SHALL BE ROUNDED. THE SHELVES SHALL BE ATTACHED TO THE CABINET SIDE PANELS. THE SHELF ARRANGEMENT SHALL BE DESIGNED SO ALL SHELF DEVICES FIT ON THEM.

(aa) THERE SHALL BE A MINIMUM OF ONE (1) INCH EMPTY SPACE BETWEEN ALL ITEMS ATTACHED TO THE DOOR AND ALL SHELF-MOUNTED DEVICES INCLUDING ITS CONNECTING HARNESS(ES), ALL LOAD SWITCHES, FLASHER AND ALL SIDE-PANEL-MOUNTED ITEMS.
(bb) "M" SIZED CABINETS SHALL HAVE TWO VENTILATION FANS. THE THERMOSTAT CONTROLLING THE VENTILATING FAN CIRCUIT SHALL BE SET AT 95 DEGREES FAHRENHEIT.
(cc) ALL FLASH TRANSFER RELAYS SHALL BE WIRED FOR FAIL-SAFE OPERATION (ENERGIZED DURING NORMAL OPERATION) AND WIRED WITH A MAXIMUM OF TWO PHASES PER RELAY.
(dd) THE CONTROLLER ASSEMBLY, WHEN PLACED IN OR COMING OUT OF AN AUTOMATIC FLASHING MODE, SHALL CONFORM TO THE AUTOMATIC FLASHING CRITERIA SET FORTH IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, SECTION 4D-12, INCLUDING THE FOLLOWING ADDITIONS.
1) A VEHICULAR CALL SHALL BE PLACED ON ALL PHASES IMMEDIATELY PRIOR TO ENTERING THE "FLASH" MODE SO THE CONTROLLER WILL CYCLE TO THE "FLASH" POINT. IT IS OPTIONAL TO HAVE ONE EXTERNAL VEHICULAR CALL PLACED IMMEDIATELY ON ALL PHASES WHEN THE "FLASH" MODE TERMINATES. THE CONTROLLER SHALL OPERATE NORMALLY ONCE THE "FLASH" MODE SEQUENCE IS TERMINATED.
2) THE CONTROLLER SHALL ENTER THE "FLASH" MODE AT THE END OF THE THROUGH SIDE STREET PHASE(S) YELLOW (OR DURING THE SIDE STREET PHASE(S) RED CLEARANCE INTERVAL) BUT JUST PRIOR TO ANY MAIN STREET GREEN.
THE FLASH TRANSFER LOGIC DEVICE SHALL TRIGGER THE "FLASH" OPERATION, SHALL BE SOLID STATE, SHALL BE EXTERNAL TO THE CONTROLLER (A CABINET ASSEMBLY DEVICE), AND SHALL FUNCTION WITH ANY NEMA CONTROLLER. THIS CIRCUITRY SHALL BE SUPPLIED IN ADDITION TO ANY INTERNAL CONTROLLER FLASH LOGIC PROVIDED BY THE CONTROLLER.
(ee) THE POWER CABLE SHALL BE CONNECTED TO AN ACCESSIBLE TERMINAL STRIP THAT SHALL BE LOCATED NEAR THE BOTTOM OF THE CABINET AND SHALL BE OF SUFFICIENT SIZE TO ACCEPT A SUPPLIED #6 WIRE LUG. THE TERMINAL STRIP SHALL BE COVERED OR SHIELDED TO MINIMIZE ACCIDENTAL CONTACT DURING NORMAL SERVICING OPERATIONS. THE COVER SHALL BE SNAPPED ON/OFF OR SECURED BY STANDARD SCREWS. THE POWER CABLE LUG TERMINAL CONNECTION SHALL BE LOCATED IMMEDIATELY BELOW THE MAIN POWER DISTRIBUTION BREAKER. POWER SHALL BE JUMPERED TO THE MAIN POWER DISTRIBUTION BREAKER. THE POWER DISTRIBUTION PANEL SHALL BE LOCATED IN THE BOTTOM RIGHT SIDE OF THE CABINET OR IT SHALL BE AN INTEGRAL PART OF THE RIGHT SIDE OF THE BACK PANEL. THERE SHALL BE A MINIMUM OF TWO (2) INCHES CLEARANCE BETWEEN THE POWER TERMINAL AND THE BOTTOM OF THE CABINET.
(ff) A #4 WIRE LUG SHALL BE PROVIDED FOR ATTACHING A GROUNDING WIRE FROM A GROUND ROD. THE GROUNDING WIRE LUG SHALL BE ATTACHED TO THE POWER DISTRIBUTION PANEL (LOWER LEFT CORNER), OR IF NONE, TO THE BACK PANEL (BOTTOM MIDDLE). IT SHALL BE DIRECTLY GROUNDED IN ACCORDANCE WITH THE GROUNDING AND BONDING NOTES.
(aa) A SINGLE POLE MERCURY PLUNGER RELAY SHALL BE INSTALLED WHICH WILL ALLOW POWER TO BE REMOVED FROM THE VEHICULAR AND PEDESTRIAN POWER BUSES. THE MERCURY RELAY SHALL BE RATED AT 35 AMPS AND THE RELAY COIL WIRED WITH A NOISE SUPPRESSION DEVICE.
(hh) ALL EXTERNAL RELAY COILS SHALL HAVE NOISE SUPPRESSION DEVICES.
(ii) THE DOOR FILTER (U.L. LISTED CLASS 2, STANDARD 900) SHALL CONSIST OF THREE DISTINCT LAYERS OF FILTERING MEDIA. THE FIRST AIR ENTERING LAYER SHALL BE COMPOSED OF A DUAL FIBER BLEND OF 100% NON-WOVEN POLYESTER TO TRAP LARGER SIZED PARTICLES. THE NEXT LAYER SHALL BE A DUAL PLY, DUAL DENIER, 100% NON-WOVEN POLYESTER OF SMALLER SIZE TO TRAP FINER PARTICLES PASSING THROUGH THE FIRST LAYER. A NON-TOXIC, NON-MIGRATORY, ODORLESS TACKIFIER SHALL BE APPLIED TO THESE LAYERS. ADHESIVES SPRAYED ON THE LAYERS ARE NOT ACCEPTABLE. THE TACKIFIER SHALL BE INCORPORATED INTO THE LAYER MEDIA DURING THE MANUFACTURING PROCESS OF THE RAW MATERIAL. A 10 GAUGE MESH SHALL BE INCORPORATED IN THE FILTER DESIGN FOR RIGIDITY. SUFFICIENT MEDIA OVERLAP SHALL BE PRESENT ABOUT THE WIRE PERIMETER TO INSURE POSITIVE SELF SEAL. THE DOOR FILTER HOLDER SHALL BE DESIGNED SO THE FILTER MAKES POSITIVE CONTACT WITH THE CABINET DOOR AT ALL TIMES AND UNDER ALL CONDITIONS AND SITUATIONS.

FOUR (4) SETS OF CABINET WIRING SCHEMATICS, TWO (2) SERVICE MANUALS AND TWO (2) INSTRUCTIONAL MANUALS SHALL BE PROVIDED PER CABINET. DELIVERY OF THESE DIAGRAMS & MANUALS SHALL ACCOMPANY THE CABINET. THE CONTRACTOR SHALL CLEARLY NOTE ANY DEVIATIONS, CHANGES, ADDITIONS OR OTHER MODIFICATIONS ON THE DIAGRAMS AND MANUALS THAT ARE APPROPRIATE TO REFLECT THE EXACT EQUIPMENT TO BE PROVIDED. THE COST FOR THIS MATERIAL SHALL BE INCIDENTAL TO THE COST OF THE SIGNAL EQUIPMENT. THE COPIES OF DIAGRAMS AND MANUALS SHALL BE STORED IN A PLASTIC ENVELOPE MOUNTED HORIZONTALLY AND SECURELY FASTENED TO THE INSIDE OF THE MAIN CABINET DOOR. THE ENVELOPE OPENING SHALL BE TO THE RIGHT OR LEFT. THE ENVELOPE SHALL NOT BLOCK ANY PART OF THE AIR FILTER OR THE AIR INTAKE LOCATED IN THE DOOR.

SERVICE & INSTRUCTIONAL MANUALS SHALL INCLUDE SECTIONS COVERING THE GENERAL DESCRIPTION OF EQUIPMENT, EQUIPMENT INSTALLATION PROCEDURES, EQUIPMENT PROGRAMMING PROCEDURES, THEORY OF OPERATION WITH SYSTEM DESCRIPTION INCLUDING BLOCK DIAGRAMS AND DETAILED CIRCUIT DIAGRAMS, PREVENTIVE MAINTENANCE, FIELD TROUBLE ANALYSIS, BENCH TROUBLE ANALYSIS, TROUBLESHOOTING ANALYSIS CHART, WAVE FORMS, VOLTAGE MEASUREMENTS, VOLTAGE MEASUREMENT CHARTS, PARTS LIST, ELECTRICAL INTERCONNECTION DRAWINGS, SCHEMATIC AND LOGIC DIAGRAMS, ASSEMBLY DRAWINGS WITH PICTORIAL DIAGRAMS SHOWING PHYSICAL LOCATIONS AND IDENTIFICATION OF EACH COMPONENT.

PROVIDE AN ARC FLASH WARNING SIGN ON THE OUTSIDE FRONT DOOR OF THE CABINET IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE PARAGRAPH 110.16.

PAYMENT SHALL BE AS PER ITEM 633.

CALCULATED | CHECKED

TRAFFIC SIGNAL GENERAL NOTES

PROJECT NAME

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REVISED 12/2/11

ITEM 633 CONTROLLER ITEM, MISC.: TRANSCEIVER INTERFACE UNIT, AS PER PLAN
THE INTERSECTION RF TRANSCEIVER INTERFACE UNIT SHALL BE THE VENTURE ENGINEERING CORPORATION REMOTE COMMUNICATIONS UNIT, MODEL #732-002A.

THE CONTRACTOR SHALL INSTALL A GILBERT "F" SERIES RF TERMINATOR (GILBERT PART NO. GTR-59-A) ON THE TEST PORT. THE COST OF THE "F" SERIES RF TERMINATOR IS CONSIDERED INCIDENTAL TO THE COMMUNICATIONS UNIT.

THE CONTRACTOR SHALL SUPPLY AN EDCO 1 GHZ COAXIAL CABLE LIGHTNING PROTECTOR, EDCO PART NO. CATV-145A. THE COST OF THE LIGHTNING PROTECTOR IS CONSIDERED INCIDENTAL TO THE COMMUNICATIONS UNIT. TRANSPORTATION DIVISION PERSONNEL SHALL INSTALL THE LIGHTNING PROTECTOR IN THE CONTROLLER CABINET.

PAYMENT SHALL BE PER EACH UNIT FURNISHED AND INSTALLED.

COAXIAL CABLE SYSTEM GENERAL REQUIREMENTS
THE CONTRACTOR SHALL INSTALL A COAXIAL INTERCONNECT CABLE SYSTEM IN ACCORDANCE WITH THE DESIGN PLANS.

AT LEAST TEN (10) DAYS IN ADVANCE OF BEGINNING COAXIAL CABLE WORK, THE CONTRACTOR SHALL NOTIFY THE DIVISION OF DESIGN AND CONSTRUCTION PROJECT MANAGER BY EMAIL OF THE AREA WHERE CABLE WORK WILL TAKE PLACE AND THE STARTING DATE OF WORK. AT THE SAME TIME, THE CONTRACTOR SHALL ALSO REQUEST THE PROJECT MANAGER TO SET UP A PRE-CONSTRUCTION MEETING WITH THE DIVISION OF DESIGN AND CONSTRUCTION SIGNAL PLAN REVIEWER TO REVIEW THE COAXIAL CABLE INTERCONNECT INSTALLATION PLANS PRIOR TO BEGINNING WORK. THE COAXIAL CABLE PRE-CONSTRUCTION MEETING SHALL BE HELD AT LEAST TWO (2) WORKING DAYS IN ADVANCE OF BEGINNING COAXIAL CABLE WORK. THE DIVISION WILL VERIFY THE PLAN IN THIS AREA AND NOTIFY THE CONTRACTOR OF ANY SPECIAL CONDITIONS OR CORRECTIONS. IF THE CONTRACTOR FAILS TO DO SO AND IF UNFORESEEN CIRCUMSTANCES, SUCH AS UTILITY POLE RELOCATIONS, NECESSITATE CHANGES TO THE COAXIAL CABLE SYSTEM PLAN, ALL CHANGES NECESSARY FOR THE COAXIAL CABLE SYSTEM TO MEET THE APPROVAL OF THE DIVISION OF DESIGN AND CONSTRUCTION SIGNAL PLAN REVIEWER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND AT THE EXPENSE OF THE CONTRACTOR.

THE EXISTING COAXIAL INTERCONNECT CABLE SHALL BE MAINTAINED AND REMAIN OPERATIONAL UNTIL IT IS DISCONNECTED AND THE NEW COAXIAL INTERCONNECT CABLE HAS BEEN CONNECTED INTO THE COAXIAL CABLE SYSTEM. THE CONTRACTOR SHALL UTILIZE A PROCEDURE WHICH WILL RETAIN CONTROL (ON-LINE STATUS) OF ANY EXISTING SIGNAL INTERCONNECT TO ANY SIGNAL(S). THE EXISTING COAXIAL INTERCONNECT CABLE SYSTEM SHALL BE FULLY OPERATIONAL DURING THE WEEKDAY HOURS OF 6:30 A.M. TO 9:00 A.M. AND 2:45 P.M. TO 6:00 P.M., MONDAY THROUGH FRIDAY. DEVIATION FROM THE ABOVE TIMES MUST BE APPROVED BY THE DIVISION OF DESIGN AND CONSTRUCTION SIGNAL PLAN REVIEWER PRIOR TO IMPLEMENTATION.

FOR CONNECTIONS OF NEW COAXIAL CABLE TO THE EXISTING COAXIAL CABLE SYSTEM, DIVISION OF PLANNING AND OPERATIONS PERSONNEL SHALL INSTALL ALL CONNECTORS AND MAKE ALL CONNECTIONS OF THE NEW COAXIAL CABLE TO THE EXISTING COAXIAL CABLE SYSTEM. THE CONTRACTOR SHALL CONTACT THE DIVISION OF DESIGN AND CONSTRUCTION PROJECT MANAGER AND SIGNAL PLAN REVIEWER BY EMAIL AT LEAST FORTY-EIGHT (48) HOURS, NOT INCLUDING SATURDAY AND SUNDAY, IN ADVANCE TO SCHEDULE THIS WORK. ALL OTHER CONNECTIONS OF COAXIAL CABLE AND EQUIPMENT INSTALLED OR RELOCATED ACCORDING TO THE COAXIAL CABLE SYSTEM PLAN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS OTHERWISE SPECIFIED.

CABLE SYSTEM MATERIALS
ALL CABLE SYSTEM MATERIALS AND EQUIPMENT REQUIRED TO PROVIDE A FULLY OPERATIONAL AND COMPLETE COAXIAL CABLE INTERCONNECT SYSTEM SHALL BE FURNISHED BY THE CONTRACTOR, EXCEPT AS NOTED IN THE PLANS. ALL EQUIPMENT SHALL BE EQUIPPED WITH COAXIAL CABLE FITTINGS OF POSITIVE MOISTURE PROTECTION AND EFFECTIVE ELECTRICAL CONNECTION. MATERIALS AND EQUIPMENT INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

A. SYSTEM PASSIVES
ALL DROPS SHALL BE GROUNDED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE, AND THE NATIONAL ELECTRICAL SAFETY CODE.

B. CONNECTORS
THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS EXCEPT THE CONNECTORS ON COAXIAL RG-6 CABLE. ALL "F" SERIES MALE CONNECTORS FOR COAXIAL RG-6 CABLE SHALL BE SUPPLIED BY AND INSTALLED BY TRANSPORTATION DIVISION PERSONNEL. FOR THE FOLLOWING TYPES OF CONNECTIONS, THE CONNECTORS SHALL BE:

1. CABLE TO CABLE
   A) 0.750-INCH CABLE TO 0.750-INCH CABLE: GILBERT SPLICE CONNECTOR, PART NO. GRS-750-SP-DU-01.
   B) 0.750-INCH CABLE TO 0.500-INCH CABLE: GILBERT FEMALE SPLICE ADAPTER, PART NO. GKSKSFS, WITH A GILBERT PIN TYPE CONNECTOR, PART NO. GRS-750-CH-DU-01, AND A GILBERT SPLICE CONNECTOR, PART NO. GRS-500-SP-DU-03.
   C) 0.500-INCH CABLE TO 0.500-INCH CABLE: GILBERT SPLICE CONNECTOR, PART NO. GRS-500-SP-DU-03.
2. CABLE TO DEVICE HOUSING
   A) 0.750-INCH CABLE TO DEVICE HOUSING: GILBERT PIN TYPE CONNECTOR, PART NO. GRS-750-CH-DU-01.
   B) 0.500-INCH CABLE TO DEVICE HOUSING: GILBERT PIN TYPE CONNECTOR, PART NO. GRS-500-CH-DU-03.
3. DEVICE HOUSING TO DEVICE HOUSING: ROTATIONAL HOUSING-TO-HOUSING CONNECTOR, GILBERT PART NO. G-KS-KS-M-T
4. "F" CONNECTIONS
   A) 0.750-INCH CABLE TO "F" CONNECTOR: GILBERT PIN TYPE CONNECTOR, PART NO. GRS-750-CH-DU-01, AND GILBERT ADAPTER (CHASSIS MOUNTING CONNECTOR TO "F" SERIES FEMALE), PART NO. G-CH-BAFF-KS.
   B) 0.500-INCH CABLE TO "F" CONNECTOR: GILBERT PIN TYPE CONNECTOR, PART NO. GRS-500-CH-DU-03, AND GILBERT ADAPTER, (CHASSIS MOUNTING CONNECTOR TO "F" SERIES FEMALE), PART NO. G-CH-BAFF-KS.
   C) DEVICE HOUSING TO "F" CONNECTOR: GILBERT "F" FEMALE-'KS' ADAPTER [AC (60 HZ) POWER BLOCKING], PART NO. GF-625-CH-DCB FOR EQUIPMENT TO "F" CONNECTOR CONNECTIONS.
5. PORT TERMINATION
   a) PORT TERMINATION ON DEVICES: GILBERT 'KS' PORT TERMINATOR, PART NO. GTR-MPORT.
   b) PORT TERMINATION ON COMMUNICATIONS UNITS: GILBERT "F" SERIES RF TERMINATOR, PART NO. GTR-59-A.
   c) PORT TERMINATION ON TAPS: GILBERT "F" SERIES RF TERMINATOR, PART NO. GTR-59-A.

HEAT SHRINK TUBING WITH CATV SEALANT SHALL BE INSTALLED FOR ALL CABLE TO CABLE SPLICE CONNECTIONS AND ALL CABLE TO ACTIVE AND PASSIVE DEVICE HOUSING CONNECTIONS, EXCEPT THOSE LOCATED INSIDE A CABINET OR POLE ENCLOSURE, TO INSURE WATER-TIGHT INTEGRITY. THE HEAT SHRINK TUBING USED SHALL BE DSG-CANUSA PART NO. CFTV-1500 OR GILBERT PART NO. GC-HST-15. A 12-IN. LENGTH OF HEAT SHRINK TUBING SHALL BE USED FOR SPLICE CONNECTIONS. AN 8-IN. LENGTH OF HEAT SHRINK TUBING SHALL BE USED FOR PIN TYPE CONNECTOR TO DEVICE HOUSING CONNECTIONS. THE HEAT SHRINK TUBING COST IS INCIDENTAL TO THE COST OF THE COAXIAL CABLE AND EACH ACTIVE AND PASSIVE DEVICE INSTALLED.

FOR ALL CONNECTIONS OF FLOODED COAXIAL CABLE, CABLE CLAMPS, BREEZE PART NO. 3604, SHALL BE USED ON THE FLOODED COAXIAL CABLE TO PREVENT THE JACKET FROM SLIPPING BACK ON CABLE. THE CABLE CLAMPS SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE HEAT SHRINK TUBING, AND THE HEAT SHRINK TUBING SHALL COMPLETELY COVER THE CLAMPS.

COLD SHRINK TAPE, AMP CST11 FUSION REPAIR TAPE, PART NO. 605262-1, SHALL BE USED ON ANY ADAPTER (CHASSIS MOUNTING CONNECTOR TO "F" SERIES FEMALE) CONNECTION NOT LOCATED INSIDE A CABINET OR POLE ENCLOSURE. APPLICATION OF THE COLD SHRINK TAPE SHALL BEGIN 0.5 IN. ON THE HEAT SHRINK TUBING, SO THAT IT COVERS THE ENTIRE LENGTH OF EXPOSED THREADS AT "F" MALE END OF ADAPTER, AND SHALL CONTINUE 1 IN. ONTO THE RG-6 DROP CABLE, SO THAT THE "F" CONNECTOR IS COMPLETELY COVERED.

COLD SHRINK TAPE, AMP CST11 FUSION REPAIR TAPE, PART NO. 605262-1, SHALL BE USED ON ANY ROTATIONAL CONNECTION NOT LOCATED INSIDE A CABINET OR POLE ENCLOSURE. THE COLD SHRINK TAPE SHALL BE APPLIED SO THAT THE ROTATIONAL IS COMPLETELY COVERED.

C.SUSPENSION CLAMPS
THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUSPENSION CLAMPS AS PER PLANS. ACCEPTABLE DEVICES SHALL BE 3 BOLT GROOVED SUSPENSION CLAMPS (CABLE TV SUPPLY PART # 551G, JOSLYN PART # J1096 OR NORTH ELECTRIC PART # S721046).

D.INCIDENTAL MATERIAL
ALL OTHER CABLE SYSTEM MATERIAL THAT IS REQUIRED AND NOT DESCRIBED IN THIS SPECIFICATION SHALL BE FURNISHED AND INSTALLED AS REQUIRED TO SATISFY THE CABLE DESIGN. THIS "INCIDENTAL MATERIAL" SHALL BE CONSIDERED AS PART OF THE RELATED BID ITEM DELIVERED AND NO ADDITIONAL COMPENSATION PROVIDED.

INSTALLATION OF COAXIAL CABLE AND EQUIPMENT
A.GENERAL
MESSENGER WIRE USED FOR INTERCONNECT WORK SHALL BE ATTACHED TO STEEL
POLES BY WRAP AROUND CLAMPS THAT ARE APPROVED BY THE TRANSPORTATION DIVISION. HOLES MAY NOT BE DRILLED OR BURNED IN ANY POLE WITHOUT THE PERMISSION OF THE DIVISION AND THEN APPROVAL WILL BE ON A POLE-BY-POLE BASIS. ANY PAINT DAMAGED BY BURNING SHALL BE CLEANED AND REPLACED WITH PAINT OF A MATCHING COLOR.

DAMAGE PREVENTION IS THE FIRST CONSIDERATION IN THE INSTALLATION OF CABLE. THE CABLE LASHER SHALL BE IN GOOD WORKING ORDER WITH NO SHARP EDGES THAT COULD DAMAGE THE OUTER SHIELD OF THE CABLE. CABLE ROLLERS SHALL BE USED TO KEEP THE CABLE WITHIN A FEW FEET OF THE MESSENGER WIRE. A CABLE ROLLER SHALL BE PLACED DIRECTLY IN FRONT OF THE LASHER TO ENSURE THAT THE CABLES WILL LAY STRAIGHT AND BE LASHED TO THE MESSENGER WIRE IN THE SAME POSITION. CABLE ROLLERS SHALL BE PLACED AT EACH POLE AS WELL AS ALL ACTIVE AND PASSIVE DEVICES.

DURING AND AFTER INSTALLATION, CABLE SHALL NOT BE ALLOWED TO RUB ON POLE HARDWARE, SPAN CLAMPS, LASHING WIRE CLAMPS, OR ANY OTHER HARD SURFACE. WHEN PLACING CABLES IN RISERS, THE CABLE SHALL NOT COME IN CONTACT WITH THE SHARP EDGES OF THE CONDUIT. BUSHINGS SHALL BE USED IN THESE LOCATIONS. AN EXPANSION LOOP SHALL BE PLACED AT EVERY POLE TO PROVIDE FOR EXPANSION AND CONTRACTION AND TO AVOID CONTACT WITH POLE HARDWARE. WHERE THE CABLE RUNS THROUGH TREES, TREE GUARDS MUST BE USED IF THE TREES CANNOT BE PROPERLY TRIMMED.

THERE SHALL BE NO SPLICES IN THE CABLE, EXCEPT AS DESIGNATED IN THE PLANS.

A.INSTALLATION OF ACTIVE AND PASSIVE EQUIPMENT
1. ALL ACTIVE AND PASSIVE EQUIPMENT SHALL BE MOUNTED BETWEEN 18 IN. AND 48 IN. FROM THE SUSPENSION CLAMP. NO EQUIPMENT SHALL BE MOUNTED MID-SPAN, UNLESS OTHERWISE STATED ON THE PLANS.
2. THE CENTER CONDUCTOR MUST BE THE EXACT LENGTH SPECIFIED BY THE MANUFACTURER OF THE EQUIPMENT BEING INSTALLED.
3. THE CABLE MUST BE PREPARED WITH THE PROPER CORING TOOL AND WIPED CLEAN OF ANY SHAVINGS.
4. WHEN PREPARING CABLE FOR INSTALLATION INTO THE EQUIPMENT, THERE SHALL BE NO MEASURABLE CHANGE IN THE INSIDE DIAMETER OF THE CABLE. USE OF THE CABLE PREPARATION TOOL FOR REMOVING THE ALUMINUM SHEATH IS REQUIRED.
5. THERE SHALL BE NO VISIBLE MARKS ON THE ALUMINUM SHEATH AFTER REMOVAL OF THE POLYETHYLENE JACKET. UTILITY TOOL NO. JST OR EQUIVALENT IS RECOMMENDED.
6. WHEN INSTALLING AN AMPLIFIER AND/OR SPLITTER, A HOUSING-TO-HOUSING CONNECTOR, RATHER THAN A CABLE JUMPER, SHALL BE USED BETWEEN THE TWO PIECES OF EQUIPMENT.
7. SILICONE LUBRICANT SHALL NOT BE USED ON ANY CONNECTOR.

C. SYSTEM BONDING AND GROUNDING
1. THE MESSENGER WIRE SHALL BE GROUNDED AT EACH AMPLIFIER AND POWER SUPPLY LOCATION AND OTHER LOCATIONS AS SPECIFIED IN 625.16 AND AS SHOWN IN TC-84.20 AND TC-84.21. GROUND RODS SHALL CONFORM TO 725.16. THE GROUND WIRE CABLE SHALL BE CROSS-LINKED POLYETHYLENE, #4 AWG COPPER, STRANDED, RHW INSULATED, 600 VOLT RATED. A 10-FT. PLASTIC SHIELD SHALL BE INSTALLED AT EACH LOCATION.
2. ON ALL BONDS, MESSENGER WIRE TO MESSENGER WIRE AND MESSENGER WIRE TO COPPER, THE CLAMP USED MUST BE OF A SUITABLE TYPE THAT WILL PREVENT CORROSIVE ACTION BETWEEN DISSIMILAR METALS.
3. THE CLAMP MUST BE INSTALLED IN THE MANNER PRESCRIBED BY THE MANUFACTURER.
4. WHEN INSTALLING THE CLAMP, THE CUT END OF THE CONDUCTOR MUST NOT PROTRUDE BEYOND THE EDGE OF THE CLAMP.
5. THE BONDING CLAMP MUST BE INSTALLED DIRECTLY TO THE MESSENGER WIRE AND NOT ON ANY PART OF THE DEAD-ENDING HARDWARE.
6. ALL BONDING AND GROUNDING CONDUCTORS MUST NOT HAVE ANY RIGHT ANGLE BENDS. ALL BENDS MUST BE AS GRADUAL AS POSSIBLE AND STILL MAINTAIN AN ORDERLY APPEARANCE.
7. ALL DEAD-END BONDS OR GROUNDS MUST BE COMPLETED ALONG WITH THE INSTALLATION OF MESSENGER WIRE.
8. THE MESSENGER WIRE MUST BE GROUNDED TO A LOW-IMPEDANCE GROUND (10 OHMS OR LESS) IF IT IS PLACED ON POLES CARRYING POWER WIRES OR IF IT CROSSES POWER WIRES. THIS PRECAUTION IS NECESSARY TO MINIMIZE THE POSSIBILITY OF ELECTRIC SHOCK, SHOULD THERE BE ACCIDENTAL CONTACT WITH POWER WIRES.
9. GROUNDING AT UTILITY POLES WITH SPARK GAPS, LIGHTNING ARRESTERS OR PRIMARY SWITCHING DEVICES SHALL NOT BE ACCEPTABLE.
10. LOCATION OF GROUND RODS SHALL BE AS SHOWN ON THE INTERCONNECT PLAN SHEETS. SHOULD THE LOCATION SO SPECIFIED BE IN CONFLICT WITH ANY OF THE OTHER PROVISIONS OF THIS SECTION, THE CONTRACTOR IS REQUIRED TO BRING THE SITUATION TO THE ATTENTION OF THE DIVISION'S SIGNAL PLAN REVIEWER.

D. CABLE INSTALLATION
1. THE CABLE SHALL BE LASHED TO THE MESSENGER WIRE USING 0.061 IN. STAINLESS LASHING WIRE, HAVING AN AVERAGE OF ONE WRAP PER LINEAR FOOT OF MESSENGER WIRE. DOUBLE LASHINGS SHALL BE USED.
2. LASHING WIRE SHALL MAINTAIN A CONSISTENT SPIRAL THROUGHOUT THE ENTIRE SPAN, WITHOUT EXCEPTION, AND MUST MAINTAIN A MINIMUM OF 40 LB. PULL DURING AND AFTER INSTALLATION.
3. THERE SHALL BE NO VISIBLE SEPARATION OF MESSENGER WIRE AND CABLE OR TRUNK AND FEEDER CABLE IN MID-SPAN LASHING.
4. TREE GUARDS SHALL BE INSTALLED ON CABLE AND MESSENGER WIRE WHERE LIMBS OR OTHER OBSTACLES ARE WITHIN 4 IN. OF CABLE. TREES WITHIN 2 IN. OF THE CABLE SHALL BE TRIMMED BACK TO 6 IN. FROM THE CABLE.
5. EXPANSION LOOPS SHALL BE OF THE TYPE AND AT THE LOCATION SPECIFIED BY THE TYPICAL DRAWINGS.
6. EXPANSION LOOPS SHALL BE PLACED IN THE FOLLOWING LOCATIONS RELATIVE TO POLES AND DEVICES:
   A) ON THE INPUT AND OUTPUT OF EACH ACTIVE AND PASSIVE DEVICE USED BY THE CONTRACTOR TO CONSTRUCT THE SYSTEM.
   B) AT EACH AND EVERY LOCATION WHERE OVERHEAD COAXIAL TRUNK OR FEEDER CABLE ENTERS A CONNECTOR OF ANY TYPE, EXCEPT A "F" CONNECTOR; AN EXPANSION LOOP SHALL NOT BE PLACED ON THE TRUNK CABLE AT A 0.750-IN. CABLE TO "F" CONNECTION OR ON THE FEEDER CABLE AT A 0.500-IN. CABLE TO "F" CONNECTION.
   C) AT EVERY POLE LOCATION.
   D) AT EVERY LOCATION WHERE THE CABLE IS BEING SECURED BY MEANS OF A SUPPORT STRAP OR CABLE CONNECTOR, THE CABLE MUST REMAIN PARALLEL TO THE MESSENGER WIRE FOR A MINIMUM OF 3 IN. FROM THE EDGE OF THE SUPPORT OR CONNECTOR.
7. EXPANSION LOOPS SHALL BE PLACED AT A MINIMUM OF 20 IN. FROM THE CENTER OF THE POLE, AND BE SUPPORTED WITH A STRAP AND SPACER ON EACH SIDE OF THE LOOP, WITHIN 6 IN. OF POINT OF CONTACT (SEE EXPANSION LOOP TYPICAL).
8. MINIMUM CABLE BENDING RADIUS SHALL BE AS SPECIFIED BY THE EXPANSION LOOP TYPICAL. FORMING BLOCKS OR EQUIVALENT SHALL BE USED WHEN CABLE IS TO BE BENT.
9. THE LASHED CABLE REQUIRES SUPPORT WHEN IT EXTENDS BEYOND THE POINTS OF TERMINATION OF THE LASHING WIRE. THIS SUPPORT IS NECESSARY TO KEEP THE CABLE IN PLACE AND TO MAINTAIN CLEARANCES BETWEEN THE CABLE SHEATH AND VARIOUS ITEMS OF HARDWARE. A POLYPROPYLENE AERIAL SUPPORT TIE WITH AN INTEGRAL 0.50-IN. SPACER, PANDUIT PART NO. AST20-5-C100, SHALL BE USED TO FASTEN THE CABLE TO THE SUPPORTING MESSENGER WIRE AND MAINTAIN SEPARATION BETWEEN THE CABLE AND MESSENGER WIRE.
10. FIFTEEN (15) FEET OF CABLE SHALL BE COILED IN ALL PULL BOXES WHERE ACTIVE AND PASSIVE DEVICES ARE INSTALLED.
11. WHEN CABLE IS INSTALLED UNDERGROUND INTO AN AMPLIFIER CABINET, 15 FEET OF CABLE SHALL BE COILED IN THE PULL BOX NEAREST TO THAT AMPLIFIER CABINET.
12. WHEN FEEDER CABLE IS INSTALLED UNDERGROUND INTO THE CONTROLLER CABINET, 15 FEET OF UNDERGROUND FEEDER CABLE SHALL BE COILED IN THE PULL BOX NEAREST TO THE CONTROLLER CABINET.
13. WHEN CABLE IS INSTALLED UNDERGROUND INTO A CONDUIT RISER, 15 FEET OF CABLE SHALL BE COILED IN THE PULL BOX NEAREST TO THAT CONDUIT RISER.

CABLE MARKERS
THE CONTRACTOR SHALL INSTALL CABLE MARKERS ON THE COAXIAL CABLE INSTALLED ON THIS PROJECT. THE CABLE MARKERS SHALL BE SUPPLIED BY THE DIVISION OF PLANNING AND OPERATIONS.

IN AERIAL INSTALLATIONS, IT SHALL BE NECESSARY TO INSTALL ONLY ONE CABLE MARKER ON ONE CABLE, EVEN IF THERE ARE MORE THAN ONE CABLE IN THE SAME BUNDLE. THERE SHALL BE A CABLE MARKER INSTALLED ON THE EXPANSION LOOP OF THE COAXIAL CABLE NEAREST EACH POLE ATTACHMENT.

IN UNDERGROUND INSTALLATIONS, A CABLE MARKER SHALL BE INSTALLED ON EACH CABLE IN EACH PULL BOX.

CALCULATED | CHECKED

TRAFFIC SIGNAL GENERAL NOTES

PROJECT NAME

ITEM 632 INTERCONNECT CABLE, COAXIAL TRUNK, .750–IN. OVERHEAD WITH ACCESSORIES, AS PER PLAN
This cable shall be Commscope Parameter III 750 cable (Part No. P3 750 JCA) or Times Fiber T10 750 Series Semiflex cable (Part No. T10750J).

The cable length shall be marked sequentially on the jacket of the cable. No tracer shall be used on this cable.

This item includes lashing wire, hangers, connectors, and any other accessories necessary to install the coaxial trunk cable (see Cable System Materials section of these specifications).

Payment shall be as per Item 632.

ITEM 632 INTERCONNECT CABLE, COAXIAL FEEDER, .500–IN. OVERHEAD, WITH ACCESSORIES, AS PER PLAN
This cable shall be Commscope Parameter III 500 cable (Part No. P3 500 JCA) or Times Fiber T10 500 Series Semiflex cable (Part No. T10500J).

The cable length shall be marked sequentially on the jacket of the cable. No tracer shall be used on this cable.

This item includes lashing wire, hangers, connectors and any other accessories necessary to install the coaxial feeder cable (see Cable System Materials section of these specifications).

Payment shall be as per Item 632.

ITEM 632 INTERCONNECT CABLE, COAXIAL FEEDER, .500–IN. OVERHEAD, AS PER PLAN
This item is intended to be installed in the same lashing bundle with other Item 632 Interconnect Cable, Coaxial, With Accessories, As Per Plan. Therefore, this item does not include lashing wire, cable markers, hangers and other accessories.

This cable shall be Commscope Parameter III 500 cable (Part No. P3 500 JCA) or Times Fiber T10 500 Series Semiflex cable (Part No. T10500J).

The cable length shall be marked sequentially on the jacket of the cable. No tracer shall be used on this cable.

ITEM 632 INTERCONNECT CABLE, COAXIAL DROP, RG–6 UNDERGROUND, AS PER PLAN
When any portion of the interconnect drop cable is installed in underground conduit, the entire length of interconnect drop cable shall be Commscope 6 Series Drop Cable, Part No. F690BEF.

All "F" series male connectors for coaxial RG–6 cable shall be supplied by and installed by Division of Planning and Operations personnel.

Payment shall be per Item 632.

ITEM 632 MESSENGER WIRE, 7–STRAND, 0.25–IN. DIAMETER WITH ACCESSORIES, AS PER PLAN
The Contractor shall furnish and install messenger wire as shown in the plans to support the coaxial cable system. The cable shall be attached to the messenger wire by a double 0.061–inch stainless spinning wire. Messenger wire shall be rated as extra–high strength and meet the requirements of 732.18. Accessories used with messenger wire shall include thru bolts, eye bolts, suspension hangers, thimbles, preformed guy grips, pole clamps, dead–ends, and three bolt clamps as needed to support the temporary interconnect cable. The messenger wire shall be dead–ended on both sides of a street crossing. Messenger wire shall be attached using thimbles to the clevises of strain pole span wire clamps and to eye bolts. All accessories shall have a rated loading strength equal to or greater than the messenger wire minimum breaking strength.

Payment shall be as per Item 632.

ITEM 632 SIGNALIZATION, MISC.: SPLITTER, TWO–WAY, AS PER PLAN
The two–way splitter shall be RMS Part No. RMS 7502K.

ITEM 632 REMOVAL OF COAXIAL INTERCONNECT CABLE, AS PER PLAN
The Contractor shall salvage and deliver the following items to the City of Columbus, Division of Planning and Operations, at 1820 East 17th Avenue: amplifiers, amplifier cabinet assemblies, pilot generators, power supplies with cabinets, directional couplers, splitters, power inserters, camera and dome assemblies, and camera cabinet assemblies (including all equipment contained within). The Contractor shall dispose of all other items, including coaxial cable, messenger wire, lashing wire, and pole attachment hardware, unless otherwise specified.

The Contractor shall contact the City of Columbus, Division of Planning and Operations, Traffic Maintenance Manager (645–7393) twenty–four (24) hours, not including Saturday and Sunday, in advance to schedule delivery. No item will be accepted without following this procedure. The Traffic Maintenance Manager shall inspect the condition of all salvaged items being presented for delivery. No item damaged by the Contractor will be accepted, and no item shall be considered delivered until the Traffic Maintenance Manager issues a receipt to the Contractor acknowledging acceptance of delivery.

Payment shall be at the lump sum contract bid amount.

ITEM SPECIAL RELOCATION OF AERIAL INTERCONNECT CABLE, AS PER PLAN
The existing signal interconnect cable connecting the Street Name 1/Street Name 2 and Street Name 1/Street Name 3 intersections shall be relocated as detailed within.

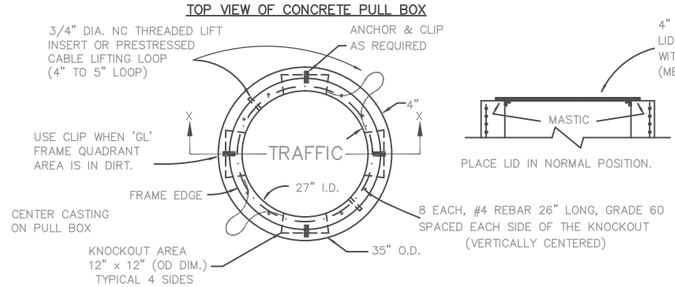
Various existing utility poles supporting the existing aerial interconnect cable and devices between these two intersections will be relocated as part of the project. This item is intended to provide for the transfer of the existing interconnect cable(s) to the relocated poles.

The result of the relocation process shall be a continuous interconnect run, without splices, between the devices shown in the plans. It shall be the Contractor's responsibility to ensure that the cable is not damaged during the removal or relocation process. If the cable is damaged, as determined by the City of Columbus Division of Planning and Operations, the Contractor shall furnish and install new interconnect cable between devices. No additional compensation will be awarded for the new cable or its installation.

Payment for the work described above shall be at the lump sum bid amount.

ITEM 625 PULL BOX, 725.08, 27", AS PER PLAN

TOP VIEW OF CONCRETE PULL BOX



PLACE LID IN NORMAL POSITION.

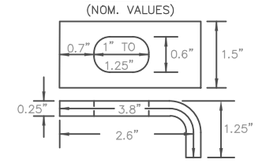
4" HEAVY DUTY FRAME WITH SOLID LID NEENAH (R–5900–F, TYPE C LID) WITH WORD "TRAFFIC" IN LID. (MEETS ASTM A48 CLASS 35B SPECS)

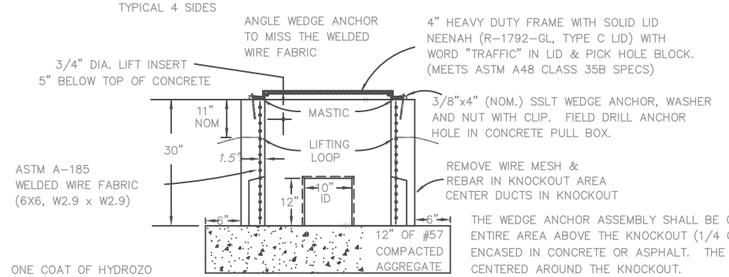
'R–5900–F' CASTING INSTALLATION: FOR USE WHEN THE PULL BOX IS PLACED ENTIRELY IN A DIRT AREA.

'1792 GL' CASTING INSTALLATION: USE WHEN CASTING IS FULLY OR PARTIALLY ENCASED IN ASPHALT OR CONCRETE.

THE CLIP SHALL BE MADE FROM A36 METAL, HD GALV (ASTM A123) AND IN THE SHAPE SHOWN.

CLIP PROFILE
(NOM. VALUES)





THE WEDGE ANCHOR ASSEMBLY SHALL BE OMITTED WHENEVER THE ENTIRE AREA ABOVE THE KNOCKOUT (1/4 OF THE CASTING) IS EITHER ENCASED IN CONCRETE OR ASPHALT. THE ENCASEMENT SHALL BE CENTERED AROUND THE KNOCKOUT.

ONE COAT OF HYDROZO ENVIROSEAL 40, RAINSTOPPER 140 OR CHEMTRETE BSM40 SHALL BE APPLIED TO THE INSIDE & OUTSIDE OF THE PULL BOX.

CONCRETE SHALL HAVE AIR ENTRAPMENT OF 6% ± 2% AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.

LID RING LOAD TRANSFER IS TO BE DISTRIBUTED BY USE OF A PREFORMED MASTIC JOINT MATERIAL.

CONCRETE MATERIALS SHALL MEET ODOT SPECIFICATIONS. STANDARD PLACEMENT FOR WIRE MESH & REBAR SHALL BE USED.

CUT OFF CONDUITS SO THEY EXTEND NO MORE THAN THREE INCHES BEYOND THE INSIDE PULL BOX WALL.

CONDUIT SHALL ENTER THE PULL BOX VIA A KNOCKOUT. CONDUIT WHEN APPROVED BY SIGNAL PERSONNEL, MAY ENTER THE PULL BOX THRU ITS WALL ONLY IF THE OPENING IS SAWN OR CORE DRILLED.

ENLARGING THE KNOCKOUT AREA IF REQUIRED SHALL BE DONE BY SAW CUTTING THE CONCRETE. NO OTHER METHOD IS ALLOWED. CONTRACTOR SHALL REPLACE THE CONCRETE HOUSING IF DAMAGED AT HIS EXPENSE.

A PULL LINE (POLYOLEFIN, #14 CU WIRE OR NYLON ROPE) SHALL BE INSTALLED IN EACH CONDUIT (USED OR UNUSED) AND SHALL BE SECURELY FASTENED AT BOTH CONDUIT ENDS. ALL UNUSED CONDUITS SHALL BE CAPPED AND THE CAPS SECURED TO THE CONDUIT WITH TAPE.

ANY CONDUIT THAT EXITS A PULL BOX, CONTAINS CABLE AND DIRECTLY ENTERS ANY ELECTRONIC CABINET, SHALL BE FOAM SEALED IN THE PULL–BOX. PULL BOX BEARING CAPACITY TO EXCEED 40,000#

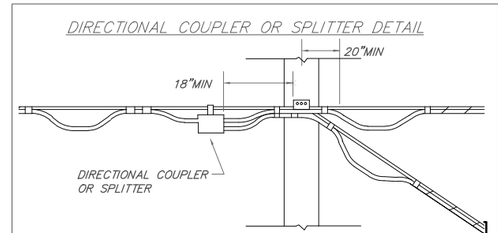
AFTER THE CONDUITS HAVE BEEN INSTALLED, ANY OPENING IN THE PULL BOX WALL SHALL BE TOTALLY FILLED WITH MORTAR OR CONCRETE AND FINISHED FLUSH WITH THE INSIDE PULL BOX WALL. (NO VOIDS)

SUB–SUMMARY OF TRAFFIC SIGNAL AND INTERCONNECT ITEMS

ITEM NUMBER	TOTAL	UNIT	ITEM DESCRIPTION	REF. SHT. NO.
625	244	LF	Conduit, Encased, 2", 725.05, As Per Plan	172
625	53	LF	Conduit, Encased, 3", 725.05, As Per Plan	172
625	3	LF	Conduit, 2", 725.04	–
625	377	LF	Conduit, 2", 725.05, As Per Plan	172
625	1	EA	Conduit Riser, 2"	–
625	652	LF	Trench, As Per Plan	172
625	1	EA	Pull Box, 725.08, 27", GL, As Per Plan	175
625	11	EA	Pull Box, As Per Plan	172
625	6	EA	Ground Rod, As Per Plan	172
625	410	LF	No. 4 AWG, 600 Volt Distribution Cable, As Per Plan	172
630	LUMP	SUM	Signs, As Per Plan	172
630	4	EA	Sign Support Assembly, Pole Mounted, As Per Plan	172
630	4	EA	Sign, Double–Faced Street Name (Installation Only)	–
630	4	EA	Removal of Pole Mounted Sign and Storage	–
632	5	EA	Vehicular Signal Head, L.E.D., 3–Section, 12–Inch Lens, 1–Way, As Per Plan	172
632	3	EA	Vehicular Signal Head, L.E.D., 5–Section, 12–Inch Lens, 1–Way, As Per Plan	172
632	8	EA	Pedestrian Signal Head, As Per Plan	172
632	4	EA	Pedestrian Pushbutton, As Per Plan	172
632	8	EA	Covering of Vehicular Signal Head, As Per Plan	173
632	8	EA	Covering of Pedestrian Signal Head, As Per Plan	173
632	4	EA	Covering of Pedestrian Pushbutton, As Per Plan	173
632	4	EA	Strain Pole Foundation, As Per Plan	173
632	4	EA	Strain Pole, Type TC–81.10, Anchor Base, Design 5, As Per Plan	173
632	1	EA	Sleeve for Anchor Base Foundation, As Per Plan	173
632	345	LF	Messenger Wire, 7 Strand, 3/8 in. Diameter With Accessories	–
632	1	EA	Removal of Traffic Signal Installation, As Per Plan	173
632	316	LF	Signal Cable, 9–Conductor, No. 14 AWG	–
632	991	LF	Signal Cable, 7–Conductor, No. 14 AWG	–
632	1808	LF	Loop Detector Lead in Cable, IMSA 50–2	–
632	14	EA	Detector Loop, As Per Plan	172
632	270	LF	Power Cable, 3–Conductor #6, AWG As Per Plan	173
633	1	EA	Cabinet Foundation, As Per Plan	173/178
633	1	EA	Controller Unit, Type TS–2/A2, With Cabinet (P44). Type TS–1, As Per Plan	173
633	1	EA	Controller Item Misc.: Transceiver Interface Unit, As Per Plan	174
632	2011	LF	Messenger Wire, 7 Strand, 0.25 In. Diameter With Accessories, As Per Plan	175
632	1679	LF	Interconnect Cable, Coaxial Trunk, 0.750–In. Overhead, With Accesories, As Per Plan	175
632	99	LF	Interconnect Cable, Coaxial Feeder, 0.500–In. Overhead, With Accessories, As Per Plan	175
632	500	LF	Interconnect Cable, Coaxial Feeder, 0.500–In. Overhead, As Per Plan	175
632	44	LF	Interconnect Cable, Coaxial Drop, RG–6 Underground, As Per Plan	175
632	1	EA	Signalization Misc.: Splitter, Two–Way, As Per Plan	175
632	LUMP	SUM	Removal of Coaxial Interconnect Cable, As Per Plan	175
SPEC.	LUMP	SUM	Relocation of Aerial Interconnect Cable, As Per Plan	175

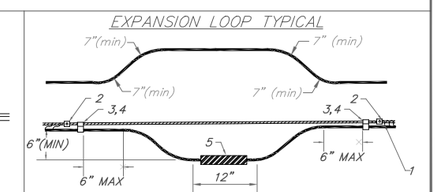
TOTALS CARRIED TO GENERAL SUMMARY

DIRECTIONAL COUPLER OR SPLITTER DETAIL



NOTE: LINE AMPLIFIER INSTALLATION SIMILAR

EXPANSION LOOP TYPICAL



1. STAINLESS STEEL LASHING WIRE
2. LASHING WIRE CLAMPS
3. CABLE SPACER
4. CABLE SUPPORT STRAPS
5. CABLE MARKER

XXXX–E

CALCULATED WJF
CHECKED JDS

TRAFFIC SIGNAL GENERAL NOTES AND SUB–SUMMARY OF QUANTITIES

PROJECT NAME

X
XX

REVISED 12/2/11

NOTES:

1. The Contractor shall ensure that all sidewalks/pathways meet ADA guidelines per City specifications.
2. Power, service and interconnect cable shall be continuous with no splices except as noted.
3. For signing and pavement markings, see sheets 165–170.
4. Center all loops in the center of their lane unless specified otherwise. Install loops after the asphalt surface course is laid.
5. The top of the pole base foundation shall be edged using a 1/2" sidewalk edger instead of being chamfered.
6. The Division of Design and Construction Personnel shall approve bolt alignment, pole foundation location and elevation prior to the Contractor installing the foundation.
7. Tagging of cable in the 27" or 32" pull box next to the control cabinet is not required except for tagging of certain cable as directed by the Project Engineer or as per plan.
8. The pedestrian signal head unit shall be aimed at the centerline of the crosswalk area (not the curb ramp) that is opposite of the unit. The pedestrian unit shall also have a slight downward angle to it.
9. Do not encase the ground rod, the grounding wire or the EMT conduit in concrete outside of their foundation. Full access to these items must be maintained at all times. Permanently mark the top of concrete, if visible, with a marker or symbol so the rod location can be known by others.
10. Any signal support base foundation within or adjacent to a sidewalk area shall be flush with the top of the sidewalk.
11. The Contractor shall not install pole foundations until the pole location area is at finished grade.
12. Underground conduit and trench that are under proposed sidewalk or roadway areas shall be installed prior to the placement of sidewalks or any asphalt or concrete roadway course.
13. The Contractor shall provide and install power and/or service cable between the control cabinet and the designated power source location. The triplex power service cable shall be run separately and shall not be bundled with any other cable.
14. See interconnect schematic sheets XXX–XXX for interconnect items.
15. The control cabinet door shall be located on the NORTHEAST side of the cabinet.
16. The cabinet foundation shall be placed adjacent to the back of the sidewalk. The top surface of a cabinet foundation located next to sidewalk areas shall be 4" above the surrounding walk. Expansion material shall be used between all foundations and adjacent sidewalk.
17. Use a separate conduit for each grouping of cables unless otherwise indicated: one conduit for 120VAC signal cable (5C, 7C, 9C); one conduit for power; one conduit for 2 conductor cable (loop & pushbutton); and one conduit for interconnect cable (twisted pair, fiber optics or coax). Any other low voltage cable not specified above can be placed in the 2 conductor cable conduit. Power cable must be in its own conduit.
18. Unless otherwise specified the following shall apply. A preformed PVC conduit elbow shall be used to change the PVC conduit direction beyond what its natural bending flex would yield. Rigid metal conduit can be bent to form an elbow or any other bending angle required only if a proper conduit bending machine is used. The elbow radius for any non–interconnect conduit shall be 24" or larger when used in a horizontal or vertical manner. Any type of elbow used for interconnect conduit shall have a radius of 36" or larger when used in a horizontal direction or in a vertical direction when the trench is 36" or deeper. If the trench is less than 36" then the vertical elbow radius shall be 24".
19. All clamps and banding material shall be painted to match the signal supports.
20. Run the RG–6 cable into the cabinet. Coil 5 ft of RG–6 cable in the cabinet. Connect the RG–6 cable to the feeder cable. Make certain that the RG–6 conduit clears the load switch rack support.

LEGEND

Centerline of Road

Right–of–Way: Existing Ex R/W Proposed Prop R/W

Fence Line — Fire Hydrant — Catch Basin — Tree

Utility Poles: Power — Telephone — Combination

Signs: Ground Mounted — Pole Mounted — Overhead
Ex. to Remain — Ex. to be Removed — Prop.

Signal Poles: Existing — Proposed
w/ Ped Signals
w/ Pushbutton

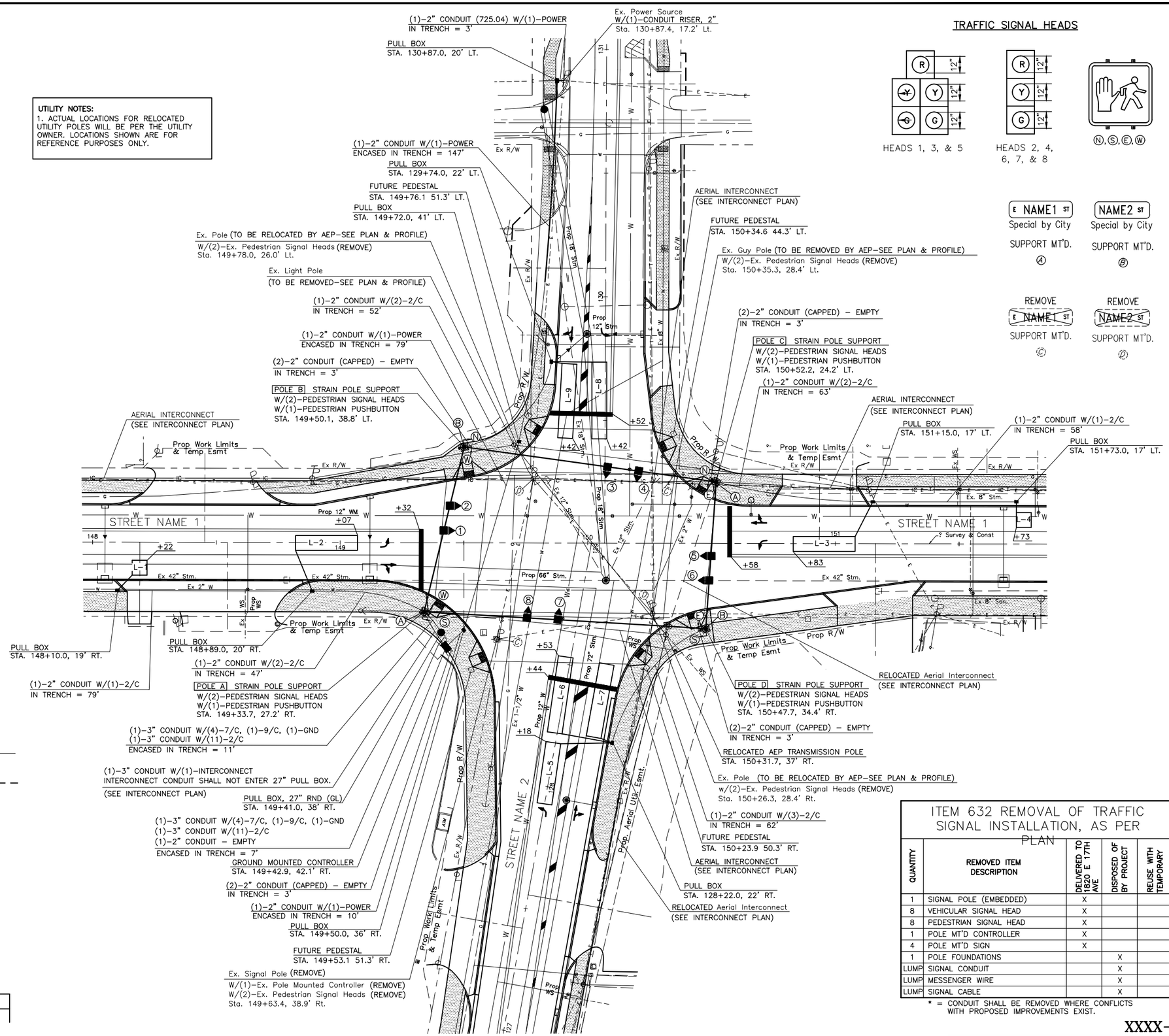
Signal Heads: Existing — Proposed

Signal Pull Box: Existing — Proposed

Signal Controller: Existing — Proposed

Signal Loops: Existing — Proposed L–X

UTILITY NOTES:
1. ACTUAL LOCATIONS FOR RELOCATED UTILITY POLES WILL BE PER THE UTILITY OWNER. LOCATIONS SHOWN ARE FOR REFERENCE PURPOSES ONLY.



ITEM 632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN

QUANTITY	REMOVED ITEM DESCRIPTION	DELIVERED TO 1820 E 17TH AVE	DISPOSED OF BY PROJECT	REUSE WITH TEMPORARY
1	SIGNAL POLE (EMBEDDED)	X		
8	VEHICULAR SIGNAL HEAD	X		
8	PEDESTRIAN SIGNAL HEAD	X		
1	POLE MT'D CONTROLLER	X		
4	POLE MT'D SIGN	X		
1	POLE FOUNDATIONS		X	
LUMP	SIGNAL CONDUIT		X	
LUMP	MESSENGER WIRE		X	
LUMP	SIGNAL CABLE		X	

* = CONDUIT SHALL BE REMOVED WHERE CONFLICTS WITH PROPOSED IMPROVEMENTS EXIST.

XXXX–E

SCALE 20 0 10 20

CALCULATED | CHECKED

TRAFFIC SIGNAL PLAN
STREET NAME 1AT STREET NAME 2

PROJECT NAME

X
XX

REVISED 12/2/11

FIELD WIRING HOOK-UP CHART

SIGNAL HEAD #	INDICATION	FIELD TERMINAL	FLASH
1 (WBLT)	R	ø2 R	Y
	Y	ø2 Y	
	G	ø2 G	
	~~Y~~	ø5 Y	
	~~G~~	ø5 G	
2 (WB)	R	ø2 R	Y
	Y	ø2 Y	
	G	ø2 G	
3 (NBLT)	R	ø8 R	R
	Y	ø8 Y	
	G	ø8 G	
	~~Y~~	ø3 Y	
	~~G~~	ø3 G	
4 (NB)	R	ø8 R	R
	Y	ø8 Y	
	G	ø8 G	
5 (EBLT)	R	ø6 R	Y
	Y	ø6 Y	
	G	ø6 G	
	~~Y~~	ø1 Y	
	~~G~~	ø1 G	
6 (EB)	R	ø6 R	Y
	Y	ø6 Y	
	G	ø6 G	
7 & 8 (SB)	R	ø4 R	R
	Y	ø4 Y	
	G	ø4 G	

SIGNAL HEAD #	INDICATION	FIELD TERMINAL	FLASH
W	DON'T WALK	ø4-DW	OFF
	WALK	ø4-W	
S	DON'T WALK	ø6-DW	OFF
	WALK	ø6-W	
N	DON'T WALK	ø2-DW	OFF
	WALK	ø2-W	
E	WALK	ø8-W	OFF
	DON'T WALK	ø8-DW	

NOTES:
White shall be used for common. Splice all wires in the signal head or ped unit. Use #14 AWG 2 wire spade terminal for 2 wire connections and #14 AWG 1 wire spade terminal for single wire connections on all wires to all field terminals. Use butt splices on all through wires. All unused wires shall be spliced through and shall have a dead-end terminal at the end of the wire.

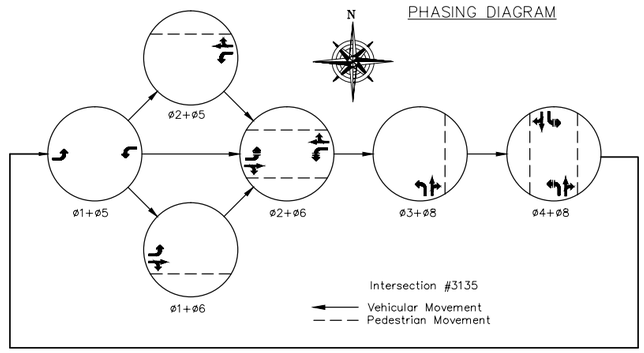
SIGNAL HEAD & CABINET FIELD WIRING HOOK-UP

SIGNAL DISPLAY	WIRE COLOR PER APPROACH
THRU R	RED
THRU Y	ORANGE
THRU G	GREEN
L/T R	BLACK (FUTURE ONLY)
L/T ~~Y~~	WHITE W/BLACK TRACER
L/T ~~G~~	BLUE
R/T ~~Y~~	RED W/BLACK TRACER
R/T ~~G~~	GREEN W/BLACK TRACER

PED UNIT FIELD WIRING HOOK-UP

PED UNIT LOCATION	CROSSWALK DISPLAY	WIRE COLOR
SOUTH CROSSWALK	WALK	BLACK
	DONT WALK	ORANGE
WEST CROSSWALK	WALK	GREEN
	DONT WALK	RED
NORTH CROSSWALK	WALK	BLUE
	DONT WALK	WHITE W/BLACK TRACER
EAST CROSSWALK	WALK	GREEN W/BLACK TRACER
	DONT WALK	RED W/BLACK TRACER

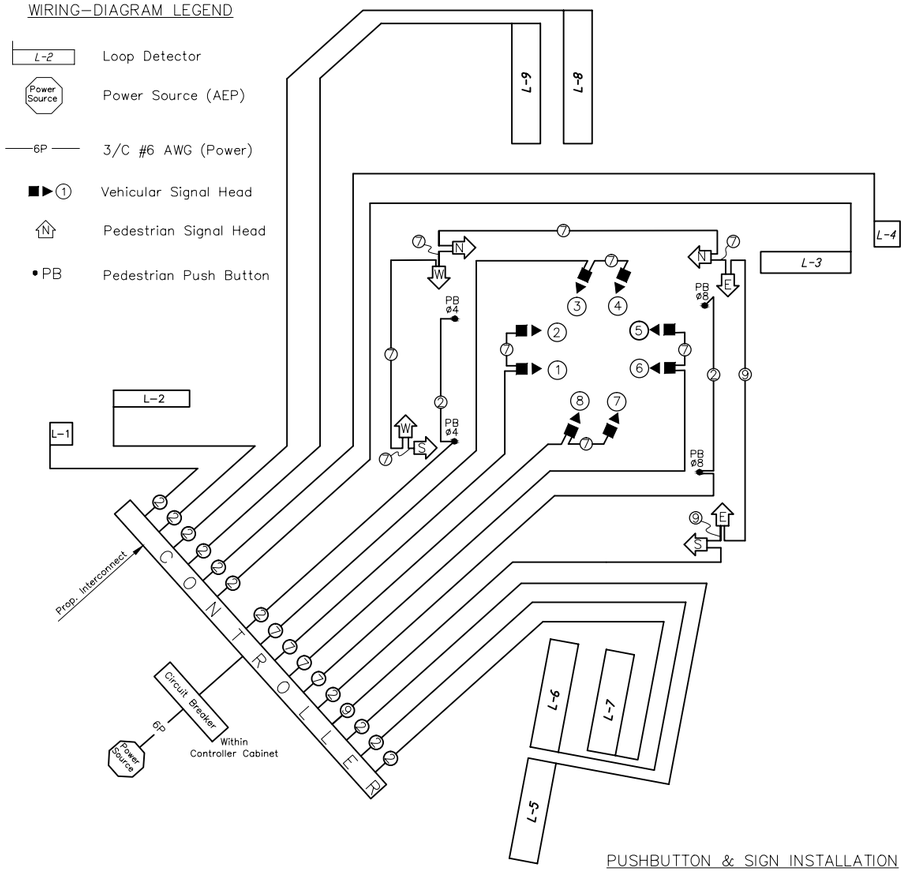
PHASING DIAGRAM



Notes:
1. Set conflict monitor for 10 sec flash.
2. Loop detector lead-in cable shall be used for the pedestrian pushbuttons. Ground the shield only at the cabinet.
3. All loop spade terminals shall have the loop homerun wire soldered to the spade terminal. The loop homerun wires shall be twisted together as close to the spade terminal screws as possible. The cable drain wire shall be connected to the closest grounding point. Solder the loop wire and homerun connection.
4. Back Panel Wiring (front side jumpers only)
   a) Hard wire 'ped recycle' to ground. Hook the detector count output to the CICU system inputs as indicated.
   b) Install a diode between terminals, ø2 'ø ON' output and 'ø1 OMIT' input, so the left turn phase (ø1) is omitted during the through phase (ø2).
   c) Install a diode between terminals, ø6 'ø ON' output and 'ø5 OMIT' input, so the left turn phase (ø5) is omitted during the through phase (ø6).
   d) Use diodes to prevent feedback on multi-use terminals.
   e) Install diodes to prevent phase green feedback between phases 4 & 7 and phases 3 & 8.
5. Controller Software Programming
   a) Initialize in ø2 & ø6 green
   b) Enable dual entry. Activate ø4 & ø8.
   c) Enable simultaneous gap out. Activate ø2, ø4, ø6 & ø8.

WIRING-DIAGRAM LEGEND

- L-2 — Loop Detector
- Power Source — Power Source (AEP)
- 6P — 3/C #6 AWG (Power)
- ■▶① — Vehicular Signal Head
- N — Pedestrian Signal Head
- •PB — Pedestrian Push Button



DETECTOR ASSIGNMENTS

DET #	DETECTOR ASSIGNMENT UNIT #	DETECTOR ASSIGNMENT CHAN #	PHASE	LOOP SIZE	NO. TURNS	LOOP DELAY DATA: DELAY IN SECONDS	LOOP DELAY DATA: INHIBIT DELAY DURING GRN ø	DET UNIT RACK & CABLE LABEL
L1	1	1	ø6	6'X6'	3	–	–	EB
L2	1	2	ø1	5'X25'	2	2	ø1	EBLT
L3	2	1	ø5	5'X25'	2	2	ø5	WBLT
L4	2	2	ø2	6'X6'	3	–	–	WB
L5	3	1	ø3	5'X25'	2	2	ø3	NBLT (F)
L6	3	2	ø8	5'X31'	2	2	ø8	NBLT (N)
L7	4	1	ø8	5'X30'	2	5	ø8	NB
L8	4	2	ø4	5'X31'	2	2	ø4	SBLT
L9	5	1	ø4	5'X30'	2	10	ø4	SB

Note:
Loops are to be hooked to the unit and channel as indicated to enhance loop performance and decrease loop crosstalk.

TIMING CHART

PHASE	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8
MOVEMENT	EBLT	WB	NBLT	SB	WBLT	EB	SBLT	NB
MIN INITIAL	7	15	7	10	7	15	–	10
PASS TIME	3.0	3.0	3.0	3.0	3.0	3.0	–	3.0
MAX GRN 1	15	40	15	40	15	40	–	40
MAX GRN 2	99	60	99	99	99	60	–	99
YELLOW	3.6	3.6	3.6	3.6	3.6	3.6	–	3.6
RED CLR	2.0	2.0	2.0	2.0	2.0	2.0	–	2.0
WALK	–	7	–	7	–	7	–	7
PED CLR	–	12	–	13	–	15	–	13
PED RECALL	OFF	ON	OFF	OFF	OFF	ON	–	OFF
VEH RECALL	OFF	MIN	OFF	OFF	OFF	MIN	–	OFF
MEMORY	OFF	ON	OFF	OFF	OFF	ON	–	OFF

CICU INPUT CONNECTOR

HARNESS PIN	HARNESS FUNCTION	BOX FUNCTION
13	PHASE 1 GREEN	EBLT GREEN (PHASE 1)
8	PHASE 2 GREEN	WB THRU GREEN (PHASE 2)
7	PHASE 3 GREEN	NBLT GREEN (PHASE 3)
6	PHASE 4 GREEN	SB THRU GREEN (PHASE 4)
12	PHASE 5 GREEN	WBLT GREEN (PHASE 5)
11	PHASE 6 GREEN	EB THRU GREEN (PHASE 6)
18	PHASE 7 GREEN	SBLT GREEN (PHASE 7)
3	PHASE 8 GREEN	NB THRU GREEN (PHASE 8)
10	WALK 1 MONITOR	PHASE 4 WALK
16	WALK 2 MONITOR	PHASE 8 WALK
22	PED CALL 1 (SYSTEM DETECTOR 7)	PHASE 4 PED CALL
36	PED CALL 2 (SYSTEM DETECTOR 8)	PHASE 8 PED CALL
4	FLASH	SIGNAL POWER
15	PREEMPT	MANUAL CONTROL ENABLE
2	SPECIAL FUNCTION 1 MONITOR	110 V OUTPUT FROM 24 VDC RELAY SENSING PHASES 1 & 5 OMIT ACTIVE
1	SPECIAL FUNCTION 2 MONITOR	110 V OUTPUT FROM 24 VDC RELAY SENSING PHASE 3 OMIT ACTIVE
5	SPECIAL FUNCTION 3 MONITOR	
24	ADDRESS-1	LOGIC GROUND
25	ADDRESS-2	LOGIC GROUND
30	ADDRESS-4	LOGIC GROUND
31	ADDRESS-8	
32	ADDRESS-16	
26	ADDRESS-32	
27	ADDRESS-64	
21	ADDRESS-128	LOGIC GROUND
29	SYSTEM DETECTOR 1	
34	SYSTEM DETECTOR 2	
35	SYSTEM DETECTOR 3	
37	SYSTEM DETECTOR 4	
33	SYSTEM DETECTOR 5	
28	SYSTEM DETECTOR 6	
20	RETURN FOR AC MONITOR	AC-
23	RETURN FOR NEMA MONITOR	LOGIC GROUND

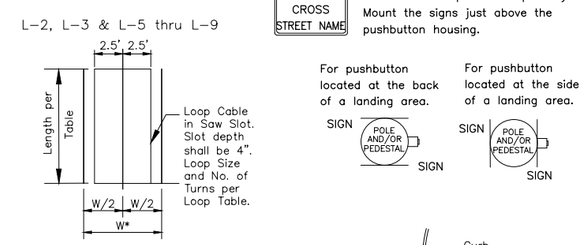
CICU OUTPUT CONNECTOR

HARNESS PIN	HARNESS FUNCTION	BOX FUNCTION
25	HOLD (COMMON)	LOGIC GROUND
21	HOLD (N.O.)	RING 1 & RING 2: MAX2 + CALL-TO-NONACTUATED 1
28	HOLD (COMMON)	LOGIC GROUND
5	HOLD (N.O.)	PHASES 2 & 6 HOLD
8	FORCE OFF 1 (COMMON)	LOGIC GROUND
10	FORCE OFF 1 (N.O.)	FORCE OFF 1 (RING 1)
31	FORCE OFF 2 (COMMON)	LOGIC GROUND
20	FORCE OFF 2 (N.O.)	FORCE OFF 2 (RING 2)
24	CALL ALL (COMMON)	LOGIC GROUND
30	CALL ALL (N.O.)	PHASES 1, 3, 4, 5, & 8 VEH CALL, DIODE SEPARATE
12	FLASH (COMMON)	LOGIC GROUND
4	FLASH (N.O.)	FLASH SYNCHRONIZER
32	SPECIAL FUNCTION 1 (COMMON)	LOGIC GROUND
26	SPECIAL FUNCTION 1 (N.O.)	PHASES 1 & 5 OMIT
17	SPECIAL FUNCTION 2 (COMMON)	LOGIC GROUND
11	SPECIAL FUNCTION 2 (N.O.)	PHASE 3 OMIT
22	SPECIAL FUNCTION 3 (COMMON)	LOGIC GROUND
9	SPECIAL FUNCTION 3 (N.O.)	
1	AC+	AC+
2	AC-	AC-
3	GROUND	EARTH GROUND
	DROP #XXX TRUNK #X, AND INT #XXXX	

PUSHBUTTON & SIGN INSTALLATION

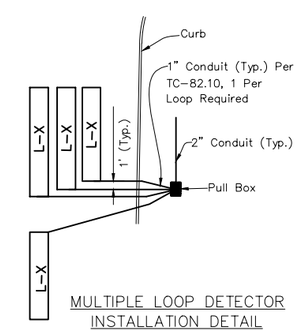
CM-R73
PUSH BUTTON TO CROSS STREET NAME

Contact the Division of Planning & Operations for CM-R73 sign details. Mount the center of the pushbutton 42" above the pedestrian pathway. Mount the signs just above the pushbutton housing.



* Lane width does not include width of curb and gutter.

VEHICLE DETECTOR DETAILS
(No Scale)



MULTIPLE LOOP DETECTOR INSTALLATION DETAIL
(No Scale)

XXXX-E

CALCULATED | CHECKED

TRAFFIC SIGNAL DETAILS
STREET NAME 1 AT STREET NAME 2

PROJECT NAME

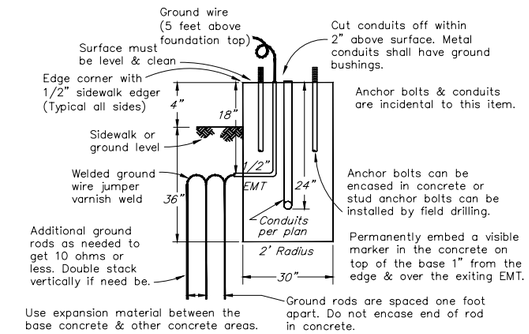
X / XX

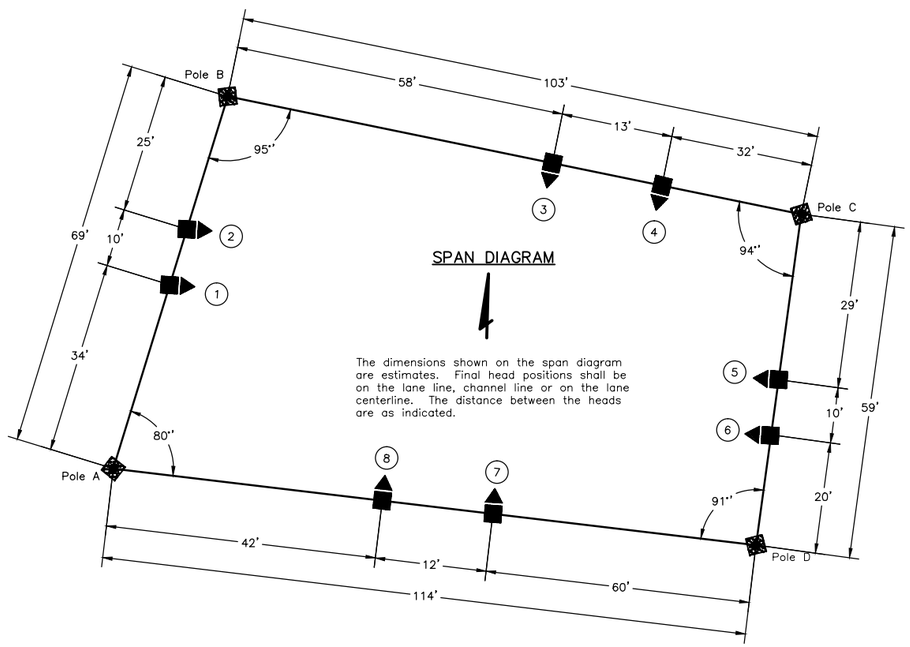
REVISED 12/2/11

INTERSECTION	SHEET NO.	POLE SIZES & SPAN ATTACHMENT HEIGHT					POLE FABRICATION DATA CLOCKWISE FROM HANDHOLE AT 0 DEGREES					FIELD ORIENTATION		
		POLE DESIGNATION	POLE DESIGN NO. (TC-81.10)	POLE HT. (FT.)	ATTACHMENT HT. (FT.) SPAN ⊙ HT. (FT.) 4% SAG	ATTACHMENT HT. (FT.) SPAN ⊙ HT. (FT.) 4% SAG	ANCHOR BOLT REF. LINE	2" BHC ANGLE/HT. (DEG.)/(FT.)	3" BHC ANGLE/HT. (DEG.)/(FT.)	PED. SIGNALS	PED. PUSH BUTTON	INDEX LINE ANGLE (HANDHOLE)	ANCHOR BOLT REF. LINE	UNUSED *2-2" CONDUIT ELL (CAPPED)
STREET NAME 1 @ STREET NAME 2	176	A	5	29'	A-B @ 23.5	A-D @ 25.5	90°		180°/28'	229°/319°	255°	234°	54°	*125°
		B	5	29'	B-A @ 23.5	B-C @ 25.0	90°	180°/28'		29°/131°	295°	144°	54°	270°
		C	5	28'	C-B @ 24.5	C-D @ 23.0	90°	180°/27'		238°/330°	246°	235°	55°	125°
		D	5	28'	D-C @ 23.0	D-A @ 25.0	90°	180°/27'		39°/134°	119°	135°	45°	250°

*NOTE: One unused 2" conduit (capped) for Pole A.

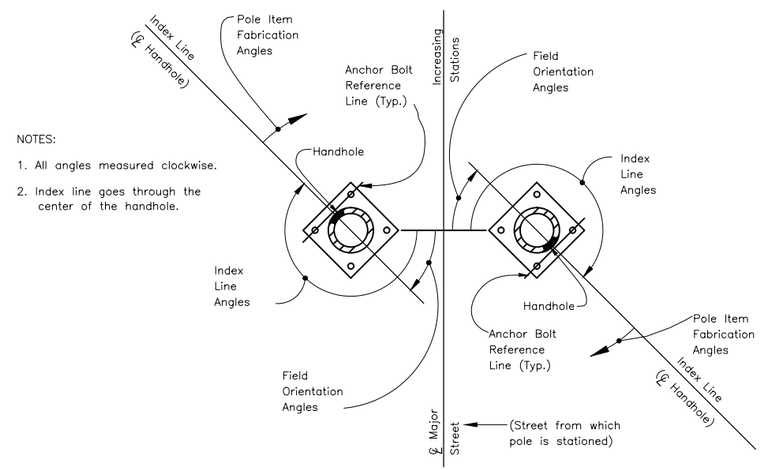
CONTROLLER FOUNDATION BASE (48"x30"x40")





SPAN DIAGRAM

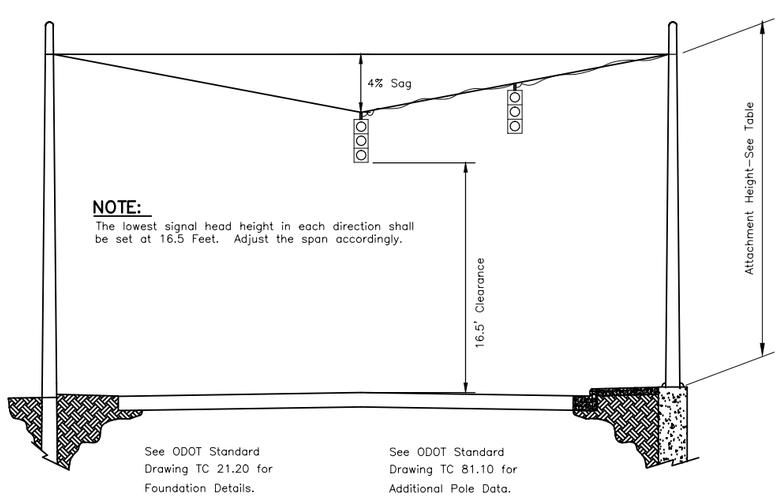
The dimensions shown on the span diagram are estimates. Final head positions shall be on the lane line, channel line or on the lane centerline. The distance between the heads are as indicated.



NOTES:

1. All angles measured clockwise.
2. Index line goes through the center of the handhole.

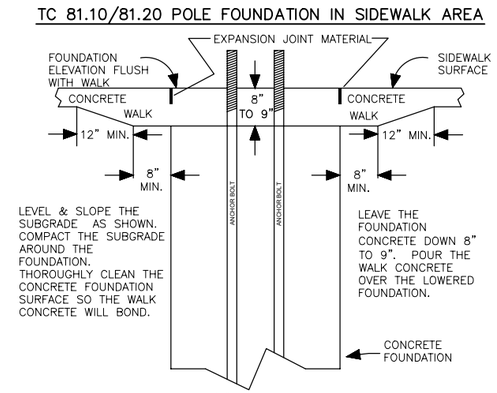
TYPICAL STRAIN POLE ORIENTATION DETAIL



NOTE:
The lowest signal head height in each direction shall be set at 16.5 Feet. Adjust the span accordingly.

TYPICAL SIGNAL ELEVATION

TC 81.10/81.20 POLE FOUNDATION IN SIDEWALK AREA



WHEN POURING WALK, EMBED 1/2" THICK EXPANSION JOINT FILLER (ODOT 608.03C & 705.03). FORM A 3'x3' SQUARE & CENTER THE JOINT FILLER AROUND THE FOUNDATION AS DIRECTED BY TRANS. DIV. SIGNAL INSPECTION PERSONNEL. ORIENTATE THE FILLER SQUARE PARALLEL TO OTHER GEOMETRIC LINES.

CALCULATED | CHECKED

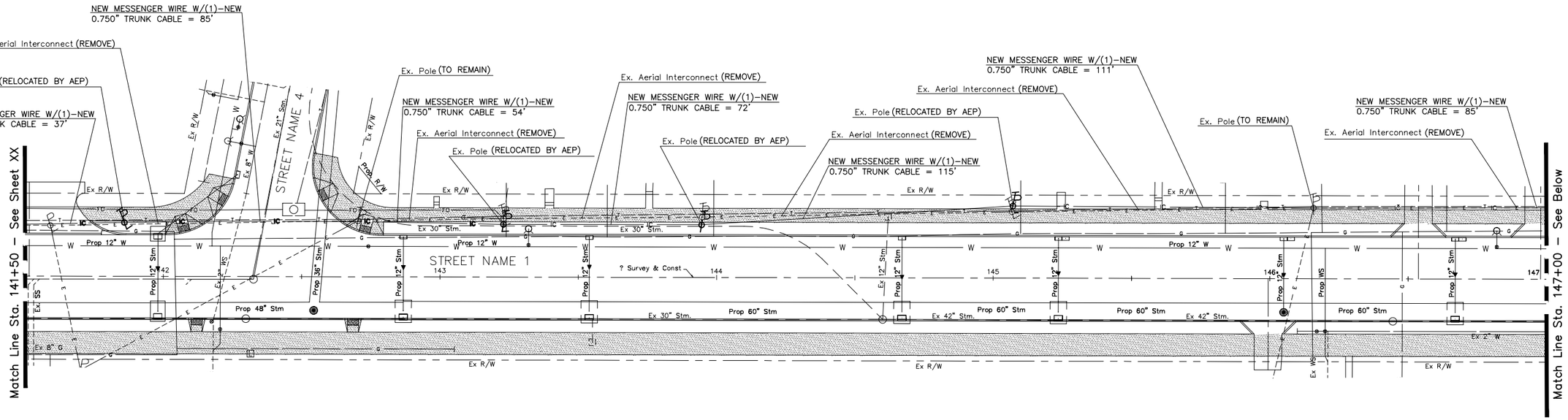
SIGNAL POLE FABRICATION AND ORIENTATION DETAILS

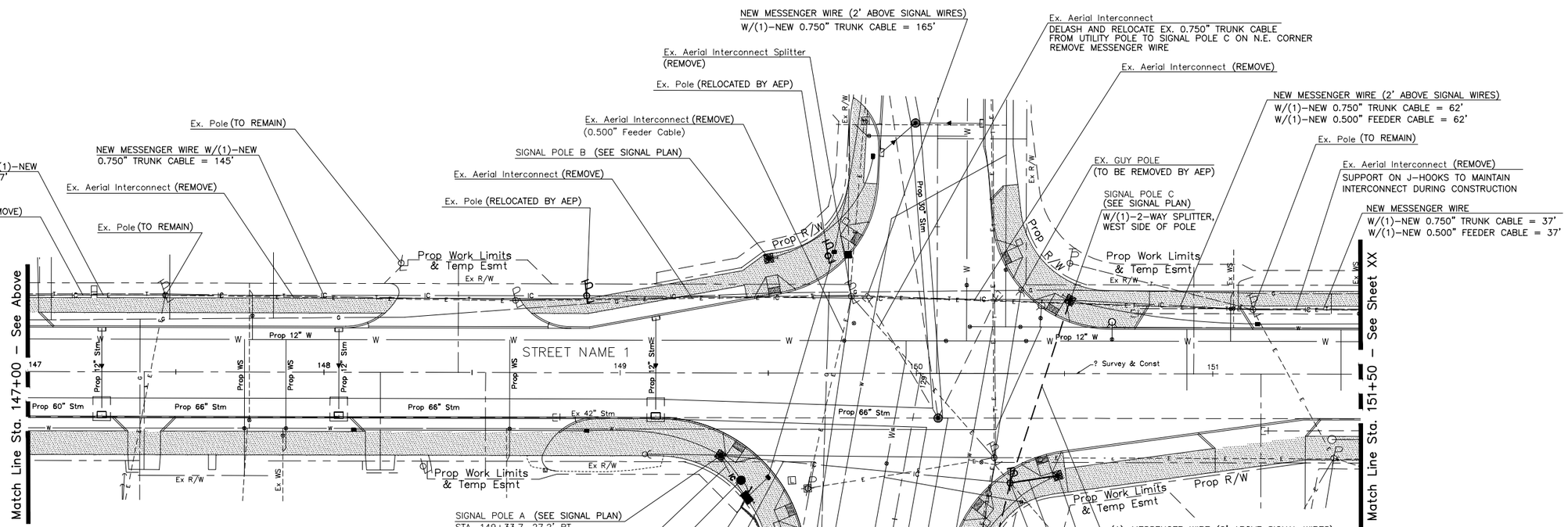
PROJECT NAME

XXXX-E

X/XX

REVISED 12/2/11





LEGEND

- Centerline of Road
- Right-of-Way: Existing Ex R/W Proposed Prop R/W
- Fence Line — Fire Hydrant — Catch Basin — Tree
- Utility Poles: Power — Telephone — Combination
- Signal Poles: Existing — Proposed
- Signal Pull Box: Existing — Proposed
- Signal Controller: Existing — Proposed
- New Interconnect Cable: IC
- Relocated Interconnect Cable:

NOTES:
1. ACTUAL LOCATIONS FOR RELOCATED UTILITY POLES WILL BE PER THE UTILITY OWNER. LOCATIONS SHOWN ARE FOR REFERENCE PURPOSES ONLY.

SCALE 20 0 10 20

CALCULATED WJF
CHECKED JDS

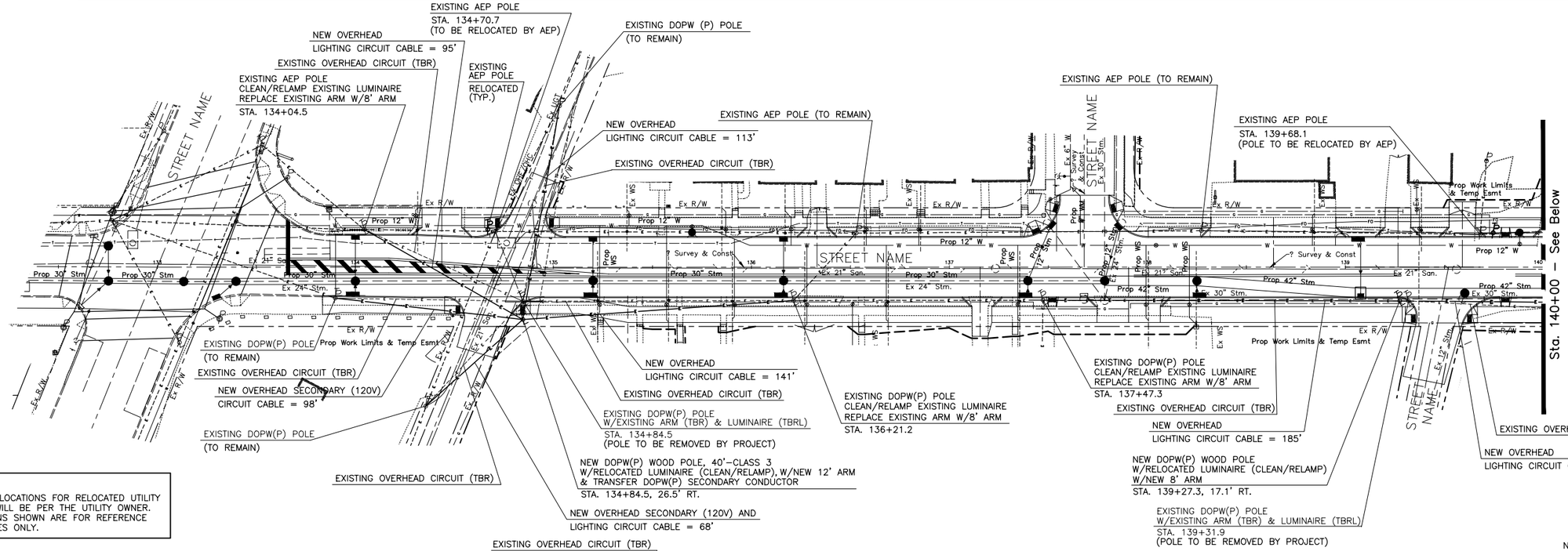
SIGNAL INTERCONNECT PLAN
STREET NAME 1

PROJECT NAME

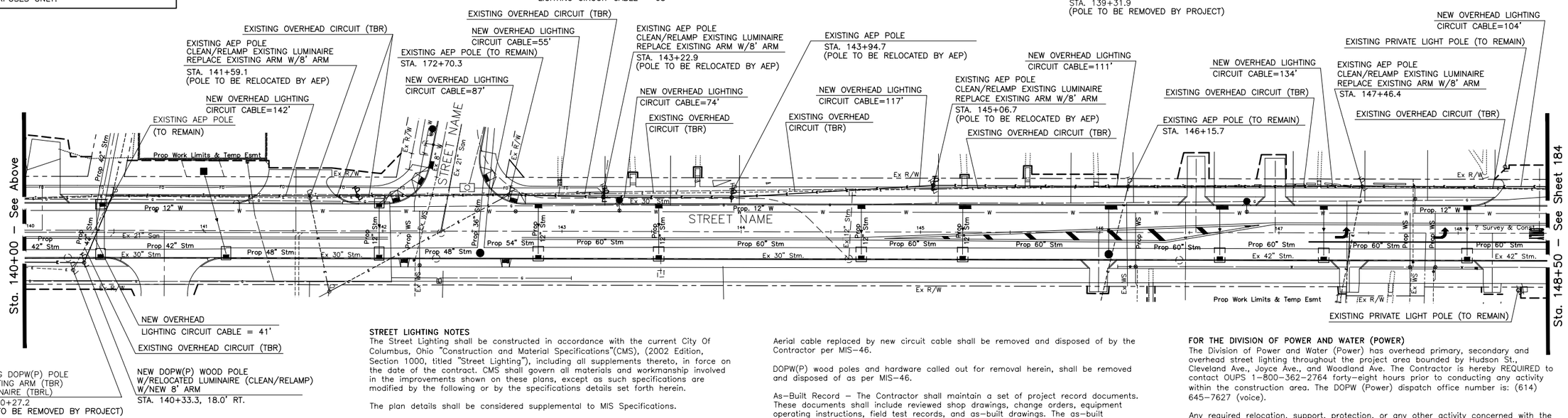
XXXX-E

X/XX

REVISED 12/2/11



NOTE:
ACTUAL LOCATIONS FOR RELOCATED UTILITY POLES WILL BE PER THE UTILITY OWNER. LOCATIONS SHOWN ARE FOR REFERENCE PURPOSES ONLY.



NEW OVERHEAD
LIGHTING CIRCUIT CABLE = 41'
EXISTING OVERHEAD CIRCUIT (TBR)

EXISTING DOPW(P) POLE
W/EXISTING ARM (TBR)
& LUMINAIRE (TBRL)
STA. 140+27.2
(POLE TO BE REMOVED BY PROJECT)

NEW DOPW(P) WOOD POLE
W/RELOCATED LUMINAIRE (CLEAN/RELAMP)
W/NEW 8' ARM
STA. 140+33.3, 18.0' RT.

LEGEND

- Existing Overhead Circuit
- Proposed Overhead Circuit
- Other Overhead Electric or Communication
- Pole W/Telephone, Power and Lighting
- AEP – American Electric Power
- DOPW(P) – Division Of Power And Water (Power)
- TBR – To Be Removed
- TBRL – To Be Relocated

STREET LIGHTING NOTES

The Street Lighting shall be constructed in accordance with the current City Of Columbus, Ohio "Construction and Material Specifications"(CMS), (2002 Edition, Section 1000, titled "Street Lighting"), including all supplements thereto, in force on the date of the contract. CMS shall govern all materials and workmanship involved in the improvements shown on these plans, except as such specifications are modified by the following or by the specifications details set forth herein.

The plan details shall be considered supplemental to MIS Specifications.

The Contractor is responsible to comply with all Local codes and ordinances pertinent to the progression on the work described within the Project Plans. Any required permits shall be obtained and paid for by the Contractor. The Contractor and Sub-Contractor shall be responsible for complying with all Federal, State and Local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also the sole responsibility of the Contractor and Sub-Contractor to initiate, maintain and supervise all safety requirements, precautions and programs in connection with the work.

Luminaires shall be relocated as shown in the drawings. All relocated luminaires shall be wired in accordance with MIS-10 and shall be cleaned and re-lamped in accordance with MIS-68. Bracket Arms (MIS-6 and MIS-10), overhead circuit cable (MIS-143), overhead circuit ground (MIS-26), down guy anchors (MIS-1) and wooden poles (MIS-42) as required shall be furnished at poles owned by the Division of Power and Water (Power).

Prior to the relocation process, the Contractor and the Engineer shall inspect the luminaires for the purpose of documenting any existing damage. Any dents or other damage identified after the luminaire has been relocated and not documented prior to the relocation operation will be presumed to have been caused by the Contractor. The Contractor shall be required to repair or replace the damaged luminaire at the option of the Design Engineer at the Contractor's expense.

Aerial cable replaced by new circuit cable shall be removed and disposed of by the Contractor per MIS-46.

DOPW(P) wood poles and hardware called out for removal herein, shall be removed and disposed of as per MIS-46.

As-Built Record – The Contractor shall maintain a set of project record documents. These documents shall include reviewed shop drawings, change orders, equipment operating instructions, field test records, and as-built drawings. The as-built drawings shall be marked legibly in red with the actual location of equipment as constructed.

All equipment installed shall have locations marked in distances off a landmark at least every 25 feet or location at a later date. Final documents and plans shall be handed over to the City of Columbus Division of Power and Water. The Division of Power and Water (Power) has overhead primary, secondary and overhead street lighting throughout the project area. The Contractor is hereby required to contact OUPS 1-800-362-2764 forty-eight hours prior to conducting any activity within the construction area. The DOPW (Power) dispatch office number is: (614) 645-7627 (voice).

All items of work called for on the plans, for which no specific method of payment is provided, shall be performed by the Contractor and the cost of these shall be included in the unit price bid for the various related items. This includes, but is not limited to, such incidental items as relocation of mail boxes, saw cutting, and removal and/or relocation of signs, railroad ties, sprinklers, relocating roof or sump drains around light pole foundations, hand digging around underground utilities or other miscellaneous items.

FOR THE DIVISION OF POWER AND WATER (POWER)

The Division of Power and Water (Power) has overhead primary, secondary and overhead street lighting throughout the project area bounded by Hudson St., Cleveland Ave., Joyce Ave., and Woodland Ave. The Contractor is hereby REQUIRED to contact OUPS 1-800-362-2764 forty-eight hours prior to conducting any activity within the construction area. The DOPW (Power) dispatch office number is: (614) 645-7627 (voice).

Any required relocation, support, protection, or any other activity concerned with the City's electrical facilities in the construction area is to be performed by the Contractor under the direction of Division of Power and Water (Power) (DOPW) personnel and at the expense of the project. DOPW shall make all final connections to DOPW's existing electrical system at the expense of the project. The Contractor shall use material and make repairs to the City of Columbus street lighting system by following the Division of Power and Water (Power)'s "Material and Installation Specifications" (MIS) and the City of Columbus "Construction and Material Specifications" (CMS). Any new or re-installed street light system shall require testing as referred to in section 1000.18 of the CMS manual. The Contractor shall conform to the Division of Power and Water (Power)'s existing Conductor Safety policy and Hold Card System (MIS-95), copies of which are available from the Division of Power and Water (Power).

If any electric facility belonging to the Division of Power and Water (Power) is damaged in any manner by the Contractor, its agents, servants, or employees, and requires emergency repairs, the Division of Power and Water (Power) shall make all necessary repairs, and the expense of such repairs and other related costs shall be paid by the Contractor to the Division of Power and Water (Power), City of Columbus, Ohio.

HORIZ. SCALE

CALCULATED | CHECKED

LIGHTING PLAN

PROJECT NAME

XXXX-E

X/XX

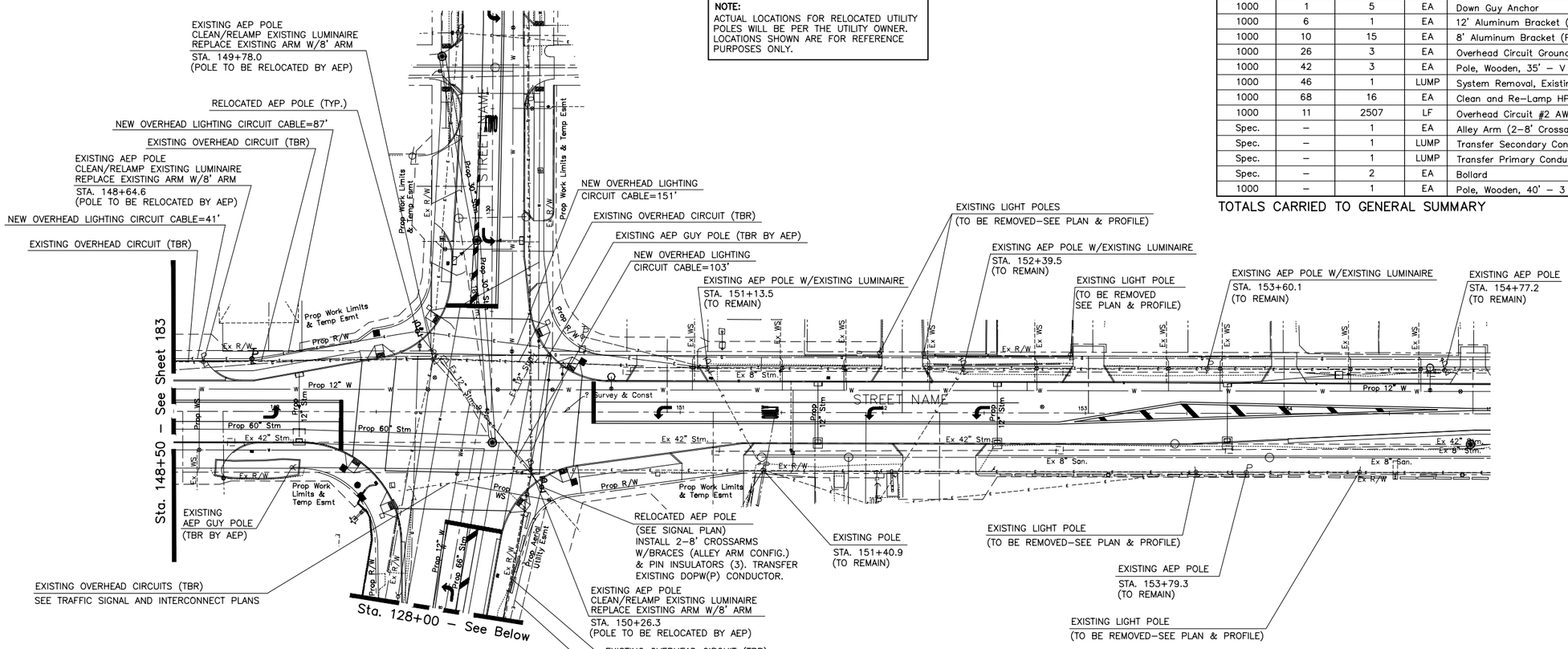
REVISED 12/2/11

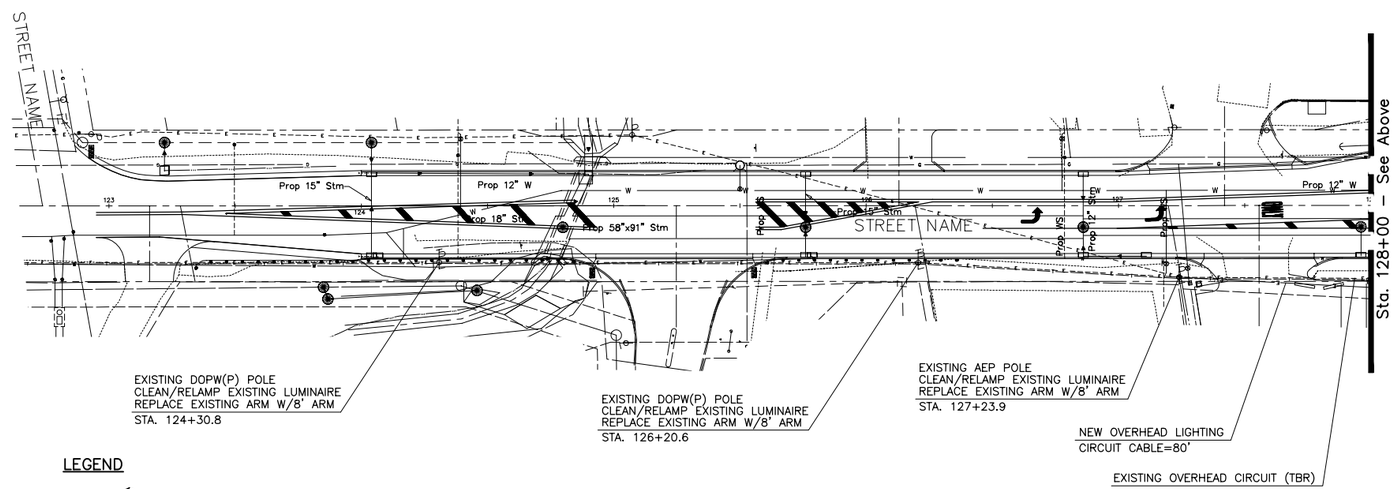
SUB–SUMMARY OF LIGHTING ITEMS

ITEM NUMBER	MIS NUMBER	QUANTITY TOTAL	UNIT	ITEM DESCRIPTION	REF
1000	1	5	EA	Down Guy Anchor	
1000	6	1	EA	12' Aluminum Bracket (For Wood Pole)	
1000	10	15	EA	8' Aluminum Bracket (For Wood Pole)	
1000	26	3	EA	Overhead Circuit Ground Unit	
1000	42	3	EA	Pole, Wooden, 35' – V	
1000	46	1	LUMP	System Removal, Existing Overhead	
1000	68	16	EA	Clean and Re–Lamp HPS Luminaires	
1000	11	2507	LF	Overhead Circuit #2 AWG Aluminum (2 wire)	
Spec.	–	1	EA	Alley Arm (2–8' Crossarms)	
Spec.	–	1	LUMP	Transfer Secondary Conductor	
Spec.	–	1	LUMP	Transfer Primary Conductor, Install Alley Arm	
Spec.	–	2	EA	Bollard	
1000	–	1	EA	Pole, Wooden, 40' – 3	

TOTALS CARRIED TO GENERAL SUMMARY

NOTE:
ACTUAL LOCATIONS FOR RELOCATED UTILITY POLES WILL BE PER THE UTILITY OWNER. LOCATIONS SHOWN ARE FOR REFERENCE PURPOSES ONLY.





LEGEND

- Existing Overhead Circuit
- Proposed Overhead Circuit
- Other Overhead Electric or Communication
- Pole W/Telephone, Power and Lighting
- AEP – American Electric Power
- DOPW(P) – Division Of Power And Water (Power)
- TBR – To Be Removed
- TBRL – To Be Relocated

SCALE 30 0 15 30

CALCULATED | CHECKED

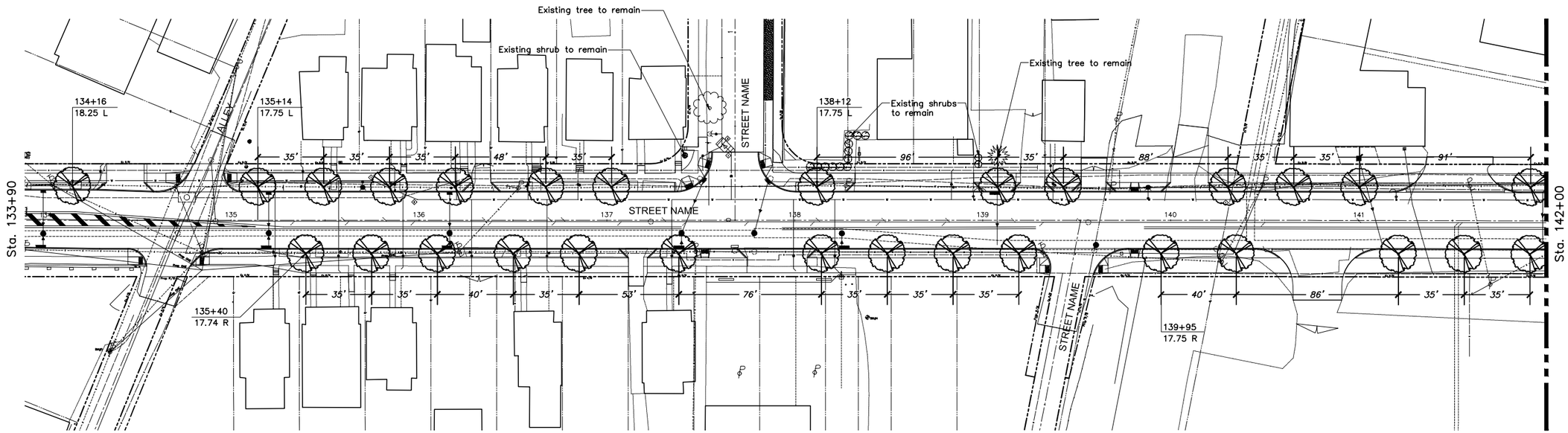
LIGHTING PLAN

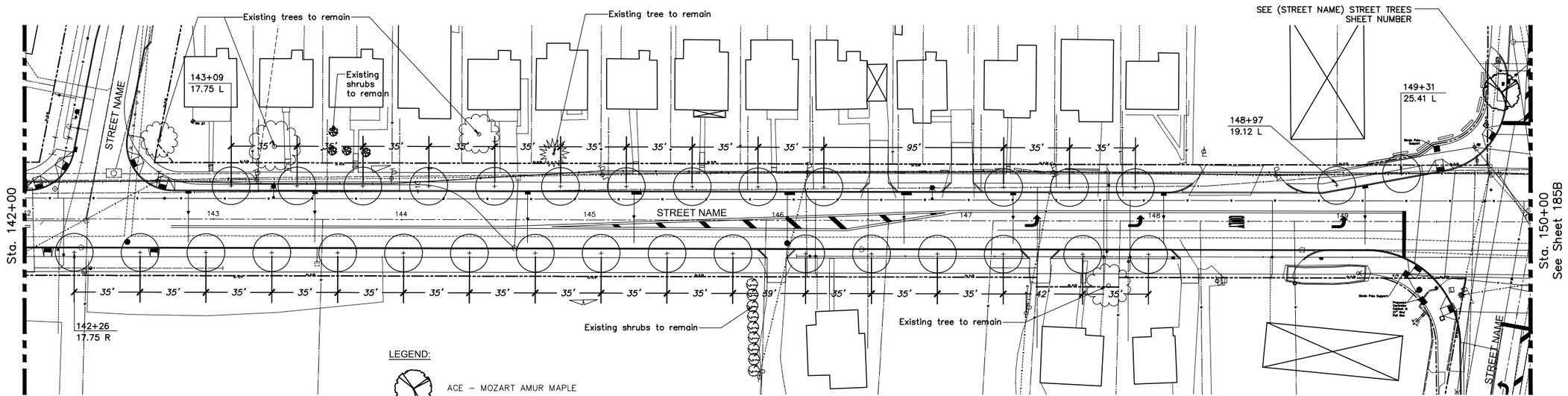
PROJECT NAME

XXXX–E

X / XX

REVISED 12/2/11





LEGEND:

- ACE – MOZART AMUR MAPLE
- MAA – STARBURST AMUR MAACKIA
- SYR – IVORY SILK TREE LILAC
- EXISTING DECIDUOUS TREE TO REMAIN
- EXISTING EVERGREEN TREE TO REMAIN
- EXISTING SHRUBS TO REMAIN

HORIZ. SCALE

30 0 15 30

CALCULATED

CHECKED

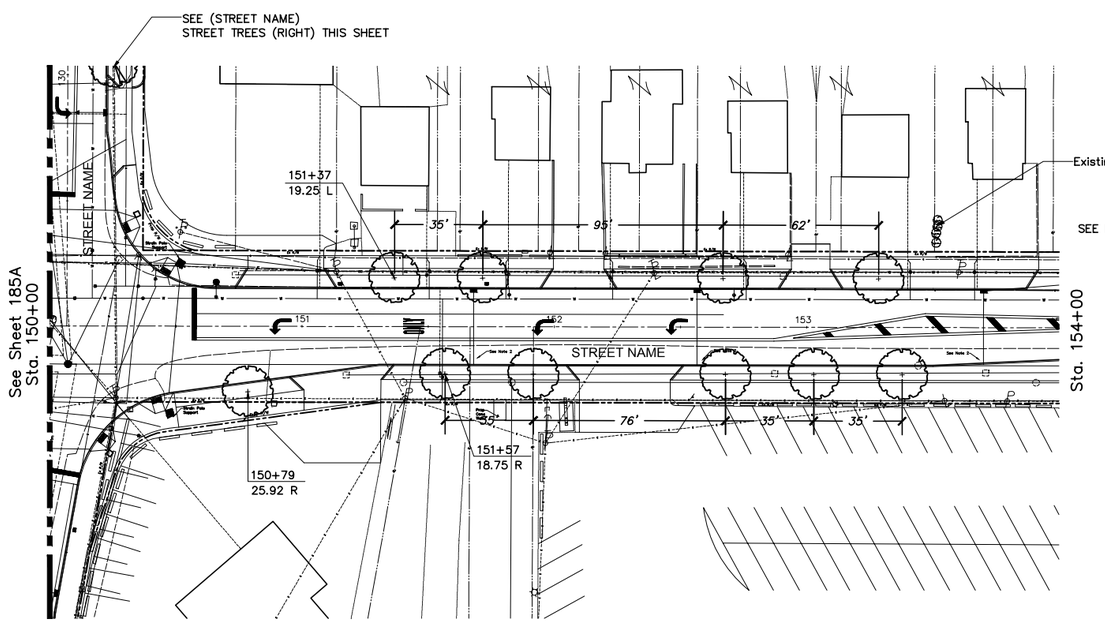
LANDSCAPE PLAN
STA. 133+90 TO STA. 150+00

PROJECT NAME

XXXX–E

X
XX

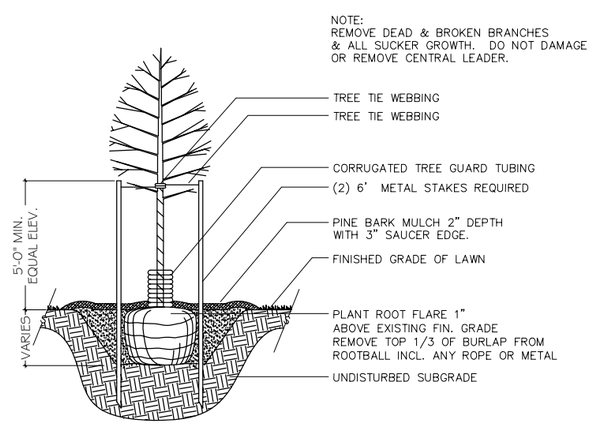
REVISED 12/2/11



STREET NAME

SCALE: 1" = 30'

ITEM NO.	ESTIMATE QUANTITIES	KEY	UNIT	DESCRIPTION		
				PLANTING		
SPEC	44	ACE	EACH	ACER ginnala 'MOZART' MOZART AMUR MAPLE	2" CAL.	B&B
SPEC	32	MAA	EACH	MAACKIA amurensis 'STARBURST' STARBURST AMUR MAACKIA	2" CAL.	B&B
SPEC	10	SYR	EACH	SYRINGA retic ulata 'IVORY SILK' IVORY SILK TREE LILAC	2" CAL.	B&B, TREE FORM
				MISC.		
SPEC	2150		GAL.	LANDSCAPE WATERING (25 GAL./TREE)		

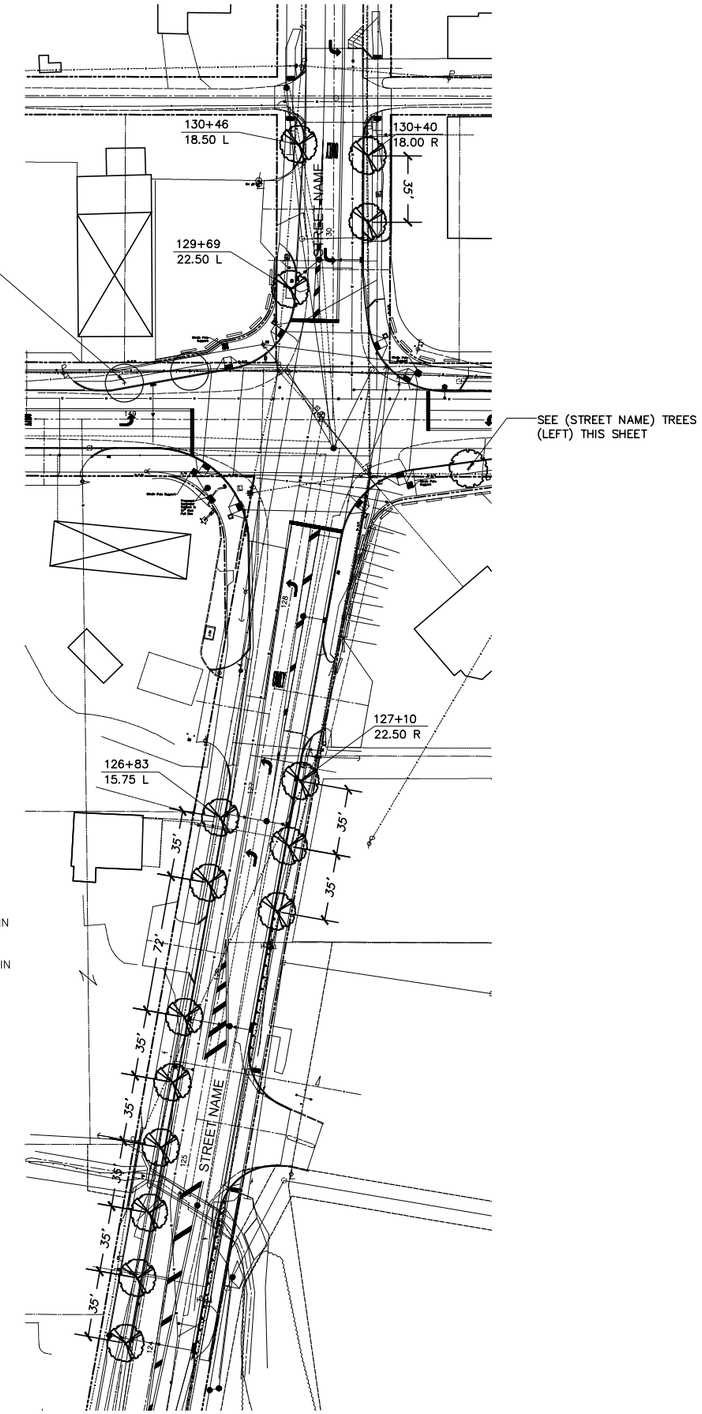


STREET TREE PLANTING

N.T.S.

LEGEND:

- ACE – MOZART AMUR MAPLE
- MAA – STARBURST AMUR MAACKIA
- SYR – IVORY SILK TREE LILAC
- EXISTING DECIDUOUS TREE TO REMAIN
- EXISTING EVERGREEN TREE TO REMAIN
- EXISTING SHRUBS TO REMAIN



STREET NAME

SCALE: 1" = 40'

HORIZ. SCALE

30 0 15 30

CALCULATED

CHECKED

LANDSCAPE PLAN STA. 150+00 TO STA. 154+00
LANDSCAPE PLAN STA. 124+00 TO STA. 130+50

PROJECT NAME

XXXX–E

X
XX

REVISION 12/2/11