

APPENDIX D - GENERAL NOTES

General Notes for Minor Urban Collectors, Local Streets, Multi-Family Developments,
Commercial and Industrial Projects

General Notes for Road Widening

Traffic Signal Standards

THE FOLLOWING NOTES SHALL BE USED FOR ALL MINOR URBAN COLLECTORS, LOCAL STREETS, MULTI-FAMILY DEVELOPMENTS, COMMERCIAL AND INDUSTRIAL PROJECTS (PUBLICLY MAINTAINED FACILITIES).

GENERAL NOTES
SUBDIVISION

1. THE DELAWARE COUNTY DESIGN, CONSTRUCTION AND SURVEYING STANDARDS, LATEST EDITION, TOGETHER WITH THE CITY OF COLUMBUS (C.O.C.) CONSTRUCTION AND MATERIALS SPECIFICATIONS, LATEST EDITION, ALONG WITH THE DELAWARE COUNTY ENGINEER (DCEO) SUPPLEMENTAL SPECIFICATIONS, SHALL GOVERN ALL MATERIALS AND WORKMANSHIP INVOLVED IN THE IMPROVEMENTS SHOWN ON THESE PLANS, UNLESS OTHERWISE NOTED.

2. A PRECONSTRUCTION CONFERENCE SHALL BE HELD AT THE COUNTY ENGINEER'S OFFICE BEFORE ANY WORK IS BEGUN. REPRESENTATIVES OF THE OWNER, DESIGN ENGINEER, AND CONTRACTOR SHALL BE IN ATTENDANCE. A SCHEDULE OF SEQUENCE OF EVENTS DURING CONSTRUCTION MUST BE SUBMITTED FOR REVIEW PRIOR TO THIS MEETING.

3. PROOF SURVEYS ARE REQUIRED TO BE PERFORMED BY THE OWNER IN ORDER TO DEMONSTRATE CONCLUSIVELY THAT THE FACILITIES ARE CONSTRUCTED TO THE CAPACITY, ELEVATIONS, SLOPES, GRADES AND SIZES SHOWN ON THE APPROVED PLANS. SUCH SURVEYS SHALL BE CONDUCTED BY A REGISTERED PROFESSIONAL SURVEYOR, SHALL EMPLOY STANDARD TECHNIQUES, AND SHALL PRODUCE AND FURNISH FIELD NOTES TO THE COUNTY ENGINEER FOR REVIEW AND RECORD PURPOSES. REDUCTION OF NOTES AND ANY PLOTTING NECESSARY TO MAKE NOTES INTERPRETABLE SHALL BE COMPLETED BY THE SURVEYOR PERFORMING THE PROOF SURVEY. PROOF SURVEYS SHALL BE IN ADDITION TO, AND SEPARATE FROM, OTHER INSPECTIONS BY THE COUNTY ENGINEER. ALL DISCREPANCIES REVEALED IN THE AS-CONSTRUCTED FACILITIES BY THE PROOF SURVEY SHALL BE RECERTIFIED BY THE OWNER AND THE PROOF SURVEY RE-PERFORMED IN ORDER TO DEMONSTRATE CONFORMANCE. THE PROOF SURVEY SHALL BE APPROVED BY THE COUNTY ENGINEER, IN WRITING, PRIOR TO THE RELEASE OF THE BUILDING PERMITS.

4. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAIN PIPES OR TILES ENCOUNTERED IN THE FIELD AND, IF DAMAGED, REPAIR OR REPLACE THEM IMMEDIATELY WITH THE SAME SIZE AND QUALITY OF MATERIALS AS FOUND. ALL DRAINAGE TILES ENCOUNTERED IN THE FIELD SHALL BE CONNECTED TO THE STORM SEWER SYSTEM AT A STRUCTURE.
5. THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER'S OFFICE FORTY EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION.
6. THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR AND MATERIALS NECESSARY TO COMPLETE ALL IMPROVEMENTS ACCORDING TO THE ENGINEERING PLANS AND SPECIFICATIONS.
7. THE CONTRACTOR SHALL LOCATE ALL UTILITIES OR UNDERGROUND STRUCTURES PRIOR TO CONSTRUCTION AND NOTIFY EACH RESPECTIVE UTILITY OWNER FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT O.U.P.S. AT 1-800-362-2764.
8. IF A DISCREPANCY EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE COUNTY ENGINEER AND THE OWNER'S ENGINEER SHALL BE NOTIFIED BEFORE WORK IS COMMENCED.
9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE SAFETY PRECAUTIONS AND TO PROVIDE ALL SAFETY EQUIPMENT TO SAFEGUARD WORKMEN AND ALL PERSONS ON OR NEAR THE WORK SITE.
10. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE WORK SITE AND SHALL SATISFY HIMSELF AS TO THE CHARACTER, QUALITY AND QUANTITIES OF WORK TO BE PERFORMED.
11. HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING FEATURES WITHIN THIS SUBDIVISION IS APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF EXISTING FEATURES SHOWN ON PLANS, SUCH AS GAS LINES, WATER LINES AND FIELD TILE, TO PROPERLY EXECUTE THE WORK OF HIS CONTRACT. IT SHALL FURTHER BE THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE DUE CARE AROUND EXISTING COMPLETED WORK ON THE SITE.
12. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY AND ALL EXISTING WORK DAMAGED DURING OR DUE TO THE EXECUTION OF THIS CONTRACT AT HIS OWN EXPENSE. ALL SAID WORK IS TO BE

REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AND THE COUNTY ENGINEER.

13. SITE CLEARING SHALL COMPLY WITH C.O.C. ITEM 201. REMOVAL OF EXISTING PIPE, PAVEMENT, STRUCTURES AND OTHER OBSTRUCTIONS SHALL COMPLY WITH C.O.C. ITEM 202.
14. ALL MATERIAL DEEMED BY THE COUNTY ENGINEER SHALL BE REMOVED FROM THE PROPOSED RIGHT-OF-WAY, CONSTRUCTION LIMITS OR FOR ANY EXCAVATION FOR THE STORM SEWER SYSTEM. THE MATERIAL REMOVED INCLUDES, BUT IS NOT LIMITED TO, ORGANIC SOIL, TOPSOIL, VEGETATION, TREES, STUMPS, ROOTS OR EXCESSIVELY WET INORGANIC MATERIALS. THE MATERIAL SHALL BE REMOVED REGARDLESS OF THE AMOUNT OF EMBANKMENT TO BE CONSTRUCTED AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203, EXCAVATION.
15. THE DELAWARE COUNTY ENGINEER OR HIS DESIGNATED REPRESENTATIVE SHALL OBSERVE AND APPROVE ALL SUB-BASE MATERIALS AND COMPACTION IN PUBLIC FILL AREAS.
16. NON-ORGANIC SITE SOILS ARE ACCEPTABLE AS USE FOR STRUCTURAL FILL PROVIDED THEY MEET ALL REQUIREMENTS OF C.O.C. ITEM 203. MOISTURE ADJUSTMENT MAY BE REQUIRED AND SHALL BE PREFORMED BY THE CONTRACTOR.
17. BE ADVISED: A SUBSURFACE DRAINAGE SYSTEM MAY EXIST ON THIS SITE. THE SYSTEM AND/OR OUTLET IF LOCATED ON THIS PROPERTY SHALL BE MAINTAINED AT ALL TIMES.
18. ANY LANDSCAPE FEATURES, SUCH AS TREES, FENCES, RETAINING WALLS, ETC. IN DRAINAGE EASEMENTS SHALL BE REVIEWED BY THE DELAWARE COUNTY SOIL AND WATER CONSERVATION DISTRICT (DCSWCD) AND THE DELAWARE COUNTY ENGINEER (DCEO) PRIOR TO INSTALLATION. THE DCSWCD AND DCEO WILL REVIEW THE PROPOSED IMPROVEMENTS TO ASSURE THAT THE IMPROVEMENTS WILL NOT INTERFERE WITH THE STORM WATER CONTROL FACILITIES.
19. ALL QUESTIONS SHALL BE DIRECTED TO THE DELAWARE COUNTY ENGINEER AT (740) 833-2400.

BACKFILLING FOR STORM SEWERS, CULVERTS AND UTILITIES

1. UTILITY TRENCHES OUTSIDE THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH SOILS MEETING THE REQUIREMENTS OF ITEM 203

(100 PCF OR GREATER). THESE TRENCHES ARE TO BE COMPACTED TO 95% OF MAXIMUM DRY LABORATORY WEIGHT AT +/- 2% OF OPTIMUM MOISTURE AND IN ACCORDANCE TO STANDARD DRAWING DCED R-100.

2. ALL UTILITY TRENCHES IN THE RIGHT-OF-WAY RUNNING PARALLEL TO THE EDGE PAVEMENT AND NOT OVER FIVE FEET (5') IN DEPTH SHALL BE BACKFILLED ACCORDING TO STANDARD DRAWING DCED R-100.
3. ALL UTILITY TRENCHES UNDER ROAD PAVEMENT, STARTING AT A DISTANCE OF FIVE FEET (5') FROM THE EDGE OF THE PAVEMENT AND EXTENDING ONE FOOT (1') IN DISTANCE FOR EACH ONE FOOT (1') IN DEPTH SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIALS PER STANDARD DRAWING DCED R-100 OR LOW STRENGTH MORTAR BACKFILL. ALSO, THE TOP OF ALL UTILITY CONDUITS SHALL BE LOCATED AT LEAST ONE FOOT BELOW THE UNDERDRAINS.
4. ALL UTILITY TRENCHES OVER FIVE FEET (5') IN DEPTH WHICH RUN PARALLEL TO THE EDGE OF PAVEMENT OR THAT ARE IN THE ZONE OF INFLUENCE SHALL BE BACKFILLED AS PER STANDARD DRAWING DCED R-100.
5. THE CONTRACTOR SHALL INCLUDE IN THE UNIT PRICE BID FOR UNDERGROUND UTILITY PIPE, ALL TRENCHING, BACKFILLING AS PER PLAN, AND THE REMOVAL AND DISPOSAL OF BRUSH, TREES, STUMPS, ETC. WITHIN THE AREA OF EXCAVATION OF THE TRENCH.
6. THE CONTRACTOR SHALL REFER TO THE UTILITY PLAN AND PROFILE SHEETS TO DETERMINE CRITICAL UTILITY CROSSINGS.
7. IN PAVEMENT, SIDEWALK, AND UTILITY CROSSING AREAS THE BACKFILL SHALL BE COMPACTED GRANULAR MATERIAL PER C.O.C. ITEM 304, AND ALL OTHER REMAINING AREAS SHALL BE BACKFILLED PER C.O.C. ITEM 603.08.
8. THE CONTRACTOR SHALL RESTORE OFF-SITE CONSTRUCTION AREAS TO AN EQUAL OR BETTER CONDITION THAN THAT EXISTING PRIOR TO COMMENCEMENT OF CONSTRUCTION TO THE SATISFACTION OF THE COUNTY ENGINEER.
9. CASING PIPE REQUIRED WITHIN THE RIGHT-OF-WAY SHALL BE SDR 21 OR SCHEDULE 40 FOR NON-PRESSURIZED LINES AND C-900 (LESS THAN 12-INCHES) OR C-905 (GREATER THAN 12-INCHES) FOR PRESSURIZED LINES.

STORM SEWERS

1. THE CONTRACTOR SHALL INCLUDE IN THE UNIT PRICE BID FOR ITEM 603, ALL TRENCHING, EXCAVATION AND BACKFILLING PER STANDARD DRAWING DCED R-100, AND THE REMOVAL AND DISPOSAL OF BRUSH, TREES, STUMPS ETC. WITHIN THE AREA OF EXCAVATION OF THE TRENCH, UNLESS BID IN ITEM 203.
2. THE PROPOSED ELEVATIONS AND LOCATIONS OF INLETS, CATCH BASINS, AND PIPES, AND THE ESTIMATED LENGTHS OF PIPES, MAY BE ADJUSTED BY THE COUNTY ENGINEER DURING THE ENTIRE IMPROVEMENT OF THIS PROJECT. BASIS OF PAYMENT FOR POSSIBLE ADJUSTMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR VARIOUS STORM SEWERS TO BE ADJUSTED.
3. UNLESS OTHERWISE NOTED ON THE PLANS, ALL STORM SEWERS SHALL BE AS HEREAFTER SPECIFIED:
 - a. ALL SIZES OF STORM SEWER LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE TYPES "A" OR "B" CONDUIT (C.O.C. 706.02 OR C.O.C. 706.04).
 - b. STORM SEWERS LOCATED OUTSIDE OF THE RIGHT-OF-WAY SHALL BE TYPE "C" CONDUIT (C.O.C. 706.02) OR HDPE COMPLYING WITH C.O.C. 720.12.
4. ALL TYPE "A", "B", AND "C" CONDUIT SHALL HAVE JOINTS, PER CITY OF COLUMBUS 901.15 AND SHALL USE TYPE C BITUMINOUS PIPE JOINT FILLER.
5. GRANULAR BEDDING SHALL BE PROVIDED FOR ALL TYPE "A", "B", AND "C" CONDUIT PER DELAWARE COUNTY STANDARD DRAWINGS DCED S-149, DCED S-151, DCED S-152, DCED S-153 AND DCED S-155.
6. ALL PIPES OUTSIDE THE RIGHT-OF-WAY SHALL HAVE A COVER OF 1.5 FEET MINIMUM. WHEREVER THIS IS NOT THE CASE, EMBANKMENT SHALL BE PLACED TO PROVIDE A MINIMUM COVER PRIOR TO THE INSTALLATION OF THE STORM SEWER.
7. OPENINGS SHALL BE PROVIDED IN THE DRAINAGE STRUCTURES TO ACCOMMODATE UNDERDRAIN OUTLETS. ANY CORING NECESSARY SHALL BE INCLUDED WITHIN THE COST OF THE UNDERDRAIN. UNDERDRAINS TO BE CONSTRUCTED IN ACCORDANCE WITH THE PLAN SPECIFICATIONS.

GRADING NOTES

1. EXCAVATION AND EMBANKMENT SHALL COMPLY WITH C.O.C. ITEM 203 AND DELAWARE COUNTY SUPPLEMENTAL SPECIFICATIONS.
2. THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR AND EQUIPMENT TO COMPLETE ALL EXCAVATION, FILL AND GRADING IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS AND SPECIFICATIONS.
3. EXCAVATION AND EMBANKMENT QUANTITIES DO NOT INCLUDE ANY PROVISION FOR UNDERCUTTING, FOOTINGS, OR UNSUITABLE MATERIAL.
4. AFTER THE TOPSOIL IS REMOVED, PROFFROLL THE PAVEMENT AND BUILDING AREA SUBGRADES TO BE FILLED. SOFT AREAS SHOULD BE UNDERCUT AND STABILIZED PRIOR TO FILLING OPERATIONS. RELATIVE DEPTH OF UNDERCUT WILL BE DETERMINED WHEN SOFT AREAS ARE DISCOVERED. THE DELAWARE COUNTY ENGINEER SHALL DETERMINE THE DEPTH AND EXTENT OF THE UNDERCUT.

EROSION AND SEDIMENTATION CONTROL NOTES

1. SILTATION AND EROSION SHALL BE CONTROLLED BY MINIMIZING THE TIME THE SITE IS DENUED BY TEMPORARY SEEDING, PERMANENT SEEDING, AND THE USE OF VARIOUS EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES. THESE DEVICES ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PHASE OF THIS PROJECT. ONCE THE SITE AREA HAS BEEN STABILIZED, BEST MANAGEMENT PRACTICES SHALL BE REMOVED WITH THE APPROVAL OF THE COUNTY ENGINEER.
2. ALL MEASURES SHALL BE MAINTAINED UNTIL ALL CONSTRUCTION UNDER THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED BY THE COUNTY ENGINEER. MAINTENANCE SHALL INCLUDE ALL REPAIRS TO THOSE AREAS AND MEASURES DAMAGED BY EROSION, CONSTRUCTION EQUIPMENT, WEATHER, FIRE, AND/OR OTHER CAUSES INCLUDING "ACTS OF GOD."
3. THE TEMPORARY CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A STATE THAT SHALL PREVENT TRACKING OR FLOW OF MUD ONTO THE PUBLIC RIGHT-OF-WAY. THIS WILL BE ACCOMPLISHED BY USE OF A GRAVEL CONSTRUCTION ENTRANCE AND THE REPAIR AND/OR CLEANOUT OF ANY DEVICES USED TO

TRAP THE SEDIMENT. ANY MATERIALS SPILLED, DROPPED, OR TRACKED FROM THE CONSTRUCTION SITE ONTO THE ROADWAYS OR INTO THE STORM SYSTEM MUST BE REMOVED IMMEDIATELY.

4. SEDIMENT DEPOSITS IN SEDIMENT TRAPS SHALL BE REMOVED AND THE MEASURES RESTORED TO THEIR ORIGINAL DESIGN PRIOR TO THE SEDIMENT OBTAINING THE ONE-HALF DESIGN HEIGHT OF THE DEVICE. ALL SEDIMENT MATERIAL SHALL BE DISPOSED OF BY AN ACCEPTABLE MEANS. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE MEASURES ARE NO LONGER REQUIRED SHALL BE PREPARED TO CONFORM TO THE FINAL GRADING PLANS, SEEDED AND MULCHED.
5. THE CONTRACTOR SHALL PLACE INLET PROTECTION FOR SEDIMENT CONTROL AT CATCH BASINS IMMEDIATELY AFTER THEIR CONSTRUCTION. COST FOR THIS WORK SHALL BE INCLUDED UNDER EROSION CONTROL. THE CONTRACTOR SHALL REMOVE INLET PROTECTION WHEN GRASS ESTABLISHMENT REACHES A MINIMUM OF 70% GROWTH DENSITY OVER THE ENTIRE DRAINAGE AREA FLOWING TO CATCH BASINS. THE COUNTY ENGINEER SHALL DIRECT SEDIMENT CONTROL AT ALL CATCH BASINS IF REQUIRED.
6. TOPSOIL SHALL BE REMOVED FROM PROPOSED RIGHT-OF WAY, MOUNDING AND EMBANKMENT AREAS PRIOR TO CONSTRUCTION OF PAVEMENT, MOUNDING, AND EMBANKMENT AREA. TOPSOIL SHALL BE STOCKPILED FOR RESPREADING AS DIRECTED BY THE COUNTY ENGINEER.
7. THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE CONSTRUCTION LIMITS UNLESS AUTHORIZED BY THE PROPERTY OWNER.
8. THE CONTRACTOR SHALL DISPOSE OF STREET, STOCKPILE, AND OVERLOT EXCAVATION AS DIRECTED BY THE COUNTY ENGINEER.
9. THE SITE SHALL BE INSPECTED ON A WEEKLY BASIS FOR COMPLIANCE WITH THE SWPPP. FURTHERMORE, SEDIMENT CONTROL BMP'S SHALL BE INSPECTED IMMEDIATELY FOLLOWING EACH RAINFALL EVENT GREATER THAN ½ INCH AND AT LEAST DAILY DURING PERIODS OF PROLONGED RAINFALL. INSPECTION LOGS SHALL BE FURNISHED TO DELAWARE COUNTY FOR EACH INSPECTION.
10. CLOSE ATTENTION SHALL BE PAID TO THE PROPER INSTALLATION AND REPAIR OF PERIMETER CONTROLS TO PREVENT FAILURE.

11. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF PERIMETER CONTROLS SHALL BE ACCOMPLISHED PROMPTLY.
12. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE PERIMETER CONTROLS IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
13. ADDITIONAL EROSION AND SEDIMENT CONTROL BMP's SHALL BE INSTALLED AS DIRECTED BY DELAWARE COUNTY.
14. THE CONSTRUCTION ENTRANCE, SEDIMENT BASINS (TEMPORARY AND/OR PERMANENT), AND PERIMETER CONTROLS SHALL BE INSTALLED AS THE FIRST STEP OF THE CONSTRUCTION SEQUENCE.
15. NO SITE WORK SHALL COMMENCE UNTIL THE EROSION AND SEDIMENT CONTROLS ARE APPROVED BY DELAWARE COUNTY.

PIPE UNDERDRAINS

1. ALL MATERIALS AND WORKMANSHIP FOR UNDERDRAINS SHALL COMPLY WITH C.O.C. ITEM 605.
2. UNDERDRAINS SHALL BE INSTALLED AND BACKFILLED TO SUBGRADE ELEVATIONS IMMEDIATELY PRIOR TO CONSTRUCTION OF SUB-BASE AND AFTER THE PROOFROLL OF THE SUBGRADE. HOWEVER, WHERE SUBSURFACE CONDITIONS ARE SUCH THAT IMPROVEMENT OF UNSTABLE SUBGRADE CAN BE ACCOMPLISHED THROUGH DRYING ACTION OF UNDERDRAINS, THE COUNTY ENGINEER MAY AUTHORIZE OR REQUIRE THE CONTRACTOR TO DELAY CONSTRUCTION OF THE SUB-BASE AS NECESSARY.
3. IMMEDIATELY PRIOR TO THE CONSTRUCTION OF CURBS, THE MATERIAL LOCATED ABOVE AND WITHIN THE UNDERDRAIN TRENCH SHALL BE REMOVED TO A DEPTH NECESSARY TO EXPOSE CLEAN #8 OR #57 STONE. BACKFILL THE EXCAVATED AREA WITH CLEAN #8 OR #57 STONE.
4. REINFORCED ENDS SHALL BE PROVIDED FOR THE EXPOSED ENDS OF ALL UNDERDRAIN OUTLETS, IF THE EXPOSED PIPE ENDS ARE UNPROTECTED BY HEADWALLS, CATCH BASINS, OR MANHOLES. THE LAST 10 FEET OF UNDERDRAIN SHALL BE TYPE "F" WHEN OUTLETING IN DITCH.

SITE CLEANUP

1. DURING CONSTRUCTION AND PRIOR TO ACCEPTANCE OF ANY PUBLIC IMPROVEMENTS, THE OWNER/DEVELOPER SHALL REMOVE OR CAUSE TO BE REMOVED ALL REFUSE, RUBBISH, UNUSED MATERIALS, EXCESS EARTH, FILL, ROCK, DEBRIS, AND FOREIGN MATTER FROM ALL PUBLIC RIGHTS OF WAY, IMPROVEMENTS, AND/OR EASEMENTS AS WERE DEPOSITED, LEFT OR RESULTED FROM THE CONSTRUCTION OF IMPROVEMENTS OF ANY NATURE WITHIN THE DEVELOPMENT. SUCH REMOVAL SHALL TAKE PLACE WITHIN TWENTY-FOUR (24) HOURS AFTER BEING NOTIFIED BY THE COUNTY ENGINEER THAT SUCH WORK IS REQUIRED, AND SHALL BE COMPLETED TO THE SATISFACTION OF THE COUNTY ENGINEER.
2. THIS WORK SHALL BE PERFORMED IN A MANNER WHICH PREVENTS EROSION AS WELL AS PREVENTS STORM WATER FROM ACCUMULATING OR PONDING ON THE SITE. THE WORK SHALL ALSO BE PERFORMED IN A MANNER THAT PREVENTS DISRUPTING OR IMPEDING SURFACE DRAINAGE FROM ONSITE OR OFFSITE SOURCES AND PREVENTS ANY NEGATIVE EFFECTS ON ADJACENT PROPERTIES. A SIX-INCH OVERLAY OF TOPSOIL SHALL BE PROVIDED AND SHALL BE SEEDED PER DELAWARE COUNTY STANDARDS.

SEEDING

1. BASED ON CONSTRUCTION START-UP DATE AND CONTRACTOR'S SCHEDULE OF EVENTS, THE SEEDING MIXTURE AND SEDIMENT CONTROL MAY BE CHANGED TO COMPLY WITH DELAWARE COUNTY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS, DUE TO A NON- GROWING SEASON AT THE TIME OF START-UP.
2. THE CONTRACTOR SHALL APPLY TEMPORARY AND PERMANENT SEEDING, FERTILIZER, AND MULCHING TO THE SATISFACTION OF THE COUNTY ENGINEER.
3. ALL SEEDING AND MULCHING SHALL BE BASED ON DELAWARE COUNTY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS.

RETENTION/DETENTION BASINS

1. ANTI-SEEP COLLARS ARE REQUIRED FOR ALL RETENTION/DETENTION POND OUTLETS. A MINIMUM OF TWO COLLARS ARE REQUIRED. COLLARS MUST BE CONSTRUCTED

- (EXCAVATED) A MINIMUM OF 3.0' INTO UNDISTURBED SOIL ON ALL THREE SIDES. CLASS C CONCRETE PER CURRENT DELAWARE COUNTY SUPPLEMENTAL SPECIFICATIONS SHALL BE USED FOR REPLACEMENT OF THE EXCAVATED MATERIAL. THE COLLARS MUST BE A MINIMUM OF 8 INCHES THICK.
2. A CLAY CORE OF SUFFICIENT THICKNESS IS REQUIRED FOR ALL DETENTION AND RETENTION PONDS IN CUT AREAS. THE COUNTY ENGINEER SHALL FIELD APPROVE THE CORE THICKNESS OR THE CONDITION OF THE EXISTING SOILS AS A SUBSTITUTE FOR A CLAY CORE (E.G., EXISTING CLAY MATERIAL).
 3. TREES AND LANDSCAPING SHALL NOT BE PERMITTED ON EMBANKMENT SURFACES

The following notes shall be provided for all projects where a road widening is required. These notes shall not be altered without approval of the County Engineer.

ITEM 614: MAINTAINING TRAFFIC, AS PER PLAN

1. THE COUNTY ENGINEER SHALL BE NOTIFIED A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE STARTING WORK AND/OR PRIOR TO EACH PHASE OR MAJOR CHANGE IN TRAFFIC PATTERNS, EITHER PERMANENT OR TEMPORARY WITHIN THE ROADWAY RIGHT-OF-WAY.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CONSTRUCTION AND MAINTENANCE OPERATIONS (OMUTCD) CURRENT EDITION, COPIES OF WHICH ARE AVAILABLE FROM THE OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF TRAFFIC, 1980 WEST BROAD STREET, COLUMBUS, OHIO 43223.
3. CONSTRUCTION OPERATIONS SHALL NOT BEGIN UNTIL ALL TEMPORARY TRAFFIC CONTROL DEVICES ARE IN PLACE AND APPROVED BY THE COUNTY ENGINEER. AT THE DIRECTION OF THE COUNTY ENGINEER, PORTABLE MESSAGE BOARDS SHALL BE PROVIDED A MINIMUM OF 14 DAYS PRIOR TO THE START OF CONSTRUCTION TO NOTIFY THE TRAVELING PUBLIC OF THE UPCOMING CONSTRUCTION ACTIVITIES.
4. TWO-WAY ONE LANE TRAFFIC SHALL BE MAINTAINED FROM 9AM TO 3PM MONDAY THRU FRIDAY AND ALL DAY SATURDAY WITH FLAGGERS, LAW ENFORCEMENT OFFICER (L.E.O.) OR APPROVED EQUIVALENT PER ODOT STANDARD DRAWINGS MT-97.10 & MT-97.11. DURING ALL OTHER HOURS, TWO-WAY TWO-LANE TRAFFIC (ONE LANE EACH DIRECTION) SHALL BE MAINTAINED AT ALL TIMES. THE OWNER SHALL PROVIDE FLAGGERS, L.E.O., OR APPROVED EQUIVALENT, AT HIS EXPENSE. THE L.E.O. SHALL BE A UNIFORMED LAW ENFORCEMENT OFFICER AND OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE. ADDITIONAL LAW ENFORCEMENT OFFICERS MAY BE UTILIZED FOR MAINTAINING TRAFFIC BEYOND THE REASONS LISTED IN THIS PLAN AT THE OWNER'S EXPENSE. THE OWNER SHALL EMPLOY THE L.E.O.'S AND THE OWNER SHALL BE RESPONSIBLE FOR THEIR ACTIONS.

5. IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO COORDINATE CONSTRUCTION ACTIVITIES WITH THE COUNTY ENGINEER AND WITH THE OWNERS OF ABUTTING PROPERTIES IN ADVANCE OF ANY OPERATIONS THAT AFFECT ACCESS. PRIOR TO TOTAL STREET CLOSURE, THE OWNER SHALL GIVE WRITTEN NOTIFICATION ON THE OWNER'S LETTERHEAD TO ALL PROPERTY OWNERS AT LEAST TWO (2) WEEKS PRIOR TO THE FIRST DAY OF WORK, INFORMING THEM THAT WORK WILL BE DONE IN THEIR AREA. THE NOTIFICATION LETTER SHALL BE SENT BY REGISTERED MAIL WITH A COPY OF THE RECEIPTS SUBMITTED TO THE COUNTY ENGINEER PRIOR TO ANY WORK BEING PERFORMED.
6. ALL TEMPORARY SIGNS SHALL CONFORM TO ODOT TYPE H, REFLECTIVE SHEETING REQUIREMENTS.
7. ALL TRENCHES WITHIN THE RIGHT-OF-WAY SHALL BE BACKFILLED OR SECURELY PLATED AS DIRECTED BY THE COUNTY ENGINEER DURING NON-WORKING HOURS. THE CONTRACTOR SHALL INCLUDE IN HIS/HER BASE BID FOR ITEM 614-MAINTAINING TRAFFIC, AS PER PLAN STEEL PLATES TO MAINTAIN TRAFFIC AT ALL TIMES WHERE OPEN TRENCHES ARE REQUIRED. STEEL PLATES SHALL BE INSTALLED PER DELAWARE COUNTY STANDARD DRAWING R-1441. STEADY BURNING, TYPE "C" LIGHTS SHALL BE REQUIRED ON ALL BARRICADES, DRUMS, AND SIMILAR TRAFFIC CONTROL DEVICES IN USE AT NIGHT.
8. A FLASHING ARROW PANEL (48"X96"-TYPE "C") SHALL BE USED IN LANE CLOSURES IN ACCORDANCE WITH THE OHIO MUTCD, CURRENT EDITION.
9. ACCESS TO ALL ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
10. THE CONTRACTOR SHALL MAINTAIN ALL PERMANENT TRAFFIC CONTROLS NOT IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROLS THROUGHOUT THE PROJECT. PERMANENT TRAFFIC CONTROLS MAY BE TEMPORARILY RELOCATED, AS APPROVED BY THE COUNTY ENGINEER. THE CONTRACTOR SHALL ASSUME ALL LIABILITY FOR MISSING, DAMAGED, OR IMPROPERLY PLACED SIGNS.
11. MAINTENANCE OF ALL TRAFFIC CONTROL DEVICES INCLUDING DRUMS, SIGNS, BARRICADES, SIGN BOARDS, ETC. SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

12. IF THE CONTRACTOR ELECTS, HE/SHE MAY SUBMIT ALTERNATE PLANS FOR THE MAINTENANCE OF TRAFFIC, PROVIDED THE INTENT OF THESE PROVISIONS ARE FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE TRAVELING PUBLIC RESULTS THERE FROM. NO ALTERNATE PLAN SHALL BE PLACED INTO EFFECT UNTIL THE COUNTY ENGINEER HAS GRANTED APPROVAL.
13. PERMANENT STRIPING SHALL BE INSTALLED IMMEDIATELY AFTER THE FINISH-PAVING COURSE IS COMPLETED. ALL PRE-MARKING MATERIALS AND ASSOCIATED COSTS SHALL BE INCLUDED WITHIN ITEM 614.
14. DRUMS SHALL BE PLACED AT 20 FEET CENTER-TO-CENTER ON TAPERS, 20 FEET CENTER-TO-CENTER ON TANGENTS, AND 8 FEET CENTER-TO-CENTER ON RADIUS OR DRIVEWAYS. ACCESS FOR MAIL AND EMERGENCY SERVICES SHALL BE MAINTAINED AT ALL TIMES.
15. THE PROPER ADVANCED WARNING SIGNING IN ACCORDANCE WITH THE OHIO MUTCD CURRENT EDITION SHALL BE PLACED ALONG THE ROAD AND ALL ADJOINING ROADS APPROACHING THE PROJECT LIMITS. ALL SIGNS NINE SQUARE (36"X36") AND OVER SHALL HAVE YELLOW TYPE A LOW INTENSITY FLASHING WARNING LIGHTS AND THREE FLAGS.
16. THE CONTRACTOR SHALL PROVIDE THE COUNTY ENGINEER, A CONTACT NAME, AND A 24-HOUR TELEPHONE NUMBER TO BE USED IN CASE OF AN EMERGENCY.
17. THE SAFETY OF PEDESTRIAN TRAFFIC SHALL BE CONSIDERED AT ALL TIMES IN THE PROVISION OF TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS AND NOTES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE LIGHTS, SIGNS, BARRICADES, AND OTHER DEVICES TO WARN OF AND PHYSICALLY SEPARATE THE PEDESTRIAN FROM HAZARDS INCIDENTAL TO THE CONSTRUCTION AND DEMOLITION OPERATIONS, AS DIRECTED BY THE COUNTY ENGINEER.

PAYMENT

THE COST OF MAINTAINING TRAFFIC AS DESCRIBED IN THE ABOVE NOTES AND AS SHOWN IN THE PLANS, SHALL INCLUDE THE FURNISHING, INSTALLATION, AND MAINTENANCE OF ALL FLASHING ARROW PANELS, SIGNS, SIGN SUPPORTS, FLAGS, FLAGGERS, L.E.O.'S, BARRICADES, DRUMS, CONES, DETOURS, AND ALL APPLICABLE SIGNS FOR DETOUR, AND INCIDENTALS REQUIRED FOR ALL PHASES

OF WORK, AND SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC, AS PER PLAN.

REMOVAL OF PAVEMENT MARKINGS

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL OF PAVEMENT MARKINGS WHERE INDICATED IN THE PLAN, AND IN THE MANNER DESCRIBED IN THE SPECIFICATIONS. PAYMENT FOR REMOVAL OF PAVEMENT MARKINGS INCLUDING ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO REMOVE THE PAVEMENT MARKING AND PROPERLY DISPOSE OF ANY EXCESS MATERIAL SHALL BE INCLUDED IN ITEM 614. UPON COMPLETION OF ALL MAINTENANCE OPERATIONS, ALL REMAINING PAVEMENT MARKINGS APPLIED WITHIN ANY MAINTENANCE PHASE SHALL BE REMOVED. PAYMENT SHALL BE INCLUDED WITHIN ITEM 614.

WORK LIMITS

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

ITEM 203: EMBANKMENT CONSTRUCTION,
ITEM 203: EXCAVATION NOT INCLUDING EMBANKMENT, AS PER PLAN

NOTE TO DESIGN ENGINEER: THESE NOTES ARE IN ADDITION TO THE ITEM 203 NOTES PREVIOUSLY PROVIDED.

1. THE EXISTING PAVEMENT SHALL BE SAWCUT, REMOVED, AND DISPOSED OF AS INDICATED IN THE APPROVED PLANS. PAYMENT SHALL BE INCLUDED WITHIN ITEM 203-EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION, AS PER PLAN.
2. ALL MATERIALS TO BE DISPOSED OF OFF-SITE SHALL BE DISPOSED OF IN AN ENVIRONMENTALLY SOUND MANNER IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. NO EXCESS MATERIALS ARE TO BE DISPOSED OF IN ANY WETLAND, FLOOD PLAIN, OR OTHER ENVIRONMENTALLY SENSITIVE AREAS. EROSION CONTROL MEASURES AT THE DISPOSAL SITE SHALL BE INSTALLED AND MAINTAINED UNTIL DISPOSAL IS COMPLETE AND THE DISPOSAL SITE PERMANENTLY STABILIZED. THE ACQUISITION OF THIS SITE IS THE OWNER'S RESPONSIBILITY.

3. THE CONTRACTOR SHALL BE RESPONSIBLE TO OVER EXCAVATE AND DISPOSE OF ANY UNUSABLE OR UNSUITABLE MATERIAL DEEMED NECESSARY BY THE COUNTY ENGINEER TO OBTAIN ACCEPTABLE SUB-GRADE COMPACTION AND AN ACCEPTABLE PROOF ROLL.
4. PROVISIONS HAVE BEEN ESTABLISHED TO ACCOMMODATE UNSUITABLE SUB-GRADE AND PREPARATION OF SUB-GRADE IN ACCORDANCE WITH CURRENT COUNTY STANDARDS. THESE ITEMS ARE CONTINGENCY ITEMS AND SHALL BE PERFORMED AS DIRECTED BY THE COUNTY ENGINEER:
 - ITEM SPECIAL: TENSOR GEOGRID BX 1100 OR APPROVED EQUIVALENT – XX S.Y.
 - ITEM 203: UNDERCUTTING AND DISPOSAL OF UNSUITABLE MATERIALS – XX C.Y.
 - ITEM 203: GRANULAR EMBANKMENT – XX C.Y.

NOTE TO DESIGN ENGINEER: THE QUANTITIES FOR UNDERCUTTING AND GRANULAR EMBANKMENT SHALL BE BASED ON A 2'-0" (MIN.) DEPTH OF UNDERCUT FOR THE ENTIRE WIDTH OF THE PROPOSED WIDENING, INCLUDING THE TWO-FOOT GRADED SHOULDER.

PAVEMENT JOINT

THE PAVEMENT JOINT WHERE THE EXISTING PAVEMENT HAS BEEN SAWCUT AND NEW PAVEMENT ABUTS TO THE EXISTING PAVEMENT SHALL BE COVERED WITH ITEM SPECIAL: GLASGRID 8502 OR APPROVED EQUIVALENT – XX SQ. YD., AND AS DIRECTED BY THE COUNTY ENGINEER.

TRENCH FOR WIDENING

THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED (PER CURRENT COUNTY STANDARDS) WITH DRUMS OR BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUB-BASE AND BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND EXCAVATION OPERATIONS. THE LENGTH OF THE WIDENING TRENCH SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE COUNTY ENGINEER. NO SEPARATE PAYMENT WILL BE PROVIDED IF TRENCH WORK IS LIMITED TO A LENGTH THAT WOULD BE COMPLETED IN A WORKDAY IF REQUESTED BY THE COUNTY ENGINEER.

ITEM SPECIAL- MAILBOX SUPPORT

THIS SHALL CONSIST OF FURNISHING AND ERECTING MAILBOX SUPPORTS AND ANY ASSOCIATED MOUNTING HARDWARE IN ACCORDANCE WITH PLAN DETAILS, AND ATTACHING AN OWNER-SUPPLIED MAILBOX AT LOCATIONS SPECIFIED IN THE PLAN, OR OTHERWISE ESTABLISHED BY THE COUNTY ENGINEER.

WOOD POSTS SHALL BE NOMINAL 4" BY 4" SQUARE OR 4 ½" DIAMETER ROUND, AND CONFORM TO ODOT CMS 710.14.

STEEL POSTS SHALL BE NOMINAL PIPE SIZE 2" I.D. AND CONFORM TO AASHTO M 181.

HARDWARE (PLATES, SCREWS, BOLTS, ETC.) SHALL BE COMMERCIAL-GRADE GALVANIZED STEEL.

POSTS SHALL BE SET PER THE FIRST PARAGRAPH OF ODOT CMS 606.03, AND SHALL IN NO INSTANCE BE ENCASED IN CONCRETE.

SUPPORT HARDWARE SHALL ACCOMMODATE EITHER A SINGLE OR A DOUBLE MAILBOX INSTALLATION, AND NO MORE THAN TWO BOXES MAY BE MOUNTED ON A SINGLE POST.

THE MAILBOX SHALL BE SECURELY AND NEATLY ATTACHED BY THE CONTRACTOR TO THE NEW SUPPORT. THE CONTRACTOR SHALL FURNISH ALL NECESSARY ATTACHMENT HARDWARE (NUTS, BOLTS, PLATES, SPACERS, AND WASHERS) AS NECESSARY TO ACCOMMODATE THE COMPLETE INSTALLATION.

IN THE ABSENCE OF A NEW BOX SUPPLIED BY THE OWNER, THE CONTRACTOR SHALL SALVAGE THE EXISTING BOX AND PLACE IT ON THE NEW SUPPORT. DUE CARE SHALL BE EXERCISED IN SUCH AN OPERATION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY BOX DAMAGED BY IMPROPER HANDLING ON HIS/HER PART, AS JUDGED AND DIRECTED BY THE COUNTY ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POST MASTER REGARDING THE TIMING OR THE MOVEMENT OF ANY MAILBOX TO A NEW LOCATION.

PAYMENT UNDER THIS ITEM SHALL BE LIMITED TO FINAL PERMANENT INSTALLATIONS. TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH ODOT CMS 107.10. HOWEVER, THE SAME

MATERIAL AND SIZE LIMITATIONS AS FOR PERMANENT INSTALLATIONS SHALL APPLY.

MAILBOX SUPPORTS, COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH, FOR ITEM SPECIAL MAILBOX SUPPORT SYSTEM, (SINGLE) (DOUBLE).

CROSS-SECTIONS

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

RIGHT-OF-WAY

IN ADDITION TO DIRECT REQUIREMENTS OF THE CONTRACT SPECIFICATIONS, THE CONTRACTOR SHALL OBSERVE AND CONFORM TO THE SPECIFIC REQUIREMENTS OF ALL RIGHTS-OF-WAY INCLUDING EASEMENTS, COURT ENTRIES, RIGHTS-OF-ENTRY, OR ACTION FILED IN COURT IN ACCORDANCE WITH THE CODE OF APPLICABLE GOVERNING AGENCY. THE COST OF THE OPERATIONS NECESSARY TO FULFILL SUCH REQUIREMENTS SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS IMPROVEMENT ITEMS UNLESS SPECIFIC PROVISION IS MADE IN THE CONTRACT SPECIFICATIONS.

CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, ANY POWER-OPERATED CONSTRUCTION-TYPE DEVICE SHALL ONLY BE OPERATED WITHIN THE HOURS AS OUTLINED IN THE SUPPLEMENTAL SPECIFICATIONS, UNLESS APPROVED BY THE COUNTY ENGINEER. IN ADDITION, ANY SUCH DEVICE SHALL NOT BE OPERATED AT ANY TIME IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT. THE COUNTY ENGINEER SHALL NOTIFY THE CONTRACTOR OF ANY DEVICE THAT WILL NEED TO BE REMOVED DUE TO ITS EXCESSIVE NOISE.

RESTORATION/CLEAN UP/DUST CONTROL

IT IS THE INTENT OF THE COUNTY ENGINEER TO KEEP INCONVENIENCE TO THE PROPERTY OWNERS TO AN ABSOLUTE MINIMUM. ALL WORK IS TO CONTINUE ON A UNIFORM BASIS AND

ON SCHEDULE, PARTICULARLY THE RESTORATION AND CLEAN UP OF DISTURBED AREAS AFTER CONSTRUCTION.

ANY DIRT, SEDIMENT, OR MUD DEPOSITED ON STREETS ON OR OFF THE PROJECT SITE SHALL IMMEDIATELY BE CLEANED BY THE CONTRACTOR AND TO THE SATISFACTION OF THE COUNTY ENGINEER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DUST CONTROL MEASURES IN ACCORDANCE WITH CURRENT COUNTY STANDARDS. DUST CONTROL OPERATIONS SHALL BE PERFORMED AS DIRECTED BY THE COUNTY ENGINEER

CARE SHALL BE EXERCISED WHEN WORKING IN THE AREA AROUND EXISTING TREES AND SHRUBS. ANY TREES OR SHRUBS NOT MARKED FOR REMOVAL THAT ARE DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE COUNTY ENGINEER.

ALL FENCES, SIGNS, DRAINAGE STRUCTURES, LANDSCAPING INCLUDING AREAS, ETC. REMOVED, DISTURBED OR DAMAGED DURING WORK UNDER THE CONTRACT IMPROVEMENTS SHALL BE RESTORED TO THE SATISFACTION OF THE COUNTY ENGINEER, UNLESS OTHERWISE SPECIFIED IN THE APPROVED PROJECT PLANS. PAYMENT FOR THE SAME SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS IMPROVEMENT ITEMS.

TRAFFIC SIGNAL STANDARDS

This is an attempt to describe a standard to be utilized by all employees, suppliers and others who want to be part of the purchase, installation and maintenance of the County owned traffic signal system. This standard must be utilized when ordering replacement components or when designing new or replacement intersection configurations. An attempt will be made to address all issues of signal equipment and associated components that go into design, installation and specification of said equipment. The traffic engineer or designate **MUST** approve any future design improvements in equipment **PRIOR** to purchase or installation.

MATERIALS:

All materials and equipment must be new, first quality and of most current design for the application. Under special circumstances, pre-approval may be given to utilize materials that have been obtained from reclamation facilities. However, these items must carry the same type of warranty, both by the installer/supplier and manufacturer, as a similar new item would have. All equipment and materials supplied must comply with the National Electrical Code and local codes of the County.

All traffic control equipment must be of the type fully compatible with the County owned traffic signal system. All software and hardware items used in cabinet and controller design must be fully interchangeable from intersection to intersection throughout the county with **NO MODIFICATIONS** to existing cabinetry or computer software. The only exception to the issue will be at the time the County determines to replace or update **ANY** portion or component of the signal or preemption system, citywide.

TRAFFIC SIGNAL EQUIPMENT:

This area will deal with descriptions of the type and design features that the County will accept as part of their countywide system. The following notes shall be added to all construction plans where a traffic signal is required. These notes shall be included on the traffic signal plan detail sheet(s).

RACEWAYS AND PULL BOXES: All underground raceways beneath main street and secondary street pavements must be a minimum of three (3) inch diameter, galvanized rigid design and meet ODOT 725.04. Pull Boxes must meet the ODOT 725.08, concrete design.

VEHICULAR SIGNAL HEADS: Heads must be furnished in arrangements such as to form from one to a maximum of five sections assembled with the specified lens size, color and circular or arrow configurations to form a specific signal face. For illustrative purposes, a typical configuration acceptable to the County is as follows: **ALL** signal sections must be of the 12 inch variety, yellow body and cap visor attachments containing L.E.D. (Light Emitting Diode) for all sections. All signal head configurations that include

left or right turn green and amber arrows must be of 5-section “dog house” design. Arrow designations must be a single piece L.E.D. All signal heads must be wired with individual cable runs to the traffic control cabinet. No “looping” in and out of signal heads will be accepted. *Each cable run into the cabinet shall be marked with the corresponding phase and/or signal head number.*

When a span wire system is used the signal heads shall be aluminum, when a mast arm support system is used the heads shall be the polycarbonate.

PEDESTRIAN SIGNAL HEADS: Signal heads supplied and/or installed in the County must be of the single section type D-2, L.E.D. They must be capable of displaying recognized 11-inch high international symbols, with certified ITE colorations, lunar white, and intensity.

PEDESTRIAN PUSHBUTTONS: Pushbuttons must be properly oriented and installed on poles or pedestals. All buttons installed on steel poles must be serviced by wiring inside the poles. Pushbutton design must be A.D.A. compliant. Signs must be included with each direction that pedestrian pushbutton stations are used. Sign design must be pre-approved by County traffic engineer.

VIDEO DETECTOR UNITS: The detection unit of choice is the Autoscope Solo Pro II. However, it is understood that video detection may not be the best choice at all locations. The County traffic engineer must make determination of the type of detection to be used at each location. Each sensor unit must be capable of delay, extend, traffic counting, occupancy, headway, and speed monitoring. The detection system must be able to be networked and the software must be operated using a Windows based PC.

DETECTOR LOOP: In the cases where video detection is not called for, slots shall be sawed in the pavement for the installation of loop detector wire (IMSA Spec. 51-5) single conductor, 14 gauge minimum, PVC/Nylon with tube jacket. The loops shall be installed as per ODOT TC-82.10. All loop detector slots shall be filled completely with a flexible embedding sealant. Loop installations in new asphalt may be sawed and embedded with sealant and backer rod in the subsurface course, prior to final coat application. Loop detector size will vary with each application. As a rule, lane control detection shall consist of a single 6' x 40' loop, with 5' of the loop design to be placed forward of the STOP BAR location. This is, of course, subject to intersection location.

FOUNDATIONS: All signal support foundations, cabinet pad foundations and pull box characteristics, must be as per State of Ohio Department of Transportation Construction & Material Specification manual (most recent issue) and ODOT Standard Construction Drawings for Traffic Control Devices. Each controller cabinet foundation must have a minimum of 2-3” and 1-1” conduit installed between the foundation base and main pull box. All installations are required to keep power supply leads in a separate conduit from signal control wiring runs.

SIGNAL SUPPORT: Depending on the area in which the signal system is being installed, Mast Arm and Span Wire will both be an option. Signal heads must be RIGID MOUNT to the mast arm. The mounting system will be per the ODOT standard drawing or approved equal. All mast arm installations must be underground fed; no overhead signal wiring from mast arm location to mast arm location will be accepted.

CABINETS: *TS-1 Cabinets shall be used.* They should be pad mounted, where able. All wires coming into the cabinet shall be tagged and labeled. The cabinet will have at least one type of light and fan. A fixed mount light in the top of the cabinet or a "lamp/neck" light are both acceptable. Cabinet shall also be able to handle future equipment for a battery back-up system or other electronic items such as pre-emption units.

POWER SERVICE: Power service must consist of equipment to provide an underground wiring race AND disconnect switch for use with power cable routed from the service source to the controller cabinet. Power service installation must consist of a weather head, conduit and fittings, stainless steel disconnect and enclosure and attachment clamps. If underground service cannot be arranged, outside pole attachment procedures may be utilized. Conduit riser shall terminate at an electric meter base or at the disconnect switch enclosure. Conduit connections with the meter base and enclosure must be watertight by the use of conduit hubs listed on the enclosure UL label. The switch enclosure neutral bar must be grounded directly to the pole-grounding lug.

CONTROLLER: The controller shall be an Econolite controller unit, type ASC/25-2100. The MMU shall have a serial port capable of downloading past conflicts. Everything shall meet the applicable sections of the State of Ohio Department of Transportation Construction and Material Specifications dated January 1, 2002.

PRE EMPTION: The pre-emption system shall be the 3M Opticom Priority Control System. The receiving units shall be the Priority Control Detectors Model 711, Phase selectors shall be model 754, card racks shall be model 793S, and switches and detector cable shall be model 138. The confirmation lights shall also be included.