

**Delaware County Engineer's Office (DCEO)
Final Engineering and Construction Plan
Review Checklist**

Project Name: _____

Note to Designer: This checklist provides an overview of the required items for the final engineering and construction plan and stormwater management report. The intent of this checklist is to highlight the items typically provided and to serve as an outline of what is required by the Delaware County Engineer's Design, Construction and Surveying Standards Manual (Standards Manual), current edition, including the Supplemental Specifications to the Standards. All references included in this checklist (such as Art. IV, Section 401 E) refer to the current edition of the Standards Manual. The design engineer preparing the final plans should be familiar with the requirements as described in the current edition of the Standards Manual, including the Supplemental Specifications (Appendix Items) prior to submitting the plans for review.

Submittal Items included with Plans

- Yes No N/A Proper number of plan sets (4 sets of full size and 1 set of half size plans) provided
- Yes No N/A Completed final plan review checklist provided
- Yes No N/A Proper fees, including fee submission checklist been submitted? See http://www.co.delaware.oh.us/engineer/Review/Plan_Review_fee_schedule_cover_page.pdf for copy of fee submission checklist.
- Yes No N/A Traffic Impact Study prepared (if applicable)
- Yes No N/A Existing Topographic Survey - Incorporated into various Plan Sheet(s)
- Yes No N/A Stormwater Management Report with all the various calculations and predevelopment and post-development tributary maps (See Article IV, Section 403 E and Article IX)
- Yes No N/A Drainage and/or Right-of-Way (R/W) Conveyance Instruments, Metes and Bounds Descriptions, and associated Exhibits provided (If applicable – typically for any off-site easements – easements must state their purpose, such as “for highway purposes” or “for drainage purposes”).
- Yes No N/A For proposed improvements to existing County/Township Road including roadway, shoulder and ditch improvements, additional plan sheets and a cost estimate are required (See separate road widening checklist in the Supplemental Specifications).
- Yes No N/A Evidence of review and approval from the local fire department provided with the plans? (Approval letter, comments, etc.)
- Yes No N/A Engineer's estimate based on Delaware County Engineer's Unit Bid Prices (Section 403 A).
- Yes No N/A All required environmental documents, Army Corps permits and ODNR permits submitted before final plan approval (Section 401 A).
- Yes No N/A OEPA Stormwater NOI submitted before final plans approval.

Yes No N/A If final plan resubmittal, written response and marked prints included that addresses previous comments and identifies additions/deletions made to plans since previous submittal (Section 401 A)

Note: The County shall contact the plans submitter if the above items have not been submitted with the plans. Failure to submit the items may result in delay or halting of the review process.

Title Sheet (See Section 402) - A sample title sheet layout is available from DCEO. Please contact our office for a copy.

Yes No N/A Name of Subdivision - Nomenclature for various divisions defined by Section, Phase, and Part (Section 402 C)

Yes No N/A Location by Range, Township, Quarter-Township, Farm Lot (U.S.M. Lands), and/or Virginia Military Survey Name and Number

Yes No N/A North Arrow

Yes No N/A Regional Planning Number (Upper right-hand corner)

Yes No N/A A clearly legible location map showing the location of the project with respect to the nearest road intersection

Yes No N/A Written and graphical (bar) scale

Yes No N/A Name, address, and telephone number of the Design Engineer preparing the plan

Yes No N/A Signature Line for the County Engineer

Yes No N/A Signature Line for the County Sanitary Engineer (if applicable)

Yes No N/A Signature Line for Del-Co Water

Note: DO NOT PROVIDE SIGNATURE LINES FOR THE COUNTY COMMISSIONERS ON THE TITLE SHEET (except for Sanitary Plans)

Yes No N/A Stamp and Signature of the Design Engineer licensed in the State of Ohio

Yes No N/A Applicable Delaware County Standard Drawings referenced by Drawing Number. City of Columbus and/or ODOT standard drawings may be referenced on a project-by-project basis.

Yes No N/A Backfill as per DCED-R100 and referenced as Standard Drawing on Title Sheet

Yes No N/A Applicable Delaware County Supplemental Specifications referenced by number. City of Columbus and/or ODOT supplemental specifications may be referenced on a project-by-project basis.

Yes No N/A Index of Sheets

Yes No N/A Index Map (Showing lot layout, including section and/or phase lines)

Yes No N/A Applicable specifications statement per Article IV, Section 402 H provided. (Typically the City of Columbus CMS would be used. Check with DCEO for further guidance.)

Yes No N/A Benchmark Information (with Elevation referenced to USGS Datum – NAVD or NGVD), Elevations, Designations and Locations

Yes No N/A Master Benchmark Description (See Article X)

Yes No N/A Source Benchmark Description (Should either be USGS Datum – NAVD or NGVD or defined from one)

Yes No N/A Owner/Developer's Name, Address, Telephone and Fax Numbers

Yes No N/A Utility Owner(s), Address, Telephone and Fax Numbers

Yes No N/A Sanitary Engineer's Office Address and Phone Number (Sanitary Sewers)

- Yes No N/A County Engineer's Office Address and Phone Number (Storm Sewers)
- Yes No N/A County Engineer's Disclaimer Paragraph: "The Delaware County Engineer's signature on this plan signifies only concurrence with the general purpose and location of the proposed improvement. All technical details remain the responsibility of the Professional Engineer who prepared and certified these plans."
- Yes No N/A Consultant's Certification Paragraph: "This is to certify that good engineering practices have been utilized in the design of this project and that all of the minimum standards as delineated in the Delaware County Design, Construction and Surveying Standards Manual have been met, including those standards greater than minimum where, in my opinion, they are needed to protect the safety of the public. Any variances to the above standards are consistent with sound engineering practices and are not detrimental to the public safety and convenience. These variances have been listed herein and have been approved by the Delaware County Engineer."
- Yes No N/A Site Development Information- Acreage, Number of Lots, Terrain Classification and Development Density Ratio (Lots & Road R/W only; Deduct Open Space - Not Gross Zoning Density) (Section 601 F)
- Yes No N/A Net Density been provided
- Yes No N/A Change Order (revisions) table provided. Numbered Triangles are used to reference changes. Revised Sheets are noted as such and dated. Deleted Sheets and Supplemental Sheets are listed in Revision Box.
- Yes No N/A Variance Table with Approval Dates Shown

General

- Yes No N/A Preliminary Plan submitted and approved
- Yes No N/A All comments from preliminary plan review resolved?
- Yes No N/A Additions/deletions from the preliminary plans identified (Section 401 A)
- Yes No N/A Intersection Sight Distance (ISD) Diagram showing adequate intersection sight distance for the proposed entrance drives(s) per the current ODOT Location and Design (L&D) Manual. (Do not use stopping sight distance tables).
- Yes No N/A Have all trees and obstructions within the R/W and sight distance triangle been shown (and designated to be removed) on the ISD diagram?
- Yes No N/A For proposed improvements to existing County/Township Road including roadway, shoulder and ditch improvements, additional plan sheets and a cost estimate are required (see separate Road Widening Checklist in the Supplemental Specifications).
- Yes No N/A Reference provided to DCEO Standard Drawing DCED-R2130 for all road widening, shoulder and ditch improvements
- Yes No N/A Reference made to DCEO Standard Drawing(s) for all required right-in/right-out access point(s)? Check with approved Traffic Impact Study and Preliminary Engineering Plan for location(s).
- Yes No N/A Show the Clear Zone Setback line for projects located on County and Township Roads according to the ODOT L&D Manual, current editions. Provide additional utility easements if needed.
- Yes No N/A Have drainage easements for road widening and/or a ditch setback been addressed (in addition to the required R/W per these Standards)?

- Yes No N/A Are existing utilities shown in area of road widening and/or a ditch setback? Have the utilities been called out to be relocated? Have easements been provided for utility relocation or future needs?
- Yes No N/A All required easements for R/W, drainage and/or sight distance shall be recorded prior to final engineering plan approval (if offsite). Copies of the recorded easements shall be submitted to the County Engineer for approval.
- Yes No N/A General Summary/Table of Estimated Quantities provided?
- Yes No N/A For open ditch roads, has the driveway pipe sizes, including calculations been approved at the Preliminary Plan submittal? Minimum drive pipe size is 12". (Section 802 H)
- Yes No N/A Any adjacent properties affected by the project?
- Yes No N/A Work Agreement(s) and/or Temporary Easement(s) been provided, if work is proposed on other property (except for work associated with a permanent drainage easement required for an adequate outlet, etc.)?
- Yes No N/A Has plans and plat for any adjoining subdivisions or other adjoining properties been reviewed to insure the proposed project is compatible?
- Yes No N/A Have the proposed storm sewer inverts, project pavements, project grading, etc. align (horizontally & vertically) with adjacent existing storm sewers, pavements, and grading? Have differences between 1929 Datum and 1988 Datum been addressed if adjacent projects or sewers were based on a different Datum?
- Yes No N/A Storm sewer pipe shall not be allowed to run beneath the curb and gutter; parallel with the curb and gutter within public R/W. (Section 904 B)
- Yes No N/A General DESC permit must be approved before final plans can be approved.
- Yes No N/A General DESC permit approved and adequate erosion/sedimentation control provided on the sanitary plans if sanitary sewers are to be constructed prior to final plan approval (Section 401 A)
- Yes No N/A Computation sheets (stormwater management, flood routing) and stormwater maintenance submitted with plans. (Section 401 A)
- Yes No N/A Two copies of plat (90% complete) submitted with final approved plans (Section 401 C)
- Yes No N/A One copy of Exhibit "C" provided for review? (This may be provided at the time of final plans resubmittal. Note however that Final Plans cannot be approved without the submission of Exhibit "C" for review by DCEO/DSWCD.)
- Yes No N/A Copy of approved ODOT Permit if accessing State Route or working with ODOT R/W (e.g. storm structure, etc.).
- Yes No N/A Health Department approval provided (If any onsite treatment is shown)? A copy of their approval letter is required before the plans can be approved by DCEO.
- Yes No N/A Copy of approved landscape plan, zoning plan and zoning text included?
- Yes No N/A Street names must be approved by the Map Department prior to final plan approval.
- Yes No N/A Sanitary Plans must be approved by County Sanitary Engineer's Office before County Engineer can sign final plans.
- Yes No N/A Final Plans must be approved by Delco Water before final plans can be approved by the County Engineer.

Yes No N/A Correct Types of Structures as per approved Standard Drawings in Supplemental Specifications.

Quantities (See Section 403) – A sample estimated quantities/general summary table is available from DCEO. Please contact DCEO for further information.

- Yes No N/A Does format match sample DCEO table?
- Yes No N/A Estimated quantities shall not be placed on the Title Sheet
- Yes No N/A Compare Quantity Sheet/General Summary Table to the Engineer's Estimate to see the Correct Units, Descriptions, and Quantities match.
- Yes No N/A Are all items in the plans accounted for in the estimate?
- Yes No N/A Underdrain quantity reasonably close to the curb quantity
- Yes No N/A Structure Types (MH's, CB's, etc.) match with the various plan sheets?
- Yes No N/A Compacted Granular Backfill (Columbus CMS - 901.17 and 912) has a separate Pay Item. Check the Quantity.
- Yes No N/A Verify Quantities for ADA Curb Ramps, and other quantities, as needed. In general, do the quantities make sense?
- Yes No N/A Check for included contingency item for subgrade reinforcing material in Soft Areas

Cost Estimate (See Section 403 and example in the Supplemental Specifications)

- Yes No N/A Copy enclosed and format consistent with Supplemental Specifications
- Yes No N/A Consistent with DCEO Standard Unit Prices – Contact DCEO for current unit prices or check DCEO Website
- Yes No N/A Signed by Ohio Registered Professional Engineer
- Yes No N/A Includes Name, Address and Phone Number of Owner
- Yes No N/A Indicates type of Agreement being requested (Bonded or Non-Bonded)
- Yes No N/A Contains an Approval Line for the County Engineer

Variations (See Section 110, 402, & 601)

- Yes No N/A None Found - Design Engineer should indicate this is accurate in next submission or with Approval Submission
- Yes No N/A Variance(s) to Standard Found:

Comments: _____

- Yes No N/A Specific Standard to which Variance is being requested
- Yes No N/A Reasoning why Variance is needed and why Public will benefit
- Yes No N/A Proposed Solution
- Yes No N/A Approved Variations with Date of Approval on Title Sheet (Section 402 G)

General Notes (See Section 403) – A sample general notes sheet is available from DCEO. Please contact DCEO for further information.

- Yes No N/A General notes must match exactly the most current General Notes found on the website at:
<http://www.co.delaware.oh.us/engineer/review/Subdivisions.htm>

Yes No N/A Additional general notes to meet project specific situations will need to be provided.

Street Plans – **Note: The Design Engineer is also encouraged to review Article IV and VI, including Supplemental Specifications of the County Engineer’s Standards Manual, current edition and the County Engineer’s website for the most current requirements.**

Plan View (See Section 403 and 601)

- Yes No N/A Plan (and plat) horizontal scale 1” = 50’ (maximum) with 1”=20’ or 1”=30’ preferred; Intersection and Cul-de-sac details at 1”=20’ or 1”=30’; Vertical scale 1” = 5’.
- Yes No N/A All utilities (underground and overhead) and topographical information in agreement with site reconnaissance visit (photographs, notes, etc.)
- Yes No N/A Note any required vehicular access restrictions to public streets. Access to all arterial and collector streets shall be approved by DCEO prior to final plan approval (Section 601 T). DCEO shall approve access to other streets as deemed necessary.
- Yes No N/A Show the Intersection Visibility Triangle for all proposed street intersections
- Yes No N/A Label Adjacent Property Names, their Lot Numbers, their driveway locations and adjacent Road Names
- Yes No N/A Station and offset or GPS coordinates of all publicly maintained structures provided? (Section 403 B)
- Yes No N/A Show and Label all Existing and Proposed R/W, Easements (including type), and No-Build Zones
- Yes No N/A If high voltage power lines on site, has the power company had the chance to review the final plans?
- Yes No N/A Show and Label Street Centerline, Edge of Pavement (or Back of Curb), Stationing and R/W of all adjacent streets.
- Yes No N/A Show/label the work and clearing limits
- Yes No N/A Master Benchmark Description (See Article X)
- Yes No N/A Source Benchmark Description (Should either be USGS Datum – NAVD or NGVD or defined from one)
- Yes No N/A Label Size, Location, and Type of all Proposed Sidewalks or Multi-Use Paths including all ADA Curb ramps to be built on site or within the Public R/W. Within R/W, sidewalk located 6’ from face of curb as per the regulations?
- Yes No N/A Show and Label all Proposed and/or Existing Ingress/Egress, or Cross Access Easements
- Yes No N/A Label all Street Names and Street Widths.
- Yes No N/A Provide intersection and cul-de-sac details. See Street and Intersection Design and Cul-de-sac Streets portion of this checklist and DECO Standard Drawings for Intersections and Cul-de-sacs.
- Yes No N/A Label all proposed lots, lot numbers and their drive locations. All drives shall not be located within the intersection radius or in an unsafe area.
- Yes No N/A Minimum Driveway Radius per Table 604 provided for all streets based on street classification (Local, Collector, and Arterial)?

- Yes No N/A Show and Label any FEMA designated Floodway and 100-year Flood Plain
 - Yes No N/A Floodway Note
 - Yes No N/A Township Issues Addressed (Use of modified ditch section, Buildings, setbacks, parking, etc.)
 - Yes No N/A North Arrow and Scale
 - Yes No N/A R/W widths provided. Proposed R/W widths per Supplemental Specifications (Section 403 G)
 - Yes No N/A No unidentified and/or unresolved surface elevation conflicts with existing cross streets, driveways, backyards, etc. exist
 - Yes No N/A All Horizontal and Vertical control points documented
 - Yes No N/A All Curve Data provided and matches approved Preliminary Engineering Plan?
 - Yes No N/A Correct Centerline Radii of Streets (Table 601-1, 601-2, 601-3, 602-1, 602-2 and 603)
 - Yes No N/A Minimum Curb Radii – See Table 604
 - Yes No N/A Emergency Access location(s) shown?
 - Yes No N/A Minimum tangent length between horizontal curves provided (100' – Arterial and Collectors; 50' – Local, Commercial and Industrial)?
 - Yes No N/A Plan details match with other related plan submissions (i.e. Sanitary Sewer plans match Street Plans, Final Street Plans match Plat)
 - Yes No N/A ADA complaint curb ramps designs provided? For additional guidance on the current ADA requirements, please contact DCEO.
 - Yes No N/A Storm structures located a minimum of 4' from ADA ramps
 - Yes No N/A ADA complaint curb ramps shall be radial to the curb return (verify)
 - Yes No N/A Driveways cannot be used as a ADA complaint curb ramp (verify)
 - Yes No N/A All underdrains outlet at the low point of road (Ditch type), with proper outlet (ODOT Type F) or into structure (curb and gutter).
 - Yes No N/A Material type for underdrains shall comply with the Supplemental Specifications.
 - Yes No N/A Precast reinforced concrete outlets are required for all underdrain outlets (open ditch typical section).
 - Yes No N/A Clear Zone (per ODOT L&D Manual, current edition, Section 600) from edge of pavement maintained
 - Yes No N/A Guardrail provided for steep embankment and/or culvert crossings (per ODOT L&D Manual, current edition, Section 600). Alternate guardrail types may be considered by the County Engineer provided the guardrail section complies with current FHWA crash testing standards for highway use.
 - Yes No N/A For open ditch roads the fire hydrants are offset 8' from the edge of pavement
 - Yes No N/A R/W Encroachments:
 - Yes No N/A Trees within R/W – require Township Trustees' Approval
 - Yes No N/A Landscaping plan must be approved by DCEO for any landscaping features within the R/W or on any areas maintained by DCEO (e.g. drainage easements, detention/retention ponds, etc.). A copy of the landscaping plan approved by the Township must be submitted to DCEO.
 - Yes No N/A Other:
- Comments: _____
-

Profile (See Section 403)

- Yes No N/A Elevation at Centerline (Profile Grade) –existing and proposed grades
- Yes No N/A Vertical curve data provided and complies with ODOT L&D Manual, current edition and the approved Preliminary Engineering Plan?
- Yes No N/A Elevations intervals do not exceed 50’ for areas outside vertical curves, at all sag and crest points and 25’ intervals for vertical curves
- Yes No N/A Existing and Proposed Ditch Flowline elevations (to a point of adequate outlet)
- Yes No N/A Existing Ground Elevation at Proposed Ditch Flowline
- Yes No N/A Minimum of 0.5% slope for all curb and gutter streets provided?
- Yes No N/A All Existing and/or Proposed Surface and Sub-Surface Drainage, Storm Sewers, Sanitary Sewers, Waterlines, Culverts, Bridges, etc. shown
- Yes No N/A Clearly label all pipe material specification and classification
- Yes No N/A Label all existing and proposed utility crossings
- Yes No N/A Plan elevations match As-Built elevations for adjoining properties (e.g. roadways, back yards, etc.)?
- Yes No N/A Profile must be in ½ foot Dotted Grids, or plane 5 foot Grids (No more than ½ Foot Solid Line Grids)?

Street & Intersection Design (See Section 403, 601, 602 and 607)

- Yes No N/A Entrance Street must be designed as a Collector with respect to pavement width only to the first intersection or specified length as determined with tapers based on the ratio of Design Speed:1 (Section 601 B.3).
- Yes No N/A Left Turn Storage on all Entrance Streets shall be ≥ 100 Feet with a 50 foot taper [Longer Storage length will be required where needed according to approved Traffic Impact Study (Section 601 B.3)]
- Yes No N/A Entrance street intersection with the existing County/Township Road comply with current DCEO Standard Drawing(s)? Does curb height taper from 6” to 0” in 10 feet? Is the modified (reinforced) shoulder details per DCEO Standard Drawing provided?
- Yes No N/A Arterial street design shall be approved by DCEO at the Preliminary Engineering Plan phase.
- Yes No N/A Has Table 604 been reviewed to insure all items listed in the table have been incorporated?
- Yes No N/A All intersection details comply with the ODOT L&D Manual, current edition?
- Yes No N/A Has the DCEO Standard Drawing for intersections been referenced and checked to insure all applicable items have been included on the plans?
- Yes No N/A Provide a separate Pavement Marking, Signage and Striping Plan (In accordance with ODOT Manual of Uniform Traffic Control Devices, current edition) and Quantities (Sections 403 I & 607). Please refer to the Traffic, Signage and Striping Section of this checklist.
- Yes No N/A For all intersection details, the center line elevations of the through streets that are normal to half-delta are provided and at a 25’ minimum spacing along the intersection radii?
- Yes No N/A Intersection grades ADA compliant?
- Yes No N/A Intersection angle, grades, elevations and pavement thickness per Section 602 and Table 604?

- Yes No N/A Intersection offset per Section 602 and Table 604?
- Yes No N/A No more than 4 streets will be permitted in an intersection.
- Yes No N/A The thicker pavement section shall be used through the radius return point on all streets (Section 602)
- Yes No N/A K Values are met for Vertical Curves (Per current edition of ODOT L&D Manual)
- Yes No N/A Proper Sight Distance (Both Vertical and Horizontal) at all intersections
- Yes No N/A All T-intersections contain 6 ADA Curb ramps and all four-way intersections contain 8 ADA Curb ramps
- Yes No N/A Percent of Grade at intersections no greater than 2 percent through the intersection to comply with ADA requirements. (Section 602 D)
- Yes No N/A Storm structures provided at all low points for curb and gutter streets?
- Yes No N/A Eyebrows must be approved by the Township in writing
- Yes No N/A Eyebrow details must comply with current DCEO Loop Street Standard Drawing(s).

Local Through and Cul-De-Sac Streets (See Section 601, Table 601-1 and 601-2)

- Yes No N/A Have all the requirements listed in Table 601-1 or 601-2 been included (e.g. pavement width, sidewalk width, R/W width, graded or reinforced shoulder width, design speed, parking restrictions, etc.)? All items listed in Section 601, Supplemental Specification to Article VI, and the appropriate table must be verified on the final plans.
- Yes No N/A Has all the information on the DCEO Standard Drawing for Cul-De-Sacs been shown on the plans?
- Yes No N/A Has the DCEO Standard Drawings for Cul-De-Sacs been referenced?
- Yes No N/A An underdrain is required for the Cul-De-Sac bulb. See DCEO Standard Drawing.
- Yes No N/A For Cul-De-Sacs, if islands are involved, has the township approved the use of the island on this project? In particular, some townships have had problems trying to clear snow on cul-de-sacs with islands. Written approval from the Township is required prior to final plan approval.

Cul-De-Sac Lengths (Maximum) – Measured from centerline intersection street to centerline of bulb

- Yes No N/A High Density: 750 Feet
- Yes No N/A Med. Density: 1000 Feet
- Yes No N/A Low Density: 1500 Feet

Cul-De-Sac Radii (Minimum)

	Edge of Pavement	Right-of-Way
With Island	55'	75'
Without Island	45'	56.5'

- Yes No N/A Maximum Grade of Cul-de-sac Centerline of Traveled Lane = 3%

Low Volume Low Density Streets (See Section 601)

- Yes No N/A Have all the requirements listed in Section 601 been included (e.g. pavement width, R/W width, graded or reinforced shoulder width,

parking restrictions, etc.)? All items listed in Section 601 and Supplemental Specification to Article VI must be verified on the final plans.

Yes No N/A Township must approve use of Low Volume Low Density Street(s)

Loop Streets (See Section 601 and Table 601-3)

Yes No N/A Have all the requirements listed in Section 601 and Table 601-3 been included (e.g. pavement width, R/W width, sidewalk width, design speed, graded or reinforced shoulder width, parking restrictions, etc.)? All items listed in Section 601 and Supplemental Specification to Article VI must be verified on the final plans.

Yes No N/A Has all the information on the DCEO Standard Drawing for Loop Streets been shown on the plans?

Yes No N/A Has the DCEO Standard Drawing for Loop Streets been referenced on the Title Sheet?

Minor Rural Collector Streets (See Section 601 and Table 602-1)

Yes No N/A Have all the requirements listed in Table 602-1 been included (e.g. pavement width, R/W width, sidewalk width, graded or reinforced shoulder width, design speed, parking restrictions, etc.)? All items listed in Section 601 and Supplemental Specification to Article VI must be verified on the final plans.

Minor Urban Collector Streets (See Section 601 and Table 602-2)

Yes No N/A Have all the requirements listed in Table 602-2 been included (e.g. pavement width, R/W width, sidewalk width, graded or reinforced shoulder width, design speed, parking restrictions, etc.)? All items listed in Section 601 and Supplemental Specification to Article VI must be verified on the final plans.

Yes No N/A Minimum of 8" thick gutter pan provided for all curb and gutter streets?

Parkways and Boulevards (See Section 601)

Yes No N/A Has the current DCEO Standard Drawing been referenced? Do the street widths and R/W widths shown meet or exceed the width shown on the Standard Drawing?

Yes No N/A Has the Township Fire Department reviewed and approved the street width provided?

Yes No N/A If Medians/Boulevards are shown, ODOT Type 6 curb is not permitted.

Yes No N/A Island Underdrains Outlet provided.

Yes No N/A Island Underdrains material type, etc. meet the Supplemental Specifications

Commercial and Industrial Streets (See Section 601 and Table 603)

Yes No N/A Have all the requirements listed in Table 603 been included (e.g. pavement width, R/W width, sidewalk width, design speed, graded or reinforced shoulder width, parking restrictions, etc.)? All items listed in Section 601 and Supplemental Specification to Article VI must be verified on the final plans.

Temporary and Permanent Turn-arounds (See Section 603)

- Yes No N/A Temporary T-turnaround provided at Phase Lines (Actual Turnaround should be proposed on next Phase where Developer has control of Property).
- Yes No N/A Temporary T- turnaround shall be required when the end of the street in question is greater than 250 feet from the nearest intersection.
- Yes No N/A For all temporary T-turnarounds on the parcel to be improved provide a note stating: “The temporary T-turnaround shall be removed once the road is extended into the adjacent property”
- Yes No N/A For all temporary T-turnarounds on the parcel to be improved provide a note stating: “No portion of the temporary turnaround shall be used as a driveway for any of the lots on the stub street.”
- Yes No N/A Show all existing temporary T-turnarounds on adjacent parcels on all applicable plan sheets.
- Yes No N/A For all existing T-turnarounds, including those on adjacent properties, provide a note on all applicable plan sheets that states: “The temporary T-turnaround shall be removed prior to the County Engineer approving the final plat.”
- Yes No N/A Provide a note on all applicable plan sheets (e.g., grading plan, plan and profile, etc.) that states: “No portion of the temporary turnaround shall be used as a driveway for any of the lots on the stub street.”
- Yes No N/A Correct Dimensions for T-turnaround (Section 603 and DCEO Standard Drawing)
- Yes No N/A Temporary easements shall be placed over the portion of the temporary T-turnaround that extends beyond the permanent R/W. Temporary easements widths shall comply with the Supplemental Standards and DCEO Standard Drawing(s). Temporary easements shall be shown on the Final Plat – See Final Plat Checklist.
- Yes No N/A Permanent T-turnarounds are not permitted except on Low Volume Low Density roads.

Emergency Access Drive(s) (See Section 403 B)

- Yes No N/A Emergency access drives shall comply with current Township regulations
- Yes No N/A Details for the emergency access, such as plan, profile, typical section, cross-sections, signage, plan notes, etc. provided on plans?
- Yes No N/A Final engineering plans cannot be approved until written approval of the emergency access has been provided by the Township.

Traffic & Pavement Design (See Section 302, 601 & 702 – 704)

- Yes No N/A Typical Section(s) showing both Grading and Pavement Sections with correct widths, pavement depths and dimensions with Design “CBR” and “SN_D” (Designed Value) or “SN_C” (Value as per Standards) shown. (Section 302 D.1, Section 702 – 704, and DCEO Standard Drawings)
- Yes No N/A Do the typical sections shown match the approved Preliminary Engineering Plans and verified with the appropriate DCEO Standard Drawing(s)?
- Yes No N/A Internal ADT’s shown for each street section and correct (Section 601 F)? Do the pavement depths comply with the ADT values shown and

- with the DCEO Typical Pavement Design Chart in Section 704 (if applicable)?
- Yes No N/A Proper terrain classification, R/W width, pavement width, shoulder width, curb and gutter section, ditch slopes and design speed provided on the typical section for each street and verified with Tables 601 – 603 and the appropriate DCEO Standard Drawing(s)?
- Yes No N/A For open ditch roads, shoulder widths comply with Tables 601-1, 602-1 and Section 601 P?
- Yes No N/A For open ditch roads, a modified shoulder section shall be provided in lieu of a graded shoulder for some townships. Contact DCEO for list of Townships where a modified ditch is required. However, use of modified shoulder is encouraged (See DCEO Standard Drawing).

Design CBR and SN Values (See Section 701 – 704)

- Yes No N/A Assumed worst case CBR = 2.9
- Yes No N/A Used DCEO Typical Pavement Design (See Section 704)

OR

Design Engineer Designed Pavement -

- Yes No N/A Actual Test(s) Results provided with plans?
- Yes No N/A Calculations based on ODOT L&D Manual/Pavement Design Manual, current edition
- Yes No N/A Pavement Design Calculations for 30 Year Design Minimum (AASHTO Pavement Design Manual)
- Yes No N/A Approved Traffic Impact Study provided (Internal and applicable external ADT's, E-18's/ADT and Total Design E-18's For Each Street).
- Yes No N/A Truck percentage appropriate for the type of street (local, collector, arterial) – See Section 702 and the approved Traffic Impact Study?
- Yes No N/A The surface course asphalt layer shall not be included in pavement design calculations.
- Yes No N/A Is pavement and subgrade reinforcing material required? – A contingency quantity for these items must be included with the General Summary and the Engineer's Estimate.
- Yes No N/A In all cases SN must be ≥ 2.66

Asphalt/Pavement Buildup (See Section 702 – 704)

- Yes No N/A Has the pavement design table in Section 704 been used for the pavement design?
- Yes No N/A Proper thickness for 404, 402, 301 & 304 shown if DCEO provided pavement section used (See Section 704 – Table and Notes)
- Yes No N/A Payment in CY is required for estimated quantities table and engineer's estimate for 404, 402, 301 and 304 items

Pavements

- Yes No N/A Pavement elevations of all existing roads agree with pavement elevations of the proposed roads (at their intersection)?
- Yes No N/A Verify that Gutter Cross Slopes on Curb-and-Gutters streets at ADA curb ramps are no more than 1.38%
- Yes No N/A Slopes at Project Edges – Verify that Plans account for Existing Slopes (See Field Check)

- Yes No N/A Driveway Pavements – Descriptions of existing types of driveways matches field check - asphalt, concrete, gravel.
- Yes No N/A Sidewalks are shown on both the Plan & Profile and Master Grading Plans
- Yes No N/A Sidewalks are provided at intersections and all designated open or Green Spaces. Within R/W, sidewalk located 6' from back of curb as per the regulations?
- Yes No N/A Are sidewalks required by Township Zoning for open ditch roads? If so, the sidewalk shall be located either in the R/W or in a dedicated easement.
- Yes No N/A Sidewalks are provided for any medium density subdivision (applies to Genoa Township)
- Yes No N/A Embankment Quantity provided
- Yes No N/A Fabric Item included for undercut areas
- Yes No N/A Sub-grade Compaction Item included
- Yes No N/A Pavement Replacement Types included in Quantities
- Yes No N/A Any Mailboxes needing removed and/or relocated are noted
- Yes No N/A Seeding and Mulching addressed. Check pay limits.
- Yes No N/A ADA curb ramps – Check for shown types, dimensions, slopes, Water or Gas Boxes, Poles, Hydrants, Pull Boxes, and Roof Drain Outlets in Ramps.
- Yes No N/A ADA curb ramps – Verify that Quantities provided match plan sheets

Cross Sections (See Section 403)

- Yes No N/A Minimum Scales (Unless Otherwise approved by the County Engineer):
 - Vertical Scale: 1"=5'
 - Horizontal Scale 1"=10'

Cross-sections shall be provided:

- Yes No N/A On all proposed open ditch and curb and gutter streets at 50-foot intervals unless waived by the County Engineer
- Yes No N/A Cross sections also provided at all driveways and culverts
- Yes No N/A A maximum of four cross sections are permitted on one plan sheet.

Cross-sections shall show:

- Yes No N/A Provide existing and proposed finished grade elevation at the centerline, ditch flowline elevation, location and elevation of existing and proposed utilities, foreslope, and backslope rates (4:1, 3:1, etc.)
- Yes No N/A Storm and sanitary sewers structures, waterlines, culverts, and bridges. Clearly label all pipe material specification and classification.
- Yes No N/A Station number and street name (if more than one proposed street)
- Yes No N/A Precast wingwalls, headwalls, footings, etc. per Supplemental Specifications
- Yes No N/A Modified ditch section been used for Townships that require it?
- Yes No N/A Proper slope used beyond back of curb (6:1 or flatter - sloping up) when curb and gutter is provided?
- Yes No N/A Check cross sections to see if all utilities are drawn accurately (horizontal and vertical). Are there conflicts between the utilities and the proposed work?

- Yes No N/A Check Sections against Grading Plan and Driveway Replacement Limits on plan views to verify that the cross sections extend to the proposed work limits.
- Yes No N/A Beginning and Ending Stations match beginning and ending Stations on Plan and Profile Sheets
- Yes No N/A Cross Section Elevations match Profile Elevations for Objects (storm sewers, culverts, drive pipes, utilities, etc. shown)
- Yes No N/A Additional Cross-Sections provided at:
-
-
-

Intersection Sight Distance (ISD) – (See Section 602)

- Yes No N/A ISD must be in accordance with ODOT L&D Manual, Current Edition.
- Yes No N/A Sight Distance Exhibits must be provided as part of the final engineering plans.

Notes:

- A. In order to maintain the required “Clear” Sight Distance of Obstacles, the County Engineer shall restrict the height of Embankments, locations of Buildings, Landscaping, and Screen Fencing in this area.
- B. At an Intersection with a Collector Street or above a 90-Foot (minimum) Clear Sight Distance area shall be provided. If more than 90-feet is required to provide the required ISD, then this amount shall be shown on the final plans. The actual length for the clear sight distance shall be based on the ODOT L&D Manual, current edition. No landscaping or feature greater than 30” in height shall be permitted within this area. An exhibit showing this Clear Sight Distance area shall be submitted with the Final Engineering Plans and certified prior to the acceptance of the street onto the Public System.
- C. The Controlling Sight Distance Requirement shall be as set forth in the table below. The classification of the intersecting streets shall be as determined by the County Engineer.

Intersecting Street Classification/Classification	Controlling Site Distance
Local/Local	SSD
Local/Collector	ISD / SSD*
Local/Arterial	ISD
Collector/Collector	ISD
Collector/Arterial	ISD
Arterial/Arterial	ISD

***A minimum of a 35 mph design speed shall be used for SSD for the collector street**

The height of object shall be determined for the current roadway profile and for a future roadway profile assuming a profile increase of 6-inches, to account for future overlay(s). See Section 602 for more information.

Structures (See Section 403 & 604) – Please contact DCEO to discuss plan requirements prior to starting design

Yes No N/A For structure in excess of 36" a separate plan and profile sheets are required. These sheets shall comply with the ODOT L&D Manual, current edition.

Lighting and Power (See Section 403 & 605) - Please contact DCEO to discuss plan requirements prior to starting design

Yes No N/A Highway Lighting-need for lighting to be determined by DCEO. Lighting shall conform to the ODOT L& D Manual, current edition.

Master Grading Plan (See Section 403 C) – See this section for complete list of items required on Master Grading Plan

- Yes No N/A Scale 1" = 50' (1" = 40' preferred)
- Yes No N/A All existing topographical information complete and accurate (per site visit)?
- Yes No N/A Mapping provided to relate proposed site to the area surrounding the site? Is the proposed site compatible with the surround area?
- Yes No N/A One-foot contour lines of the development area.
- Yes No N/A Existing Contours (dashed)
- Yes No N/A Proposed Elevations (solid) including Contours and Spot Grades
- Yes No N/A All easements shown (major flood routes, preservation/conservation, storm sewers, etc.) and widths comply with Supplemental Specifications?
- Yes No N/A Construction limits shown
- Yes No N/A North Arrow and Scale
- Yes No N/A All existing vegetation, trees to be protected, wetlands, archeological areas, etc. shown?
- Yes No N/A Proposed mounding, trees, and other landscape features shall not encroach on proposed R/W
- Yes No N/A Trees or Landscape Features located on or near storm water management facilities (Not acceptable)
- Yes No N/A Proposed Landscape Mounding Contours shown
- Yes No N/A All major flood routes include elevations (or a profile) along the routing path, typical sections showing 100-year storm is contained, elevations at all property corners and all break points, and drainage arrows indicating design sheet flow? Easement widths based on 1-foot above the 100-year flood elevation?
- Yes No N/A Major Flood Routing (Designated with Unique Arrows defined on legend). Arrows used must be a different symbol than flow routing arrows.
- Yes No N/A Does the major flood routing for the proposed site affect any property downstream (e.g., existing subdivision, commercial sites, homes, etc.)? If so, the final engineering plans shall meet the requirements of Art. IV, IX, and the Supplemental Specifications.
- Yes No N/A Elevation of finished floors a minimum of 1-foot above 100-year flood elevation?
- Yes No N/A Cross sections and profile of all major flood routes must be provided and comply with Article IX and the Supplemental Specifications
- Yes No N/A Flood routes show limits of 100-year flood elevation on all lot lines?
- Yes No N/A 100-year headwater elevations for all culvert crossings, with easements provided for the 100-year flood elevation plus 1-foot of freeboard.

- Yes No N/A Rear lots have 2 percent or greater slope, or storm sewer provided with 5-year hydraulic grade line below grate and 10-year ponding depth not to exceed 1.5 feet; proposed grades match existing ground adjacent to project.
- Yes No N/A Storm structure provided in rear lots at every third property line if slope is less than 2 percent? Storm structures are not required in rear lots if ravine is adjacent to back yard.
- Yes No N/A All private drainage systems (sump pumps and roof drains) shall be routed through a storm water management facility.
- Yes No N/A Private drainage systems must outlet into the rear lot drainage system (outlet into a structure if slope is less than 2 percent). No coring of curb or storm pipe is permitted. If no rear lot drainage system exists, the private drainage system can outlet into a front yard structure.
- Yes No N/A Offsite flows indicated at property lines with arrows and the total acres tributary to those points; easement widths based on 1-foot above the 100-year elevation?
- Yes No N/A Once storm sewer capacity is exceeded, has water from all areas of site been routed to basins? (Basins are sized to have the 100-year storm routed to them?)
- Yes No N/A All proposed walkout basements identified on plans
- Yes No N/A Storm Sewer Top of Casting & Invert Elevations shown? Do the top of casting elevations match the storm profiles?
- Yes No N/A Show and Label any FEMA designated Floodway and 100-year Flood Plain.
- Yes No N/A Floodway Note provided?
- Yes No N/A Label Adjacent Property Names, Lot Numbers and Road Names
- Yes No N/A Existing and proposed utilities shown? (Surface and subsurface)
- Yes No N/A Overflow elevation for all ponds shown
- Yes No N/A Ponding Limits and Elevations shown
- Yes No N/A Ponding Tabulations (required and provided)
- Yes No N/A Correct Design Year Storm used for basin sizing?
- Yes No N/A Orifice Plate Details – Orifice plates cannot be attached to endwalls.
- Yes No N/A Drainage arrows provided to indicate direction of sheet flow
- Yes No N/A Do pond, sidewalk, or other embankment locations create any safety issues for vehicles or pedestrians?
- Yes No N/A Proposed Pad and Finished Floor Elevations provided?
- Yes No N/A Utility pedestals shall be located outside the 100-year flood elevation along major flood routes.
- Yes No N/A Driveway Slope(s) less than maximum permitted?
- Yes No N/A Headwall Specifications or Standard Drawing referenced?
- Yes No N/A Ditch Flow direction and slope shown?
- Yes No N/A Proper design year storm used for Drive Pipes (10-year)? Have drive pipes been sized for all drives and shown on the plans? County standards used to compute design year flow (See Art. IX)?
- Yes No N/A Proper drive pipe length provided per Article VIII, Section 802 H?
- Yes No N/A Cross-sections of Ditches in R/W or within publicly maintained area (at 50-foot spacings)
- Yes No N/A Key Notes identifying all items
- Yes No N/A Spot elevations provided at all lot corners and mid-points?
- Yes No N/A Are leach fields, mound systems or other approved on-site sanitary shown on the plans for the lots and existing adjacent lots? Storm water

routed anywhere near existing or proposed leach fields or mound systems, potentially creating problems for owners or adjacent owners?

Erosion & Sediment Control Plan (See Section 403 and 1200-1202)

- Yes No N/A Separate Sediment Control Plan (Separate from the master grading plan - Section 403 F)
- Yes No N/A Sedimentation and Erosion Control provided in accordance with current County Standards (see Article XII and Supplemental Specifications)
- Yes No N/A Inlet Protection Locations shown and labeled
- Yes No N/A Silt Fence Locations shown and labeled
- Yes No N/A Check Dam Locations shown and labeled
- Yes No N/A Erosion Control Standards Details provided
- Yes No N/A General Notes (See Supplemental Specifications for Notes)
- Yes No N/A Sequence of Construction (See Supplemental Specifications for Notes)
- Yes No N/A Construction Entrance Location shown and labeled
- Yes No N/A Construction Entrance Detail shown and labeled
- Yes No N/A Major Flood Routing (Designated with Unique Arrows defined on legend). Arrows used must be a different symbol than flow routing arrows.
- Yes No N/A Erosion Control measures have been taken to protect all adjacent properties?
- Yes No N/A For temporary sediment basins, has the requirements from the Supplemental Specifications been followed (e.g. Cost Estimate, Bonding, etc.)? See Section 904 I and Supplemental Specifications
- Yes No N/A Erosion Control (such as mats, etc. shown for steep slopes/embankments on the plans, profiles, storm sewer cross-sections, etc.) or where calculations indicate significant velocities for erosion.
- Yes No N/A Has erosion protection been shown at all pipe outlets at endwall/headwalls?
- Yes No N/A Ditch depth calculations provided in storm report?
- Yes No N/A Has ditch protection been called out on the plans based on shear stress calculated per ODOT L&D Manual, current edition (Sections 1102.3 and 1102.4)?

Storm Water Management (Retention/Detention) Basin Plan (See Section 403 D and 904 G)

- Yes No N/A Is a separate plan sheet from the Master Grading Plan submitted showing the proposed basins?
- Yes No N/A Dimensioned plan and cross-sectional views of the complete basin(s) shown? Contour lines need to be shown at 1-foot intervals and the area of each contour plane. Basin side slopes need to be shown as well.
- Yes No N/A Has DCEO standard drawings for retention/detention basins been referenced? Has requirements from these drawings been provided on plans (e.g. side slopes, minimum freeboard, erosion protection, paved channel or perforated pipes for detention basins, etc.)
- Yes No N/A Has flow from all offsite upstream tributary areas been accounted for (either routed around or through the basins) – See Section 904 G?

- Yes No N/A Emergency spillway shown for >100-year storm? Was offsite water accounted for in the emergency spillway design if the offsite water was routed through the basin(s)?
- Yes No N/A Contours below normal pool level for all detention basins are shown.
- Yes No N/A An ingress and egress easement is provided to and around all basins (Minimum of 15 feet wide)
- Yes No N/A Detention/Retention requirements for conservation subdivisions comply with requirements per the Supplemental Specifications.
- Yes No N/A Details of flow restriction structures (size, orifice plates, specifications, materials, etc.)
- Yes No N/A Horizontal orifice plates shall be approved by DCEO. Area of the horizontal orifice plate shall not be less than 1.4 square feet and shall be located on outside – top of the structure for maintenance purposes.
- Yes No N/A Allowable release rates, times of concentration and other design criteria provided per Supplemental Specifications?
- Yes No N/A Submerged outlet are not permitted except as approved by DCEO (See Section 904 G 3)
- Yes No N/A Retention/Detention Basin Table of Contour Areas with approved release rates.
- Yes No N/A If retention basin is used for both water quantity and quality requirements, the more restrictive requirement shall apply if a conflict arises between two portions of the Standards (Section 904 G 5).
- Yes No N/A Storm water management summary table provided (See Supplemental Specifications for sample)?
- Yes No N/A Seeding and mulching limits shown and comply with current standards (Section 904 G and Supplemental Specifications)?
- Yes No N/A If an existing pond is to be used as a storm water control facility, the pond must be evaluated per current requirements (See Supplemental Specifications). This evaluation must be provided prior to submittal of the final engineering and construction plan.
- Yes No N/A A paved channel or perforated pipes with an adequate outlet provided within detention basins where the slopes are less than 2%.

Storm Water Management Report Requirements & Calculations (See Section 401, 403 E & 901 – 904)

General

- Yes No N/A Documentation of outlet adequacy provided during the Preliminary Plan phase (Section 901)? Does provided information comply with current requirements for minimum slope, minimum velocity, minimum freeboard, etc.?
- Yes No N/A If a culvert or storm sewer pipe is being used at the adequate outlet, has the condition of the pipe been field verified with documentation provided to DCEO (Section 901)?
- Yes No N/A Bound (3-ring) report and CD (PDF Format) of Storm Water Management Report submitted with items as listed in the Supplemental Specifications (Supplement to Article IV, Section 401 A)?
- Yes No N/A Signature and Stamp of Ohio Registered Professional Engineer
- Yes No N/A Is the overall storm water management for the site acceptable? Is water diverted from one watershed to another (not permitted)?

- Yes No N/A Does the storm water management for the site adversely impact any property downstream?
- Yes No N/A Written Explanation/Summary/Narrative provided
- Yes No N/A Summary Table
- Yes No N/A Water quantity addressed and complies with Art. IX and Supplemental Specifications?
- Yes No N/A Water quality addressed and complies with Art. XII and Supplemental Specifications?

Easements

- Yes No N/A Adequate drainage easements per Section 902, 904 C and the Supplemental Specifications provided for open water courses? Easements shall be based on the Supplemental Specifications. Drainage easement widths for jurisdictional streams shall be determined by DCEO.
- Yes No N/A Adequate drainage easements per Section 902 and the Supplemental Specifications provided to access any drainage feature (minimum of 15 feet)?
- Yes No N/A Adequate easements per Section 902 and the Supplemental Specifications provided for storm sewers?
- Yes No N/A Adequate easements per Section 903 D and the Supplemental Specifications provided for all major flood routes?
- Yes No N/A Additional offsite drainage easements per Section 902 required conveying the site runoff to the approved adequate outlet?

Design Criteria (Section 903)

- Yes No N/A Method of calculation meets current requirements (See Supplemental Specifications for Article IX)
- Yes No N/A Appropriate runoff coefficients and CN factors used (See Supplemental Specifications - Article IX)
- Yes No N/A Drainage areas determined using the sources listed in Section 903 C?
- Yes No N/A Have the drainage areas been determined correctly (check these)? Land use and CN listed for each individual watershed (subarea)? The drainage areas (tributary maps) shall be submitted for the pre- and post-developed conditions and must identify the individual watershed boundaries (using letter designations, A, B, C, etc.- See Section 903 C). Drainage areas in acres shown for all subareas? Flow paths and times of concentrations listed on the maps for sheet flows, shallow concentrated flows, ditch flows? Land use, Manning's "n", and slopes listed on the maps that the times of concentrations were based on.
- Yes No N/A Plan with tributary areas defined and tributary acreages labeled including offsite tributaries (Article IV Section 401 A, and the Supplemental Specifications).
- Yes No N/A Pre-Development and Post-Development Maps provided and comply with Art. IV Section 403 E, Art. IX Section 903 C, and the Supplemental Specifications?
- Yes No N/A Topography of areas adjacent to development area provided.

Calculations

- Yes No N/A Correct Soil Types, Runoff Coefficients, Times of Concentration, Intensities, etc., used.
- Yes No N/A Correct Manning's "n" used.
- Yes No N/A The Rational Method is not permitted for determination of storage volume (Section 903)
- Yes No N/A Calculations and frequencies provided according to Art. IX, Supplemental Specifications (See Table 901), and Article IV, Section 403 D and E.
- Yes No N/A Calculations of the pre-development peak flows from the delineated drainage areas for the 1, 2, 5, 10, 25, 50, and 100-year frequency, 24 hour storms. List the peak flows on the map.
- Yes No N/A Calculations of the post-development peak flows from the delineated drainage areas for the 1, 2, 5, 10, 25, 50, and 100-year frequency, 24 hour storms. List the peak flows on the map.
- Yes No N/A Calculations agree with Plan?
- Yes No N/A All private drainage systems (sump pumps, roof drains, etc.) routed to a storm water management facility and included in the calculations?
- Yes No N/A Routing Calculations
- Yes No N/A Inflow Hydrographs
- Yes No N/A Outflow Hydrographs
- Yes No N/A Calculations included for all storm sewers with correct design storm and correct storm hydraulic grade check
- Yes No N/A Calculations included for all culverts with correct design storm and correct storm hydraulic grade check

Low Density Developments (See Section 601 for density amount)

- Yes No N/A Post-Development runoff rate for the 1-year through the 100-year storms detained and released @ pre-development runoff rate for same storm rate (e.g., 1-year to 1-year, 2-year to 2-year, etc.)

Medium and High Density Developments (See Section 601 for density amount)

- Yes No N/A Post-Development runoff rate for the 100-year storm detained and released @ 2-year storm runoff pre-development rate.

Flood Routing

- Yes No N/A Flood routing calculations and capacity based on current standards (100-year storm minus design year storm- See Section 904 D)? Credit for up to the 10-year storm as the design year storm is permitted.
- Yes No N/A Flood routing depth in streets limited to 12" at the gutter line for all local (residential, commercial and industrial) and minor urban collector streets? Flood routing depth for all other street classifications shall comply with the ODOT L&D Manual, current edition.
- Yes No N/A Flood routing depth shall not exceed 1.5 feet in non R/W (e.g. backyards) areas.
- Yes No N/A Flood routing provided for all off-site water draining through the site?
- Yes No N/A For culvert pipes (open at each end) the culvert must convey the 100-year storm without any overtopping (Section 904 D)

Roadway Culvert Requirements (Section 904 A)

- Yes No N/A Culvert Design with calculations provided

- Yes No N/A Has ODOT L&D Manual, Vol. 2 (current edition) been used for the culvert design procedure?
- Yes No N/A Has the drainage areas for each culvert been submitted and checked?
- Yes No N/A Has the appropriate design year storm been used (See Supplemental Specifications)?
- Yes No N/A Has ODOT L&D Manual, current edition been used to calculate the design year and 100-year storm design discharges?
- Yes No N/A Has the appropriate structure type been used? Single span culverts, such as four-sided box, three-sided flat top or three-sided arch culverts shall be required in lieu of multiple cell pipe culverts.
- Yes No N/A Has the culvert plan and profile sheets been included for any culvert with spans greater than 36-inches in diameter and for all three and four-sided structures? Maximum scale for the plan is 1" = 10'. Plan format must comply with current ODOT L&D Manual requirements.
- Yes No N/A For all culverts 36-inches in diameter or larger, shop drawings shall be submitted to the County Engineer for approval.
- Yes No N/A Has the culvert inlet been set deep enough to provide an adequate outlet for future channel improvement (verify with DCEO and DSWCD)?
- Yes No N/A Minimum cover from top of pipe to bottom of subgrade must be 24 inches
- Yes No N/A Minimum pipe diameter shall not be less than 12"
- Yes No N/A Does the culvert material type per current Standards and Supplemental Specifications (Section 904 A. 12).
- Yes No N/A Are the design year and 100-year headwater (ponding) limits upstream shown on a separate plan and included as part of the Storm Water Management report? The maximum scale of the plan is 1" = 50'. The plan must show proposed contours at 1' intervals (minimum) and the associated headwater pools upstream of the culvert(s). All structure/buildings upstream of the culvert(s) must be shown on this plan. These headwater pools must also be shown on the Master Grading Plan.
- Yes No N/A Headwalls sized properly
- Yes No N/A Headwalls are Cast-in-Place or Pre-Cast. For all pre-cast walls shop drawings shall be submitted to the County Engineer for approval.
- Yes No N/A Driveway Pipes provided with calculations.
- Yes No N/A A table of approved drive pipe sizes must be provided to DCEO Permit Department

Storm Sewer Requirements (Section 904 B)

- Yes No N/A Storm sewer calculations included and correct?
- Yes No N/A Storm sewer design appropriate (flowing full for the design year storm)?
- Yes No N/A Minimum design frequency of 2-year storm (curb and gutter) or 10-year (open ditch) used for all local and minor urban collector streets? The ODOT L&D Manual must be used to determine the minimum design storm frequency for all other street classifications.
- Yes No N/A Storm sewer material per current Standards and Supplemental Specifications (Section 904 B. 4.)
- Yes No N/A Storm sewers sized correctly?

- Yes No N/A For all curb inlets, storm sewer pipes shall enter through the front and back of the structure.
- Yes No N/A Storm pipes shall not enter through the corner of a structure – for all catch basins and curb inlets (Check these)
- Yes No N/A Flow line of pipes set so that crown of the pipes match at structures
- Yes No N/A All storm sewers must be sized to carry offsite water and must be located no less than 10 feet from the Property Line (for drainage areas of 1 acre or more).
- Yes No N/A Storm Sewer Profiles provided. Show the 100-year water surface in the basins on the profiles.
- Yes No N/A Clearance of all storm sewers shown – show in profile?
- Yes No N/A Has the maximum depth per current DCEO standard drawing(s) been verified for each catch basin(s)?
- Yes No N/A Has the 100-year water surface been compared to the top of castings of the storm sewer and grading to make sure water will not bypass the basins for the 100-year storm?
- Yes No N/A 5-Year HGL provided (Insure that it does not exceed the top of inlets or window elevation)
- Yes No N/A Hydraulic grade line based on the tailwater depth or 0.8 x pipe diameter, whichever is greater, for all local and minor urban collector streets? The ODOT L&D Manual must be used to determine the hydraulic grade line depth for all other street classifications.
- Yes No N/A For rear lots, the depth of water for the 10-year storm shall not exceed 1.5 feet above the grate/window elevation.
- Yes No N/A Maximum time of concentration to first structure is 10 minutes for curb inlets and 15 minutes for a ditch catch basin (for all local and minor urban collector streets). The ODOT L&D Manual must be used to determine the maximum time of concentration for all other street classifications.
- Yes No N/A Minimum pipe diameter 12". For all plastic pipes – verify with the manufacturer(s) that all pipe diameters shown can be supplied.
- Yes No N/A Pipe roughness coefficient (n) = 0.015 for all pipe diameters (see Supplemental Specifications).
- Yes No N/A Velocity \geq 3 Fps (See Supplemental Specifications for minimum pipe slopes)
- Yes No N/A Acceptable length between structures (300' maximum)
- Yes No N/A Storm Sewer Pipes will fit structures called out in the plans?
- Yes No N/A Minimum cover from top of pipe to bottom of subgrade must be 24 inches (check these).
- Yes No N/A Pipes have a minimum of 18 inches of cover beyond pavement and shoulders.
- Yes No N/A Maximum cover per requirements in Supplemental Specifications
- Yes No N/A Curb inlet pipes shall not exceed 21-inch diameter.
- Yes No N/A Storm Pipes (main storm line) shall be separated from all inlets if the pipe diameter is \geq 24 inches.
- Yes No N/A Sewer pipe shall not be located parallel to the curb and gutter and within the zone of influence for the roadway section.
- Yes No N/A Pipe type, class, etc. shown in profile and carried to Estimated Quantities?
- Yes No N/A Check to see if Item 912, Compacted Granular, is beneath the roadway.
- Yes No N/A Headwalls/Endwalls comply with DCEO Standard Drawings?

- Yes No N/A Rock Channel Protection or other acceptable erosion protection provided where necessary (See Supplemental Specifications for design method)
- Yes No N/A Adequate Storm Sewer Easements provided per the Supplemental Specifications

Open Watercourses (Section 904 C and Section 1205)

- Yes No N/A Has proper environmental permits (e.g. US Army Corps, EPA, ODNR, etc.) been obtained for all existing streams? Copies of the approved permits shall be submitted to DCEO prior to final plan approval.
- Yes No N/A Proper easements must be provided on all streams as outlined in the Supplemental Specifications

For new channels

- Yes No N/A Minimum design storm frequency is 10-year (bank full).
- Yes No N/A Method of calculation for the design flow must comply with the Supplemental Specifications
- Yes No N/A Minimum desired slope is 0.40%; 0.24% minimum slope, with a minimum velocity of 2 fps for the design year storm, is permitted at the discretion of the County Engineer. For sites with a slope less than 0.4%, a modified ditch section may be required by DCEO.
- Yes No N/A Minimum side slope is 4:1

Subsurface Drainage Tile (Section 904 D)

- Yes No N/A Has all existing subsurface tile, including those on the County Drainage Maintenance Program, been accounted for in the design? Locations of the existing drainage maintenance tile systems within Delaware County are available from SWCD.
- Yes No N/A The existing subsurface tile system shall not be connected into the storm water management system unless approved as part of the Preliminary Engineering Plan approval.

Curb Inlets (Section 904 E)

- Yes No N/A Acceptable Curb Inlets Spacing (400' maximum)
- Yes No N/A Spread of water (width) does not exceed requirements of Section 904 E.)?
- Yes No N/A Has bypass flow been included in the design?
- Yes No N/A Has the maximum depth per current DCEO standard drawing been verified for each curb inlet?
- Yes No N/A Any curb inlet that has a depth > 6' must be approved by the County Engineer.
- Yes No N/A Storm pipes shall not enter through the corner of a curb inlet (Check these). Please refer to the Supplemental Specifications for permissible angles for specific pipe diameters.
- Yes No N/A Manholes used as curb inlets must be approved by County Engineer

Drainage (Ditch) Maintenance Petition (Section 904 G)

- Yes No N/A Submission of signed Petition for Storm Drainage Maintenance (Required to be submitted with Final Plat).

Utility Requirements (Section 401 & 403)

- Yes No N/A Del Co Water Signature (required on final plans prior to DCEO approval)
- Yes No N/A Casing Pipe of sufficient length (Minimum of 5' Back of Curb/Edge of Pavement on each side - See DCEO Standard Drawing)
- Yes No N/A Casing Pipe materials are typically C-900, SDR-21 or Schedule 40
- Yes No N/A Backfill requirements included
- Yes No N/A Waterline located in separate easement outside the R/W and on the opposite side of the street as the sanitary sewer?
- Yes No N/A Are all utilities located outside the R/W or per the Utility Company's policy, whichever is more restrictive?
- Yes No N/A Fire hydrant shown in the typical section and in the correct location? – See DCEO Standard Drawing(s) – Roadway Typical Sections

Sanitary Requirements (Section 401)

- Yes No N/A Set of Sanitary Plans Submitted for Review
- Yes No N/A Adequate Compaction Distances Shown [Starting at 5' From Back of Curb (or E/P), Then Follow 1:1 Slope]
- Yes No N/A Backfill Requirements included with use of DCED R-100 standard drawing for all crossings within publicly maintained areas?
- Yes No N/A Provide a minimum of 10 feet (horizontal) and 1.5 feet (vertical) separation (or as required by the Sanitary Engineer's Office) between sanitary lines and all storm sewers, waterlines, etc.
- Yes No N/A Onsite sanitary system – Plan submittal to DCEO not required. Plans for onsite systems must be approved (letter) from County Health Department prior to DCEO approval
- Yes No N/A Check that no wye crossings existing under the pavement.

Traffic, Signage and Striping (Section 403 H, 606 & 607)

- Yes No N/A Is a separate Signage, Traffic Control Devices, and Striping Plan Sheet(s) provided? If only one intersection is involved with a maximum of 8 lots in the entire development, then a separate signage/striping plan is not required.
- Yes No N/A All signage, traffic control devices and striping comply with the Ohio MUTCD, current edition?
- Yes No N/A Traffic Control Device Plan and Quantities (Sections 403 I & 607)
- Yes No N/A Regulatory Signs provided: Such as Stop, No Parking, Speed Limit, etc.
- Yes No N/A All Sign locations shown on Plan View
- Yes No N/A MOT Plans provided for work within County/Township R/W. This would include work such as utility line bore, etc. (Section 403 G). For road widenings, please refer to the Road Widening checklist.
- Yes No N/A Provide speed limit signs on all proposed streets and spaced per current Ohio MUTCD standards?
- Yes No N/A Provide speed limit signs on the intersecting state, county or township road near the proposed subdivision entrance (both directions).
- Yes No N/A Provide school zone signs is school site is part of subdivision, or the Township will require surety for future installation of school

- Yes No N/A zone signs, pavement markings, warning signals, etc. prior to final plan approval.
- Yes No N/A No parking signs located on same side of street as fire hydrants?
- Yes No N/A No parking signs spaced between 50 and 200 feet?
- Yes No N/A Street signs shall be located on the same plan sheet as the traffic control devices, pavement markings, etc. All street signs shall be in accordance with the current County Standards, including the sign at the subdivision entrance street from a state, county or township road.
- Yes No N/A Special street name signs shall be approved in writing by the Township Trustees and be maintained by the Owner or the Homeowner's Association.
- Yes No N/A A street naming procedure is provided in the Supplemental Specifications (Section 607) for reference purposes. All street names shall be approved by the County Map Department before the final plans can be approved.
- Yes No N/A Stop signs and stop bars shall be provided at all intersections. Location of stop signs and stop bars shall be compatible with curb ramp locations and cross walks.
- Yes No N/A Stop signs shall not be placed on the same pole as street signs.
- Yes No N/A Stub streets shall require reflective signage (minimum of 3 signs). At the discretion of the Township, a sign may be required designating that this street shall be extended in the future (check with Township Zoning).
- Yes No N/A Proper reflectivity provided for all signs, per current Ohio MUTCD?
- Yes No N/A Permanent Striping – A minimum of Edge Lines, Centerlines, and Lane Control Lines are shown with appropriate color (Yellow – centerline; White – edge lines and lane control lines). Typically these items are used at the intersection of the entrance street with the existing County/Township/State Road. Item 644 is used - Not 642 Paint.
- Yes No N/A Signs are included in Quantities. Number and Type are correct.

Construction Related Items:

FOR INTERNAL USE ONLY

- Yes No N/A Schedule meeting with design engineer, SWCD and Storm Water Department to review comments prior to sending formal review letter.
- Yes No N/A Map Department must provide an e-mail approving final street names prior to final plan approval

- Yes No N/A Email Map Department to release lot numbers and addresses when plans are approved.
- Yes No N/A Notify Permit Department for Fees and Initial Title Sheet Mylar before signing
- Yes No N/A Provide a table of approved drive pipe sizes to the Permit Department
- Yes No N/A Have Storm Water Department DESC permit approval and initial Title Sheet Mylar before signing
- Yes No N/A SWCD must initial Title Sheet Mylar before signing.
- Yes No N/A County Operations Manager has been informed of any pipe replacements on Township Roads.
- Yes No N/A Email a copy of the comments to the Township Zoning Inspector.
- Yes No N/A Provide a set of plans to Liberty Township Fire Department (LTFD) for their review. Do not approve plan until LTFD has provided an approval letter.
- Yes No N/A Has Design Consultant provided two sets of the approved plans Full Size (22" x 34") and CD of the approved plans and storm water management report (PDF format)
- Yes No N/A Provide ADA information to design engineers from City of Columbus Website – Standard Drawings – http://pubserv.ci.columbus.oh.us/transportation/Forms/Standard_Drawings_2007_Final.pdf or [\\Dce-storage\countvengineer\Review\2006 standards update\Standard Drawings \(CAD FILES\)\Columbus ADA DWG](\\Dce-storage\countvengineer\Review\2006 standards update\Standard Drawings (CAD FILES)\Columbus ADA DWG)
- Yes No N/A Emergency access paving materials – www.prestogeo.com
- Yes No N/A Alternate guardrail applications – www.amtim.com/drawings

Comments:

Comment Disclaimer:
The County Engineer Reserves The Right To Make Any Additional Comments At Any Time Up To The Actual Approval Of This Project. See the Delaware County Design, Construction and Surveying Standards, current edition, including the Supplemental Specifications for other items not addressed on this list.

Approved Disapproved

Reviewed By: _____ Date: _____

Write letter to: _____

