The Delaware Co Engineers Standards Manual can be found on the Design Resource Page at:
https://engineer.co.delaware.oh.us/development/development-resources/

Project Name: _____

Circle y for yes, n for no, or write NA for non-applicable on this project. While not all questions below are based on the County Standards, some are there as considerations to aid the design engineer.

Where any Section is referenced in this checklist, the related Supplemental Section may contain information that also applies to the Section. CRITICAL ITEMS – key geometrics, road functional classification and stormwater management are considered critical items that affect the overall project design and are therefore focused on here first. KEY GEOMETRICS – Correct design speed listed? y/n Sight distance exhibits comply with correct ODOT L&D tables? y/n (Sec. 201) adequate at all intersections? y/n Crest vert curve K ok? y/n sag vert curve K ok? y/n Road curves in compliance w/ ODOT (Fig 203-3 and 203-6)? y/n Max deflection w/o a vertical curve comply with O Fig203-2?y/n	Local & collectors, horiz curves comply with Sec 601? y/n Arterials, horiz curves comply with O Fig202-1? y/n FUNCTIONAL CLASSIFICATION of roads- Road classification listed and road widths correct? Pavement cross sections adequate? y/n Any Clear Zone (CZ) issues from edge of travel way? y/n CZ issues with- guard rail? headwall location? utility poles? Pond adequate dist from road? Others? _____ Road and lane widths adequate? y/n Right of Way along existing road adequate? y/n Plat (90% complete) shall be submitted for review when the plans the plans are essentially approvable. The Plat will be reviewed if provided before required.
STORMWATER MANAGEMENT REPORT- Pre & Post Trib Maps included? y/n offsite tribs included in map? Pond size based on 100 yr post to 2 yr pre? y/n (unless low density subdivision which can do storm matching) Overland drainage calcs included? y/n Report signed/sealed? y/n ENTITIES The Consultant shall be responsible for coordinating the proposed engineering plans with the Township Zoning, Streets Superintendent, Fire Department, and Delco Water.	TITLESHEET- *(Sample dwg file available upon request)* Name follow nomenclature (Section 402)? y/n RPC # shown ? y/n Location map w/scale? y/n Consultant certification note? y/n Approval block with engineer's notes? y/n (402) North arrows? y/n Range, twp, quarter, etc. listed? y/n Variances listed? y/n Phase lines shown and identified? y/n Standard Dwgs listed? y/n If major/minor arterials, major/minor rural collectors involved – ODOT Specs need listed. Change order block? y/n Clearing limits shown? y/n Benchmarks shown on map? y/n
GENERAL NOTES SHEET- (*Sample dwg file available upon request)* Co General Notes drawing w/our std notes used? y/n Estimated quantities listed? y/n TYPICAL SECTIONS (See Section 302, 601 & 702-704) Show both Grading and Pavement Sections? y/n Correct widths, pavement depths and dimensions with Design "CBR" and "SNd" (Designed Value) and Terrain Classification labeled on the individual Typical Sections? y/n Assumed worst case CBR = 2.9? y/n (List DCEO Standard Drawings) Internal ADT's shown for each street section and correct (Section 601 F)? y/n Street verified w/ appropriate DCEO Std Drawing(s) buildup? y/n	TYPICAL SECTIONS (Continued) R/W width, pavement width, shoulder width, curb and gutter section, ditch slopes and design speed provided on the typical section for each street & verified w/Tables 601 –603 and the appropriate DCEO Standard Drawing(s)? y/n On open ditch roads, shoulder widths comply w/ Tables 601-1, 602-1 and Section 601 P? y/n RCC must be identified on the typical sections if proposed to be used. Also, 4" of Item 304 must be provided below the RCC or it will not be approved. y/n
TYPICAL SECTIONS (Continued) On open ditch roads (except for low volume, love density roads), a full depth paved shoulder shall be provided. ASPHALT PAVEMENT BUILDUP match Standard Drawings? y/n Payment in CY is required for estimated quantities table for 441, 301 and 304 items. y/n Asphalt called out in quantities table as: Item 441 - 1 ½" Asphalt Surface Course, Type 1 and Item 441 - 1 ½" Asphalt Intermediate Course, Type 2? y/n	ASPHALT PAVEMENT BUILDUP (Continued) The surface course asphalt layer shall not be included in pavement design calculations. y/n Is pavement and subgrade reinforcing material required? y/n A contingency quantity for these items must be included in the General Summary. Provided? y/n In all cases SN must be > 2.66. True? y/n

PLAN & PROFILE SHEETS- (403B) Vert scale 1"=5', Horiz sc 1"-50'(max, 1"=20' or 30' preferred)? y/n Plan contain street centerline, stationing, R/W lines, easements, temporary lot numbers, work and/or clearing limits? y/n Waterlines, storm & san sewers, guardrail, ex and prop utilities? y/n Topographic features, obstructions or encroachments within R/W or clear zone? y/n Any hydrant location issues? y/n Profile contain ex. and prop. profile grades? y/n Vert curve data and elevations at sags and crests at 25' min Intervals, elevations at 50' elseware? y/n Storm, san, waterline, culverts, bridges shown? y/n Pipe material (and pipe class if RPC) listed? y/n	UTILITY REQUIREMENTS (Section 401 & 403) Del Co Water signature line on the coversheet? y/n Sidewalk locations shown on individual lots? y/n (requested by Delco to confirm where the service meters can go) A note can state "Walks on building lots by homebuilder". y/n Waterline Casing Pipe of sufficient length (Minimum of 5' Back of Curb/Edge of Pavement on each side - See DCEO Standard Drawings? y/n Backfill requirements included? y/n Waterline located in separate easement outside the R/W and on the opposite side of the street as the sanitary sewer? y/n Are all utilities located outside the R/W or per the Utility Company's policy, whichever is more restrictive? y/n Fire hydrant shown in the typical section in the correct location?
ON PLANVIEW OR GRADING PLAN Pavement elevations at existing roads agree w/ pavement elevations of the proposed roads (at their intersection)? y/n Verify that Gutter Cross Slopes on Curb-and-Gutters streets at ADA curb ramps are no more than 1.38%. y/n Design account for slopes at existing edge of property along project? y/n Driveway Pavements – labeling of existing material types of driveways matches field check - asphalt, concrete, gravel? y/n Sidewalks shown on both the Plan & Profile, & Master Grading Plans? y/n Are sidewalks 5' wide? ADA requirements must be met. y/n Sidewalks provided at intersections and all designated open or Green Spaces? y/n Within R/W, sidewalk located 6' from back of curb as per Regs? y/n Check if Township Zoning require on open ditch roads? y/n	ON PLANVIEW OR GRADING PLAN (Continued) If so, the sidewalk shall be located either in the R/W or in a dedicated easement. y/n Sidewalks are provided for any medium density subdivision. Provided? y/n Embankment Quantity provided? y/n Pond Quantity, Road Quantity y/n Item included for undercut areas?y/n Sub-grade Compaction Item included? y/n Pavement Replacement Types included in Quantities? y/n Any Mailboxes needing removed and/or relocated are noted? y/n Seeding and Mulching addressed. Check pay limits. y/n ADA curb ramps – Check for shown types, dimensions, slopes, Water or Gas Boxes, Poles, Hydrants, Pull Boxes, and Roof Drain Outlets in Ramps? y/n Does the curb ramp width match the width of what is connecting to it (pedestrian path, multiuse path, sidewalk, etc. y/n Verify ramp quantities match plan sheets? y/n
<u>LOOP STREETS</u> (See 601 and Table 601-3) Requirements listed in Section 601 met? y/n (e.g. pavement width, R/W width, sidewalk width, design speed, graded or reinforced shoulder width, parking restrictions, etc.)? y/n DCEO Loop Street Standard Drawing items met? y/n Has DCEO Standard Drawing for Loop Streets been referenced on the Title Sheet? y/n	<u>Minor Rural Collector Streets</u> (See 601 and Table 602-1) All requirements in Table 602-1 been addressed (e.g. pavement width, R/W width, sidewalk width, graded or reinforced shoulder width, design speed, parking restrictions, etc.)? y/n All items listed in Section 601 y/n
<u>Minor Urban Collector Streets</u> (See Section 601 and Table 602-2) All items in Table 602-2 been addressed? (e.g. pavement width, R/W width, sidewalk width, graded or reinforced shoulder width, design speed, parking restrictions, etc.)? y/n All items in Section 601 on the plans. y/n Minimum of 8" thick gutter pan provided for all curb and gutter streets? y/n ODOT No. 3 Catch Basins need called out on all streets utilizing a 24" wide gutter pan.	<u>Parkways and Boulevards</u> (See Section 601) 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? y/n ~~Has the Township Fire Department reviewed and approved the street width provided?~~ y/n If Medians/Boulevards are shown, ODOT Type 6 curb is not permitted. Island Underdrains Outlet provided? y/n Island Underdrains material type, etc. meet the Standards? y/n
<u>Commercial and Industrial Streets</u> (See Section 601 and Table 603) Table 603 requirements addressed (e.g. pavement width, R/W width, sidewalk width, design speed, graded or reinforced shoulder width, parking restrictions, etc.)? y/n Section 600 including Section 601 must be verified on the plans. y/n <u>Emergency Access Drive(s)</u> (See Section 403 B) Emergency access drives comply with current Township Regulations? y/n	<u>Emergency Access Drive(s)</u> (Continued) Details for emergency access, such as plan, profile, typical section, cross-sections, signage, plan notes, etc. provided? y/n ~~Written approval from the Township provided of the emergency access drive? y/n~~ <u>Temporary Turn-Arounds</u> (See Section 603) Temporary T-turnaround provided at Phase Lines (Actual Turnaround shall be on next Phase where Developer has control of Property). y/n Temporary T- turnaround required when the street in question is greater than 250 feet from the nearest intersection. y/n

Temporary Turn-Arounds (Continued) For all existing T-turnarounds, including those on adjacent properties, provide a note on plan or grading sheet that states: "The temporary T-turnaround shall be removed once the road is extended into the adjacent property" y/n Provide the note: "No portion of the temporary turnaround shall be used as a driveway for any of the lots on the stub street." y/n Show all existing temporary T-turnarounds on adjacent parcels on all applicable plan sheets. y/n	Temporary Turn-Arounds (Continued) Correct Dimensions for T-turnaround (Section 603 and DCEO Standard Drawing) y/n Temporary easement shown over the portion of the temporary T-turnarounds that extends beyond the permanent R/W. y/n Temporary easements widths shall comply with the Standards and DCEO Standard Drawing(s). Temporary easements shall be shown on the Final Plat.
CROSS SECTIONS- (403B) Max scale: vertical 1"=5', Horiz scale: 1"-10' y/n Sections at even 50' intervals, at driveways, at culverts, & as determined by DCEO? y/n Do these agree w/grading plan? y/n (including extending to the proposed work limits?) Ex grade (dashed), prop grade (solid line)? y/n exist. and prop. C/L elev labeled? y/n Sta. number & street name labeled? y/n ditch flowline elev labeled? y/n ex and prop utilities shown in location & elev? y/n foreslope & backslope labeled (4:1, 3:1)? y/n Beginning & Ending Stations match on plan & profile? y/n Storm under road in excess 36" require separate plan & prof. y/n	MASTER GRADING PLAN- (403C) Max scale of 1"=50', 1"=40 or more detailed scale preferred. y/n Construction limits, North Arrow and Bar Scale shown? y/n All existing vegetation, trees to be protected, wetlands, archeological areas, etc. shown? y/n Proposed mounding, trees, and other landscape features shown? They shall not encroach on proposed R/W. y/n Trees or Landscape Features located on or near storm water management facilities? y/n (Not acceptable) All existing topographical information complete (per site visit)? y/n Proposed site compatible with the ex. surround area per plan? One-foot contour lines of the development area? y/n Existing Contours (dashed), Prop. Elevations (solid) including Contours and Spot Grades? y/n
MASTER GRADING PLAN- (Continued) Major overland floodroutes clearly located/shown on gr plan? y/n Offsite flows indicated at property lines with arrows and the total acres tributary to those points listed? y/n Reviewer shall verify all easements shown (major flood routes, preservation/conservation, storm sewers, etc.) & widths comply with Standards? Make sure the drainage extends down to the point of adequate outlet. All major flood routes include elevations (or a profile) along the routing path, elevations at all lot lines/property corners and all break points, and drainage arrows indicating design sheet flow? y/n Easement widths set at 1-foot above the 100-year flood elev? y/n	MASTER GRADING PLAN- (Continued) Proposed Pad and Finished Floor or Finished Grade Elevations provided? FF a minimum of 1' above the 100 yr flood elevation? Major Flood Routing (Designated w/ Arrows symbols defined on legend). Arrows used must be a different symbol than local grading arrows. y/n Cross sections & profile of all major flood routes must be provided & comply with Section 900 showing 100 year storm is contained y/n Does proposed major flood routing affect properties downstream (e.g., existing subdivision, commercial sites, homes, etc.)? y/n
MASTER GRADING PLAN- (Continued) 2 percent or greater slope in rear lots, or storm sewer provided with 5-year hydraulic grade line below grate and 10-year ponding depth not to exceed 1.5 feet; y/n If rear yard storm, provide structure at every third property line where slope less than 2% y/n Storm structures are not required in rear lots if ravine is adjacent to back yard but DESC Dept may require conservation easement. y/n?	MASTER GRADING PLAN- (Continued) Do proposed grades match existing ground adjacent to project? y/n? Are existing contours and general topography on the adjacent properties within 100 feet of the development area shown? y/n All private drainage systems (sump pumps and roof drains) shall be routed through a storm water management facility systems or must outlet into the rear lot drainage system (outlet into a structure if slope is less than 2 percent).
MASTER GRADING PLAN- (Continued) 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 as last option. For all curb inlets, storm sewer pipes shall enter through the front and back of the structure. True? y/n Storm pipes shall not enter through the corner of a structure – for all catch basins and curb inlets. True? y/n Manholes used as curb inlets must be approved by variance by Co Engineer. y/n IMPORTANT: All storm sewers must be located no	MASTER GRADING PLAN- (Continued) less than 10 feet from the development Property Line (for drainage areas of 1 acre or more directed toward development). True? y/n All proposed walkout basements identified on plans? y/n Storm Sewer Top of Casting & Invert Elevations labeled? Do the top of casting elevations match the storm profiles? y/n Any FEMA designated Floodway & 100-year Floodplain labeled? y/n Floodway Note provided? y/n Adjacent Property Names, Lot Numbers and Road Names labeled? Existing and proposed utilities shown? (Surface and subsurface) y/n Overflow elevation detail for all ponds shown? y/n
MASTER GRADING PLAN- (Continued) Ponding Limits and Elevations shown? y/n Drainage arrows indicating direction of sheet and ditch flow? y/n Do pond, sidewalk, or other embankment locations create any safety issues for vehicles or pedestrians? y/n Utility pedestals shall be located outside the 100-year flood elevation along major flood routes. y/n Driveway Slope(s) less than maximum permitted? y/n Headwall Specifications or Standard Drawing referenced? y/n	MASTER GRADING PLAN- (Continued) Cross-sections of Ditches in R/W or within publicly maintained area (at 50-foot spacings) y/n? Key Notes identifying all items? y/n Spot elevations provided at all lot corners and mid-points? y/n Are leach fields, mound systems or other approved on-site sanitary shown on the plans for the lots and existing adjacent lots? y/n Storm water routed anywhere near existing or proposed leach fields or mound systems, potentially creating problems for owners or adjacent owners? y/n

Proper design year storm used for Drive Pipes (10-year)? Drive pipes been sized for all drives? Drive pipe table on plans? y/n Co. standards used to compute design year flow (See Sec 900)? y/n Proper drive pipe length provided per Section 800, Section 802 H?	All structure/buildings upstream of culvert(s) must be shown on this plan. Provided? y/n Negatively impacted? y/n These headwater pools must also be shown on this Plan. Provided?
INTERSECTION SIGHT DISTANCE (ISD) – (See Section 602) ISD in accordance with ODOT L&D Manual, Current Edition? y/n ISD Exhibits required in final engineering plans. Notes: A. To maintain required "Clear" Sight Distance of Obstacles, County Engineer shall restrict the height of Embankments, locations of Buildings, Landscaping, and Screen Fencing in this area. B. At Intersection with Collector Street or above a 90-Foot (min) Clear Sight Distance area shall be provided. If more than 90-feet is required for ISD, this amount needs shown on the final plans. The actual length for clear sight distance shall be based on the ODOT L&D Manual, current ed. 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 at the end of Section 602 of the County Standards. The classification of the intersecting streets shall be as determined by the County Engineer. DITCH SETBACKS Where pavement widening along existing roads is not involved but the ditch does not meet current County Standards, the ditch shall be set back. See the ditch improvements on Standard Drawing DCED-2130 for what is required. Besides plan and cross sections, has a typical ditch cross section detail been provided on the plans? y/n POND PLANS, SECTIONS, & DETAILS (Section 900 & Standard Drawings) Ponding Tabulations (required and provided) y/n Correct Design Year Storm used for basin sizing?	POND PLANS, SECTIONS, & DETAILS (Cont'd) All pond outlet storm profiles must show and call out an anti-seep collar. Shown and called out? y/n Orifice Plate Details if used? y/n Orifice plates cannot be attached to endwalls or on the outlet pipe side of storm control structures. CULVERTS (403B) Is culvert material type per current Standards. All culverts beneath multiuse paths shall be backfilled with compacted granular backfill. Minimum cover from top of pipe to bottom of subgrade must be 24 Inches. A variance request is required for each pipe with less than the 24". Under no case shall a variance be granted if the minimum cover is less than 9". If variance approved by the County, has RCP pipe been called out with concrete encasement (required)? Detail drawings of all bridges, culverts/sewers 36" or greater provided, which follow ODOT L&D Manual and Bridge Design Manual? Plans scale shall be provided at 1"=10'? y/n For all culverts 36-inches in diameter or larger, shop drawings shall be submitted to the County Engineer for approval. For all bridges that are eventually going to be within public R/W, the plans needs to include a note that reads: 1. Shop drawings for the bridge need signed and sealed by an Ohio Registered PE and need submitted to the County before the bridge is cast. 2. The Fabricator also needs to sign and seal the load ratings for the bridge. Bridges must be approved by the County Engineer. INTERSECTION & CUL-DE-SAC DETAILS- Scale 1"=20' or 30'? y/n Spot elevations at centerline and along edge of pavements? y/n Adequate slope at corners? (No bath tubs holding water) y/n At connections of a new subdivision road with an existing roads, provide a full depth sawcut of the existing road a minimum of 1 foot from the edge of the existing road, with the final width of pavement sawcut to be determined by the County Engineer based on conditions onsite. Seal Joint per Item 401.08.B
STORM SEWER PROFILES Proper headwalls called out? y/n Headwalls are Cast-in-Place or Pre-Cast. For all pre-cast walls shop drawings shall be submitted to the County Engineer for approval. Storm sewer material per current Standards? y/n 5-Year HGL elevation line provided on the profiles? y/n (Insure that it does not exceed the top of inlets or window elevation) Has the 100-year water surface in the pond 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? y/n Clearance of all storm sewers shown – show in profile? y/n Has the maximum depth per current DCEO standard drawing(s) been verified for each catch basin(s)? y/n Storm Sewer Pipes will fit structures called out in the plans?	STORM SEWER PROFILES (Continued) Pipes have a minimum of 18 inches of cover beyond pavement and shoulders. y/n Curb inlet pipes shall not exceed 21-inch diameter. y/n Storm Pipes (main storm line) shall be separated from all inlets if the pipe diameter is > 21 inches unless a double inlet will allow the pipe to work. Pipe type, class, etc. shown in profile and carried to Estimated Quantities? Has Item 912, Compacted Granular, been shown beneath the roadway. y/n? Rock Channel Protection or other acceptable erosion protection provided where necessary (See Supplemental Specifications for design method.
BASIN PLANS All offsite flow srom upstream tributary areas been accounted for (either routed around or through the basins)? y/n See Section 904 G. Emergency spillway shown for >100-year storm? y/n BASIN PLANS (Continued) If retention basin is used for both water quantity & quality requirements, the more restrictive requirement shall apply if a conflict arises between two portions of the Standards (Section 904 G 5). Section 900 including Section 904 G? If an existing pond is to be used as a storm water control facility, the pond must be evaluated per current requirements (See Section	BASIN PLANS (Continued) Offsite water accounted in emergency spillway design if the offsite water was routed through the basin(s)? y/n Contours below normal pool elev on all wet ponds shown? y/n An ingress and egress easement is provided to and around all basins provided? y/n (Minimum of 15 feet wide) comply with requirements in the Standards. y/n BASIN PLANS (Continued) A paved channel or perforated pipe underdrains with an adequate outlet provided within detention basins with bottom slopes less than 2%. Provided? y/n

900). This evaluation must be provided prior to submittal of the final engineering and construction plan. Evaluation Provided? y/n Detention/Retention requirements for conservation subdivisions Details of flow restriction structures (size, orifice plates, specifications, materials, etc.) y/n	Are any pond inlet pipes below the pond outlet pipes? y/n Submerged inlets are not permitted except as approved by DCEO (See Section 904G 3) through means of a variance. Due to safety issues during maintenance, all headwalls are required to be above the 100 yr pond surface elevation to provide a place to stand over the inlet/outlet pipes. All above 100 yr? y/n KURT, DO YOU WANT US TO COMMENT, OR TAKE OFF OUR LIST AND YOU COMMENTS?
EASEMENTS Adequate drainage easements provided for open water courses? y/n (per Section 900 including Section 902, 904 C) Drainage easement widths for jurisdictional streams shall be determined by DCEO. Have adequate storm sewer easement widths been provided per Section 900 including Section 902 based on pipe size and depth? y/n Adequate drainage easements to access any drainage feature? y/n (minimum of 15 feet per Stds) Adequate easements for all major flood routes? y/n (per Section 900 including 903 D) Additional offsite drainage easements conveying the site runoff to the approved adequate outlet? y/n (per Section 902) The outlet(s) may consist of a ditch, stream, storm sewer, retention/detention basin, etc having sufficient capacity to accommodate the surface water runoff in a reasonable way, An adequate outlet shall convey the 2 year storm with the 10 yr hydraulic grade line not exceeding top of the grate for storm sewers. All signage, traffic control devices and striping comply with the Ohio MUTCD, current edition? Y/N	TRAFFIC, SIGNAGE AND STRIPING PLAN (Section 403 H, 606 & 607) Is a separate Signage, Traffic Control Devices, and Striping Plan Sheet(s) provided? Y/N 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. Traffic Control Device Plan and Quantities (Sections 403 I & 607) y/n Regulatory Signs provided: Such as Stop, No Parking, Speed Limit, etc. y/n (Internal Comment: have Mike Love review the signage plan for stop sign locations, etc.) Signage plan needs a note that reads: "All signs and sign supports shall conform to the latest edition of the OMUTCD, ODOT Standard Construction Drawings, and the 2019 ODOT CMS. In addition, all signs located at a County/Township intersection shall conform to Standard Drawing DCED-R2185. Any deviation from the above requirements for signs and/or supports within the subdivisions shall require written approval from the Township". Provided? Y/N
TRAFFIC, SIGNAGE AND STRIPING PLAN (Continued) All Sign locations shown on Plan View? y/n MOT Plans provided for work within County/Township R/W? y/n This would include work such as utility line bore, etc. (Section 403 G). For road widenings, please refer to the Road Widening checklist. For Subdivisions where a road widening is part of an approved County TID, or equivalent fair share is involved in lieu of constructing the required road widening improvements, the Subdivision plans must include temporary entrance details for review. Where pavement widening along existing roads is not involved but the ditch does not meet current County Standards, the ditch shall be set back with details shown on the Subdivision Plans. Provide speed limit signs on all proposed streets and spaced per current Ohio MUTCD standards? y/n Provide speed limit signs on the intersecting state, county or township road near the proposed subdivision entrance (both directions). Provide school zone signs if school site is part of subdivision, or the Township will require surety for future installation of school zone signs, pavement markings, warning signals, etc. prior to final plan approval. y/n No parking signs required at 200' spacing on <u>one side</u> of roads 27' wide or narrower and shall be located on same street side as fire hydrants? No parking signs should be rotated at 45% to street.	TRAFFIC, SIGNAGE AND STRIPING PLAN (Continued) Has approval letter from Twp Fire Department been provided? y/n Note that Fire Department is a commenting agency but is not a regulatory (signatory) agency with respect to approval of engineering plans. The County Engineer has the final say on public streets. Street signs shall be located on the same plan sheet as the traffic control devices, pavement markings, etc. y/n 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. Item 647 shall be called out on the short-line markings (stop bars, crosswalks, arrows). Item 644 can be called out for centerlines and channelization. y/n Special street name signs shall be approved in writing by the Township Trustees and be maintained by the Owner or the Homeowner's Association. y/n
TRAFFIC, SIGNAGE AND STRIPING PLAN (Continued) Note: All Street names on the Final Plat shall be as per the Approved Preliminary Plan submitted to Delaware County Regional Planning Commission (DCRPC). The Consultant is responsible for coordinating and obtaining approval from DCRPC for any street name changes. Location of stop signs and stop bars shall be compatible with curb ramp locations and cross walks. Y/n Stop signs shall not be placed on the same pole as street signs. y/n Stub streets shall show the Temporary Barricades and reference Standard Drawing DCED-R2190.	TRAFFIC, SIGNAGE AND STRIPING PLAN (Continued) 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). 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). y/n 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. y/n Signs are included in Quantities. Number and Type are correct

OTHER DESC Permit submittal made to DESC Dept? y/n other epa, corps permits, etc. provided? y/n	EROSION & SEDIMENT CONTROL PLAN (Continued)
INSPECTION DEPARTMENT PLAN COMMENTS Check with the Chief Inspector. Include comments? y/n	DELAWARE SOIL AND WATER CONSERVATIION DISTRICT (DSWCD) Does Milt Link of DSWCD have any comments?
STORMWATER MANAGEMENT REPORT General: Documentation of outlet adequacy provided during the Preliminary Plan phase (Section 901)? y/n If an existing 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)? y/n If requested, a bound (3-ring) binder of the Storm Water Management Report shall be submitted with items as listed in Section 900? (and Section 401 A)? Signature and Stamp of Ohio Registered Professional Engineer on Report Cover? y/n	STORMWATER MANAGEMENT REPORT (Continued) Written Explanation/Summary/Narrative provided? y/n Is water diverted from one watershed to another? y/n (not permitted, unless by variance during the Preliminary Plan phase) Does the storm water management for the site adversely impact any property downstream? y/n Water quantity addressed and complies with Section 900? y/n Method of calculation meets current requirements? y/n (Section 900) Ditch depth calculations provided in storm report? y/n Ditch velocity calculated for the various ditches? y/n Is the overall storm water management for the site acceptable? y/n
REPORT DESIGN CRITERIA (Section 903) Pre-Development and Post-Development Maps provided? y/n Comply with Section 400 including Section 401 A, Section 403 E, Section 900 including Section 903 C? 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.? y/n (See Section 903 C). Drainage areas in acres labeled for all subareas? y/n Have the areas been determined correctly? (check these-per Section 903) All offsite tributary areas called out on maps? y/n (Section 400 including Section 401 A and Section 900). Flow paths lengths, path slopes, times of concentrations, and land use called out on the trib maps for sheet flows, shallow concentrated flows, ditch flows? y/n Contours of areas adjacent to development area need provided along with the contours of offsite tributary areas. Provided? y/n	REPORT DESIGN CRITERIA (Continued) POND SIZING Subdivision Development Density (Low, Medium, or High) is calculated using Section 601 criteria. For Low Density Developments 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. Otherwise known as storm-matching) For Medium and High Density Developments, Post-Development runoff rate for the 100-year storm detained and released @ 2-year storm runoff pre-development rate. Appropriate runoff coefficients and CN factors used for calculating peak discharges of each subarea? y/n (Section 900) In undeveloped areas, a runoff number of CN=77 shall be used as a maximum for onsite predevelopment. In other cases, the appropriate "CN" factor may be determined by using Technical Release No. 55.
REPORT DESIGN CRITERIA (Continued) Allowable release rates, times of concentration and other design criteria provided per Section 900? y/n Do pond outlet control structure information in the report match the related details on the plans for each of the ponds? y/n (pipe size and slope, WQ orifice size, major storm window or orifice size, top of grate elevation, emergency overflow elevation)? y/n Retention/Detention Basin Table of Contour Areas w/approved release rates listed on plans agree w/ pond sizing calculations? y/n Water Management Report Requirements & Calculations (See Section 401,403 E & 901 – 904) FLOOD ROUTING Flood routing calculations & capacity per current standards? y/n	REPORT DESIGN CRITERIA (Continued) (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. Flood routing depth in streets limited to 12" at the gutter line for all local (residential, commercial and industrial) and minor urban collector streets? y/n Flood routing depth for all other street classifications shall comply with the ODOT L&D Manual, current edition. Flood routing depth shall not exceed 1.5 feet in non R/W (e.g. backyards) areas. True? y/n Flood routing calculations provided for all off-site water draining through the site? y/n
ROADWAY CULVERT REQUIREMENTS (Section 904 A) Culvert Design with calculations provided. y/n Drainage areas for each culvert been submitted and checked? y/n Appropriate design year storm been used? y/n (Section 900) Has ODOT L&D Manual, current edition been used to calculate the design year and 100-year storm design discharges? y/n For culvert pipes (open at each end) the culvert must convey the 100-year storm without overtopping road (Section 904 D). y/n Has the appropriate structure type been used? y/n Single span culverts, such as four-sided box or three-sided flat top shall be	ROADWAY SIZING CULVERT REQUIREMENTS (Continued) Minimum cover from top of pipe to bottom of subgrade must be 24 Inches. y/n Minimum pipe diameter shall not be less than 12". y/n 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? y/n The maximum scale of the plan is 1" = 50'. channel improvement (verify with DCEO and DSWCD)? y/n Driveway Pipes calculations provided? y/n

required in lieu of multiple cell pipe culverts. Has the culvert inlet been set deep enough to provide an adequate outlet for future	On open ditch roads, a table of approved drive pipe sizes must be provided to DCEO Permit Department and be shown on the plans. Provided? y/n
STORM SEWER SIZING REQUIREMENTS (Section 904 B) Storm sewer calculations included and correct? y/n Storm sewer design appropriate (flowing full for the design year storm)? y/n Minimum design frequency of 2-year storm (curb and gutter) or 10-year (open ditch) used for all local and minor urban collector streets? y/n All Local Streets with 18" gutter pans need to utilize DCED-S125 Curb Inlets. Is this the case on the plans? y/n The ODOT L&D Manual must be used to determine the minimum design storm frequency for all other street classifications. Do the storm sewer crowns match? y/n All storm sewers must be sized to carry offsite water (for drainage areas of 1 acre or more). True? y/n 5-Year HGL calculations provided (Insure that it does not exceed the top of inlets or window elevation)	STORM SEWER SIZING REQUIREMENTS (Continued) 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? Y/N The ODOT L&D Manual must be used to determine the hydraulic grade line depth for all other street classifications. For rear lots, the depth of water for the 10-year storm shall not exceed 1.5 feet above the grate/window elevation. True? y/n 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). True? y/n The ODOT L&D Manual must be used to determine the maximum time of concentration for all other street classifications. Minimum pipe diameter 12". For all plastic pipes – verify with the manufacturer(s) that all pipe diameters shown can be supplied.
STORM SEWER SIZING REQUIREMENTS (Continued) Pipe roughness coefficient (n) = 0.015 for all pipe diameters (see Section 900). y/n Velocity > 3 Fps? y/n The maximum velocity should not be greater than 15 fps. y/n Minimum allowable slope exceeded? y/n (See Section 900 for minimum pipe Slopes allowed based on pipe size) Acceptable length between structures (300' maximum)? y/n Minimum cover from top of pipe to bottom of subgrade must be 24 inches (check these). Maximum cover per requirements in Section 900. Met? y/n Sewer pipe shall not be located parallel to the curb and gutter and within the zone of influence for the roadway section. True? y/n	OPEN WATERCOURSE CRITERIA (Section 904 C and Section 1205) Proper easements must be provided for open watercourses. Provided? y/n For new channels Minimum design storm frequency is 10-year (bank full). Provided? y/n Method of calculation for the design flow must comply with the Section 900. 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 or underdrain may be required by DCEO. y/n
OPEN WATERCOURSE CRITERIA (Section 904 C and Section 1205) Maximum side slope is 4:1. True? y/n Where Erosion Control matting, etc. are required in ditch bottoms, the width of the material shall be called out and it shall be noted on the profile sheets the stationing (from where to where) and the material width to be provided. Provided? y/n	SPREAD OF WATER (Section 904 E) Have spread of water calculations been provided? y/n For streets greater or equal to 26 feet wide, maximum of 8'? y/n For streets less than 26 feet wide, maximum of 9'? Inlet spacings not exceed 400 feet? y/n
SUBSURFACE DRAINAGE TILE (Section 904 D) Has all existing subsurface tile, including those on the County Drainage Maint. Program, been accounted for in the design? y/n Shown on the plans? y/n Locations of the existing drainage maintenance tile systems within Delaware County are available from SWCD.	SUBSURFACE DRAINAGE TILE (Continued) 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. True? y/n CURB INLETS (Section 904 E) Acceptable Curb Inlets Spacing (400' maximum)
SANITARY SEWER PLANS- (including Section 401) Set of Sanitary Plans Submitted for Review? y/n Storm and waterline crossings shown? y/n Compacted Granular Backfill noted? y/n Backfill Requirements included with use of Sanitary Drawing Sa.S-2 which is the Sanitary Engineer's equivalent to our DCED R-100 Standard Drawing? No reference to DCED-R100 is then needed. Road Plans cannot be approved before Sanitary plans are approved. Sanitary Requirements (Section 401) y/n Check that no wye crossings existing under the pavement. y/n	SANITARY SEWER PLANS- (including Section 401) Adequate Compaction Distances Shown [Starting at R/W, Then Follow 1:1 Slope]? y/n 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. y/n Onsite sanitary system – Plan submittal to DCEO not required. Titlesheet for onsite systems must be approved by County Health Department prior to DCEO approval.
Other Info- Next submittal include resolution of comments letter? y/n	Letter must list any additions since last submittal? y/n 401 (major plan changes may result in add'l review fees)
	INSPECTION ESTIMATE Asphalt called out in estimate as: Item 441 - 1 ½" Asphalt Surface Course (448, Surface Course, PG 64-22), and Item 441 - 1 ½" Asphalt Intermediate Course (448, Intermediate Course, PG 64-22). y/n A sample Inspection Estimate with the required format can

	be found on our Design Resource Page. Estimate format correct? y/n Has a contingency quantity for pavement and subgrade reinforcing material been included in the Engineer's Estimate? Provided? Signs and striping included in Subdivision Inspection Estimate? y/n Quantities correct? MYLAR COVERSHEET Once the plans are ready for signing, we provide will provide them to Delco Water and our office for signing.
FOR INTERNAL USE ONLY Plan is: approved? y/n approved based on resolution of comments? y/n not approved? y/n Let Cindy know right away if a subdivision has private streets? y/n (because the County is unable to take Bonds on private streets). Notify Permit Department for Fees and Initial Title Sheet Mylar before signing. Applies? y/n Provide a table of approved drive pipe sizes to the Permit Department. Applies? y/n Have Storm Water Department DESC permit approval and initial Title Sheet Mylar before signing. Done? y/n SWCD must initial Title Sheet Mylar before signing. y/n Note that the drawings need to be on the State Plane Coordinates. County Operations Manager has been informed of any pipe replacements on Township Roads. Applies? y/n Have the Design Consultant provided one set of the approved plans Full Size (22" x 34") and one half size (11x17). As an aid, see ADA Standard Drawings information on City of Columbus Website. Emergency access paving materials – www.prestogeo.com	Alternate guardrail applications – www.amtim.com/drawings ONCE FINAL PLANS ARE APPROVED -Provide the following: *1 full size signed copy of approved signed plans, 1 half size (11x17) signed copy of plans, digital copies of the *.PDF plans, storm report, and the DWG & DXF files of the plans.* OTHER COMMENTS: _____ _____ _____ _____ _____ _____ _____ _____