

STREET CONSTRUCTION (E-PLAN) REQUIREMENTS
(Subdivision **)**

**Electronic Submission requirements
Plan Requirements**

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ELECTRONIC SUBMISSION FOR E-PLANS

1. The electronic submission shall contain a PDF file of the E-plan set being submitted. The PDF plan set shall be formatted as detailed in “PDF FILE REQUIREMENTS FOR E-PLANS” and submitted to engineeringinfo@columbus.gov .

All other supporting items submitted along with the E-plans (i.e. storm water report, pavement design, easements, etc.) shall be submitted via pdf.

For the INITIAL and SIGNATURE submittals, the base map must also be submitted in .DWG format. All .DWG format features shall be prepared in conformance with the City’s adopted Digital Submission Standards.

2. When the E-plans are submitted on PDF for signature, include with that electronic submittal PDF files for the E-plans, all accompanying documents (i.e. final storm water report, storm sewer calculations, etc.), and the base map in .DWG format.
3. Include in the electronic submission, the electronic document or image of the written summary of responses to the (Division of Design & Construction) comments from the previous review.
4. Any submissions determined to be incomplete, inaccurate, or non-compliant shall require correction by the applicant before the E-Plan will be fully approved and/or signed by the City.

PDF FILE REQUIREMENTS FOR E-PLANS

A single PDF file of the entire set of plans shall be submitted each submission (including signature submittal).

The PDF file shall be exported directly from the drafting software and shall not be scanned or converted from image files such as TIF.

The PDF plan files shall be rendered at 300 DPI (dots per inch) as a full size drawing (22” high by 34” wide). All PDF plan files except for traffic signal interconnect splicing details shall be rendered in gray scale.

All PDF plans files shall have a flattened annotations layer. No text or markups from the designer or drafting software objects shall appear as a comment in the PDF file.

Embedded scales or viewports may be used but shall be accurate according to the scale printed on the sheet.

All images must be submitted “Right Side Up”, meaning viewable as if you are reading them.

The PDF page number shall exactly match the sheet number printed on the plan set. Skipped pages or lettered pages are not permitted. The PDF page numbering system shall contain only the sheet number. Sheet titles, sheet counts, or any other text is not permitted in the PDF page numbering system.

Each E-plan PDF plan set file shall include the project number as shown below:

NOTE: The “0” after the “E” is a zero not the letter “O”.

Examples:

At INITIAL submittal

Once Plan Number is assigned (#1553 in this example)

E0XXXX_plans.pdf

E01553_plans.pdf

STREET CONSTRUCTION (E-PLAN) REQUIREMENTS

(Subdivision **)**

Requirements for and information on the “E-Plan” for Subdivisions shall contain, but not limited to, the following:

1. GENERAL REQUIREMENTS:

- 1.1. **PLAN SIZE:** All plans shall be submitted on standard E-size sheets - 22” high x 34” wide. Refer to Sample Plans on the Department Public Service website for formatting requirements.
- 1.2. **PLAN LAYOUT:** Orientation of plan views shall be with the top of the north arrow pointing to the TOP of the plan sheet or to the RIGHT of the plan sheet.
- 1.3. **GRAPHIC SCALE:** Show on each plan sheet or specific view (plan/detail/section/profile) the numeric scale AND a graphic of the scale.
- 1.4. **PLAN NUMBER ASSIGNMENT:** The street plan number will be assigned by the Accela plan tracking system at the time of submittal for initial review. For initial submittal – use the “X” in each of the 4 positions for the plan sequence number.
- 1.5. **SECTIONS/PARTS:** Each SECTION or PART of a preliminary plat shall have its own unique “E-Plan” with associated Final Plat.
- 1.6. **STREET STATIONING:** Station the centerline of each street. Each street is to have its own stationing. Stationing should progress up from SOUTH-to-NORTH and from WEST-to-EAST. Provide a “Basis of Stationing” statement explaining the origin and basis of stationing. Whenever possible, use established stationing from previous (project) plans and make reference to the plan number(s) in the statement. When establishing new stationing, set an even station at the centerline of the nearest street intersection and describe in the (basis of stationing) statement. When stationing is newly established, include in the statement that is being set for this project. Station equations or negative stationing on the plans will not be accepted.
- 1.7. **REFERENCE TO RELATED DRAWINGS:** Notate on the plans any drawing related to or interfacing with, or adjoining, this project. Examples of drawings to reference are street construction plans of existing roads this project fronts or stationing is based off of, adjoins or ties into; a residential subdivision plan that constructed the existing street fronting this project; CC-plans on private storm sewers that tie-in to a storm sewer on this plan; sanitary sewer plan; Water Service Plan plans, street construction plans on other active projects this project interfaces with; or street construction plans of other projects which extend a street from this project.
- 1.8. **SURVEY HORIZONTAL & VERTICAL CONTROL:**
 - 1.8.1. **Horizontal Control:** The Ohio State Plane Coordinate System and North American Datum of 1983 (2007 NSRS).
 - 1.8.2. **Vertical Control:** North American Vertical Datum 1988 (NAVD 88) shall be used on all projects. All temporary benchmarks and project/site elevations shall be based upon a source bench mark of a third order or better monument system established and maintained by the Franklin County, OH Engineer’s office. The 1929 North American Vertical Datum (NAVD) datum should only be used when the 1988 (NAVD) elevations are unavailable and must be approved, in writing, by the City in advance of initial plan submittal.
- 1.9. **PLAN REVIEW FEES:** Fees are based on an hourly rate and are invoiced at the time all review comments have been addressed. Final payment must be received before the plan is routed for signature.
- 1.10. **OTHER JURISDICTIONS:** If the project is also located within other jurisdictions besides the City of Columbus, or, if other entities have jurisdiction over the project, provide signature blocks for the other jurisdictions per the direction of those jurisdictions. Make concurrent submittals of the E-plans to all other jurisdictions and provide a copy of their previous comments with all future submittals. The other jurisdictions must sign the E-plan prior to Columbus signature, or, in the case of ODOT, the ODOT permit must be obtained prior to E-plan signature.
- 1.11. **TRAFFIC SIGNAL DESIGN:**

All traffic signal and interconnect design work shall be performed in accordance with the Traffic Signal Design Manual, latest edition. Refer to the Department of Public Service website. The Engineer in responsible charge for applying the concepts and practices assembled in this Manual is required to hold current registration as a Professional Engineer in the State of Ohio. The Engineer must also be prequalified

by the Ohio Department of Transportation (ODOT) for Traffic Signal and/or Signal System design as applicable to the specific design effort.

- 1.12. PHASED CONSTRUCTION PROJECTS. For projects constructed in phases, the phase lines shall be clearly shown and labeled throughout the plan set, Index Map, and Estimate of Quantities. The private agreement, surety, and inspection fees and Plat shall encompass all phases of the plan and be in place prior to the start of construction of any phase. A plan with PARTS can NOT be phased.
- 1.13. PLAN REVISION: Once E-plans are signed, any change to the plan requires a plan revision. Refer to a separate document titled "Procedure for Revision of E-Plan (Private Development)".

2. SUBMITTALS: Submissions of all items to BZS Site Engineering are to be made digitally. Email all items to: Engineeringinfo@columbus.gov The email may contain a link to an FTP site or cloud storage location of the electronic files. The following items shall be submitted:

- 2.1. Completed APPLICATION of submittal for review.
- 2.2. For the INITIAL and FINAL SIGNATURE submittals, the base map must also be submitted in .DWG format. All .DWG format features shall be prepared in conformance with the City's adopted Digital Submission Standards.
- 2.3. SURVEY DOCUMENTATION: Provide a statement with the 'Source Benchmarks' (at least one, preferably two) that are Franklin County monuments, each identified by the County's official designation and description, from which the project/site vertical and horizontal control are sourced from or have been tied back into. Provide the standard vertical and horizontal control method used and correction factors. Documentation shall include the survey firm and signed by the Surveyor.
- 2.4. E-PLAN sheets: PDF's of all E-plan sheets. The sheets shall be properly formatted per the instructions on the page entitled "Electronic Submission for E-Plans" (located at end of this document). The email may contain attachments or a link to an FTP site or cloud storage location of the electronic files.
- 2.5. APPROVED (signed) PRELIMINARY PLAT (overall Plat of entire site to be developed).
- 2.6. FINAL PLAT FOR THE SECTION/PART related to the construction plan set submitted.

Submit a PDF copy of the final plat along with the E-plan submittal. This PDF submittal of the plat along with the E-plan is to be considered a supplemental document needed for proper review of the E-plan in order to ensure both the plat and the E-plan have consistent information.

Please be aware that there is a separate official process for Final Plat approval that is administered by the BZS Site Engineering Section, which still requires paper submittals.

- 2.7. PROPOSED R/W or EASEMENT (if required by the improvement as a standalone document from the final plat.)

A PDF of all legal descriptions and exhibits must be emailed to BZS Site Engineering for review against the E-plans. These DOCUMENTS (survey exhibit and description on 8 ½" X 14") shall be metes and bounds legal descriptions and exhibits prepared by an Ohio Certified Land Surveyor and must be sealed/stamped in blue ink. Easement documents must have the exhibit in PDF format and the metes and bounds legal description in a Word document. If the DOCUMENTS are for Right-of-Way (fee title transfer), they must be pre-approved by the appropriate County Engineer's Office.

Once the E-plan reviewer has reviewed the legal descriptions and exhibits for consistency with the R/W or easement limits shown on the E-plans, original DOCUMENTS must then be sent to City's Right-of-Way Services Manager with a cover letter describing the request (Right-of-Way and/or Easement) and the E-Plan number and Project Title.

When submitting items directly to the City Right-of-Way management send to the attention of Right-of-Way Services Manager, Public Service, Division of Division of Infrastructure Management, 111 N. Front Street, Columbus, OH 43215. Any questions regarding the format of these documents and exhibits and processing can be directed to the Right-of-Way Services Manager.

Once the Right-of-Way and/or Easement has been approved by the Right-of-Way Services, Manager, a deed (front end document) will be prepared by the City of Columbus attorney and emailed or sent back to the applicant to acquire the appropriate signatures. The applicant must return the original signed deed to the Right-of-Way Services Manager.

The Right-of-Way Services Manager will notify the DPS E-Plan Reviewer that they have received the executed deed (Right-of-Way and/or easement) necessary for this project and from their perspective the project may proceed for signature.

Plan signature shall not occur until D&C Plan Review receives notification from City Right-of-Way Services Manager that R/W documents (deeds or plat) are signed, approved and executed by the Owner(s).

City will then record the document(s) at the appropriate county and write legislation to have City Council accept, dedicate and/or name.

2.8. DRAINAGE EASEMENTS (if required by the improvement as a standalone document from the final plat)

A PDF of all legal descriptions and exhibits must also be submitted for review by the DPS E-plan reviewer and the DOSD E-plan reviewer . These reviewers will check for consistency between these documents and the E-plans.

Once the E-plan reviewers have reviewed the descriptions and exhibits, the next step is to submit the following items to BZS Site Engineering, 111 N. Front Street (attention: Andy Beard or Tieran Cline)

1. Two (2) **hard copies** of easement Legal Description and Exhibit on legal size paper with original P.S. signature,
2. Legal Description in a MS WORD file, and Digital PDF of the Exhibit on CD;
3. Closure report for each description prepared by the PS that prepared the description
4. Run a closure and submit. The closure should be less than 0.02', and the precision should be greater than 10,000.
5. Grantor (grantor must be deeded owner) information including:
 - a. company,
 - b. company address,
 - c. contact,
 - d. phone,
 - e. email

Following approval of the Legal Description and Exhibit by DOSD Private Development Review Section, the easement will be forwarded to The City Attorney Real Estate Division.

The Real Estate Division will prepare the legal language for the easement and send it to the Grantor for signature.

The Grantor will return the executed easement to the City Attorney Real Estate Division. The City will record the easement and notify the DOSD Private Development Review Section.

The E-plan reviewer will need written confirmation from DOSD that the aforementioned easements have been recorded. It is the design engineer's responsibility to contact DOSD to request that this written confirmation is forwarded to the DPS E-plan reviewer.

E-Plans with Drainage Easements will not be signed until the easements are recorded and the written confirmation is received.

2.9. CC-PLAN

When requested in advance by the DPS E-plan reviewer, submit a copy of the accompanying CC plan for the site.

2.10. STORM DRAINAGE

Shall be in accordance with the City of Columbus Storm Water Drainage Manual, latest edition.

2.10.1. Exhibits: Tributary map of drainage areas contributing to storm water flow in the R/W and onto the streets which are picked up by inlets and/or ditches and pipes.

2.10.2. Calculations: Pipe sizing, hydraulic grade line, pavement spread and depth, and inlet spacing/capacity.

2.10.3. Summary table and/or spreadsheets demonstrating compliance to City Storm Water Manual and Standards.

2.10.4. Report, signed and stamped by the Engineer registered in the State of Ohio, with summary and conclusions drawn from exhibits, calculations, and tables.

2.11. NON-STANDARD ITEMS:

If a non-standard item is desired to be included on the plans, please make a detailed written request to the DPS plan reviewer. The DPS plan reviewer will forward the written request to the Right of Way Manager. The Right of Way Manager will then provide a response. The non-standard item may either be approved, denied, conditionally approved, etc.

If the item is conditionally approved pending a review by the City's materials testing section, coordinate with the E-plan reviewer to determine the next steps. Typical items which may be required to be reviewed by this process include, but are not limited to, decorative pavers, stamped concrete, faux brick, architectural curbing, etc. Manufacturer's data, test data, strength characteristics, installation instructions, and maintenance requirements may be required for review as part of the City's evaluation.

Please be aware that installation of any non-standard items in the R/W may require a Maintenance Agreement to be executed between the parcel owner and the City, and the Maintenance Agreement shall be in place prior to plan signature.

2.12. APPROVED PAVEMENT DESIGN:

The pavement design shall comply with the City's Policy and Procedure for 'Residential Street Pavement Design' (refer to City of Columbus website).

Written documentation will be required affirming an approved pavement design from the City of Columbus Pavement Program Manager.

To achieve this approval, prior to submitting the E-plans, forward the proposed pavement design to the DPS E-plan reviewer. Provide a soil report from a Geotechnical Firm and pavement calculations for street design per the ODOT Pavement Design Manual based on the ADT volumes as required by the Residential Street Pavement Design Policy.

The DPS E-plan reviewer will forward the information to the City's Pavement Program Manager for review and comment. If the pavement design is not submitted prior to submittal of the E-plan, the E-plan approval may be delayed.

SHEETS in the PLAN SET

“Sample” sheets of an E-plan can be found, for guidance, on the City of Columbus website. <http://publicservice.columbus.gov/content.aspx?id=47082>

3. TITLE SHEET: Refer to “E-Plan (Private Dev) Title Sheet” for layout format.

- 3.1. INDEX OF SHEETS: Lists the sheet title and sheet number.
 - 3.1.1. Sheets and information in the plan set should be titled and located in order indicated.
 - 3.1.1.1. Title Sheet
 - 3.1.1.2. Typical Sections
 - 3.1.1.3. ADT Exhibit
 - 3.1.1.4. General Notes
 - 3.1.1.5. Estimate of Quantities
 - 3.1.1.6. Maintenance of Traffic
 - 3.1.1.7. Storm Water Pollution Prevention Plan
 - 3.1.1.8. Demolition Plan
 - 3.1.1.9. Plan and Profile (Street)
 - 3.1.1.10. Cross Sections (if Street Widening or Ditch Construction/Relocation)
 - 3.1.1.11. Details. (Intersections, Drives, etc.)
 - 3.1.1.12. Master Grading Plan
 - 3.1.1.13. Storm Sewer Profiles
 - 3.1.1.14. Survey Coordinate Data - Storm and/or Water
 - 3.1.1.15. Pavement Marking and Signing
 - 3.1.1.16. Traffic Signal & Traffic Signal Interconnect
 - 3.1.1.17. Street Lighting Plan (Contact the Division of Power for specific requirements involving content and order of demolition sheets, proposed sheets, photometrics, etc.)
 - 3.1.1.18. Landscape Plan
 - 3.2. PROJECT DESCRIPTION: A brief description of R/W improvement and purpose of the improvement in the R/W (e.g. new subdivision, road widening; turn lane addition; new street.)
 - 3.3. OWNER/DEVELOPER: Full name of legal business entity with address, contact name, phone/fax numbers, e-mail that will be the responsible party to the construction agreement at the time of construction. Said business entity name **must** be listed and must exactly match the name on the construction agreement. Also list the same information for the Developer and the Property Owner if they are different than the legal business entity responsible for the construction agreement at the time of construction.
 - 3.4. BENCH MARKS: The benchmarks and control points shall be tied into, or sourced from, at least one, preferably two, Franklin County Monuments
 - 3.4.1. Provide the ‘Source’ monuments with the Franklin County Engineer’s official designation; description of the Monument(s); coordinates (northing, easting); and elevation. Provide the method used to establish site/project benchmarks and control points from the ‘Source’ and correction factor.
 - 3.4.2. Reference the Horizontal DATUM and Vertical DATUM used (refer to GENERAL REQUIREMENTS).
 - 3.4.3. List of site/project vertical and horizontal control points established for the project.
 - 3.5. BASIS OF BEARINGS: Bearings shall be referenced to an official record of deed, plat or road improvement plan that has the bearing used. If plat, deed or plan is not referenced, then provide how bearings are established with reference to monuments (give official designation) on which the bearings are sourced from, or tied to, and the survey basis.
 - 3.6. CONSULTANT/ENGINEER: Firm Logo (if applicable). Engineer’s Seal. Full name of firm with address, contact name (Responsible Engineer), phone/fax numbers, e-mail. Signature line for the Engineer of Record.
 - 3.6.1. NOTE: Additional requirement of Traffic Signal Engineer’s P.E. stamp and signature on plans containing traffic signal or interconnect work – see SECTION 1.10.
 - 3.7. PLAN TITLE:
 - 3.7.1. For the project, provide name of the subdivision with Section#, Part# or Phase #. Each subsequent sheet shall carry the Plan Title and a sheet title describing the work shown thereon.

- 3.8. INDEX MAP: (Scale 1"=200' minimum)
 - 3.8.1. Indicate boundaries of the improvement in relation to adjoining properties and major roads. Show jurisdictional boundaries of Corporation line(s) where applicable. Add SIGNATURE APPROVAL LINES for entities having jurisdiction, as applicable.
 - 3.8.2. Include the boundaries of entire site to be developed as shown on the Preliminary Plat.
 - 3.8.3. "Sections" and/or "Parts" clearly outlined and labeled with the particular Section/Part highlighted (in BOLD) related to this plan and other adjoining Section/Parts, in lighter but legible font, shown with its respective E-Plan number in parenthesis.
 - 3.8.4. The "Section" or "Part" related to the plan SHALL match the Final Plat.
 - 3.8.5. Show the existing road(s) along the entire frontage of the site being improved from which the improvement will take access. Show existing curb cuts and streets (accessing other developments) along both sides of existing road(s). Show the existing road to the nearest intersection of a public road or if distance is considerable, provide a dimension from the corner of the Private Improvement site to the nearest public road intersection and a dimension to the proposed access street for the Private Improvement site.
 - 3.8.6. Where a proposed access street (to the Private Improvement) intersects with an existing roadway, locate and label the centerline and name of the proposed street intersection
 - 3.8.7. Show benchmark locations here and on street plans.
 - 3.8.8. Show Storm sewer lines and structures.
 - 3.8.9. Below the lower right hand corner of the INDEX MAP, provide a list of drawings required by other City agencies that are associated with the project, such as: Final Plat, Sanitary, Mass Grading, Storm (Private). Water (main line extension if required).
 - 3.9. ZONING INFORMATION: Provide the development name; zoning case number; certified address; and City Council Ordinance Number. For those 'not applicable', notate as 'N/A'
 - 3.10. LIST OF STANDARD DRAWINGS (ODOT and City of Columbus) and SUPPLEMENTAL SPECIFICATIONS: List the document number and date (issued) of all applicable to the project.
 - 3.11. LOCATION (or VICINITY) MAP: Notate and show site location related to major arteries, I-270, I-70, I-71, I-670 and label Federal/State highways, and corporation limits where applicable.
 - 3.12. SPECIFICATION: Statement of City Construction Material Specification applicable to the plan.
 - 3.13. SIGNATURE APPROVAL LINES: (include disclaimer statement).
 - 3.13.1. CITY OF COLUMBUS: sign-off by various Divisions
 - 3.13.2. OTHER ENTITIES: Provide signature line for other public entities having jurisdiction (e.g. County, Township, Municipality, State permit, etc.)
 - 3.14. REVISION BLOCK: Plan revision table with column headings of 'revision #', 'description' of revision, 'sheet(s)' revised, initial, and date. Locate at the lower right hand corner of the sheet.
 - 3.15. NOTICE FOR "OHIO UTILITIES PROTECTION SERVICE (OUPS)" containing contact phone numbers and website.
 - 3.16. DRAWING NUMBER: Drawing # as **XXXX-E** and sheet number (page number system X/XX)
 - 3.17. TITLE BLOCK: As shown on the sample plan drawings. Refer to the DPS website.
- 4. TYPICAL SECTIONS:** Typical Section for each street showing:
- 4.1. Street NAME with (ADT design volume (not range) for the street in parenthesis).
 - 4.2. Typical section of Street, full width to the R/W lines, with build-up components labeled and features (sidewalk, lawn, slopes, curb & gutter (or berm), slopes shown between R/W lines.
 - 4.3. Pavement LEGEND of street build-up (pavement type, base, sub-base, curb/gutter, under-drain, sub-grade, etc.) with material, work item, thickness of each component.
 - 4.4. Street centerline STATIONING. Define the street limits and any transitions by station number.
 - 4.5. Quantity: Show unit quantity of pavement in square yards for each street.
 - 4.6. If proposed work is a continuation of (or adjoins) an existing street, verify that the proposed typical section conforms, as a minimum, to that of the existing street. Where existing record plans do not exist or pavement build-up (thickness and composition) is not shown on a record plan, borings to determine pavement build-up of existing streets are required. Provide the information with the initial submittal for review and approval of the 'proposed' pavement section.

4.7. Widening: If widening is proposed on an existing street, the existing street is to be planed and over-laid using Item 441 as the surface course over the existing and proposed as determined by the City.

5. ADT (Average Daily Traffic) EXHBIT

5.1. Result of traffic study/calculations with ADT (Average Daily Traffic) for full build-out of entire developed area as shown on the Approved Preliminary Plat and abutting properties for existing, planned, and future developments. The Department of Public Service may include an estimate of future ADT's to be accounted for from abutting properties in cases where there has not yet been an approved zoning plan. Include all Sections and Parts of the subdivision with the Section (or Part) shown highlighted (or heavier weight lines) related to Plan AND Final Plat.

5.2. Show distribution of the calculated ADT volume on the exhibit and the ADT for each street and/or street segment. ADT ranges should not be shown.

5.3. Residential collector and higher-classification streets shall include ADT for all through traffic and locally generated traffic.

5.4. For further requirements, refer to "Residential Street Pavement Design" policy, latest edition.

6. GENERAL NOTES: General notes addressing compliance to CMSC, latest edition; notification/contact information; construction and work requirements; restrictions; utilities; infrastructure protection; item specials; access limits; et cetera. Refer to sample plan set on the City's website.

6.1.1. Provide General Notes as applicable per the 'Commercial (Private Development) Sample Plan Sheets located on Department of Public Service website. Note: Section Headings on the 'sample' sheet is for guidance on plan preparation and not to be repeated on the construction plans. The 'REQUIRED PLAN NOTES' should be as written and other notes shall be as indicated in the other sections and applicable to the project

6.1.2. Do not comprise notes that are repetitive of or contrary to, the CMSC information.

6.1.3. Any 'As per Plan' item must have a note or detail associated with it describing what differs from the standard CMSC item.

6.1.4. Items that are completely unique and are not contained in the CMSC shall be designated as 'Item Special' and a note or detail included that fully describes the item.

6.1.5. Provide a "Legend" for symbols, abbreviations, and line designation used uniformly throughout the plan.

7. ESTIMATE OF QUANTITIES: Complete and accurate listing of ALL items of work in the R/W shown on the plan:

7.1. COLUMN 1: CMSC Item No. using the Construction Materials Specification, Columbus OH, latest edition.

7.2. COLUMN 2: Quantity

7.3. COLUMN 3: Unit of measure.

7.4. COLUMN 4: Description as found in CMSC.

7.5. Include demolition and removal items.

7.6. Include items not covered in the City's specification and notate on the plans (e.g. ODOT catch basin, culvert, guardrail, Item 'Special')

7.7. PARTS or PHASES. For projects that segment construction projects into Parts or Phases, provide a column in the Estimate of Quantities table for the quantity in each Part or Phase with a Total column.

8. MAINTENANCE OF TRAFFIC (MOT): When work in a plan involves connection to, or work on existing streets open to the public, a detailed MOT plan with the following items, in part or in full, as determined by work to be performed, and specific to the plan. The MOT shall be designed to allow the least inconvenience to motorist and pedestrians alike while offering the safest alternative.

8.1. Detailed temporary traffic control notes shall precede the MOT detail drawings. Refer to the City website, Department of Public Service, Division of Design and Construction section for Temporary and Permanent Traffic Control Notes to be used.

8.2. MOT detail drawings shall include phasing & all geometric features including existing pavement markings and signing.

8.3. Any temporary pavement shall be shown and detailed.

- 8.4. If phased, each phase shall include a description of the proposed work. Each MOT phase shall include all proposed construction in that phase and the completed construction of the previous phase.
- 8.5. MOT plan shall extend a minimum of 200 feet beyond first and last temporary traffic control device on mainline street and a minimum of 200 feet on side streets. The proposed temporary traffic control shall be shown as bold lines along with the existing traffic control shown in lighter line weight.
- 8.6. All temporary traffic control signs, drums, flashing arrow panels, portable changeable message signs, tapers, lane widths, pavement marking words with dimensions, temporary signal poles, signal heads, etc., shall be shown at appropriate locations (stations, sign legends, sign codes, sign sizes) shall be included.
- 8.7. Signs, barricades, flashing arrow panels, portable changeable message signs, etc. and their locations may be identified by a ballooning-numbering system. All signs, barricades, etc. shall be shown on a key-legend format corresponding to each balloon. The key-legend shall be on the same plan sheet as the schematic and used uniformly throughout the plan. All signs shall include legend, sizing, color, codes, etc.

9. DEMOLITION PLAN: For clarity on the Plan & Profile sheets, it is recommended that a separate plan view or separate sheet show items in the R/W for demolition and site preparation. Do not repeat showing the items on the Plan & Profile sheets that have been removed on Demolition plan and are not being replaced. Provide the disposition (remove, replace, relocate, salvage, etc.) of those items disturbed on the Demolition sheet and the location of those items in final configuration on the Plan and Profile sheets as replaced, or relocated along with the existing items that remain 'as is' and any proposed items. In no case shall items that existed that were removed be shown on the Plan and Profile sheets. Describe by item and limits or coded letter/number with legend description. Existing drives or access along road frontage, abandoned or no longer used, are to be shown for removal and area re-graded to fit surrounding terrain. To achieve this, an intersection detail may be required for the location of the drive being taken out to assure positive drainage.

10. PLAN & PROFILE: (minimum scale allowed 1"=60' horizontal; 1"=10' vertical)

- 10.1. VIEW ORIENTATION: "North Arrow" up but may be to the right to best fit the sheet.
- 10.2. **STREET PLAN:** Plan view with name of street, limits of the street by station number, intersections, lots with lot #, and "Reserves". The street plan shall match the Final Plat. Plan view shall include:
 - 10.2.1. Benchmarks or any survey control points located within the project limits.
 - 10.2.2. Existing utility, infrastructure and features being connected to. Provide plan numbers of applicable record plans.
 - 10.2.3. BASIS OF STATIONING: Provide statement on each street plan & profile sheet.
 - 10.2.4. Label BEGIN project and END project for each street.
 - 10.2.5. STATIONING of each street at the BEGIN, END, along street centerline, at intersection with other streets, alleys, and (commercial) drives
 - 10.2.6. Survey BEARING of street centerline and LENGTH of each street.
 - 10.2.7. Centerline data (Δ , R, T, L, etc.) on each street. When street has a horizontal curve, provide centerline data and bearing before and after curve.
 - 10.2.8. Curb data (Δ , R, T, L, etc.) for each curve.
 - 10.2.9. Identify all control points with stationing such as PC, PT, etc.
 - 10.2.10. Locate and label tapers, transitions, deflections and tie-in points for pavement, pedestrian facilities, curbs, et cetera.
 - 10.2.11. Grade break station(s). Maintain a minimum of 300 feet between grade breaks or PVI's.
 - 10.2.12. Dimensions showing width of the following – street (face-of-curb or E/P), R/W (Right Of Way), easements, and each lot.
 - 10.2.13. R/W line (on both sides of the street) and easements clearly defined and labeled.
 - 10.2.14. Water line, bends, valves, and fire hydrants. Locate by station number, and offset. Show water service location to each lot.
 - 10.2.15. Storm sewer with pipe sizes. Storm structures with structure #, station location, reference dimension or offset left/right of street centerline.
 - 10.2.16. Indicate concrete encasement of storm sewer or other utilities with limits identified.
 - 10.2.17. "Reserves".
 - 10.2.18. Provide pedestrian facilities (sidewalk or shared-use-path) along "Reserves", along frontage of existing roads that this development adjoins but may be a backyard to a lot; and at intersections with ADA crossings labeled to be 'installed by Developer'.
 - 10.2.19. Location (station) of Pavement Relief joints

- 10.2.20. Sanitary sewer pipe and structures.
- 10.2.21. Street lights with station location.
- 10.2.22. Electrical conduit crossings and pull-boxes. Locate by station, offset.
- 10.2.23. Miscellaneous Items: Show utility sleeve locations, temporary barricades, temporary outlet ditches for under drain discharge from end of proposed pavement, temporary easements for storm sewer or under drain outlets, and other necessary easements – either platted or deeded.
- 10.2.24. Show reference to other sheets numbers for “Detail” related to plan view (e.g. “see sheet 7 & 8 for Intersection Detail”).
- 10.2.25. Provide the plan # for work shown to be done by “others”.
- 10.2.26. Provide a “Legend” for symbols, abbreviations and/or coded notes.
- 10.2.27. Show the limits of each ‘PHASE’ or ‘PART’ if construction is segmented on the plans
- 10.3. **STREET PROFILE:** Elevation view. Locate view on same sheet and below the “plan view” and include:
 - 10.3.1. BEGIN project and END project station and elevations.
 - 10.3.2. Existing grade profile.
 - 10.3.3. Show and label street profile grade, % slope.
 - 10.3.4. Allowable street grade is 0.50% minimum and 7.5 % maximum.
 - 10.3.4.1. Minimum 300 feet between grade breaks (or P.V.I.’s)
 - 10.3.4.2. Bench street grade to maintain at the maximum specified cross-slope for ADA within boundary of ADA/Pedestrian Access Route (PAR) crossing streets.
 - 10.3.5. Vertical curve data with length of curve, station and elevations at PVI, PVC, along curve, and PVT.
 - 10.3.6. For intersecting streets, provide stations and elevations of intersecting centerline, P.C., curb lines/edge of pavement. Verify match with profile of the respective street.
 - 10.3.7. Water line profile with elevations, pipe size, minimum cover, % slope, concrete backing and compaction requirements.
 - 10.3.8. Utility crossings with name of utility, size, elevations.

11. CROSS SECTIONS (Required when WIDENING an existing street).

- 11.1. Plans shall be on 1” grid, dotted ½-foot increment, with 5’ foot vertical and 5’ horizontal scale.
- 11.2. Intervals between regular sections shall normally be 50LF.
- 11.3. Stationing shall increase from bottom to top of sheet.
- 11.4. Show/label Ex. RW, Proposed RW, and easements beyond the R/W and work limits.
- 11.5. Show/label all proposed and existing underground utilities.
- 11.6. Limits of existing pavement shall be shown.
- 11.7. Existing features shall be shown in dashed lines & proposed features shall be solid lines.
- 11.8. Show/label fences, walls, walks, and paths.
- 11.9. Label proposed/ existing T/P (Top of Pavement) elevations.
- 11.10. Labeling of the sections shall follow the Standard Drawing for each area. Label slope grades.
- 11.11. Ditch line elevations & flow arrows.
- 11.12. Drive profiles with % slopes shall be included within the sections, preferably extending out to 25’ beyond limit of drive work. Drive profiles not falling on a full section shall be shown on a partial section.

12. DETAILS-INTERSECTION, CULDESAC, EYEBROW: Plan view showing:

- 12.1. Show street intersections labeled with ‘Streetname’ and station of each street centerline at point of intersection and alignment angle.
- 12.2. Location of R/W.
- 12.3. Curb data. Station location of radius.
- 12.4. Elevations along curb/gutter or edge of pavement.
- 12.5. Flow pattern of surface drainage with % slope for streets and around curbs.
- 12.6. Grade break, station number, and pavement elevations, % slope of pavement.
- 12.7. Tapers with stationing and length/width dimensions.
- 12.8. Dimensioned widths of street, R/W, sidewalks, ramps, etc.
- 12.9. Note to “locate iron pin” at center point. Provide ‘Permanent Marker Coordinate Table’ with list of each intersection, Permanent Marker (PM) Number, ‘Design’ Easting/Northing and ‘As-Built’ Northing/Easting’.
- 12.10. Provide cul-de-sac joint sawing diagram or reference to the standard drawing.

- 12.11. Show, locate and label all infrastructure and structures (storm, sanitary, electrical, signal strain poles, power poles, street lights, control cabinets, pull boxes (electric & other utilities), valves (water, gas, etc.) within limit of work with top of casting elevations. Verify no interference and positive drainage.
- 12.12. Provide (lot) driveway locations. (Drives locations may be limited by ADA ramps). Notate on the Final Plat “No Vehicular Access” at final design location of ADA ramps so that the residential home is situated on the lot to avoid conflict of drive with ADA ramp.
- 12.13. ADA access paths & curb ramps. Detail on plan (scale 1’= 10’). (Also see Criteria for ADA)
- 12.14. Thicken walks, ramps, transitions to 8 inches at intersection per standard drawings.
- 12.15. Station the centerline of ADA route at street crossings. Give elevations of corner points of ramps and transitions.
- 12.16. Notate % running slope on ramps (5% to 7.69%) or transitions greater than 1.56%.
- 12.17. CRITERIA FOR ADA
 - 12.17.1. Fully comply with the latest edition of City of Columbus ADA Rules and Regulations
 - 12.17.2. The PAR (Pedestrian Access Route) is defined as ADA compliant; minimum clearance of 48” wide by 80” high clear of any obstruction, encroachment, handrail projection or doors swing; and continuous across parcel frontage, crossing streets, alleys and drives. The PAR shall be in the R/W or in a public access easement for any portion that is outside of the R/W. Any portion of the PAR proposed to be outside of the R/W and within a public access easement must receive prior written approval from the Right of Way Manager from the Division of Infrastructure Management. Additionally, City standard drawings 2300 (sidewalk) and 2310 (shared use path) show flatter areas adjacent to the sidewalk on both sides (minimum 1’ at 3.13% max) and shared use path (minimum 2’ at 6:1 max). These flatter areas are also required to be within the R/W unless a public access easement is approved by the Right of Way Manager.
 - 12.17.3. Provide a continuous, ADA compliant, pedestrian facility along the project limits in accordance with City standard drawings 2300 (sidewalk), 2310 (shared-use-path) and 2319 (ramps).
 - 12.17.4. Infrastructure located at an intersection can be affected by the ADA ramps. It is recommended that ADA ramps be located early in the design process to reconcile any conflict.
 - 12.17.5. Where ramps on the Developer’s corner exist AND are compliant, notate as “existing compliant ramp (DND)” and provide the location (station, offset of ramp centerline), configuration, orientation and relationship to the companion ramp location on the opposite side. It is the Developer/Engineer’s responsibility to verify existing ramps are ADA compliant and Developer’s responsibility for replacement if determined later by the City to be non-compliant.
 - 12.17.6. For newly signalized intersections all ADA compliant ramps and companions are to be provided.
 - 12.17.7. Where a pedestrian crossing at an intersection is prohibited, no ramps are to be installed and required signing shall be in place or the required signs installed if none currently exist.
- 12.18. On standard private driveways and alleys, the ADA ramp/access is parallel to the street (Standard Drawing 2319). On a typical drive or alley approach, every attempt should be made to get the PAR (Pedestrian Access Route) crossing the approach level with the adjacent sidewalk, and avoid transitioning the sidewalk lower to meet the driveway. This is done by increasing the slope, up to the maximum allowable slope per Standard Construction Drawing 2201 and 2202, of the drive approach from the curb-line or edge of pavement to the front of the PAR. If a transition of the sidewalk is necessary to meet the driveway at a lower elevation, ensure that grade breaks are perpendicular to the running direction of the PAR and the cross slope does not exceed the maximum allowable cross slope of 1.56%. Drain from the walk to the drive, and from back of walk to the street. NOTE: Drives serving Alleys, signalized drives, or striped commercial driveways require the placement of detectable warnings. See City of Columbus ADA Rules and Regulations XII.A.2.
- 12.19. Show all transition components. Provide elevations of corner points of landings, ramps, and transitions. Notate % running slope on ramps/transitions. Design ramps to “Full Design” criteria detailed in the Columbus ADA Rules and Regulations
- 12.20. Maintain maximum specified cross-slope within boundary of the PAR. Show PAR by phantom lines. Notate % cross-slope (max 1.56%) on the PAR through drive approaches, street crossings and landings.
- 12.21. Verify a ‘landing’ is provided wherever a (public to private) walk intersects or a wheelchair turns.
- 12.22. Pavement markings (cross-walks, stop bars), signs and traffic signal facilities (e.g. loops, push buttons, poles) may be affected by ADA and shall be adjusted accordingly.
- 12.23. ADA access must be provided to push buttons (refer to ‘The City of Columbus ADA Rules and Regulations’ for location/orientation) at proposed and existing signalized intersections and/or drives.

Pushbutton shall be shown with the ADA access detail. The developer is responsible to provide ADA compliant signal facilities in the R/W contiguous to their property and crossings to the opposite side as determined by the City.

13. STORM SEWER PROFILE: Elevation view showing profile of storm sewer in the R/W with:

- 13.1. Structure shall have numeric identifier tying structures to the plan views.
- 13.2. Structure number with station location.
 - 13.2.1. Elevation of pipe IN/OUT and top of casting.
 - 13.2.2. Type structure and type casting.
 - 13.2.3. Other inlets (or knock-outs) into structure, with pipe size, direction of entry, and invert.
- 13.3. Pipe size with grade (% slope). Pipe length.
- 13.4. Street centerline @ street crossings labeled with name of street.
- 13.5. Backfill material and compaction requirement over each length of pipe between structures with limits stationed.
- 13.6. Concrete encasement requirements (CMSC 901.12 and 910) with limits stationed.
- 13.7. Profile of existing grade and proposed grade.
- 13.8. Show the limits of each 'part' or 'phase' above each profile if construction is 'parted' or 'phased'.
- 13.9. Label name and size of existing and proposed utilities (public and private).
- 13.10. Other information as required by the Department of Public Utilities, Division of Sewers and Drains.

14. PAVEMENT MARKING AND SIGNING:

- 14.1. When roadway improvements are being performed, on a separate plan view, show all existing and proposed permanent traffic control items within the project limit. The plan shall indicate lane use, lane width and alignment as proposed.
- 14.2. The traffic control plan shall include all roadway items including but not limited to, curb lines or edge-of-pavement, drives, medians, all islands, sidewalk with curb ramps, all curb cuts, final Right-of-Way (R/W) lines, easements, street names, utility poles, signal poles and signal items, manholes and pull boxes, parking meters when applicable, marked crosswalks distinguish if painted, brick or both, street lighting, street side trees, and hydrants. However, in certain cases the E-plan reviewer may require various items (i.e. utilities) to be deleted for clarity.
- 14.3. Existing and proposed permanent pavement markings shall be shown - include only the existing markings that have NOT been removed within the project limits. Existing markings may include those outside the project limits for alignment purposes and shall include the area minimum 200' past the projects limits on the mainline or to the nearest intersection and 200' on side streets. All intersections shall be shown in full.
- 14.4. Permanent existing and proposed signing shall be shown in full with the same limits as the proposed pavement markings. All existing signing shall be shown as removed with the exception of those outside the project limits shown for plan review purposes only and proposed signing. Each proposed sign shall show the sign symbols if existing and the sign text. The sign code, size, state pole mounted when applicable, and station shall be included for each sign. Offset stationing when required.
- 14.5. Proposed markings shall be labeled, stationed and include a legend with type marking material.
- 14.6. Raised pavement markers (RPM) shall be shown. A word document or AutoCAD drawing set may be obtained from the traffic control plan reviewer for RPM spacing requirements. Contact the traffic control plan reviewer for Inlay Marking specifications.
- 14.7. For traffic control requirements at signalized intersections, refer to the City of Columbus Traffic Signal Design Manual.
- 14.8. Refer to the City website, Department of Public Service, Division of Design and Construction section for Temporary and Permanent Traffic Control Notes to be used.
- 14.9. All projects shall comply with the requirements set by supplemental specification called (SS-1630) '*Installation of Ground Mounted Signs and Sign Supports*'. Refer to SS-1630 for standard post sizes for various sign types.

15. TRAFFIC SIGNALS:

- 15.1. Refer to the City of Columbus Traffic Signal Design Manual.
- 15.2. Obtain additional information by contacting the Department of Public Service, Division of Design and Construction-Signal Design Staff.

16. LIGHTING:

- 16.1. Location and station of street lights, street crossings, pull boxes, conduit, conductors.
- 16.2. Provide stationing and offset on pull boxes. Verify no interference with other structures.

17. LANDSCAPE PLAN:

- 17.1. Provide plan as required for specific projects.
- 17.2. Ensure that any quantity tables on the landscaping plans sheets are cross-referenced to the summary of quantities provided near the beginning of the plan set.

NOTE: Refer to City of Columbus Website - 'Sample E-Plan' sheets for format.