CITY OF BROADVIEW HTS.
ENGINEERING DEPARTMENT
CIVIL ENGINEERING PLAN REVIEW DEVELOPMENT CHECKLIST

Instructions:

1. Use the attached list to verify the completeness of the engineering plans being submitted.
2. Check the box next to each item that has been provided on the plans.
3. If an item or section is not applicable to the given project, write "N/A".
4. Add notes next to any items where clarification to City staff is needed.
5. Attach the completed checklist with the engineering plans at time of **first** submittal only.
6. Verify the items under Section A: First Plan Submittal Requirements are met. The Engineering Department reserves the right to reject any set of plans that does not meet these minimum submittal requirements.
7. Sign and complete contact information below. All contact information is required and incomplete or missing fields will not be accepted.

Please note the following information is intended to assist the design engineer in preparation of civil drawings for review by City Staff. The following checklist is not intended to be a definitive list of all information or a list of *design* requirements. Refer to City design manuals for complete design information.

Owner/Developer: _____

Phone: _____ Email:_____

Developer Representitive/Engineer:_____

Phone: _____ Email:_____

"I, the undersigned, Engineer of Record for this project, hereby certify that I have reviewed the Civil Engineering Plan Submittal Process packet, and that the information provided herein is correct and complete to the best of my knowledge."

Signature: _____ Date: _____

Printed Name: _____ Phone: _____

Address/
Location: _____ Email: _____

Project Name: _____

A. Submittal Requirements

- ☐ Submit one plan set for Engineering
- ☐ Each set is neatly bound, no loose sheets will be accepted
- ☐ All submitted plan sheets shall be either 22"x34" or 24"x36" in size
- ☐ This signed and completed plan review checklist attached with plans
- ☐ In addition to site specific civil sheets, the following sheets are required in all plan sets:
  - Cover Sheet (per exhibit A)
  - Plat (recorded or proposed version)
  - Approved "stamped" Site Plan from Planning Department
  - General Notes (see website for current notes)

Plans not meeting above requirements may be returned without a review and marked "**Incomplete**"

B. Requirements for all Civil Plan Sheets

- ☐ Title block with engineering firm information, registration number, engineer's seal, sheet title, and page numbers clearly shown
- ☐ Benchmarks are required on all pertinent sheets
- ☐ North Arrow and scale clearly shown on each plan sheet
- ☐ Legend (relevant to each sheet) showing all special symbols, linetypes and hatch used
- ☐ Street names labeled on all existing, proposed, and future streets
- ☐ Lot & Block numbers and/or ownership info shown for all lots
- ☐ Caution notes shown when working next to any existing utilities (public and franchise)

C. Recommended Order of sheets

1. Cover Sheet
2. Plat
3. General Notes
4. Approved Site Plan *(commercial projects)*
5. Dimensional Control Plan *(commercial projects)*
6. Tree Survey (if applicable)
7. Erosion Control Plan
8. Post Construction Storm Water Quality Plan
9. Grading Plan
10. Drainage Area Map and Drainage Plans
11. Water and Sewer Plans
12. Paving Plans
13. Sidewalk Layout Plan
14. Street Light and Signage Plan
15. Traffic Control Plan (site specific)
16. Construction Details
17. Approved Landscape Plan *(commercial projects)*
18. Screening & Buffering Plans *(residential projects)*

D. Dimensional Control Plan (*Non-residential projects*)

- ☐ Dimensions for all buildings, pavement and hardscape areas (i.e. parking areas, driveways, fire lanes, turn lanes, sidewalks, radii, throat depths, etc.) measured to the nearest 0.0'
- ☐ Control points to structures (i.e. inlets, etc.) based on dimension from property corner or known feature (not from an arbitrary point parallel to property line)
- ☐ Verification of public right-of-way widths. Dimension each property corner adjacent to public right-of- way to a perpendicular point on opposite side right-of-way line (do not label "variable width" only)
- ☐ Dimension along right-of-way to nearest cross-street and/or driveway measured from edge of drive to edge of drive.

E. Tree Survey, if applicable

- ☐ Property lines, right-of-way and easements shown and dimensioned
- ☐ All buildings, structures, and utilities (existing and proposed) shown

- ☐ FEMA and fully developed floodplains, NRCS lake tree preservation zone, and Erosion Hazard
- ☐ Setback shown
- ☐ Show existing grading contours
- ☐ List in table format, the species and size of all trees at least 6" in caliper measured at 4.5' trunk height from ground
- ☐ Show surveyed location of trees

F. Erosion Control Plan

- ☐ Existing and proposed contours clearly shown/labeled
- ☐ Existing and proposed storm lines and inlets shown
- ☐ List the total disturbed acreage including offsite and delineate limits of construction
- ☐ Sedimentation basin provided for disturbed basins 10 acres or greater
- ☐ Erosion Hazard Setback, FEMA 100-yr floodplain, and Fully Developed 100-yr floodplain delineated
- ☐ Appropriate BMP's used and identified
- ☐ Phasing of BMP's with construction activities listed/described
- ☐ BMP details provided, should be per current ODNR Rainwater Manual
- ☐ Stockpile area and batch plant areas shown and labeled
- ☐ Areas to be sodded or seeded shown and specified with permanent perennial vegetation
- ☐ Areas of permanent erosion control (other than vegetation) clearly shown

G. Post Construction Storm Water Quality Plan (*For sites greater than one (1) acre*)

- ☐ Proposed contours clearly shown/labeled
- ☐ Drainage areas and sub areas delineated and labeled
- ☐ Proposed storm water conveyance systems such as storm lines, storm inlets, grass channels, and vegetated swales shown
- ☐ Flow arrows for surface drainage shown
- ☐ Proposed non-structural and structural post-construction (permanent) BMPs to address post-construction run-off identified
- ☐ Wetlands delineated where applicable
- ☐ Erosion Hazard Setback, FEMA 100-yr floodplain, and Fully Developed 100-yr floodplain delineated easements (show post project FP) shown where applicable
- ☐ Description of long-term operation and maintenance of BMPs
- ☐ List the total site impervious area (ft2 of all paving, roof areas, etc.) – Commercial Projects
- ☐ List the total site open space area (acres) – Residential Projects

H. Grading Plan

- ☐ Both onsite and offsite existing/proposed contours shown clearly labeled
- ☐ Date and name of firm who prepared geotechnical report with corresponding note stating: "Work shall be done in accordance with the Geotechnical Report by _____, dated _____."
- ☐ Drainage clarified by flow arrows, high points, sags, ridges, and valley gutters
- ☐ Show driveway locations for all lots adjacent to storm inlets
- ☐ Show drop grade beams and elevations as needed
- ☐ Positive overflow provided at all low points, easements dedicated as needed
- ☐ Finished pad and/or floor elevations shown
- ☐ Minimum finished floor elevations shown adjacent to floodplains, ponds, creeks/channels, etc.
- ☐ Clearly show all walls and label top/bottom elevations of wall at key locations
- ☐ Erosion Hazard Setback, FEMA 100-yr floodplain, and Fully Developed 100-yr floodplain delineated easements (show both pre project FP and post project FP)
- ☐ Erosion Hazard Setback determination sections provided (in plans or under separate cover)
- ☐ Cross-sections and flow data for all swales and open channels provided
- ☐ Spot shots shown to ensure proper drainage

I. Drainage Area Map

- ☐ Existing contours clearly shown for *entire* drainage basin, both onsite and offsite. Aerial topography or similar is acceptable for offsite areas with major contour labels shown
- ☐ Drainage areas and sub areas delineated and labeled
- ☐ Flow arrows for surface drainage shown
- ☐ Existing and proposed storm lines and open channels shown
- ☐ Inlet designation labels shown
- ☐ Detention pond shown and labeled
- ☐ Drainage easements shown and labeled
- ☐ Zoning indicated for all offsite areas and/or land use assumptions specified
- ☐ Rational Method Peak Runoff Rate Computation Table shown (Q=KCIA) rounded to three significant figures
- ☐ Time of concentration and weighted runoff coefficient calculations shown as needed
- ☐ List the *total* site impervious area (ft^2 of all paving, roof areas, etc.) – *Commercial Projects*
- ☐ Erosion Hazard Setback, FEMA 100-yr floodplain, and Fully Developed 100-yr floodplain delineated

J. Hydraulic Calculations

Street Flow Computation Table provided for all public streets for 10-yr and 100-yr events
Inlet Interception Computation Table provided for all public inlets for 10-yr and 100-yr events
Pipe Hydraulics Computation Table provided for all public lines for 10-yr and 100-yr events
Provide electronic copies of all hydraulic computations on CD or digital media

K. Detention Pond Design and Hydraulic Calculations

- ☐ Water Quality Calculations (per Ohio EPA Phase II Requirements) include but not limited to:
  - Detention pond design calculations shown
  - Provide detention pond volume sizing calculations and/or computation table
  - Provide stage-discharge table and/or curve information
  - Provide weir and/or orifice sizing calculations for outfall structure
- ☐ Existing and proposed contours shown and labeled.
- ☐ Detention/Retention Pond Design and calculations based on City of Broadview Heights Codified Ordinance 1286, also include:
  - Cross-section of pond including side slopes, normal pool elevation (if applicable), show 100-yr WSE,
  - 10-yr WSE, and 1-yr, 24 hour WSE as required per the stormwater ordinance
- ☐ Detail of pond outfall structure showing all elevations as necessary
- ☐ Trash rack (and detail) provided for smaller orifice openings
- ☐ Overflow spillway location and design information provided
- ☐ Show and label all existing/proposed utilities and easements
- ☐ Provide electronic copies of all hydraulic computations or data files (HMS, RAS, StormCAD, PondPack, etc.) on CD or digital media

L. Storm Drain Plan

Plan View

- ☐ Show and label all existing and proposed utilities
- ☐ Dimension location/spacing of utilities
- ☐ Label inlet type, inlet block-outs, size, paving station, and top of curb elevation at a minimum
- ☐ Label type and size of existing/proposed structures (i.e. headwalls, manholes/junction boxes)
- ☐ Label type, size and dimensions of all permanent outfall erosion protection.
- ☐ Show centerline stationing for pipe with PC & PT stations and curve data
- ☐ Label centerline stations for lateral connections, manhole & junction box locations, pipe size changes, headwalls, and future stub out connections
- ☐ 100-yr gutter flows and bypass shown at each inlet along public streets and firelanes
- ☐ Erosion Hazard Setback, FEMA 100-yr floodplain, and Fully Developed 100-yr floodplain shown
- ☐ Provide applicable construction details for all drainage structures

Profile View

- ☐ Existing and proposed ground line at centerline of pipe shown and labeled correctly
- ☐ Show all hydraulic data including design flow, full flow capacity, friction slope, velocity, and velocity head. For partial flow conditions show design flow, full flow capacity, normal depth, normal velocity, and velocity head.
- ☐ Label station and flowline elevation information for all structures, crossings, laterals, etc.
- ☐ Label flowlines at every 50 foot station
- ☐ Indicate length, type/class, slope and size of all storm pipes
- ☐ Show and label 100-yr and/or 10-yr HGL, label HGL elevations at all junctions
- ☐ All utility crossings and parallel sewer lines shown in profile
- ☐ 100-yr WSE shown at outfall for ponds, creeks and channels
- ☐ Open channels shall also include a typical cross section with all hydraulic data

M. Water Plan

Plan View

- ☐ Show and label all existing and proposed utilities
- ☐ Show and label water line leading to fire sprinkler systems as “fire line” where applicable
- ☐ Label size, type and pressure class for all proposed water mains
- ☐ Show location for all water services and meters
- ☐ Show and label all easements
- ☐ Dimension location of all mains, services, meters, and spacing from other utilities
- ☐ Curve data and stationing provided as necessary
- ☐ Show and label all fire hydrants, valves, fittings, FDC locations, and back-flow prevention
- ☐ Label valves with paving station near barrier free ramps or ADA routes

Profile View

Profile all water mains 12” and larger, or where a potential conflict may arise
Existing and proposed ground line at centerline of pipe shown and labeled correctly
Label station and flowline elevations at 100’ intervals, and for all fittings, laterals, and crossings
Indicate length, type/class, slope and size of all lines
All utility crossings and parallel sewer/storm lines shown in profile
Indicate length, type and size of encasement as needed

N. Sanitary Sewer Plan

Plan View

- ☐ Show and label all existing and proposed utilities
- ☐ Dimension location of all mains from other utilities
- ☐ Label line name, size, thickness, and type of all proposed sanitary sewer lines
- ☐ Stub-outs labeled with size, slope, length, and flowline elevations (if not profiled)
- ☐ Show and label all easements
- ☐ Show centerline stationing for sanitary sewer
- ☐ Show and label all manholes with rim elevations, as well as cleanouts
- ☐ Indicate type and size of encasement where needed
- ☐ Show flow direction arrows for sewer main
- ☐ Topographic contours shown to delineate sewer basins

Profile View

- ☐ Profile shown for all mains 8” and larger, or where a potential conflict may arise
- ☐ Existing and proposed ground line at centerline of pipe shown and labeled
- ☐ Label station and flowline elevation information for all manholes, cleanouts, crossings, laterals
- ☐ Label flowlines at every 50 foot station
- ☐ Manhole inflow and outflow elevations to be designed with a minimum of 0.1’ drop
- ☐ Indicate the type and diameter for all manholes
- ☐ Indicate length, type/class, slope and size of all sanitary sewer pipe between manholes
- ☐ All utility crossings and parallel storm lines shown in profile
- ☐ Indicate length, type and size of encasement as needed

O. Paving Plan

Plan View

- ☐ For all new streets, a site specific geotechnical evaluation and pavement design submitted with plans
- ☐ Typical Pavement Section details shown (firelane, parking areas, streets, subgrade, etc. For streets, centerline stationing at every 100', PC's, PT's, and curve data labeled
- ☐ Intersection, driveway and island curb radii labeled
- ☐ All sidewalks and barrier free ramps shown, labeled and dimensioned
- ☐ Existing, proposed, future streets and drives shown and labeled
- ☐ Right-of-way corner clips and sight visibility easements provided
- ☐ Storm inlets identified with paving stations and top of curb elevations at center of inlet.
- ☐ Drainage clarified by flow arrows at crests, sags, ridges, intersections, and valley gutters
- ☐ Show driveway locations for all lots adjacent to storm inlets and intersections

Profile View

- ☐ Existing ground line for left, right, and center of right-of-way shown
- ☐ Proposed top of curb line shown for all public streets, proposed invert line shown for all alleys
- ☐ Show right and left top of curbs at intersections where split grade occurs
- ☐ Top of curb/pavement elevations labeled at every 50 foot stations
- ☐ Vertical Curve stationing and elevations including PVC, PVI, PVT, crest/sag location, curve length, algebraic grade difference, and "K" values shown at a minimum
- ☐ Street grades shown to the nearest 0.01'. Max and min grades per street design manual
- ☐ Show "compacted fill" callout/note for all areas of fill

P. Sidewalk Layout Plan *(Residential Subdivisions)*

- ☐ Provide a single scalable sheet showing all sidewalks to be installed with the development
- ☐ Distinguish between developer installed sidewalks and homebuilder installed sidewalks.
- ☐ Show actual layout locations and sizes of all proposed sidewalks and barrier free ramps
- ☐ Specify the Type (based on City or current ODOT PED detail) of Barrier Free Ramps used at all locations
- ☐ Confirm sidewalk layout and grades (show in grading plan) meet ADA standards

Q. Street Light and Signage Plan *(Arterial Streets and Residential Subdivisions)*

- ☐ Show all street light locations, consideration should be given to electrical layout from utility company
- ☐ Show all stop signs and traffic related signage locations
- ☐ Street lights located on opposite side of street from Stop Sign
- ☐ Verification of fire hydrant placement relative to street lights and stop signs (3' clear zone)
- ☐ If symbols used in plan, include appropriate legend for clarification

R. Traffic Control Plan *(Site specific)*

- ☐ Design site specific traffic control plan, ODOT standard alone is inadequate
- ☐ Indicate posted speed limit or design speed
- ☐ Show all sign designation, sign graphic, and sign size
- ☐ Show channelization device type, locations, and spacing
- ☐ Show all traffic barricades and indicate type
- ☐ Show all detour routes and detour signage
- ☐ Show flagger locations where applicable
- ☐ Show message boards with text for two phases
- ☐ Show flashing arrow boards where applicable
- ☐ If symbols used in plan, include appropriate legend for clarification