



ARTICLE 5: PORTAGE COUNTY ENGINEER'S STANDARDS for ROAD, STORM WATER & DRAINAGE IMPROVEMENTS

Section 500

General Statement

This Section pertains to the design and construction of roads, storm water management and/or drainage improvements approved by the County Engineer's office or their designated agents.

Section 501

Intent of the Regulations, Project Scope and Plans

The intent of these regulations is to prescribe complete functional improvements, which the Developer undertakes to do, at no cost to Portage County and in full compliance with the approved plans, standard drawings and specifications of the Portage County Engineer or the Portage Soil and Water Conservation District. They are to be cooperative and each party's requirements are as binding as if called for by all parties. Should any misunderstanding arise as to the intent or meaning of said plans, specifications or standard drawings or any discrepancy appear in either, the coordinated decision of the Portage County Engineer and/or the Portage Soil and Water Conservation District in such case shall be final and conclusive. The Portage County Engineer is the Portage County Storm Water Coordinator and the Coordinator oversees the Portage County Soil and Water Conservation District in the Storm Water Management Program.

Section 502

Improvement Plans

502.1 General Requirements for Improvement Plans

All Improvement Plans shall be prepared on 24" x 36" sheets. Paper Improvement Plans shall be submitted for plan reviews. Final as built Improvement Plans shall be submitted on mylar and in electronic format. If more than three sheets are required, then a title sheet shall be used. The professional engineer responsible for the preparation of the Improvement Plans shall affix his stamp or seal.

502.2 Title Sheet

The Title Sheet shall be page number one and each sheet thereafter shall be numbered consecutively. The title sheet shall contain the following information:

- A. Title block
- B. Developer: Name, address, and telephone number.

- C. Location map with north arrow: This shall indicate the subdivision location within the County and in relation to major roads and landmarks.
- D. An index for all drawings contained in the Plans.
- E. Typical Section: A typical section shall be located on this sheet or other sheets of the Plan to show design elements of the road construction.
- F. General Notes: A set of general notes covering special situations, not covered under the general specifications, shall be shown on this sheet or other sheets of the Plan.
- G. Estimated quantities by Ohio Department of Transportation (ODOT) number for all construction items shall be located on this sheet or other sheets of the Plan.
- H. Names of all affected utilities, with contact persons and telephone numbers.
- I. Signature lines for all required approvals.

502.3 Topographic and Drainage Sheet

A topographic map of the Subdivision area at a scale of 1" = 100 feet shall be provided showing the following information:

- A. General Information
 - 1. Title
 - 2. North arrow
 - 3. Corporation lines and subdivision names with plat number.
 - 4. Existing above ground structures
 - 5. Existing and proposed easements
 - 6. Flood hazard areas
 - 7. Wetlands and impacts to wetlands
- B. Topographic Details
 - 1. All elevations shall be referenced to NAV88 or current datum. List the datum used on the plans.
 - 2. Contours shall be drawn at 2-foot intervals if slope is less than ten percent (10%), and 5-foot intervals if the slope is greater than ten percent (10%).
- C. Drainage Details
 - 1. The Developer's engineer shall make a complete study of the drainage area contributing to the Subdivision.
 - 2. To show the entire drainage area, additional sheets may be required. If additional sheets are needed, existing mapping data/ information will be sufficient (i.e. it is not necessary to survey outside of the project limits to determine contributing drainage area).

3. The proposed storm drainage system shall be shown completely. The drainage area for each pipe or drainage structure shall be outlined and the number of acres included.

502.4 Special Construction Drawings

These sheets shall contain detailed drawings of special construction items not otherwise shown. Detail sheets prepared by the Portage County Engineer or Ohio Department of Transportation for pavement and storm sewer items shall be incorporated in the set of construction drawings. Erosion and sediment control details shall also be incorporated as directed by the Portage County Engineer and/or the Portage Soil and Water Conservation District.

502.5 Road Plan and Profile Sheets

All roads within the subdivision shall be shown on a standard plan and profile sheet. Plan view on top of sheet and profile view on bottom.

A. Scale

1. 1" = 50 feet for the horizontal scale and 1" = 5 feet for vertical scale on rural density Subdivisions.
2. 1" = 30 feet for the horizontal scale and 1" = 5 feet for vertical scale on suburban or urban density Subdivisions.

B. Plan Items

1. Road centerline, stationing, right-of-way lines and widths, curve data, proposed monument locations (on centerline at points of curvature, points of tangency, and intersections), road names, subplot lines, easements and lot numbers.
2. Pavement, curbs, gutters, sidewalks, storm and sanitary sewer structures, bridges, culverts, guardrail and proposed and existing utilities.
3. Topographic features within the general area and any obstruction within the right-of-way or construction area.
4. Existing and proposed easements
5. Flood hazard areas
6. Wetlands

C. Profile Items

1. Centerline stationing, benchmarks with the description and elevation, original ground profile grade on the centerline labeled at 50' stations, and proposed profile grade on the centerline labeled at 50' stations for straight grades and 25' stations for vertical curves.
2. Vertical curve data and sight distance data

3. Storm structures, sanitary sewer structures with assigned numbers, bridges, culverts and proposed and existing utilities.

502.6 Cross-Section Sheets

- A. Scale: Both horizontal and vertical scales shall be 1" = 5 feet, unless approved otherwise by the County Engineer.
- B. Location: A cross-section should be at each 50-foot interval and other needed locations and shall show the existing ground line dashed and the proposed section drawn solid. Include the following data:
 1. Proposed finished grade elevations
 2. Station
 3. Existing elevations
 4. Existing and Proposed Utilities
- C. Drainage Sections

If a detail culvert sheet is not used, then a cross-section at any proposed culvert or other structure shall be shown. This detail shall include the elevation at both the inlet and outlet. Also, the type and size of structure shall be shown. The profile of existing drainage channels shall be shown and should extend a minimum of 50 feet beyond the inlet and outlet and should extend beyond where the proposed grade matches the existing grade.

502.7 Drainage Structures

Detail drawings of all bridges and other drainage structures (other than standard culvert pipe without headwalls) shall be provided.

502.8 Intersection Details

The construction drawings shall include detailed plan views of intersections and cul-de-sacs. These detailed plan views shall be drawn at a scale of 1" = 10 feet or 1" = 20 feet and shall show radius return curve data, proposed elevations for centerline and gutter (or edge of pavement), proposed sidewalks (as applicable), and proposed utilities (i.e. storm, sanitary, water).

502.9 Storm Water Pollution Prevention Plan (SWPPP)

- A. See Section 509 for Storm Water Management Requirements. The SWPP plan shall comply with the *Portage County Construction Site Sediment, Erosion and Storm Water Management Rules & Recitals* and the current regulating version of the Ohio EPA'S current National Pollution Discharge Elimination System's (NPDES) *General Permit for Storm Water Discharges Associated with Construction Activity*. The plan must also follow the guidelines set forth in the *Ohio Rainwater and Land Development Manual*.

- B. A SWPPP must be submitted prior to any grading or disturbance of the site (See Section 509.02 for information).
- C. Show locations of all structural and non-structural erosion and sediment control, storm water management and post-construction water quality Best Management Practices (BMPs). If applicable, erosion and sediment control information may be incorporated on the topographic or drainage sheet.

502.10 Additional Plan Sheets

- 1. Draw to scale all sub lots or acreage abutting the streets where improvements are to be located. Include the front foot dimensions, property owners' names, sub-lot numbers (if area is subdivided) or total acreage owned by each acreage owner for property abutting on the streets.
- 2. Show corporation lines, subdivision names, plat volume and pages when subdivision plat is recorded, and original lot lines and numbers on the drawings.
- 3. Show all easements including exact location and width.

Section 503

Minimum Road Design Standards

503.1 Engineering Design

- A. Design speed: 25 mph minimum
- B. Right-of-way width: See pages 5-27 to 5-30 for typical cross sections.

503.2 Horizontal and Vertical Design

- A. Intersection Sight Distance (ISD)

The intersection sight distance for proposed roads shall be based upon a design speed determined by the Portage County Engineer and shall comply with the ODOT *Location and Design Manual* for horizontal and vertical design.

- B. Horizontal alignment

Minimum radius:

Residential:	250 feet
Commercial/industrial:	400 feet

- C. Vertical design

	Maximum Grades	Minimum Grades
Residential	10%	.5%
Commercial/Industrial	6%	.5%

All changes of grade shall be connected by vertical curves of appropriate length.

503.3 Cross Section Design

See pages 5-27 to 5-29 for typical cross sections.

503.4 Pavement Widths

See pages 5-27 to 5-29 for typical cross sections.

503.5 Ditches

A. See pages 5-27 to 5-30 for typical cross sections.

B. Minimum Grade:

Residential: 1%

Commercial/Industrial: 1%

503.6 Intersection Design

A. Types of allowable intersections

1. T-type intersections are encouraged for residential non-through traffic streets.
2. Rotary-type intersections, roundabouts and circular islands are permitted if the Portage County Engineer determines that such intersections are properly integrated with the existing and proposed street system in the area and are designed in accordance with accepted design standards.
3. Minimum centerline offsets at centerline:

Residential: 150 feet

Commercial/industrial: 300 feet

B. Intersection grades

1. The grade on the through street shall be three percent (3%) or less.
2. The grade on the stop leg of an intersection shall be three percent (3%) or less.
3. To provide proper drainage at all intersections, the stop street legs of all intersections shall have a downgrade of between 1.56% and 3%.

C. Cross road alignment

Minimum intersection angle: 75 degrees

Minimum tangent length: 100 feet

D. Radius returns

	Residential	Commercial/Industrial
Edge of Pavement or Curb	30 feet	50 feet
Right-of-Way	25 feet	50 feet

503.7 Cul-De-Sacs

	Residential with Islands	Residential without Islands	Commercial/ Industrial
Right-of-Way	70-Foot Radius (Minimum)	70-Foot Radius (Minimum)	80-Foot Radius (Minimum)
Pavement Radius – Outside Edge	50 feet	50 feet	60 feet
Pavement Radius – Inside Edge	26 feet	NA	NA

- A. Islands are not permitted in commercial/industrial cul-de-sacs.
- B. The maximum profile grade or cross slope in a cul-de-sac shall not exceed four percent (4%).
- C. Proper drainage shall be provided for residential cul-de-sacs with islands.

Section 504

Sidewalk Standards

504.1 Sidewalk Design and Location

- A. A minimum four (4) foot wide concrete sidewalk, as depicted on the Typical Sections for Portage County Curbed Streets (pages 5-27 and 5-29), shall be installed on both sides of the roadway, throughout the entire development one (1) foot from the right-of-way line.
- B. The sidewalks shall be installed per ODOT Item 608 Specifications. Concrete sidewalks shall be four (4) inches thick, six (6) inches thick under driveways, with an aggregate base as required for leveling.
- C. All subdivisions requiring sidewalks shall have curb ramps installed at all intersection crossings complying with current Americans with Disabilities Act (ADA) standards.
- D. Sidewalks shall be provided where considered reasonable by the Regional Planning Commission for the protection of public safety, such as in the vicinity of schools, churches, public open space areas and commercial developments or near public transportation stops.
- E. A sidewalk or a modified sidewalk system may be required in an open space conservation style development, a commercial development or an industrial park, subject to the recommendation of the Regional Planning Commission.

504.2 Sidewalk Installation

The installation of a sidewalk shall be the responsibility of the Developer for all lots, and shall be constructed within the time period during which the Maintenance Guarantee has been posted by the developer. A Performance Guarantee shall be required for all sidewalks.

Section 505

Street and Stop Sign Standards

505.1 Sign Costs

The Developer is responsible for the costs of initial signage for roads in Subdivisions.

505.2 Sign Design

All signs must conform to the standards of the responsible agency. Street signs must display a road name and a township or county highway number assigned by the Portage County Engineer.

505.3 Sign Installation

Two installation options are available:

- A. The Portage County Engineer can make and install standard county street and stop signs and bill the Developer for the cost.
- B. The Developer can have street and stop signs made and installed in conformance with county or township standards.

Section 506

Seeding and Sodding

Current ODOT Construction and Material Specifications, Items 659 and 660, apply. The entire area within the right-of-way shall be seeded, sodded or otherwise protected from erosion. All areas outside the limits of the right-of-way and adjoining land of the project where the vegetation has been injured or destroyed or is in need of protection (due to the fact that erosion of these unprotected areas will result in having dirt, etc., deposited in the drainage structures and other improvements within the project and/or create an unsightly condition) shall be restored and protected as directed by the County Engineer, with the recommendation of the Portage Soil and Water Conservation District.

Section 507

Dry Hydrants

For Subdivisions in areas not served by a public water supply system, the local fire department or township may require dry hydrants to be installed. Such hydrants shall be accessible to emergency vehicles.

Section 508

Drainage Design

No subdivision will be approved unless there is an outlet for all storm water. Provisions shall be made to accommodate effectively the increased runoff caused by changed soil and surface conditions during and after development. It may be necessary to direct surface water to a drainage ditch, stream or an existing storm system which has the capacity to carry the flow. No natural drainage course shall be altered, and no fill, buildings, nor structures shall be placed in, on, or over it unless provision is made for the flow of water in a manner satisfactory to the Portage County Engineer. An easement shall be provided on both sides of an existing surface drainage course for the purpose of maintaining, protecting, widening, deepening, enclosing, or otherwise improving it for drainage purposes. Impacts to any natural drainage ways or streams must be permitted by the Army Corps of Engineers and the Ohio Environmental Protection Agency (OEPA).

508.1 Drainage System Requirements *(Sec. 620 1984 PCSR)*

The design criteria for the drainage system shall be based on the State of Ohio Department of Transportation design policy and/or County Engineer standards. These criteria shall apply to development along existing roads as well as those requiring new roads to be constructed.

A. Road Drainage System

The road storm drainage system shall serve as the local drainage system. It shall be designed to carry roadway, adjacent land, and house storm water drainage. To prevent excessive pipe sizes, storm sewers shall drain into natural waterways as soon as possible.

B. Off-Road Drainage System

The design of the off-road drainage system shall include the watershed affecting the Subdivision and shall be extended to a watercourse or ditch adequate to receive the storm drainage.

C. Protection of Drainage Systems

The Developer shall adequately protect all ditches (roadways and watercourses) to the satisfaction of the County Engineer.

In all cases, any drainage facilities within the Subdivision shall be in a stable condition, free from excessive erosion or sedimentation and/or other debris. Any damage resulting from erosion, scour, silting of drainage ways, or blockage of storm drainage systems, on and off the development, caused by the construction, shall be corrected at the Developer's expense.

D. Drainage Outlets

Where the County Engineer finds it necessary to clean, alter or reconstruct a natural drainage course or storm sewer system outside the development boundary to provide a storm water outlet, or to prevent damage to other properties due to an increased or accelerated flow, the outlet shall be provided and constructed at the expense of the Developer and in accordance with plans and specifications approved by the County Engineer.

Section 509

Storm Water Management Requirements

509.1 Performance Standards

On October 6, 2019, the Portage County Board of Commissioners adopted Resolution No. 19-0656 "Exhibit B," entitled "*Portage County Construction Site Sediment, Erosion, and Storm Water Management Rules*." This Regulation may be updated periodically as part of our efforts to be compatible with current OEPA Permit requirements. In addition to defining the Storm Water Pollution Prevention Plan (SWPPP) and erosion and sediment Best Management Practices (BMP'S), these rules specify the following procedures and/or requirements:

- A. Performance Standards during Active Construction;
- B. Post-Construction Water Quality Practices;
- C. Easements;
- D. Construction and Maintenance Guarantee; and
- E. Violations and Penalties.

509.2 Storm Water Pollution Prevention Plan (SWPPP)

- A. A construction Storm Water Pollution Prevention Plan for Subdivisions and/or a site SWPPP, as applicable, shall be submitted to the Portage County Soil and Water Conservation District (PCSWCD) prior to any grading or disturbance of the site. The SWPPP shall be prepared by qualified persons and submitted plans must be stamped by a registered professional engineer.
- B. The plan shall be in compliance with the *Portage County Construction Site Sediment, Erosion, and Storm Water Management Rules* (current edition or regulating document), and with the Ohio EPA National Pollution Discharge Elimination System (NPDES) *General Permit for Storm Water Discharges Associated with Construction Activity*, and will follow the guidelines set forth in the *Ohio Rainwater and Land Development Manual*.
- C. In addition to compliance with the documents noted above (Section 509.2B), the SWPPP shall include runoff calculations that meet the following critical storm requirements:

1. Storm water runoff estimations and calculations for pre- and post-development peak discharges shall be calculated using the U.S. Soil Conservation Services TR-55 method or other method approved by the County Engineer.
2. In order to control water pollution by soil sediment from accelerated stream channel erosion and flood plain erosion caused by accelerated storm water runoff from development areas, the peak rates of runoff from an area after development may be no greater than the peak rates of runoff from the same area before development for all twenty-four hour storms from one to one hundred year frequency. Design and development to match the peak rate of runoff for the one, two, five, ten, twenty-five, fifty and one hundred-year storms may be considered adequate to meet this requirement. If an increase in volume is expected after development, peak rates of runoff must be reduced. Reduce rates of critical storm and all more frequent storms to one-year 24-hour frequency. Less frequent storms shall have peak runoff rates no greater than predevelopment peak runoff rates.
3. The critical storm for a specific development area is determined as follows:
Determine the total volume of runoff from a one-year frequency, twenty-four-hour storm, occurring on the development area before and after development. Then determine the percent of increase in volume of runoff due to development and using this percentage, select the critical storm from table below.

Critical Storm Table

If the Percentage Increase in Volume of Runoff is equal to or greater than	And less than	The 24-hour "Critical Storm" for Discharge Limitation will be
0	10	1 Year
10	20	2 Year
20	50	5 Year
50	100	10 Year
100	250	25 Year
250	500	50 Year
500	-----	100 Year

- D. As-built drawings will be required for all permanent, post-construction storm water management facilities and shall be submitted per Section 518.2 to the County Engineer. The As-Built Survey of the permanent Stormwater Management facilities shall include an As-Built set of stormwater facility calculations. These As-built volume and outflow calculations shall be certified (sealed, signed and dated) by a Registered Surveyor and/or Engineer as applicable, with a statement certifying that the Storm water facilities as installed meet the design criteria of the improvement plans approved by the County.

- E. No earthmoving activities may commence without SWPPP approval from the PCSWCD.

509.3 Flood Hazard Areas and Wetlands

A. Flood Hazard Areas

If any portion of the land within the Subdivision falls within Special Flood Hazard Areas as indicated on the Federal Emergency Management Agency Flood Insurance Rate Maps (FIRM) or other approved technical documentation, the Flood Hazard Area must be shown on the SWPPP, the Improvement Plans and the Plat, and must comply with all the provisions in the Portage County Flood Damage Reduction Regulations.

- B. Wetlands will be identified on the Storm Water Pollution Prevention Plan, the Improvement Plans and the Plat. If they are going to be impacted in any manner, the developer is responsible for contacting the U.S. Army Corps of Engineers.
 - 1. If a U.S. Army Corps of Engineers permit is required, the permit number shall be shown on the Storm Water Pollution Prevention Plan, the Improvement Plans and the Plat.
 - 2. In areas where jurisdictional wetlands, as defined by an on-site delineation verified by the United States Army Corps of Engineers, will be affected, a copy of the wetland delineation report shall be submitted with the SWPPP.
 - 3. If an individual Permit is required, a copy of that Permit, showing project approval and any restrictions that apply to the site activities shall also be submitted.
 - 4. If an individual permit is not required for the proposed project, the Developer shall submit proof of compliance with the Nationwide Permit Program and Ohio EPA Regulations. Proof shall include, but is not limited to the following:
 - a. A letter from a qualified professional who has surveyed the site and found no Waters of the United States.
 - b. A letter from a qualified professional who has surveyed the site and found Waters of the United States, then we need a jurisdictional determination from the Army Corp of Engineers.
 - c. A site plan showing any proposed fill of Waters of the United States conforms to conditions specified in the applicable Nationwide Permit and Ohio EPA Regulations.

509.4 Residential Storm Water Maintenance Program

Structural post-construction storm water facilities, not including the overall storm water conveyance system, for all *new residential* subdivisions must be entered into an annual inspection and maintenance program managed by the Portage County Storm Water District. Facilities constructed in residential subdivisions that have not entered into the District's inspection and maintenance program are the responsibility of the Subdivision's Owners Association. Operation and maintenance of facilities in commercial, semi-public, or industrial subdivisions shall be the responsibility of the Developer or ultimate owner.

- A. An easement shall be provided that allows access to all structural post-construction storm water facilities and extends out 10 feet in all directions around the facility. The easement shall also include the discharge point of the facility.
- B. A long-term maintenance plan is required for all post-construction BMPs and shall be submitted along with the SWPP for review.
- C. Storm water runoff from all proposed impervious surfaces must be conveyed to a post-construction BMP. Whenever possible, roof drain runoff shall be tied directly to centralized storm water conveyance system.
- D. Once entered into the program, all facilities will be inspected by the Portage County Storm Water District at least once over a five-year period which coincides with the OEPA NPDES permit term.
- E. Maintenance provided under this program shall be conducted to ensure that the facility is functioning as designed. This does not include aesthetic maintenance such as regular mowing and landscaping.

Section 510

Dams

All dams, as defined in the *Ohio Administrative Code* (Section 1501:21-13-01) or current regulations, constructed within a subdivision must meet the current Ohio Department of Natural Resources and/or Ohio Department of Transportation construction standards. Furthermore, verification of proper construction practices must be conducted and signed off on by either the design engineer or a qualified professional.

Section 511

County Engineer Requirements for the Construction of Improvements

511.1 Plan Review Fees

The plan review fees shall cover the actual wage/salary plus overhead of the County Engineer reviewer or the contract cost of the reviewing services as determined by the Portage County Engineer. The developer is held responsible for all Improvement Plan review fees which must be paid before final plan approval is granted. The Portage County Engineer will give an itemized statement to the developer on request.

The minimum charge will be as listed on the County Engineer's Review Fee schedule and such fee must be included with each Improvement Plan submittal.

511.2 Estimated Cost of Road, Storm Water and Drainage Improvements

Upon approval of the Improvement Plans and before starting any construction work, the Developer's engineer shall prepare and submit to the Portage County Engineer an estimate of costs by item for:

- A. Construction surveying
- B. Construction engineering
- C. Construction of roads, sidewalks, walkways, bike paths
- D. Traffic control improvements
- E. Storm sewers
- F. Fire ponds
- G. Drainage structures
- H. Erosion and sediment control
- I. Restoration of land and site cleanup
- J. Post construction storm water best management practices (BMPs)
- K. County Inspection Fees
- L. Other related items

The total estimated cost including labor shall be prepared and signed by the Developer's engineer. The Portage County Engineer may add to the Developer's estimate an amount to cover contingencies to arrive at the total estimated cost.

Section 512

Performance Guarantees

Before the Final Plat may be considered for approval, the Portage County Regional Planning Commission must confirm that the Developer has furnished to the Portage County Board of Commissioners the Performance Guarantees as required herein. If the construction of the Subdivision improvements is complete, Maintenance Guarantees are required, otherwise a Performance Guarantee will be required.

512.1 Performance Guarantee

- A. Prior to any consideration of Plat approval, the Developer shall furnish a Performance Guarantee to the Portage County Board of Commissioners in the amount equal to one hundred ten (110) percent of the approved total cost of the improvements not yet completed based on the estimates prepared in accordance with Section 511.2. Such Performance Guarantee shall be secured by a cash escrow account established with a solvent financial institution. Performance Guarantees and Escrow agreements shall be provided utilizing forms in Appendix 5A or appropriate forms provided by the Portage County Engineer and the Portage County Soil and Water Conservation District.
- B. Performance Guarantees will remain in effect until released by the Portage County Board of Commissioners. Performance Guarantees shall guarantee completion of the

required improvements in compliance with the approved Improvement Plans for all work inspected by the Portage County Engineer.

- C. The developer will remain liable for any expenditure over and above the derived performance guarantee, including but not limited to unforeseen site conditions that increase the construction estimate or increased material costs.

512.2 Reduction of Performance Guarantee

The Portage County Engineer may authorize the release of funds backing the Performance Guarantee for Improvement Plan items completed after receiving a written, itemized request from the Developer. The request shall include copies of all invoices to be paid by the funds released.

After an inspection of the completed work, an amount equal to 90% of the requested funds will be authorized for release. Ten percent (10%) of each release request will be retained until all improvements have been completed. The reduced Performance Guarantee shall remain in effect to cover the remaining construction of improvements.

512.3 Failure to Construct or Complete Improvements

If the Developer fails to commence active and continuous construction of the required improvements within one (1) calendar year of the date of approval of the Final Plat, or fails to achieve substantial completion of the improvements within two (2) calendar years of said date, such that the improvements are not available for public use or are not completed to required standards, and the Portage County Engineer deems it necessary to notify the Portage County Board of Commissioners that the Developer has failed in his duty to complete the project, the Portage County Board of Commissioners may notify the Developer and the issuer of the Performance Guarantee in writing of such failure and of Portage County's intention to vacate the unfinished Subdivision or to complete the project via the Performance Guarantee.

Section 513

Guarantee for Previously Constructed Roads Used as Haul Roads

In order to protect existing roads in a multiple phase Subdivision, Performance Guarantees for future phases shall include assurances of the maintenance and repair of any of the Subdivision's completed roads used by construction vehicles for access to the phase(s) under construction.

513.1 Haul Road Performance Guarantee

Prior to the start of construction of a future phase, the Developer shall provide the Portage County Board of Commissioners a Performance Guarantee in an amount sufficient to cover the maintenance and repair of the subdivision's completed roads used by construction vehicles for access to the phases under construction.

513.2 Haul Road Performance Guarantee Amount

The estimated amount of the Guarantee will be submitted by the Developer's engineer and approved by the Portage County Engineer. The Guarantee will remain in effect and be released subject to the recommendation of the Portage County Engineer when the road(s) in question are no longer used by the Developer's construction vehicles and any maintenance work required thereto has been completed.

513.3 Separate Haul Roads

When a separate "Haul Road" is established and construction vehicle traffic is eliminated from Subdivision roads constructed in a previous phase, the phase Guarantee requirement as stated above, shall not apply. The Portage County Engineer must review and approve such proposed temporary Haul Road(s) prior to the start of construction. Upon the completion of construction, the Developer shall eliminate the temporary Haul Road(s) and restore the road pathway to its original condition.

Section 514

Supervision of Construction of Road, Storm Water and Drainage Improvements

514.1 Pre-Construction Meeting

Prior to the commencement of any project, a pre-construction meeting will be held with the owner, Developer and/or his/her representative, design engineer, contractor, the Portage County Engineer and other agencies as required. At this time the project will be discussed in regard to procedure, construction methods, plans, materials, inspections, storm water management, erosion control, etc.

514.2 Requirements for Start of Construction – Approvals and Permits

- A. Approvals Required. The following items must have been approved:
 - 1. The Improvement Plans and the Storm Water Pollution Prevention Plan (SWPPP) for the Subdivision.
 - 2. A construction schedule showing the starting and completion dates for each phase of the construction work, and a date for the completion of the entire Subdivision.
 - 3. Any Performance Guarantees required for the project.
- B. Permits Required. The contractor must have all necessary permits required for the project prior to the start of construction.
 - 1. Jurisdictional Wetlands
 - a. In areas where jurisdictional wetlands, as defined by an on-site delineation verified by the United States Army Corps of Engineers, will be affected, a copy of the wetland delineation report shall be submitted with the SWPPP.
 - b. If an individual Permit is required, a copy of that Permit, showing project approval and any restrictions that apply to the activities shall also be submitted.

- c. If an individual permit is not required for the proposed project, the Developer shall submit proof of compliance with the Nationwide Permit Program and Ohio EPA Regulations. Proof shall include, but is not limited to the following: A letter from the site owner verifying that a qualified professional has surveyed the site and found no Waters of the United States, or a site plan showing any proposed fill of Waters of the United States conforms with the conditions specified in the applicable Nationwide Permit and Ohio EPA Regulations. Must coordinate with 509.3 Section 4.
2. National Pollution Discharge Elimination System (NPDES) Permit

The Developer must provide proof of compliance with the Ohio EPA General Storm Water National Pollution Discharge Elimination System (NPDES) permit. Proof of compliance shall be, but is not limited to, a copy of the NPDES General Storm Water Permit Notice of Intent and/or a copy of the NPDES permit number and/or a copy of the Ohio EPA Director's Acceptance Letter for the NPDES permit.

514.3 Cooperation of Developer and/or Contractor

The Developer and/or contractor shall have available on the project site at all times one (1) copy of all approved plans and specifications. He/she shall cooperate with the Portage County Engineer's Inspector or the Portage Soil and Water Conservation District Inspector and with other contractors in every way possible. The Developer and/or contractor shall at all times have a competent representative acting as his/her agent on the project. The representative shall be capable of reading and thoroughly understanding the plans and specifications and promptly supplying such materials, tools, equipment and labor as may be required. A representative shall be furnished regardless of the amount of work sublet.

514.4 Roadway Construction

All work shall be done in conformance with the approved Improvement Plans, and the latest editions of the Ohio Department of Transportation *Construction and Materials Specifications* and the Portage County Engineer Specs and Details.

514.5 Inspection

- A. The Portage County Engineer shall be responsible for the inspection of all improvements listed in Section 516.4D below. The Developer, his/her engineer, or his/her contractor shall give notice to the Portage County Engineer at least three (3) working days in advance of any construction of physical public improvements. Failure to notify the Portage County Engineer may result in requiring the complete removal of such uninspected work at the Developer's sole cost.
- B. The Portage County Engineer shall determine the amount of inspection, including laboratory and other test(s), required to assure that the Developer or his contractor(s)

and/or subcontractor(s) will comply with the approved Improvement drawings and schedule.

- C. The project engineer shall perform the first inspection of erosion and sediment control devices to certify that the 'as built' conditions comply with the approved Storm Water Pollution Prevention Plan (SWPPP) no less than two (2) working days prior to the start of construction. An inspection report shall be sent to the Portage Soil and Water Conservation District within seven (7) days from the date of the inspection. Following this initial inspection, regular inspections will be performed by the Portage Soil and Water Conservation District for compliance with the SWPPP. If the site is not in compliance with the approved plan, the Developer will be notified in writing by mail or email and will have fourteen (14) days to make the necessary corrections/improvements.
- D. The following operations will be inspected by the Portage County Engineer's office:
 - 1. Preliminary grading and final Right of Way Grading
 - 2. Backfilling of all trenches and excavations in the right-of-way
 - 3. Preparation of sub-grade
 - 4. Paving (rigid and flexible)
 - 5. Inlet construction
 - 6. Drainage improvements
 - 7. Sidewalk/walkway construction
 - 8. Storm water management system construction
 - 9. Any construction of utilities within the street right-of-way
 - 10. Any construction of structures within the right-of-way
 - 11. Traffic Control Improvements
- E. Any of the above-listed construction operations that may be performed without advance notice to the Portage County Engineer's office may result in coring of the pavement, subgrade boring and non-acceptance of the improvement if it does not meet the specifications of the Portage County Engineer.

514.6 Inspection Fees

- A. The inspection fees shall cover the actual wage/salary plus overhead of the County Engineer inspector or the contract cost of the inspection service as determined by the Portage County Engineer.

- B. Any costs incurred by the Portage County Engineer to perform pavement corings, sub-grade borings and/or non-destructive testing to field verify the Developer's work shall be borne by the Developer.
- C. The Developer is held responsible for all inspection fees which will be payable upon receipt of invoice. The Performance Guarantees posted by the Developer guarantees the payment of all inspection fees.
- D. The Portage County Board of Commissioners shall not authorize the release of any Guarantees until the Portage County Engineer certifies that all inspection fees have been paid in full.

514.7 Testing

- A. All material supplied shall be inspected as directed by the Portage County Engineer.
- B. Compaction tests shall be made in fill areas in the right-of-way and on the subgrade prior to paving as directed by the Portage County Engineer.
- C. Pavement tests shall be conducted on site as directed by the Portage County Engineer.
- D. The Portage County Engineer reserves the right to order pavement cores made if conditions warrant.
- E. The testing mentioned above shall be done by a private testing laboratory acceptable to the Portage County Engineer and shall be done at no cost to the County.

514.8 Field Changes

- A. Approval of Final Improvement Plans shall not prevent the Portage County Engineer, or his/her agent, from ordering needed changes he/she deems necessary in the field as work progresses. This extra work shall be at the Developer's sole expense.
- B. If it becomes necessary to modify the previously approved improvements due to unforeseen circumstances, the Developer shall inform the Portage County Engineer in writing of the conditions requiring modification.
- C. Written authorization from the Portage County Engineer to make the required modification must be received by the Developer and/or Developer's engineer before proceeding with the construction of the improvement.

Section 515

Plat Approval Withheld

Plat approval may be withheld if there is a problem with Improvement Plan compliance (including Storm Water Pollution Prevention Plan compliance) in any of the preceding plat phases.

Section 516

Conditional acceptance of Improvements

516.1 Conditional acceptance procedure

- A. Upon completion of all improvements the Developer shall notify the Portage County Engineer by letter that all of the improvements have been completed in accordance with these Regulations and all other applicable laws and regulations.
- B. The Portage County Engineer will then schedule an inspection of the completed improvements. The Developer, his/her engineer and a Township representative may accompany the Portage County Engineer or his/her representative on the inspection.
- C. Any discrepancies shall be recorded, and the Developer and the contractor will be furnished a copy of this punch list and shall be expected to proceed as soon as possible with any corrections.
- D. This procedure shall be repeated until it is determined by the Portage County Engineer that the improvements have been satisfactorily completed.
- E. If the improvements are found to be satisfactory the Portage County Engineer will issue a letter to the Portage County Board of Commissioners, with a copy to the developer, recommending conditional acceptance and the amount of a maintenance bond.
- F. Upon conditional acceptance by the Portage County Board of Commissioners, the developer shall furnish a maintenance guarantee in the amount of 3% of the construction cost.
- G. The Subdivider shall be responsible for routine maintenance of all improvements and shall repair all failures due to faulty construction as soon as they become apparent. Said subdivider shall also make repairs due to erosion or abuse by utility companies installing utilities and shall repair all failure, for all other reasons, during the one (1) year period. He shall restore the improvements at the end of the maintenance period.
- H. The improvements will be eligible for final acceptance one year after the conditional acceptance. The maintenance bond shall remain in effect until final acceptance by the Portage County Board of Commissioners. Before the Portage County Board of Commissioners will release the maintenance bond or maintenance fund, the developer shall submit a sworn statement that all bills and financial obligations incurred for maintenance or restoration of the subdivision improvements have been fully paid.

516.2 Monument Inspection at Conditional Acceptance

- A. The Developer's surveyor shall set monuments, at a minimum, at all interior lot corners and angle points, blocks and Subdivision perimeter. Centerline monuments and right of way monuments may be set prior to Final Acceptance at the discretion of the Developer. (see section 519.1)
- B. All monuments shall have the surveyor's identification cap, be identified on the Final Plat and shall be in place, visible, and marked with a minimum 24" lath at the same time

of conditional acceptance by the Portage County Engineer in accordance with state regulations and all other applicable laws and regulations.

Section 517

Maintenance Guarantees

Before the Portage County Engineer will authorize the release of the Performance Guarantee by the Portage County Board of Commissioners, an inspection will be completed to ensure that each phase of the project is satisfactory and complete. Only upon satisfactory completion of the Subdivision shall the Performance Guarantee be released or reduced. The Developer shall provide a separate Maintenance Bond Guarantee (in the form of a surety bond) in the amount of three percent (3%) of the estimated cost of all improvements administered by the Portage County Engineer.

517.1 Optional Increase of the Amount of Maintenance Guarantees

The Portage County Engineer may increase the required Maintenance Guarantees above the specified amounts if, in his/her opinion, unusual topographic, subsoil or other construction limitations warrant.

517.2 Assurances of the Maintenance Guarantees

The Maintenance Guarantees shall assure that the Developer will maintain and restore the roads and other improvements until such roads and improvements pass the final inspections of the Portage County Engineer and are accepted by the Portage County Board of Commissioners.

517.3 Release of the Maintenance Guarantees

It is the responsibility of the Developer to request inspections for the release of Maintenance Guarantees. After all maintenance and restoration work has been completed to the satisfaction of the Portage County Engineer, the Portage County Board of Commissioners will release the Maintenance Guarantees or those portions remaining to the Developer. The Maintenance Guarantees will remain in full force and effect until formally released by the Portage County Board of Commissioners.

Section 518

Maintenance of Improvements

The term "maintenance work" as used herein shall also include all repairs and replacement and all cost associated therewith including inspection and re-inspection costs as described earlier in this section and elsewhere in these regulations.

518.1 Maintenance Responsibilities

- A. The Developer shall be responsible for the maintenance of the improvements during the construction period and until the Maintenance Guarantee is released by the Portage County Board of Commissioners.

- B. One (1) year after acceptance of the Maintenance Guarantee, the Developer shall request that the Portage County Engineer inspect the improvements.
- C. The Developer shall be notified by the Portage County Engineer of the need for any necessary maintenance work. Should the Developer fail to perform such necessary maintenance work within the time specified, the Portage County Engineer may perform said maintenance work or may authorize the performance of said work by others, at which time the Developer will forfeit a portion of the Maintenance Guarantee to pay for such maintenance work.
- D. Dry hydrants and appurtenances related to fire ponds shall be the maintenance responsibility of the Township Fire Department subject to call on any Guarantees if repair work is necessary within a one (1) year period after acceptance of the Maintenance Guarantee. The Township is responsible for contacting the Portage County Engineer regarding any repair work issues within said one (1) year period.

518.2 Repair of Damage

Any damage done to the improvements by construction traffic, local traffic or by any other means shall be repaired or the damaged materials replaced.

518.3 Snow and Ice Removal

- A. Prior to the final acceptance of the Subdivision improvements, the Developer shall perform all work necessary including snow and ice removal to keep the road passable for auto traffic to service all families living in or, in the case of commercial or industrial subdivisions, employees working in the Subdivision.
- B. In particular, the roads shall be open and accessible for emergency equipment at all times for all occupied dwellings units or businesses.
- C. Should the Developer fail to perform said maintenance, he/she shall be liable for all costs and expenses incurred in the performance of such maintenance work.
- D. The Developer shall indemnify, defend and hold harmless all governmental bodies for any and all liabilities that may arise or are related to such roads.
- E. After final acceptance of the Subdivision improvements, the Township Trustees shall be responsible for snow and ice removal on publicly dedicated roads.
- F. The Subdivision's Owners Association shall be responsible for private streets and roads.

518.4 Mud Removal

The Developer and his/her contractor shall be responsible for the removal of mud or other debris on the pavement surface. Should the Developer fail to perform said removal, he/she shall be liable for all costs and expenses incurred in the performance of said removals.

518.5 Street Surface Course

Upon the expiration of the maintenance period for the roadways, and before final acceptance, the surface course of asphalt concrete shall be installed.

518.6 Failure to Maintain Improvements

- A. If a developer fails to adequately maintain the improvements within the established term of the Maintenance Guarantee, then notice of maintenance deficiencies will be sent.
- B. If a the Developer still fails to maintain the required improvements within thirty (30) calendar days of actual or constructive notice of maintenance deficiencies, unless the Portage County Engineer approves an extension, the Portage County Engineer shall notify the Portage County Board of Commissioners that the Developer has failed to perform maintenance obligations.
- C. The Portage County Board of Commissioners shall notify the Developer and the surety or bank, which may be acting as escrow agent, in writing of such failure and of Portage County's intention to perform maintenance work with its own work force or by letting the work to others using the Maintenance Guarantee for payment thereof.
- D. If such maintenance deficiencies raise concerns of public safety, the County may perform maintenance work, regardless of notice, and may rely upon the Maintenance Guarantee for payment thereof.
- E. The developer will remain liable for any expenditure over and above the derived maintenance guarantee.

Section 519

Final Acceptance of Improvements

Roads, except those that are to remain private, will be accepted and turned over to the township for maintenance once all applicable items in this section are met as stipulated in Sections 516 and 517. New structural post-construction storm water facilities in residential subdivisions must be turned over to the Storm Water District for annual inspection and maintenance.

519.1 Monument inspection at Final Acceptance

To ensure that any monuments at lot corners and on the right of way that were disturbed or destroyed during construction are in place at the time of Final acceptance.

- A. The Developer's surveyor shall set monuments at all centerline points of curvature and points of tangency, cul-de-sac and stub street locations and centerline intersections and at all right of way points of curvature and points of tangency. Monuments set in pavement shall be enclosed within approved cast iron monument boxes.

- B. All monuments shall have the surveyor's identification cap, be identified on the Final Plat and shall be in place, visible, and all monuments along the right of way are marked with a minimum 24" lath at the same time of final acceptance by the Portage County Engineer in accordance with state regulations and all other applicable laws and regulations.
- C. The registered professional surveyor in charge of the installation of required monuments as shown on the plat shall submit a written affidavit stating that all monuments have been installed and any monuments removed or mangled during construction have been replaced.

519.2 As-Built Drawings

At the completion of the construction and before acceptance, the Developer's engineer shall update the Portage County Engineer's set of mylar drawings, including all permanent post-construction storm water management facilities, -(including as-built design calculations per Section 509.2.D) and, all storm water structure, sanitary sewer structures, waterline and gas line structures such as valves and hydrants, service valves, sanitary, storm and water connections in lots for permanent record, showing the locations, sizes and elevations of all improvements as constructed. As-built drawings shall also be submitted to the Portage County Engineer in a format approved by the County Engineer.

519.3 Final Inspection

- A. Upon completion the maintenance period, the Developer shall notify the Portage County Engineer by letter that all of the improvements have been completed in accordance with these Regulations and all other applicable laws and regulations.
- B. The Portage County Engineer will then schedule an inspection of the completed improvements. The Developer, his/her engineer and a Township representative may accompany the Portage County Engineer or his/her representative on the inspection.
- C. Any discrepancies shall be recorded, and the Developer and the contractor will be furnished a copy of this punch list and shall be expected to proceed as soon as possible with any corrections.
- D. Another final inspection will be made for acceptance upon written notification from the Developer that the punch list items have been completed.
- E. Storm Sewer System Final Inspection: Prior to final acceptance of the storm sewer system, the developer shall clean and televise the entire system and provide to the County Engineer a digital video of the system and an accompanying report.
- F. Post Construction Storm Water Quality Structures: Prior to final acceptance of the structures the developer shall remove all accumulated sediment and ensure the outlet structure(s) comply with approved as-built plans.

519.4 Acceptance of Improvements

- A. If the Portage County Engineer determines that the improvements are not in conformity with all applicable regulations and the approved Improvement Plans, the Developer shall be advised in writing of the deficiencies in the form of a punch list. This procedure shall be repeated until it is determined by the Portage County Engineer that the improvements have been satisfactorily completed. If the Developer fails to complete the punch list items within a time limit set by the Portage County Engineer, the County may require compliance through the use of the Maintenance Guarantee.
- B. If the improvements are found to be satisfactory and all inspection monies are paid, the Portage County Engineer will recommend to the Portage County Board of Commissioners acceptance of the improvements and release of any remaining Performance Guarantee or Maintenance Guarantees.
- C. If the Portage County Board of Commissioners, upon the recommendation of the Portage County Engineer, determines the Improvements to be in compliance with the Improvement Plans and these Regulations, it shall, by resolution stated upon the Commissioners, accept the improvements for public use and benefit.
- D. The Portage County Board of Commissioners shall not approve or accept the improvements or, prior to Plat approval, accept the dedication of any land for road purposes until any lien attached thereto has been satisfied, and until a one (1) year Maintenance period has passed. The Developer will be required to submit an affidavit stating all bills incurred pertaining to the improvements and costs of the Subdivision are paid in full, that there is no mechanic's lien or any other type of lien on the Subdivision, and that all contractors, subcontractors and all employees of independent contractors and agents have been paid in full, including all salaries and applicable taxes.
- E. The Portage County Engineer's endorsement of the Final Plat denotes that when the streets and roads shown thereon for dedication to the public are constructed in conformity with the Subdivision's Improvement Plans, and said streets and roads are determined by the Portage County Engineer's inspection to be in good repair and have been maintained as required in these regulations for one (1) year, said streets and roads will be accepted for public use as permitted by Section 711.091 of the *Ohio Revised Code*.

Section 520

Other Construction Responsibilities

520.1 Indemnification

The Developer agrees to indemnify, defend and hold harmless Portage County and the Township in which the Subdivision is located from and against any and all liabilities, claims, causes of action (including negligence), fines, penalties and expenses of any nature that arise, allegedly arise or are caused by the Developer and the Developer's independent contractors,

employees or agents. The indemnifications shall survive the final completion of the Subdivision and expiration of any Performance or Maintenance Guarantee.

520.2 General Liability Insurance

The Developer agrees to furnish to the County Engineer certificates showing the type, amount, class of operations covered, effective dates and date of expiration of required insurance policies. The amounts shall be as follows:

- A. General Liability Insurance (bodily injury and property damage) with a minimum limit of
 - 1. \$1,000,000 per occurrence
 - 2. \$2,000,000 aggregate
- B. Portage County and the Township in which the subdivision is located must be named as additional insured with regard to General Liability and Portage County must receive at least thirty (30) days advance written notice of Policy cancellation, non-renewal, reduction of limits or other material modification.

520.3 Surveying

Only surveyors registered in the State of Ohio shall be employed for activities involving surveying.

Section 521

Minimum Road Pavement Specifications and Road Cross-Sections

521.1 Minimum Roadway Specifications and Road Cross-Sections

ROAD CLASSIFICATION	PAVEMENT WIDTH		PAVEMENT THICKNESS					
	CURBS (FEET)	OPEN DITCH NO CURBS (FEET)	NON- REINFORCED CONCRETE	FULL-DEPTH ASPHALT			AGGREGATE	
			452 CONCRETE PAVEMENT (INCHES)	301 or 302 ASPHALT CONCRETE BASE (INCHES)	448 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2 (INCHES)	448 ASPHALT CONCRETE SURFACE COURSE TYPE 1 (INCHES)	304 (INCHES)	SHOULDERS
RESIDENTIAL, CURBS-ASPHALT	26			6	1.75	1.5	4	TURF
RESIDENTIAL, NO CURBS-ASPHALT		22		6	1.75	1.5	4	617 RAP
RESIDENTIAL, CURBS-CONCRETE	26		7				4	TURF
RESIDENTIAL, NO CURBS		22	7				4	617 RAP
COMMERCIAL/INDUSTRIAL, CURBS-ASPHALT	30			7	2.5	1.5	6	TURF
COMMERCIAL/INDUSTRIAL, NO CURBS-ASPHALT		28		7	2.5	1.5	6	617 RAP
COMMERCIAL/INDUSTRIAL, CURBS-CONCRETE	30		9				6	TURF
COMMERCIAL/INDUSTRIAL, NO CURBS-CONCRETE		28	9				6	617 RAP

AN ALTERNATE PAVEMENT SECTION, INCORPORATING THE USE OF CHEMICALLY STABILIZED SUBGRADE, MAY BE SUBMITTED TO THE COUNTY ENGINEER TO REVIEW FOR USE ON A PROJECT. SUCH ALTERNATE DESIGNS SHALL HAVE A STRUCTURAL NUMBER NO LESS THAN THE ABOVE MINIMUM PAVEMENT SECTION AS CALCULATED PER THE ODOT PAVEMENT DESIGN MANUAL.

COMMERCIAL AND INDUSTRIAL PARK ROADS ARE ROADS IN SUBDIVISIONS HAVING COMMERCIAL AND/OR INDUSTRIAL ENTERPRISES SERVED BY TRUCKS

IN CASE OF QUESTION, THE COUNTY ENGINEER WILL DECIDE ON THE ROAD CLASSIFICATION FOR CONSTRUCTION PURPOSES

COMMERCIAL / INDUSTRIAL - ODOT TYPE 2 OR 6 ONLY. ALL CURB CUTS MUST BE FORMED AT TIME OF CURB PLACEMENT OR SAWED.

SECTION 521.2: Road Cross-Sections

Figure 7

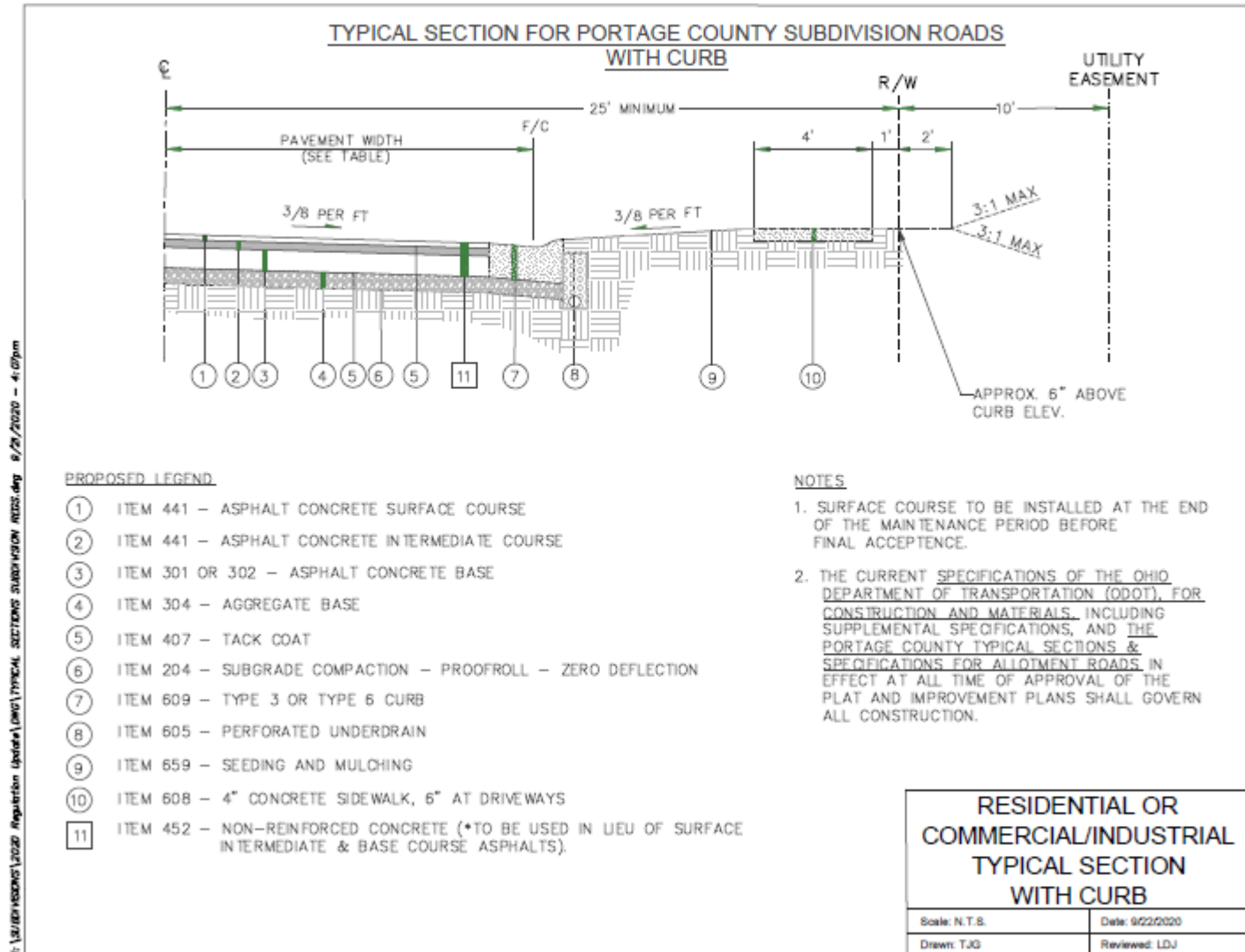


Figure 8

