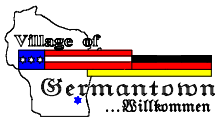


**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS  
SECTION 3.0: GRADING AND EROSION CONTROL REQUIREMENTS**

<b>TABLE 1.0: GOVERNING AGENCIES AND APPLICABLE CODES/GUIDELINES/REGULATIONS</b> (Most stringent shall apply)	
Wisconsin State Statutes & Administrative Code	<ul style="list-style-type: none"> <li>• Chapters NR 151 and 216</li> <li>• Chapter DSPTS 321, 360, 382 (formerly Comm 82)</li> </ul>
State of Wisconsin Department of Transportation (WisDOT)	<ul style="list-style-type: none"> <li>• WisDOT Standard Specifications for Highway and Structure Construction (WisDOT Standard Specifications)</li> <li>• WisDOT Facility Development Manual (FDM)</li> <li>• WisDOT Erosion Control Product Acceptability List (PAL)</li> <li>• WisDOT Construction and Materials Manual</li> <li>• WisDOT Approved Product List</li> </ul>
State of Wisconsin Department of Natural Resources (WDNR)	<ul style="list-style-type: none"> <li>• Technical Standards (a.k.a., Conservation Practice Standards)</li> <li>• Wisconsin Pollutant Discharge Elimination System (WPDES) permit</li> </ul>
Village of Germantown	<ul style="list-style-type: none"> <li>• Municipal Code</li> <li>• Design, Drafting &amp; Construction Standards &amp; Specifications (Sec. 1-9)</li> <li>• Village Board and Committee actions</li> <li>• DPW Director, Village Engineer, Utility Superintendent discretion</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Standard Specifications for Sewer &amp; Water Construction in Wisconsin (Standard Specifications)</li> <li>• American Association of State Highway and Transportation Officials (AASHTO)</li> <li>• Southeast Wisconsin Regional Planning Commission (SEWRPC)</li> <li>• Manufacturer specifications</li> </ul>

<b>TABLE 2.0: DESIGN CRITERIA</b>					
Geotechnical Services Report	<ul style="list-style-type: none"> <li>• A Geotechnical Engineer shall be retained to assess and evaluate site conditions and subsurface conditions, and to recommend site work and compaction requirements</li> <li>• The report shall be prepared, sealed and signed by a Wisconsin P.E.</li> </ul>				
Rainfall Depths & Distribution; Hydrology Methodology	<ul style="list-style-type: none"> <li>• <i>Rainfall Frequency Atlas of the Midwest</i>, Midwest Climate Center and Illinois State Water Survey, 1992.</li> </ul> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Recurrence Interval (years)</th> <th style="text-align: center;">Rainfall Amount (inches/24 hours)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2.13</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• SCS Type II Distribution</li> <li>• TR-55 preferred; Rational Method if permissible by WDNR and DSPTS</li> </ul>	Recurrence Interval (years)	Rainfall Amount (inches/24 hours)	1	2.13
Recurrence Interval (years)	Rainfall Amount (inches/24 hours)				
1	2.13				
Earthwork Balance	<ul style="list-style-type: none"> <li>• Earthwork balances shall be zero-sum for each phase of development and zero-sum for the entire development</li> <li>• Interim Plan: Account for topsoil stripping, rough grade cuts/fills, pond undercuts, roadway undercuts, sidewalk undercuts, utility trench spoils, topsoil of outlots</li> <li>• Final Plan: Account for basement undercuts, driveway undercuts, topsoil of lots</li> </ul>				

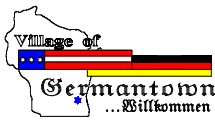


**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS**  
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Archeological & Historical	<ul style="list-style-type: none"> <li>Erect snow fence surrounding archeologically sensitive areas, and avoid these features</li> </ul>
Drainage	<ul style="list-style-type: none"> <li>Preserve all drainage patterns, and avoid adverse impacts to neighboring properties</li> </ul>
Endangered Species Habitat	<ul style="list-style-type: none"> <li>Erect snow fence surrounding endangered species habitat, and avoid these habitats</li> </ul>
Septic Fields	<ul style="list-style-type: none"> <li>Erect snow fence surrounding proposed septic fields, and avoid these areas</li> </ul>
Survey Monuments	<ul style="list-style-type: none"> <li>Avoid all survey monuments</li> </ul>
Trees	<ul style="list-style-type: none"> <li>Erect snow fence surrounding the drip line of trees intended to be saved, and avoid these areas</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>Use Digger's Hotline to locate all private and public utilities, and avoid them</li> <li>Hand dig to locate depths</li> </ul>
Wetlands	<ul style="list-style-type: none"> <li>Erect silt fence surrounding wetlands, and avoid these areas (unless disturbance is authorized by Wisconsin DNR, US Army Corps of Engineers, and Village Planning Commission and Village Board)</li> </ul>

Tracking Pad	<ul style="list-style-type: none"> <li>Install before starting any construction-related activity</li> <li>Conform to WDNR Technical Standard #1057</li> </ul>
Silt Fence	<ul style="list-style-type: none"> <li>Install before starting any construction-related activity</li> <li>Conform to WDNR Technical Standard #1056</li> </ul>
Wattles	<ul style="list-style-type: none"> <li>Install before starting any construction-related activity</li> <li>Conform to WDNR Technical Standard #1071</li> <li>North American Green WS925/WS1210 (or equal)</li> </ul>
Inlet Protection	<ul style="list-style-type: none"> <li>Install before starting any construction-related activity</li> <li>Conform to WDNR Technical Standard #1060</li> </ul>
Sediment Trap	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1063</li> </ul>
Sediment Basin	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1064</li> </ul>
Temporary Diversion Swales	<ul style="list-style-type: none"> <li>Construct as needed to direct drainage to sediment traps and/or basins</li> </ul>

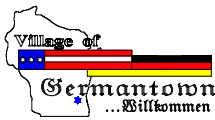
Seven Days of Inactivity	<ul style="list-style-type: none"> <li>Contractor or Builder shall stabilize all areas (whether partial or entire) having &gt; 7 days of inactivity using one of the following practices:             <ul style="list-style-type: none"> <li>Seeding: Conform to WDNR Technical Standard #1059</li> <li>Mulch: Conform to WDNR Technical Standard #1058</li> <li>Binding Agent: Conform to WDNR Technical Standard #1050</li> </ul> </li> </ul>
Dust Control	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1068</li> </ul>
Sediment Bale Barrier	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1055</li> </ul>
Dewatering	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1061</li> <li>Ero-Tex Dewatering Filter Bags (or equal)</li> </ul>
Street Sweeping	<ul style="list-style-type: none"> <li>Sweep and/or scrape paved surfaces adjacent to construction site vehicle access periodically to remove soil, dirt and/or dust.</li> <li>Tracked soil shall be collected (swept) from paved roads before end of each working day.</li> <li>Contractor shall dispose of collected materials.</li> </ul>



**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS**  
**SECTION 3.0: GRADING AND EROSION CONTROL REQUIREMENTS**

**TABLE 6.0: CLEARING & GRUBBING**

General	<ul style="list-style-type: none"> <li>• Conform to WisDOT Standard Specifications Sec. 201</li> <li>• Roadside: Conform to WisDOT Standard Specifications Sec. 202</li> </ul>
Utility Lines	<ul style="list-style-type: none"> <li>• Protect utility lines from damage.</li> </ul>
Clearing	<ul style="list-style-type: none"> <li>• Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared.</li> <li>• Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing.</li> <li>• Apply herbicide in accordance with the manufacturer's label to the top surface of stumps designated not to be removed.</li> </ul>
Tree Removal	<ul style="list-style-type: none"> <li>• Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing.</li> <li>• Work shall include the felling of such trees and the removal of their stumps and roots.</li> <li>• Trees shall be disposed.</li> </ul>
Pruning	<ul style="list-style-type: none"> <li>• Prune/Trim trees designated to be left standing within the cleared areas of dead branches 1 1/2 inches or more in diameter; and trim branches to heights and in a manner as indicated.</li> <li>• Paint cuts more than 1 1/4 inches in diameter with approved tree wound paint.</li> </ul>
Grubbing	<ul style="list-style-type: none"> <li>• Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.</li> <li>• Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved.</li> <li>• Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform to the original adjacent surface of the ground.</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>• Saleable Timber: All timber on the project site noted for clearing and grubbing shall become the property of the Contractor, and shall be removed from the project site and disposed of offsite.</li> <li>• Nonsaleable Materials: Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of outside the limits of Village-controlled land at the Contractor's responsibility, except when otherwise directed in writing.</li> </ul>
Fires	<ul style="list-style-type: none"> <li>• Fires are prohibited</li> </ul>

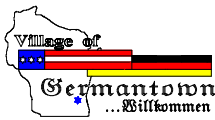


**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS**  
**SECTION 3.0: GRADING AND EROSION CONTROL REQUIREMENTS**

<b>TABLE 7.0: MASS, LOT &amp; TRENCH GRADING</b>	
Compaction	<ul style="list-style-type: none"> <li>Mechanical Compaction required by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or vibratory compactors as appropriate</li> <li>Trenches: Initial lift = 18" max.; Subsequent lifts = 12" max</li> <li>Conform to Geotechnical Services Report compaction layer thickness requirements</li> </ul>
Density	<ul style="list-style-type: none"> <li>Structural Fill:               <ul style="list-style-type: none"> <li>Dry density: &gt;95% max. as det. by standard proctor (ASTM D-698)</li> </ul> </li> <li>Conform to Geotechnical Services Report</li> </ul>
Moisture Content Tolerance	<ul style="list-style-type: none"> <li>Cohesive soil: Between -1 to +3 percent of optimum</li> <li>Granular soil: ±3 percent of optimum</li> <li>Conform to Geotechnical Services Report</li> </ul>
Surface Elevation Tolerance (excluding Roadways)	<ul style="list-style-type: none"> <li>Interim Plan = ± 0.25 ft (3 in)</li> <li>Final Plan = ± 0.08 ft (1 in)</li> </ul>
Final Yard Grade	<ul style="list-style-type: none"> <li>Residential: FYG should be 1-½ ft to 2 ft above highest point of lot frontage</li> <li>Adjustments:               <ul style="list-style-type: none"> <li>Adjustments &lt; 0.25 ft (3 in) permissible</li> <li>Adjustments &gt; 0.25 ft (3 in) requires Village Engineer approval; Conform to Municipal Code Sec. 14.078</li> </ul> </li> </ul>
Topsoil Removal	<ul style="list-style-type: none"> <li>Topsoil removal is prohibited without authorization from the Village Public Works &amp; Highway Committee</li> <li>Conform with Municipal Code Sec. 17.441</li> </ul>
Prohibited	<ul style="list-style-type: none"> <li>Debris; frozen material; large clods or stones; organic material; blast rock; stones larger than 6" dia.; sand. Contractor shall haul away and dispose of these materials at Contractor's expense.</li> </ul>

<b>TABLE 8.0: DITCHES &amp; SWALES</b>	
Capacity	<ul style="list-style-type: none"> <li>100-year rainfall event capacity min. as determined by TR-55 or Rational Method</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>Trapezoidal ditches &amp; swales required</li> </ul>
Slopes	<ul style="list-style-type: none"> <li>Longitudinal slope = 1% min.; 10% max.</li> <li>Cross-slope = 4H:1V preferred (3H:1V max.)</li> </ul>
Depths	<ul style="list-style-type: none"> <li>Roadway Ditches = 2' min. below outside edge of pavement (intended to adequately drain roadway's underlying crushed aggregate base course)</li> <li>Backyard Swales = 2' min. below lowest top of bank</li> <li>Sideyard Swales = 1' min.</li> </ul>
Erosion Mat	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standard #1053</li> <li>Low Flow w/ 4H:1V to 3H:1V Side Slopes = North American Green DS75 (or equal)</li> <li>Moderate Flow w/ 3H:1V to 2H:1V Side Slopes = North American Green DS150 (or equal)</li> </ul>
Alignments	<ul style="list-style-type: none"> <li>Centerline along shared parcel boundaries preferred</li> <li>Dissecting parcels should be avoided</li> </ul>

<b>TABLE 9.0: TOPSOIL</b>	
General	<ul style="list-style-type: none"> <li>Conform to WisDOT Standard Specifications Sec. 625</li> <li>Spreading Depth = 4" min.</li> <li>Village Roadway Reconstruction Projects:               <ul style="list-style-type: none"> <li>Topsoil shall be imported and screened</li> </ul> </li> <li>Village Utility Relay Projects:               <ul style="list-style-type: none"> <li>Topsoil shall be imported and screened</li> </ul> </li> </ul>

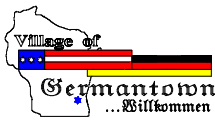


**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS**  
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<b>TABLE 10.0: FINAL EROSION CONTROL INSTALLATIONS</b>	
Seeding	<ul style="list-style-type: none"> <li>Hydroseeding required</li> <li>Mixture: Conform to WisDOT Standard Specifications Sec. 630.2.1.5.1.1.2</li> <li>Conform to WDNR Technical Standard #1059</li> <li>Hydro-seeding application equipment shall incorporate an agitation system that will suspend and homogeneously mix the slurry</li> <li>Cellulose fiber mulch shall be applied at the rate of 1500 lbs/acre</li> <li>Organic tackifier shall be applied at the rate of 70 lbs/acre</li> <li>Fertilizer: Conform to WisDOT Standard Specifications Sec. 629               <ul style="list-style-type: none"> <li>Nitrogen &gt; 16%</li> <li>Phosphoric acid &gt; 6%</li> <li>Potash &gt; 6%</li> <li>Total nitrogen &gt; sum of phosphoric acid and potash</li> <li>Apply at rate of 300 lbs/acre</li> </ul> </li> <li>Perform morning watering to insure full seed germination of hydro seed application. Watering shall be sufficient enough to saturate the soil to the depth of the slurry mulch, using caution to not super saturate or wash away slurry and seed</li> </ul>
Erosion Mat	<ul style="list-style-type: none"> <li>Conform to WDNR Technical Standards #1052 &amp; #1053</li> <li>Low Flow w/ 4H:1V to 3H:1V Side Slopes = North American Green DS75 (or equal)</li> <li>Moderate Flow w/ 3H:1V to 2H:1V Side Slopes = North American Green DS150 (or equal)</li> </ul>
Rip-Rap	<ul style="list-style-type: none"> <li>Required when slope &gt; 5% or flow &gt; 10 cfs</li> <li>Medium Rip-Rap w/ Type R Geotextile Fabric: Conform to WisDOT Standard Specifications Sec. 606 and 645.2.6</li> </ul>

<b>TABLE 11.0: INSPECTION &amp; TESTING</b>	
Scheduling	<ul style="list-style-type: none"> <li>Contact Engineering Dept. (262) 250-4721 two business days before construction to schedule inspection(s) of initial installation</li> </ul>
Erosion Control Inspection Form	<ul style="list-style-type: none"> <li>Contractor shall use WDNR's Construction Site Inspection Report (Form #3400-187)</li> <li>Contractor shall submit photocopies of completed forms to Village Engineering Dept. ea. month</li> </ul>
Erosion Control Frequency	<ul style="list-style-type: none"> <li>Once per week min.</li> <li>After each ½" rainfall per 24-hour event</li> </ul>
Erosion Control Remedial Action	<ul style="list-style-type: none"> <li>Contractor shall remedy/repair deficiencies w/i 48-hours of discovery</li> </ul>
Proof-rolls	<ul style="list-style-type: none"> <li>Use a fully-loaded tri-axle dump truck</li> <li>Conduct on proposed roadway sub-grade and on base course</li> <li>Ruts exceeding 1" depth are considered failure</li> <li>In event of failure, EBS, geotechnical fabric Type SR, or a combination of both are acceptable remedies</li> <li>When using geotechnical fabric Type SR, conform to WisDOT Standard Specifications Sec. 645</li> </ul>
Density Testing	<ul style="list-style-type: none"> <li>Nuclear gauge method (ASTM D2922) shall be performed by on-site Geotechnical Engineer at Contractor's expense</li> <li>Submit report of testing results to Village Engineering Dept. prepare, sealed, signed and dated by Wisconsin P.E.</li> </ul>

<b>TABLE 12.0: REMOVAL OF TEMPORARY EROSION CONTROL DEVICES</b>	
Localized Removal	<ul style="list-style-type: none"> <li>Contractor may remove erosion control devices in localized areas after those areas are adequately vegetated and stabilized</li> </ul>
Ultimate Removal	<ul style="list-style-type: none"> <li>Contractor shall removal all erosion control devices in all areas after the site is adequately vegetated and stabilized</li> </ul>



**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS  
SECTION 3.0: GRADING AND EROSION CONTROL REQUIREMENTS**

<b>TABLE 13.0: SUBMITTAL REQUIREMENTS</b>	
Construction Drawings & As-Builts	<ul style="list-style-type: none"> <li>Initial condition plan, interim condition plan and final condition plans are required, and shall be on D-sized paper prepared, sealed, signed and dated by Wisconsin P.E.</li> <li>Entire site and individual lots shall present existing and interim contours on interim condition plans, and existing and final contours on final condition plan</li> <li>Construction sequences shall be presented on the plans</li> <li>Construction notes shall be presented on the plan</li> <li>Earthwork balances for both interim condition and for final condition shall be prepared, sealed, signed and dated by a Wisconsin P.E.</li> <li>Datum: Local NVGD 1929 datum required</li> <li>Submit both paper and electronic copies to Village Engineer; Electronic contours shall have proper elevation attributes</li> <li>Preparation and submittal of construction drawings and as-built drawings shall be at the Engineering Consultant's expense.</li> </ul>
Drainage Easements	<ul style="list-style-type: none"> <li>Public: 20' min. width centered over centerline alignment</li> <li>Private: Required when conveyance for multiple properties</li> <li>Submit both paper and electronic copies to Village Engineer</li> <li>Preparation and submittal of easements shall be at the Engineering Consultant's expense</li> </ul>
Plan Review	<ul style="list-style-type: none"> <li>Engineering Consultant shall prepare the entire WDNR Water Resources Application for Project Permits (WRAPP)</li> <li>Submit two (2) original paper and 1 electronic copy of all documents to the Village Engineer for review</li> <li>Engineering Consultant shall submit the entire WRAPP package to WDNR</li> <li>Preparation and submittal of plan review packages shall be at the Engineering Consultant's expense.</li> </ul>
Street Excavation in ROW Permit	<ul style="list-style-type: none"> <li>Contractor to prepare and submit w/ fee to Village Engineering Dept.</li> </ul>
Erosion Control Permit	<ul style="list-style-type: none"> <li>Contractor to prepare and submit w/ fee to Village Inspection Services (Building Inspection) Dept.</li> </ul>
Building Permit	<ul style="list-style-type: none"> <li>Plans, reports and permits shall be reviewed and accepted by the Village Engineer before the Village will issue a building permit</li> </ul>
Topsoil Removal Permit	<ul style="list-style-type: none"> <li>Topsoil removal is prohibited without authorization from the Village Public Works &amp; Highway Committee</li> <li>Conform with Municipal Code Sec. 17.441</li> </ul>
Final Yard Grade Adjustment Permit	<ul style="list-style-type: none"> <li>Conform to Municipal Code Sec. 14.078</li> <li>Contractor or Builder to prepare and submit request w/ fee to Village Engineering Dept.</li> </ul>
Occupancy Permit	<ul style="list-style-type: none"> <li>Developments: All temporary erosion control devices shall be removed before the Village will issue an occupancy permit</li> <li>Individual Lots: Occupancy permit contingent upon removal of all temporary erosion control devices once vegetation is well-established and the surface soils are stabilized</li> <li>As-built drawings shall be reviewed and accepted by the Village Engineer before the Village will issue an occupancy permit</li> </ul>

<b>TABLE 14.0: LIST OF VILLAGE STANDARD DETAILS</b>	
	<ul style="list-style-type: none"> <li>Under Development</li> </ul>



**DESIGN, DRAFTING & CONSTRUCTION STANDARDS & SPECIFICATIONS**  
**SECTION 3.0: GRADING AND EROSION CONTROL REQUIREMENTS**

**TABLE 15.0: OTHER REQUIREMENTS**

- |  |  |
|--|--|
|  | <ul style="list-style-type: none"><li>• Contractor shall be responsible for Digger's Hotline locates; site safety; resident access; traffic control; erosion &amp; sediment control; protection of survey monuments; and protection of existing facilities, features and structures at all times</li><li>• At end of each day, open excavations shall not exceed 25 ft. in length.</li><li>• At end of each day, contractor shall erect barricades with flashers and snow fencing surrounding excavations.</li></ul> |
|--|--|