APPENDIX A

THE MANUAL OF STREET STANDARDS

BERKELEY COUNTY, WEST VIRGINIA

Section 1.1 Purpose

Any individual, developer, corporation or entity desiring to construct a road, street or parking area within a Subdivision or Land Development Unit within Berkeley County, West Virginia shall follow the procedures described herein. Design and construction shall also be as specified herein.

Section 1.2 Procedure

The applicant shall adhere to the following procedure in order for the project to progress in an orderly manner:

(a) Submit to the County Planning Commission the appropriate number of sets of plans. Included in the plans shall be roadway plan and profile sheets with scale 1"=50' horizontal and 1"=5' vertical. Plan and profiles shall be augmented by complete alignment information, accurate dimensions locating roadway, highway and drainage structures, ditches and other incidental construction. Finished grade elevations shall be shown every 50' on the profiles as well as stations and elevations for PVC, PVI and PVT. For proposed streets adjacent to developed properties, or lands owned by someone other than the developer, cross sections shall be submitted showing stations every 50' along the developed portions of the proposed roadway. The location of all Bench Marks used and the elevations for some shall be noted on the plans. Drainage pipes and ditches shall be shown on the plan and on the cross sections. Engineering design computations and drainage area maps shall accompany submission to justify the sizes of drainage structures, pipes, ditches, etc. Acceptable storm drainage design criteria shall be the 24 hour 25 year recurrence storm. All pipes shall have a minimum of one (1) foot of cover over pipes.

(b) When the plans meet the approval of the County Engineer he shall recommend approval of the plans to the Berkeley County Planning Commission. Upon approval of the plans by the Planning Commission three (3) copies of the approved plans shall be submitted to be signed and dated as approved by the Planning Commission and County Engineer. One copy shall be returned to the developer as proof of approval.

(c) Prior to actual construction operations, the developer’s contractor shall review the project and proposed schedule with a representative of the County Engineer/Planning Commission for the purpose of scheduling periodic inspections by the County.

(d) Upon completion of all construction, a field inspection will be held by a representative of the County. If any problems exist, the developer shall be notified in writing as to the nature of any deficiencies. Said deficiencies shall be corrected prior to final approval of the roads.

(e) Upon completion of the required improvements, it will be the responsibility of the developer to insure the work performed for a period of twelve (12) months after the approval of the improvements by the Planning Commission. The above warranty shall be of an amount and in a form consistent with present Planning Commission policies.

(f) The developer's attention is also directed to Section 713 Storm Water Management for other information on required improvements.

Section 1.3 Specifications

Specifications for road improvements shall be those of the West Virginia Department of Highways contained in "Standard Specifications Roads and Bridges" adopted 1993 and as may be amended from time to time.

Section 1.4 Geometric & Pavement Design

Geometric and pavement design shall be in accordance with plates 1 through 8, plates A and B included herein. Items not covered in the plates shall be in accordance with State Department of Highway Standards or ASSHTO as may be appropriate.

Section 1.5 Intersection Design

(a) Sight distances at Intersections

Sight distances at Intersections should be regulated to allow approaching drivers sufficient time to stop. Each vehicle should be visible to the other driver when each vehicle is located on the street centerline and at a specified distance from the point of intersection of the street centerlines. Clear sight triangles should be provided at all intersections and no building, structure, grade, or planting higher than two and one-half (2 ½) feet above the centerline of the street should be permitted within such sight triangles. For intersections of streets having an ADT of 200 or less, or having 20 mile-per-hour speed limit the clear sight triangle requirement may be waived.

(1) Clear sight triangles of fifty (50) feet measured along street centerlines from their points of junction should be provided at all intersections of lanes and places. This may be waived as noted above.

(2) Clear sight triangles of seventy-five (75) feet measured along street centerlines from their points of junction should be provided at all intersections of Class 2 and Class 1 streets.

(3) For intersections of industrial or commercial with state highways, a greater sight distance is desirable.

(b) Horizontal Alignment at Intersections

The preferred angle of intersection for intersecting streets is 90 degrees.

(1) The minimum angle is 60 degrees. Any change in street alignment to meet this requirement should occur at one hundred (100) feet from the intersection.

(2) Multiple intersections involving junctions of more than two (2) streets should be avoided.

(3) Two (2) streets intersecting the same street from opposite sides should intersect this same street directly opposite one another or with a minimum offset of one hundred fifty (150) feet between their centerlines.

(4) Minimum curb radii at street intersections should be fifteen (15) feet.

Section 1.6 Paths

Paths that connect dwellings with off-street parking pads, parking lots, etc., shall have a minimum width of three (3) feet. Local paths or public sidewalks that are within the street right-of-way or in maintained open spaces shall have a minimum width of four (4) feet. Public paths or sidewalks that connect clusters or groups of homes with commercial centers or public facilities shall have a minimum width of four (4) feet or, if they include a bicycle lane, the minimum width shall be five (5) feet. A separate single-lane bicycle path shall have a minimum width of two-and one-half (2 ½) feet and a separate two-lane bicycle path shall have a minimum width of four (4) feet.

Section 1.7 Sidewalks

When possible, steps in sidewalks and paths shall be avoided. When steps are necessary, the minimum number of risers shall be two (2) in adjacent series or at least two (2) single risers may be used in a ramp series with the maximum distance between risers being six (6) feet. Risers shall not exceed six (6) inches. All risers and treads shall be uniform in a single flight. All risers in a single sidewalk or path shall be uniform in-height. Tread width shall be at least eleven (11) inches or twelve (12) inches when step flights have a total rise of more than thirty (30) inches. Tread pitch shall be 1/8-inch per foot for drainage.

Sidewalks and paths may be paved with asphalt or portland cement concrete. Other suitable materials for surfaces may be used as appropriate for local conditions or aesthetics. Procedures for asphalt concrete mixing, proportioning and placement shall be designed by a registered engineer having experience in asphalt concrete construction acceptable to the Planning Commission.

Portland cement concrete sidewalk or path paving shall have expansion joints at all intersections with other paths or sidewalks and structures and at the bottom and top of flights of steps with three (3) or more risers. Portland cement concrete sidewalk or path surfaces shall be brushed or broomed. Procedures for mixing, proportioning and placing portland cement sidewalks or paths shall be designed by a registered engineer having experience in portland cement concrete construction acceptable to the Planning Commission.

Concrete sidewalks shall be at least four (4) inches thick except under driveways when at least six (6) inches must be used.

Section 1.8 Cul-de-sac Requirements

For all housing developments which contain an interior roadway in excess of two thousand (2,000) feet in length at least one cul-de-sac shall be provided with a paved diameter of one hundred (100) feet with a one hundred twenty (120) foot diameter right-of-way for school bus turnaround. Additional larger cul-de-sacs may be required dependent upon the proposed design.

Section 1.9 Off -Street Parking

(1) In conventional single-family home subdivisions, off-street parking spaces for resident family members will be provided for each home.

(2) In other types of residential developments, including but not limited to townhouses, cluster housing, apartments and factory built homes, off-street parking facilities shall be provided at the ratio of 2.0 automobile parking spaces per dwelling unit.

Special situations, such as proximity to alternative modes of transportation, availability of local community services within walking distance, distance to employment and commercial centers, housing for the elderly, probable income levels of the residents , etc., may warrant an increase or decrease in this ratio.

(3) Off-street parking facilities may be parking lots, parking bays, or other suitable types.

(4) All turnarounds at the end of dead-end streets shall be provided with the parking bays outside of the right-of-way line, unless other suitable facilities are provided, so that emergency vehicle access will not be impeded by parked vehicles.

(5) All parking lots and parking bays permitting parking, other than parallel, shall be physically separated from the street and confined by curbing or other suitable separating device, unless other suitable design is approved.

(6) Capacity for each parking lot or parking bay shall not exceed thirty-six (36) cars and adjacent lots or bays shall be physically separated one from the other by a planting strip at least ten (10) feet in width.

(7) An open space of not less than twenty (20) feet shall be provided between the edge of any parking area and the outside of the nearest residential building.

(8) Entrances and exits to and from off-street parking areas shall be located so as not to interfere with street traffic.

(9) Every off-street parking area shall include sufficient reservoir space to accommodate entering and exiting vehicles without overflowing out into adjacent streets.

(10) Parking areas shall be designed so that each motor vehicle may proceed to and from the parking space provided for it without requiring the moving of any other motor vehicle.

(11) All dead-end parking areas shall be designed to provide sufficient back-up area for the end stalls of the parking area and to allow turn-around of cars without having to back out of parking areas.

(12) The layout of every parking area shall be such as to permit safe and efficient internal circulation, in accordance with accepted traffic engineering principles and standards.

(13) All curblines in all parking areas shall have a minimum radius of curvature of five (5) feet.

(14) Maximum distance from parking area to residential building entrance shall be one hundred fifty (150) feet.

(15) Nonresident parking demand caused by deliveries and visitors is to be satisfied in the following ways:

(a) Where parking is provided by individually owned spaces, the street section must be designed for additional, nonresident parking on the street.

(b) Where parking is owned in common, or by an operator of apartment or factory built home developments, additional space, equal to at least 0.3 of the total off-street parking requirement, must be provided and designated for common use for delivery and visitor parking.

(16) Parking area dimensions shall be no less than those listed in the following table:

	Parking		Driveway	
Angle of Parking	Stall Width	Stall Depth	One-Way	Two-Way
90	9'	20'	20'	24'
60	9'	21'	18'	21'
45	9'	20'	15'	18'
30	9'	18'	12'	15'
Parallel	8'	22'	12'	18'

(17) Other off-street parking spaces shall be provided at a rate listed for the type of use below:

TYPE OF USE	NUMBER OF PARKING SPACES REQUIRED
Commercial	
Carpet, furniture and appliance sales and other retail uses characterized by relatively low customer turnover and large indoor floor displays	One per 500 sq. ft. of floor area
Automobile, boat, or farm equipment sales and other retail activities characterized by large area outdoor display of merchandise and low customer turnover	One per 2,000 sq. ft. of lot area
Automobile repair of service shop	Four per service bay or service area
Automobile filling and service station	One per every two gas pumps
Auction House	One per four seats

TYPE OF USE	NUMBER OF PARKING SPACES REQUIRED
Hotels, Motels	One per sleeping room PLUS one for each two employees PLUS one For each 400 sq. ft. of area used for ballrooms, private meeting rooms, and the like
Funeral Homes	One per 150 sq. ft. of floor area devoted to viewing and one per vehicle used in activity PLUS one per each two employees
General Retail	One for each 150 sq. ft. of floor area
Banks, financial institutions and other office activities characterized by moderate to heavy customer use	One per 200 sq. ft. of floor area PLUS five reservoir spaces for each drive-up teller window exclusive of driveways or access areas
Office activities which are characterized by low customer use and occupied almost exclusively by employees	One per each 300 sq. ft. of floor area
Medical and Dental Offices	One per each 150 sq. ft. of examination office, treatment and waiting room floor area
Restaurants	One per each 50 sq. ft. of floor area devoted to customer service but excluding food preparation, storage, mechanical and other incidental service areas OR one space for each four seats, whichever is greater PLUS five reservoir spaces for each drive-in window where applicable exclusive of driveways or access areas

TYPE OF USE	NUMBER OF PARKING SPACES REQUIRED
Shopping Centers	Five per 1,000 sq. ft. of gross leasable floor area
Veterinary Offices	One per each 300 sq. ft. of floor area, plus one per each employee
Other general commercial activities of a personal or business service nature not included in categories specifically mentioned elsewhere	One for each 300 sq. ft. of floor area
Recreational Entertainment	
Golf Course or Club	Four per hole plus spaces for restaurant, other facilities as specified above.
Miniature Golf	One for each putting hole
Bowling alleys, tennis courts, racquetball courts and similar participation activities not mentioned elsewhere in this Subsection	Four for each unit of activity (alley, court, etc.)
Stadiums, arenas, theaters, auditoriums and similar spectator activities	One for each four sets
Skating rinks, gymnasiums, swimming pools and similar uses	One for each 100 sq. ft. of floor or surface area, plus one space for each two employees
Institutional	
Churches and similar uses	One for each 400 sq. ft. of floor area
Hospitals	1.5 for each bed, plus one space for each two employees
Nursing homes, domiciliary care facilities and similar uses	One for each four beds, plus one space for every two employees, plus one for each facility vehicle

TYPE OF USE	NUMBER OF PARKING SPACES REQUIRED
Group Homes	One for each four beds, plus one space for every two employees, plus one for each facility vehicle
Day Care Centers and similar uses	One for every 10 students, plus one space for each vehicle plus one space for each employee
Elementary and Middle Schools (Public or Private)	1 for every 8 students
High Schools (Public or Private)	1 for every 5 students
Private Schools including dance or martial arts instruction	1 for every 3 students
Industrial/Wholesale	
Industrial processing and manufacturing, building tradesmen shops, warehousing, wholesaling, if not normally characterized by customer visitation	1 for every 1.5 employees on the largest shift, plus one for each motor vehicle used in the business

Section 1.10 Street and Other Outside Lighting

Street lights, like sidewalks, are accepted as integral parts of city streets but few are considered necessary in rural and suburban developments. In areas where there are concentrations of pedestrians and/or vehicles, fixed source lighting tends to reduce accidents.

Areas of potential need of lighting for the safety of pedestrians and motorists are schools, churches, recreation or other community centers, apartment and townhouse developments and parking areas where lighting may be needed for the safety of pedestrians would be interior sidewalks and paths.

Whenever street or other outside lighting is required, the minimum lighting intensity shall be in accordance with the American National Standard Practice for Roadway Lighting. Illuminating Engineering Society, Approved July 11, 1972, American National Standards Institute and amendments thereto.

GEOMETRIC DESIGN CRITERIA
STREET AND HIGHWAY STANDARDS

CLASSIFICATION	MAXIMUM A.D.T.	PAVEMENT WIDTH	SHOULDER WIDTH	SHOULDER TYPE	CURBED PAVEMENT WIDTH
CLASS 4 / GRAVEL	5 ACRE LOTS	18'	3'	Earth	Not Allowed
CLASS 3	200	18'	4'	Crusher Run Stone	34'
CLASS 2	500	20'	5'	Crusher Run Stone	36'
CLASS 1	1000	22'	6'	Crusher Run Stone	38'
COMM. / IND.	---	24'	8'	Crusher Run Stone	44'

NOTES: (1) A.D.T. - Average Daily Traffic - based on actual counts or 7 vehicles/day/residential lot.
(2) Curbed Pavement Width based on face to face of curb (or flow line to flow line).
(3) Shoulders not required for curbed roadway sections.

GEOMETRIC DESIGN CRITERIA
STREETS AND HIGHWAYS

Item	Streets				
	Class 4	Class 3	Class 2 Minor	Class 1	Comm/Ind
Design Speed	20	25	30	35	40
Pavement Width		See Standard Plate No. “A”			
Shoulder Width		See Standard Plate No. “A”			
Minimum Parking Lane Width (1)	N/A	8'	8'	8'	10'
Minimum Turning Lane Width	---	---	---	---	12'
Minimum Horizontal Curvature Radius	100'	150'	250'	300'	500'
Minimum Turning Flare Radius at connections	30'	30'	35'	35'	50'
Stopping Sight Distance	100'	175'	200'	235'	275'
Minimum Roadway Grade	0.5%	0.5%	0.5%	0.5%	0.5%
Maximum Roadway Grade	15%	12%	10%	10%	8%
Intersection Approach Grade (2)	8%	6%	6%	6%	6%
Roadway Pavement Slope	3/8"/ft.	3/8"/ft.	3/8"/ft.	3/8"/ft.	3/8"/ft.

Roadway Shoulder Slope	3/4"/ft.	3/4"/ft.	¾"/ft.	3/4"/ft.	3/4"/ft.
Maximum Superelevation	---	---	---	0.04'/ft.	0.04'/ft.
Minimum Superelevation Runout	---	---	---	175'	200'
Minimum Right-of-Way Width	40'	50'	50'	60'	60'
Minimum Right-of-Way at Cul-De-Sac (Radius)	50'	50'	---	---	60'

Notes: (1) For curbed roadways only.
(2) Maximum allow, algebraic diff. - connect. Grade with pavement cross slope.
(3) Single lane structures - width - 14 feet.

Plate Nos. 1 through 7 may be obtained from the Berkeley County Planning Department office.