Road and Driveway Standards

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3.0 Road and Driveway Standards

The purpose of this Standard is to help Glastonbury landowners plan and contract for the construction of a road or driveway.

In order to plan a road or driveway, it is necessary to prepare a parcel master plan, select and stake the best route, develop a site drawing, fill out and submit the Glastonbury Project Review and Evaluation Application, including Sheet "A" with the required attachments.

The application and review process with the Glastonbury Project Review Committee is required before any construction can take place.

3.1 Parcel Master Planning and Route Selection

The landowner should consider all the possibilities for the development of his land and develop a long-range plan so that the project can unfold in an orderly manner. Roadways should then be situated to provide access for all of the potential uses.

The best route should be selected after considering the following factors: distance, terrain, water courses, soi1 conditions, drainage, safety, vegetation, exposure, snow drifting, access to building sites, and access to a Community Road and to other parcels.

Climbing grades should be kept less than 10% and preferably between 6% and 8% for easier driving and safer winter usage.

Topographic maps, including the Glastonbury Certificate of Survey Topo maps, aerial photographs, and soil maps may be useful in identifying alternate routes. Verification on-site is essential before a final decision is made in selecting the route.

3.2 Site Development

The selected route should be staked-out on the ground and accurately drawn on a topographic map of the parcel. Significant features such as water courses, building sites, borrow areas, turnouts, and culverts should be identified on the map. Any section of the route that cannot be built to specifications (i.e. a narrow stretch constricted by surface features) should be clearly noted on the map.

3.3 Project Review

Before construction can begin on a road, the project must be evaluated and approved by the Glastonbury Landowners Association. The purpose for review is to insure that the technical standards and aesthetic values of the Community are uniformly administered and maintained at a minimum level for the benefit of all residents.

The review is initiated by the landowner filling out a Glastonbury Project Review Application. The completed form with any of the required submittals appended should be

sent to the GLA Secretary. The GLA will review the project and communicate its decision and any recommendations or conditions to the landowner. Once the project has been approved, the landowner is free to begin the construction necessary to build the road or driveway.

Within thirty (30) days after the submission of all required materials, the GPRC will give the applicant a written response which may include the following:

A) A preliminary approval, subject only to final review;

B) A preliminary approval subject to conditions, such as a requirement that access be constructed, utilities be extended, etc. and final review;

C) Recommendations for changing or improving the plans for the proposed subdivision;

D) Tabling the application pending resolution of issues or submittal of additional information;

E) An offer or disclaimer from the GPRC for providing maintenance, utilities or other services which are currently provided to the rest of the parcels; or

F) A disapproval based upon failure to meet minimum standards, inconsistency with the Covenants, Standards or Master Plan or a finding of an inappropriate multiple-family residential building project.

3.4 Design Specifications

There are four categories of roads that can be constructed within the Community: (1) Community Roads, (2)Private Roads, (3) Multiple Residence Driveways, and (4)Single Residence Driveways.

Community Road: Community Roads are those built by the Developer and maintained by the GLA for general community use, as well as privately constructed roads either dedicated to or maintained by the GLA. Normally, these roads are dedicated by perpetual easement to the Community. When a parcel is being subdivided, all roads serving new lots must conform to this standard, unless a waiver has been granted by the GLA where the new road will neither be dedicated to or maintained by the Community. A typical cross-section of a Community Road is presented in Figure 3.1. Table 3.1 presents the design specifications for Community Roads.

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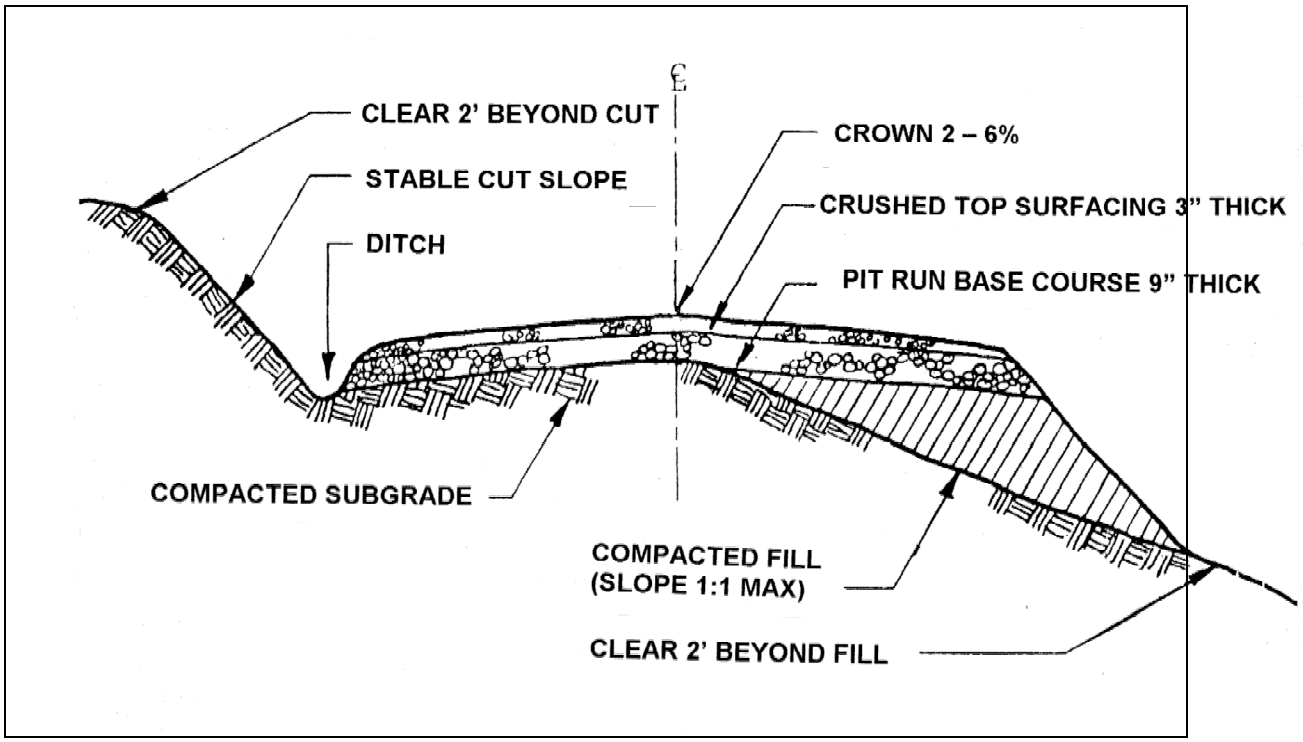


Figure 3.1: Cross Section of Typical Community Road

Private Road: Private Roads are those which serve more than three residences on a parcel but are not maintained by the Community. Design specifications for private roads are presented in Table 3.1.

Multiple Residence Driveway: Multiple Residence Driveways are those which serve two or three residences. Table 3.1 presents the design specifications for this type of driveway.

Single Residence Driveway: The minimum standards for a driveway serving one residence are presented in Table 3.1. However, in most cases, the design minimums for a single residence driveway will actually be dictated by the access required during construction of the home. Consideration must be given to access by concrete mixers, earth moving equipment, materials deliveries, septic tanks, and mobile home deliveries.

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Table 3.1: Road Design Specifications

	GLA Roads	Private Roads	Multiple Residence Driveway	Single Residence Driveway
Minimum Easement (Right of Way)	60 ft	60 ft	N/A	N/A
Normal Width of Driving Surface	24 ft	20 ft	14 ft	12 ft
Minimum Width, Paved Roads	24 ft	N/A	N/A	N/A
Mimimum Shoulder Width, Paved Roads	2 ft	N/R	N/R	N/R
Minimum Width of Driving Surface in Mountainous Terrain	20 ft	16 ft	12 ft	10 ft
Maximum Grade	12%	12%	14%[a,b]	14%[a,b]
Maximum Continuous Grade for 500+ Feet	10%	10%	N/A	N/A
Minimum Road Visibility	240 ft	240 ft	240 ft	240 ft
Minimum Frequency of Turnouts in Sections Narrower than Normal Width	500 ft	500 ft	Discretionary	Discretionary
Minimum Turning Radius	100 ft	50 ft	See Note b	See Note b
Depth of Base Course Rock	9 in.	9 in.	6 in.[c]	6 in.[c]
Depth of Crushed Surface Gravel	3 – 6 in.	3 in.	3 in.[d]	3 in.[d]
Rock & Gravel Specification	See Table 3.3		See Table 3.3 [c]	
Compaction	See Sec. 3.5.3			
Angle of Repose on Cuts and Fills	See Table 3.2		See Table 3.2 [c]	
Drainage	See Section 3.5.5			
Dead Ends	Cul de Sac or Turnarounds	Turnaround [d]	N/A	N/A

N/A = Not Applicable
N/R = Not Required

NOTES:

(a) Maximum Grade 14%, provided safety is ensured and adequate stopping distance is provided. Grades in excess of 10% may require four wheel drive vehicles and/or chains when icy.

(b) Mobile home delivery will be made easier by providing a turning radius of approximately 1.1 x length of home and a maximum grade of 10% unless special equipment is employed for delivery.

(c) Recommended standard. The road base is not as critical as in other categories,

particularly on well-drained sites.

(d) Recommended standards.

3.5 Construction Standards

This section contains the general standards for construction that are to be utilized for road projects in the Community.

3.5.1. Clearing and Grubbing

The construction zone should be cleared two feet beyond the toe of the fill and the top of the cut, as illustrated in Figure 3.1. All leaning and undercut trees should be removed. Topsoil must be stripped whenever terrain will permit and stockpiled for use in reclaiming borrow areas and cut and fill slopes. On a Community Road, visibility should be clear for at least 240 feet to insure safety.

All brush, stumps, logs, debris and boulders should be removed from the construction zone and disposed of in a suitable manner, such as by burning or burying.

3.5.2 Switchbacks

Switchbacks are to be avoided, but if the terrain makes them necessary, they should be carefully laid out and have, in addition to the other road standards the following criteria:

A) 10% maximum gradeon straightaways;
B) 7% maximum grade through curves;
C) 50 foot minimum turning radius; and
D) Increase in road width 4 feet through curves.

3.5.3 Subgrade Preparation

To prevent erosion, cut and fill slopes must be laid back to a stable angle of repose, depending upon soil characteristics. Table 3.2 gives the recommended minimum angle in terms of horizontal run to vertical rise.

For compaction of subgrades, base course and fill material should be placed in layers and compacted to 90% relative density. Crushed top surfacing should be compacted to 95% relative density. Water should be applied to obtain optimum moisture content for proper compaction. Sod and organic material must be excluded from fill sections.

Table 3.2: Minimum Angle of Repose for Cut & Fill

FILL SLOPES		
Soil Type	**Run:Rise (< 3 ft)**	**Run:Rise (> 3 ft)**
Common	3:1	1.5:1
Rock	-	1.25:1
CUT SLOPES		**Run:Rise** .
Solid Rock		0.25:1

Hardpan or Soft Rock		0.50:1
Common, Slopes > 55%		0.75:1
Common, Slopes < 55%		1:1
Common, Cuts < 3 ft		2:1
Unstable Plastic Soil		3:1

3.5.4 Road Base and Surface Materials

Base course and finished surface materials for roads built in the Community should consist of rocks and gravel graded according to the specifications in Table 3.3, below.

Table 3.3: Rock & Gravel Materials Specification

Base Course Rock (Pit Run)		
Material Size	**Percent of Total**	
> 6”	0%	
2” to 6”	40 – 65%	
_” to 2”	15 – 50%	
Fines and Binder	10 – 20%	
Crushed Surface Gravel		
Materail Size	**Mix “A”**	**Mix “B”**
> 1”	0%	0%
3/8 to 1”	15 – 50%	0 – 40%
No. 10 Sieve to 3/8”	25 – 35%	20 – 30%
No. 40 to 10 Sieve	10 – 20%	15 – 25%
No. 200 to 40 Sieve	10 – 15%	20 – 25%
Greater than No. 200 Sieve[a]	8 – 15%	5 – 20%

[a] Shall not exceed 66% of material retained on No. 40 Sieve

3.5.5 Drainage of Road Surfaces

The components to consider in providing adequate drainage are the road crown, inslopes, outslopes, ditches and culverts.

Surface Profile: The purpose of shaping a road surface is to shed water into the side ditches. Typically, a crown or side slope of 2% to 6% is necessary to permit rapid drainage. The type of soil in the subgrade will govern the amount of crown required. Light sandy soil will drain quickly, requiring less crown than heavy clays. On stable soils the roadbed may slope outward to the fill slope, eliminating the need for a crown and ditches. Insloping roads are recommended in mountainous terrain, allowing the discharge of water into the ditch and providing greater protection for motorists during winter. Figure 3.3, below, illustrates these design alternatives.

Ditches: Grades should be from 0.4% to 8.0%. Ditches with slopes greater than 1% shall

be lined with well established grass or riprap, or where provided with velocity control devices, see Section 4.7. Plain soil and unlined ditches should not exceed a grade of 0.5%. Sideslopes should have a ratio of one foot of rise per two feet of run. Depth should be at least one foot.

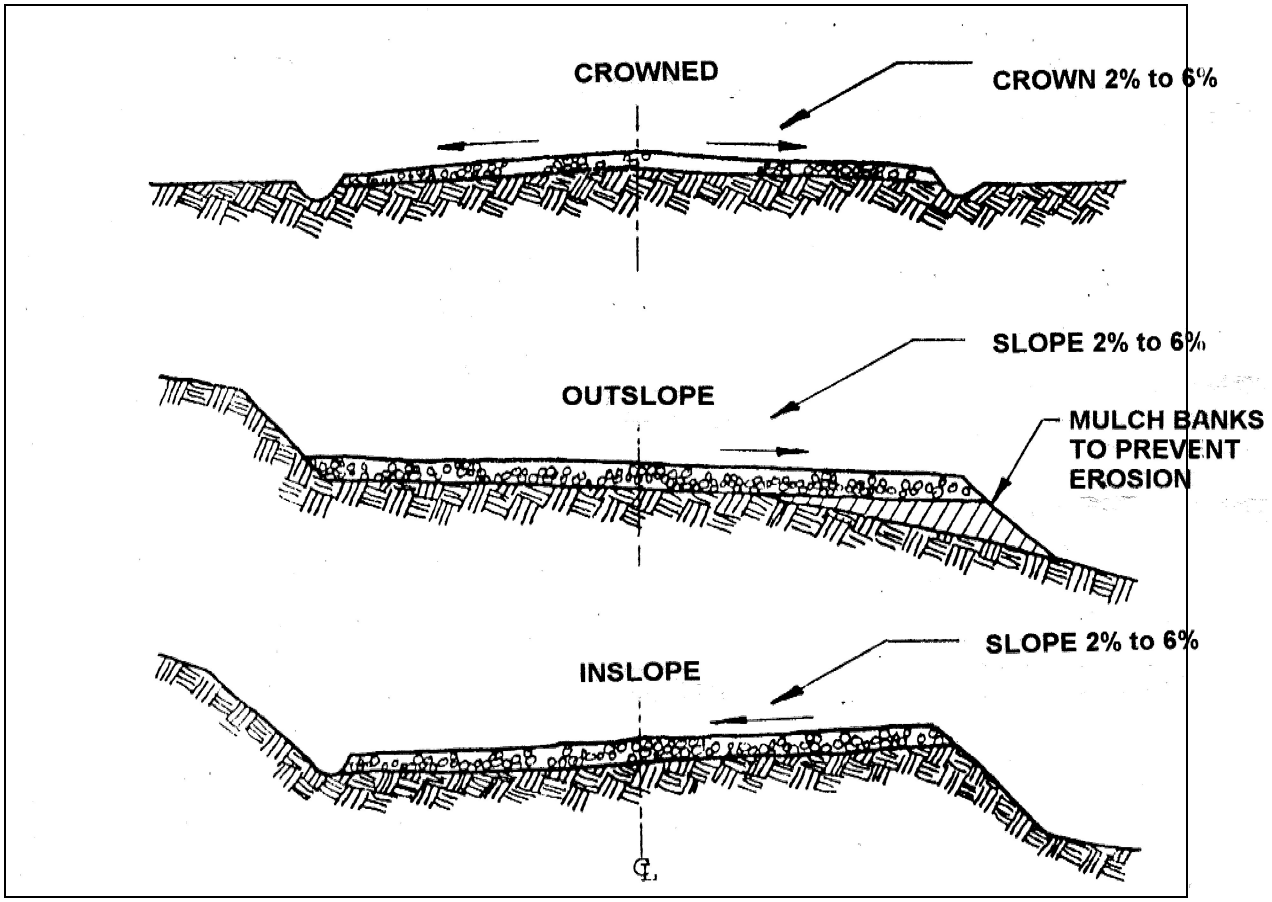


Figure 3.2: Road Surface Profiles

Culverts: Culverts are required where roads cross any ditch or water course; at intersections with other roads; and at designed intervals underneath elevated portions of roadways to prevent ponding. It is preferable to provide drainage at frequent intervals rather than concentrating water into one large conduit.

Culverts should be sized to the maximum expected flow in fifty years for a given location, with consideration to the size of the watershed, permeability of the soil, vegetation, and slope of the drainage ditch. They should be of sufficient length to allow construction of a driving surface consistent with the width of adjacent sections of the roadway.

Installation of culverts should be in accordance with generally accepted standards,

with attention given to the details of bedding, compaction, and erosion control.

Acceptable culvert materials are the following: (1) Corrugated galvanized steel (AASHTO M36 or M2l8); (2) Corrugated aluminum (AASHTO M196); or (3) Corrugated polyethylene pipe (AASHTO M252 and M294).

3.6 Intersections

Whenever possible, roads should intersect at right angles, or angles greater than sixty degrees. Visibility should be given prime consideration in locating intersections. A minimum corner radius of twenty feet should be constructed. For roads or driveways intersecting a Park County road, it is necessary to first get permission and construction guidelines from the County Road Superintendent.

3.7 Trees

Whenever possible, roads should be situated to avoid unnecessary removal of trees. Care should be taken not to scar trees with equipment. It is preferable to completely remove a tree or stump than to bury it in the fill slope. Wood products should be removed as soon as possible to avoid burial under the roadway.

Standing trees should not be relied upon to provide support for a roadway. Dead, leaning or undercut trees which pose a hazard to a roadway should be removed.

In the forested areas it may be necessary to prune trees in order to increase visibility for private roads and driveways intersecting Community Roads. It is preferable to remove the lower limbs of trees blocking the view, rather than removing the tree. A minimum sight distance of 240-feet shall be maintained where private roads enter community roads.

3.8 Reclamation of Disturbed Areas

In order to protect the land from erosion and the spreading of noxious weeds, cut and fill slopes and borrow areas must be covered with topsoil, mulched and planted with appropriate ground cover at the earliest suitable season. See *Standard 4.0 Land Reclamation and Landscaping Guidelines*. If weed growth does appear, immediate steps must be taken by the parcel owner to remove or treat the infestation to prevent it from spreading.

3.9 Safety Considerations

The safety of a road is directly related to the standard of its design and the quality of workmanship in its execution. The safety criteria which apply the construction of Community Roads and private roads are:

- Post all hazards
- 100-foot radius
- 50 foot minimum radius of curvature

- Surface compacted and stable
- 14.5 feet minimum vertical clearance
- 240 foot minimum visibility
- Consistent width, except where turnouts are required.

3.10 Maintenance of New Roads

Landowners who construct roads in the course of property improvements are required to make adequate provisions for the ongoing maintenance of the new roads serving the subdivision as speicfied herein under *Road and Driveway Standards*. All road improvements must be completed before final Glastonbury subdivision approval will be given and before sales or conveyances may be made. Ongoing maintenance may be provided by either: A) private agreement between the owners of all the new lots or tracts; B) contractual agreement between the landowner(s) and the Glastonbury Landowners Association where no new divisions of land were created; or C) dedication of a new Commuinty Road to and the assumption of the responsibility by the GLA.

3.11 Criteria for Accepting New Roads into the Glastonbury Road System

The Glastonbury Landowners Association may agree to accept a new road in a subdivision for addition to the Community Road System and assume the ongoing maintenance responsibility under the following criteria:

A) Road configuration, layout and design are approved by the GLA prior to road construction;

B) The road must be designed and constructed to the current *Section 3. Road and Driveway Standards*;

C) The road meets any additional standards required by the GLA at the time of review;

D) The road must be inspected and approved by the GLA after construction has been completed to verify that all standards have been met and that the road has been constructed as designed;

E) The road is designated on the final plat filed with the Park County Clerk and Recorder as provided in *Section 2.6 Subdivision Plat Filing*;

F) A fee of $240 for each tract or lot must be paid by the landowner(s) prior to the time of acceptance of responsibility by the GLA; and

G) A final agreement must be executed between the GLA and the landowner(s) providing for the dedication of the road to and the acceptance of ongoing maintenance responsibility by the GLA.

ROAD STANDARDS

The GLA will not approve any new roads for addition the the Community Road system unless all the provisions listed herein above are satisfied.

3.12 References

American Public Works Association, Southern California Chapter, *Standard Specifications for Public Works Construction*, Building News Inc., Los Angeles, 1979

Anonymous, *Standard Specifications for Road and Bridge Construction*, 1981, (adopted by the Montana Dept. of Highways and Montana Highway Commission)

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