ROAD IMPROVEMENT STANDARDS
AND
LAND DEVELOPMENT REQUIREMENTS

Solano County
Department of Resource Management
Public Works Engineering
675 Texas Street, Suite 5500
Fairfield, CA 94533
(707) 784-6060
www.solanocounty.com

TABLE OF CONTENTS

FOREWORD

This document contains the Road Improvement Standards and Land Development Requirements ("Standards") as required by Chapter 28, of the Solano County Code (commonly called the "Zoning Regulations") and referred to in Chapter 26 of the Solano County Code (commonly called the "Subdivision Ordinance") and Chapter IX of the Land Use and Circulation Element of the General Plan.

The Standards contain conditions and standards pertaining to Public and Private Roads, Emergency Access Roads and associated drainage facilities and improvements.

The Standards contain conditions and standards pertaining to Use Permits, Development and Performance Standards as defined in Chapter 28 of the Solano County Code.

The Standards contain conditions and standards pertaining to Subdivisions as defined in Chapter 26 of the Solano County Code.

The Standards shall apply unless the Zoning Administrator, the Planning Commission or the Board of Supervisors determines that different conditions and standards shall apply to a particular development or application. Other elements or plans approved by the Board of Supervisors may supersede these Standards.

The Standards are in conformance with good engineering principles and practice.

The Road Improvement Standards and Land Development Requirements were prepared under my direction.

Matt Tuggle, P.E. C61328

Engineering Manager
Public Works – Engineering Division
Department of Resource Management

DOCUMENT ADOPTION AND NOTICE OF UPDATES

This document may be updated from time to time to ensure current compliance with Solano County Code as it may be amended, as well as maintaining compliance with the professional standards of engineering and surveying.

1. Full update
    a. Adopted February 28, 2006
2. Full update including the addition of Appendix of supplemental Standards and Documents
    a. Adopted April 22, 2025
    b. Board of Supervisor's Resolution No. 25-~~xxxx~~295

SECTION 1 - ROAD IMPROVEMENT STANDARDS

Sec. 1-1 - GENERAL

Sec. 1-1.1 - DEFINITIONS

AASHTO means the American Association of State Highway and Transportation Officials.

ADT means Average Daily Traffic. The average number of vehicles that travel a segment of road in a 24-hour period.

Arterial Road means a high-speed, high-volume road for travel between major points in both rural and urban areas.

Caltrans means the State of California Department of Transportation.

CEQA means the California Environmental Quality Act

Clear Recovery Zone (CRZ) means an unobstructed, flat area alongside a roadway designed to provide space for drivers to regain control if they veer off the road, enhancing safety by reducing the risk of crashes.

Clear Width means the width between obstructions. For bridges, typically the distance between the barrier rails or sidewalks.

Collector Road means a road that links local and collector roads with arterial and other collector roads. It is usually of moderate traffic volume.

County Code means the codification of the General Ordinances of the County of Solano as approved and amended from time to time by the Board of Supervisors.

Developer means the proponent of a subdivision or other development, typically the property owner or his/her representative.

Director means the Director of Transportation for Solano County, or his/her designee. This position is held ex-officio as defined in Chapter 2 of County Code by the Director of Resource Management.

EIR means an Environmental Impact Report.

Enhanced Width Road means a road that requires a higher design standard

because of the presence of a large volume of truck traffic, or for other specific reasons. Enhanced width roads shall be designated by the Director.

GHG means Greenhouse Gas.

GPA means a General Plan Amendment.

HCM means the Highway Capacity Manual.

Highway Design Manual (HDM) means the guide published by Caltrans that provides standards and guidelines for the planning, design, and construction of highways and roadways to ensure safety, efficiency, and regulatory compliance.

ITE means the Institute of Transportation Engineers.

Local Road means a road used primarily for access to residences, businesses, or other abutting property.

LOS means Level of Service.

MUTCD means the Manual on Uniform Traffic Control Devices.

OPR means the California Governor's Office of Planning and Research.

PCE means Passenger Car Equivalent.

PHF means Peak Hour Factor.

Public Road means all or any part of the entire width of any road or street, including the width of any right-of-way dedicated to, reserved for, used by or for the general public, when those roads or streets have been accepted as and declared to be a part of the county road system.~~a road that has been accepted into the County's Maintained Mileage by the Solano County Board of Supervisors~~.

R-Value means the resistance of a construction material to deformity.

Shoulder means the portion of a roadway contiguous with the traveled way. It may be used by stopped vehicles, for pedestrians and bicyclists, and for lateral support of the roadway.

State Responsibility Area (SRA) means the Wildland areas in California where the State (Cal-Fire) is responsible for wildfire prevention and suppression, rather than local or federal agencies.

Traffic Index (TI) means a measure of the number of equivalent single axle loads expected in the design lane over the design period.

Traveled Way means the portion of the roadway for the movement of vehicles, exclusive of shoulders.

Urban Road means a road located in an urban or urbanized area, characterized by a high density of residences or businesses.

Vehicle Miles Traveled (VMT) means the sum of all miles driven by vehicles within a certain area and time frame.

Volume means the number of vehicles passing a given point during a specified period of time.

Sec. 1-1.2 - REFERENCES

a. ~~x.~~Chapter 2 (Administration) – Solano County Code
b. Chapter 17 (Motor Vehicles and Traffic) – Solano County Code
c. Chapter 24 (Roads, Streets and Other Public Property) – Solano County Code
d. Chapter 26 (Subdivisions) – Solano County Code
e. Chapter 28 (Zoning Regulations) – Solano County Code
f. Chapter 31 (Grading, Drainage, Land Leveling, and Erosion Control) – Solano County Code
g. California Fire Code, Title 24, Part 9

Sec. 1-1.3 - MODIFICATION OF STANDARDS

Subject to the provisions of Chapter 26 of the Solano County Code (Solano County Subdivision Ordinance), the Director may, where warranted, impose additional and/or more stringent requirements beyond those contained in these standards, and also may waive or modify the requirements contained in these S~~s~~tandards and Appendices.~~-~~

Such modifications shall be notated and described herein.

Sec. 1-1.4 - DESIGN PLANS

All improvements performed in accordance with this section shall be based on plans prepared by a civil engineer licensed to practice in the State of California. These plans shall be submitted to the Department of Resource Management for approval in both hard copy and electronic form, in a format approved by the Director. Construction shall not start until the Director has approved the plans.

Where the County does not have a standard detail, the designer shall use the current Caltrans Standard Plans.

Sec. 1-1.5 - DESIGN SPECIFICATIONS

Unless otherwise specifically indicated in these standards, all work shall be designed in accordance with the current Caltrans Standard Specifications, Caltrans Highway Design Manual, the AASHTO Policy on Geometric Design of Highways and Streets, the Manual on Uniform Traffic Control Devices (MUTCD), the MUTCD California Supplement, and the Solano County Subdivision Ordinance. In the event of a difference between these references, the most stringent requirement shall apply.

Sec. 1-1.6 - CONSTRUCTION SPECIFICATIONS

Construction specifications shall be as contained in the current Caltrans Standard Specifications and applicable Special Provisions.

Sec. 1-2 - PUBLIC ROAD STANDARDS

Sec. 1-2.1 - TRAFFIC PROJECTIONS

The ADT to be used for design shall be based on the traffic volume projected for twenty years after completion of construction. Subdivision road design shall be based on the traffic volume projected at ultimate development of the area.

The TI to be used for design shall be determined by the type of vehicles and traffic volume projected for the proposed road. In the absence of detailed traffic information, the TI to be used for design may be based on the ADT (see Figure 1) or, for residential subdivisions, on house count (see Figure 2). The truck traffic to be used for design may generally be taken to be five percent of ADT.

Traffic volume projections shall be based on methods approved by the Director. Projections for local roads in residential subdivisions shall be based on an average of ten trips (one-way) per day per home site.

Sec. 1-2.2 - DESIGN SPEEDS

Design speeds shall normally be based on the AASHTO Policy on Geometric Design of Highways and Streets, except as modified in this section. Rural roads in rolling or mountainous areas (except in residential areas) shall generally have a design speed of 45 mph or greater and shall not be less than 35 mph except where

the terrain and physical constraints prevent that speed from being reasonably obtained. Roads in rural residential areas shall generally have a design speed of from 25 to 35 mph (the lower speed shall be used for roads that are fairly short, or where the residences are closely spaced or located close to the road) and shall not be less than 25 mph except where the terrain and physical constraints prevent that speed from being reasonably obtained. Local urban residential roads shall generally have a minimum design speed of 25 miles per hour, and urban collector roads shall generally have a minimum design speed of 35 miles per hour. In some locations, environmental concerns may dictate lower design speeds to preserve the scenic values of a particular roadway. Safety considerations may also require a lower design speed in some locations.

Sec. 1-2.3 - TRAVELED WAY

The traveled way is the minimum width to be paved in all cases.

Sec. 1-2.4 - VERTICAL ALIGNMENT

Maximum road grades shall generally be based on the AASHTO Policy on Geometric Design of Highways and Streets. However, road grades shall not exceed 18 percent (12 percent if unpaved). The minimum grade for roads with curb and gutter, dikes or berms shall be 0.50 percent. Parabolic curves shall be provided at all locations where the algebraic change in grade is greater than one percent. If a parcel falls within a State Responsibility Area (SRA), it must comply with the State's Fire Safe Standards, as outlined in the State Fire Code, which takes precedence and supersedes this code.

Sec. 1-2.5 - HORIZONTAL ALIGNMENT

Changes in horizontal alignment shall be accomplished with circular curves.

Sec. 1-2.6 - CLEAR RECOVERY ZONE AREAS

Sight distance ad visibility shall generally be based on stopping sight distances for approaching vehicles traveling at the speed limit (if posted), or at a reasonable speed (if no speed limit is posted). Caltrans Highway Design Manual shall be used as guide along with related standard drawings in this document to establish clear sight distance. Refer to the Appendix ~~xxx~~ for Solano County's Clear Recovery Zone Policy Memorandum.

Sec. 1-2.7 - ROADWAY STANDARDS

The width of the traveled way and shoulder shall be in accordance with the latest edition of Caltrans Highway Design Manual (HDM) at the time of application

submittal, except that the following minimums shall apply:

Width of Traveled Way (plus Paved Shoulders on each side) and Right-of-Way in Feet

ADT	Standard Roads (< 30 mph)	Standard Roads (> 35 mph)	Enhanced Width Roads	Right-of-Way (Minimum)
less than 250	20	22	24 + 2	60
251 - 750	22	24	24 + 2	60
751 - 4,000	24	24	24 + 4	70
4,001 - 10,000	24 + 4	24 + 4	24 + 8	80
> 10,000	48 + 8	48 + 8	48 + 8	100

In addition, all roads shall generally have 4-foot graded shoulders on both sides. This width may be reduced to accommodate existing trees, drainage facilities, slopes, and other features as determined by the Director.

The speeds to be used to determine the roadway width shall be the speed limit (if posted), or at a reasonable speed (if no speed limit is posted), as determined by the Director. For most urban residential roads, and for most rural residential roads with a length of one-quarter mile or less, the speed will be 30 mph or less, while for most other roads the speeds will be 35 mph or more.

An enhanced width road is a road that requires a higher design standard because of the presence of a large volume of truck traffic, or for other specific reasons. Enhanced width roads shall be designated by the Director.

The right-of-way shown above is the minimum requirement. The actual right-of-way width shall be increased where necessary to accommodate all elements of a roadway, including cut and fill slopes, roadside drainage facilities, medians, bridges (including sufficient width to allow maintenance personnel and equipment to get under the bridge), and public utilities. At intersections, the right-of-way shall include connecting curves with the same radii as the edge of pavement connections. ~~Rights-of-way shall generally be obtained in fee title.~~

Roadway and right-of-way widths shall be increased to accommodate on-road parking, bicycle traffic and pedestrian traffic, where warranted. Roads in areas planned or zoned for commercial or industrial uses shall have a width of traveled way and right-of-way four feet greater than the minimums shown in the table above.

Sec. 1-2.8 - STRUCTURAL SECTION

Road structural sections shall be designed in accordance with the procedure outlined in the Caltrans Highway Design Manual and based on the R-value of the underlying material and the traffic index. In lieu of testing, a design R-value of 5 may be used.

The structural section of paved shoulders shall be the same as that of the traveled way. The minimum structural section shall be one of the following:

a. 0.25’ asphalt concrete and 0.75' aggregate base
b. 0.5’ asphalt concrete

For an illustration of a typical road section, see the Standard Details.

Sec. 1-2.9 - INTERSECTIONS

Connecting radii at public road intersections, both for the edge of pavement and for the right-of-way limit shall generally be not less than 30 feet. Where both connecting roads are arterial or major collector roads, the connecting radii shall be not less than 40 feet. However, where significant truck right-turn movements are anticipated, the standard for a commercial driveway shall apply.

Sec. 1-2.10 - MEDIANS

Roads with four or more lanes may require a center median, as determined by the Director. The standard median width shall be 16 feet. The minimum median width shall be four feet. Additional paved shoulder width may be required adjacent to the median.

Sec. 1-2.11 - CUL-DE-SACS

Wherever a dead-end road is permitted, an adequate turning area will be provided (see Figure 4).

Sec. 1-2.12 - BERMS, DIKES and OVERSIDE DRAINS

Berms, dikes, and/or overside drains may be required to concentrate the flow of water from the pavement to a desired location.

Sec. 1-2.13 - GUARDRAILS

Guardrails may be required in areas having hazardous roadside slopes or obstacles that cannot be eliminated or mitigated by other means.

Sec. 1-2.14 - UTILITY POLES

Utility poles to be located within the road right-of-way shall be placed as close to the edge of the right-of-way as practical. A utility plan shall be submitted to the Department of Resource Management as part of the encroachment permit application. No utility poles shall be installed until the utility plan has been approved. Refer to ~~Appendix xxx~~ the Appendix for Solano County's Clear Recovery Zone Policy ~~Memorandum~~.

Placement of utility poles shall adhere to the following criteria:

a. The horizontal clear distance from the edge of the traveled way to a pole shall conform to the requirements of the Caltrans Highway Design Manual (309.1 Horizontal Clearances). In no case shall the clear distance be less than four feet. On roads with an ADT greater than 250 vehicles per day and a speed limit (if posted) or reasonable speed (if not posted) of 35 mph or greater, the desired clear distance shall be eight feet.

b. Poles shall not be placed on the outside of curves in the road.

c. Poles shall not be placed opposite the dead-end leg of T-intersections.

Sec. 1-2.15 – TREE REPLACEMENT AND PLANTING OF SLOPES

Road projects shall be designed to minimize the removal of existing trees, especially large native trees, and other vegetation where practical and consistent with traffic safety. The standards for graded shoulder widths may be reduced to permit the preservation of existing trees and vegetation. When trees must be removed as part of a project, they shall be replaced at a minimum 2:1 ratio with the tree type, size and location determined by the Director. The Director may set a higher standard for tree replacement based on environmental requirements, acceptability to the community and the traveling public, aesthetic impacts, and other reasons and determined solely by the Director.

~~Each replacement tree shall be at least a 15-gallon sapling.~~ Initial planting shall be in a hole at least twice the size of the root ball, and planting shall be accompanied with soil conditioners sufficient to reasonably insure survival of the tree. Each replacement tree must be double staked and shall be regularly watered for a period of not less than 24 months.

In addition to the planting of replacement trees, the Director may require the

planting of additional trees or other vegetation to mitigate the impact of construction and enhance the appearance of a road. Such planting may include the planting of acorns and walnuts, as approved by the Director.

Sec. 1-2.16 – EROSION CONTROL MEASURES

All cut and fill slopes, and exposed or bare dirt areas, shall be seeded with a suitable cover
and matted, and other appropriate erosion control measures shall be installed, in accordance with County standards and as approved by the Director.

Sec. 1-2.17 - CURBS, GUTTERS and SIDEWALKS

Residential roads in areas zoned for RE-1/2 or greater density shall generally have concrete curbs, gutters and sidewalks. Concrete curbs, gutters and sidewalks shall also be installed where a significant number of other properties in the neighborhood have existing curbs, gutters and/or sidewalks, in commercial and industrial areas where warranted, and in other areas where required by the Director. Roadway widths in areas with curbs, gutters and sidewalks shall be increased to accommodate on-road parking, when warranted. Curbs, gutters and sidewalks, where required, shall be constructed in accordance with Figure 5. Sidewalks shall generally have a minimum width of 5 feet, to encourage walkability. Greater widths may be required in commercial or other areas with significant pedestrian traffic.

Sec. 1-2.18 – ROAD MAINTENANCE

The cost of maintaining public improvements constructed in conjunction with a subdivision or other private development, including plantings, shall be the responsibility of the developer for a period of one year after acceptance of the improvements by the Director. The developer shall provide the County with a bond or other security acceptable to the Director in an amount of ten percent of the total value of the public improvements that were constructed, as determined by the Director. Any repair work to be done to the public improvements within the one-year period shall be performed by the developer to the satisfaction of the County. Roadway markings must maintain minimum retro-reflectivity levels in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) to ensure nighttime visibility and safety.

Sec. 1-2.19 - MISCELLANEOUS STANDARDS

Valley gutters, where permitted, shall be constructed in accordance with Figure 6. Private driveway connections shall be constructed in accordance with Figure 7. Commercial driveway connections shall be constructed in accordance with Figure 8.

Any trenching across County roads shall be performed in accordance with Figure 9. Installation of survey monument wells shall be performed in accordance with Figure 10. Utility access covers shall be installed in accordance with Figure 11.

Sec. 1-2.20 - SIGNS, SIGNALS, and STRIPING

Road name signs shall be provided and installed at all road intersections, including the intersection of two private roads.

Traffic control signs, signals, and pavement striping shall be installed in accordance with a plan prepared by the developer and approved by the Director.

In general, rural roads with a prevailing speed of 35 mph or greater, a pavement width of at least 18 feet, a length of at least one-half mile and an ADT of at least 100 should have a centerline. If the ADT of a road is greater than 250, the centerline should include raised markers. However, if the pavement width is less than 19 feet, one-way or two-way no passing centerlines should consist of all raised markers or should have no raised markers.

In general, rural roads with a prevailing speed of 35 mph or greater, a length of at least one- half mile and an ADT of 250 or greater should have edge lines. In areas subject to frequent heavy fog, edge lines should be considered even for roads that do not meet these criteria. Edge lines may be used on roads that do not have a centerline.

Striping and pavement markings shall generally consist of thermoplastic, with raised markers where appropriate.

Where traffic signals are required, the developer shall pay the total or a pro-rata share of the cost for the installation as determined by the Director. The County shall pay the cost of energizing and maintaining the traffic signal if the signal is serving County roads exclusively. If the traffic signal serves an intersection of County and private roads, the cost shall be pro-rated between the County and the subdivision served by the private road as the number of private road legs served by the intersection bears to the number of County Road legs.

Sec. 1-2.21 - ROAD LIGHTING

Road lighting shall be installed along streets in areas designated as "RE-1" (Residential estate district) or greater density.

The Director may require individual road lighting at adjacent road intersections or other locations where necessary for public safety.

The design, intensity, and location of road lighting shall be determined by the Director based on existing lighting conditions, existing and projected level of development, and factors necessary for the public safety. In general, lights on two lane roads should be spaced at 250-~~-~~foot intervals, alternating on opposite sides of the road. They shall typically consist of 70-~~-~~watt ~~high pressure sodium~~LED luminaries on residential roads, and 100-watt ~~high pressure sodium~~LED luminaries at all other locations. Where lights are being installed primarily as a traffic safety measure, such as lighting an intersection, full cutoff lights (where the lens is flush with the bottom of the light fixture) should be used. Where lights are being installed primarily to enhance general safety and security, semi-cutoff lights (where the lens extends slightly below the bottom of the light fixture) should be used.

Sec. 1-2.22 – PAVEMENT UNDULATIONS

The installation of pavement undulations (speed humps) as a method of controlling traffic speeds will be considered on County roads that meet the following conditions:

a. It is a residential road having a speed limit not greater than 25 mph.

b. The total paved width is 40 feet or less.

c. The grade of the road approaching the undulation is 8 percent or less.

d. The road approaches have horizontal curve radii of at least 300 feet.

e. The road approaches meet the minimum safe stopping sight distance as defined by the latest edition of Caltrans Highway Design Manual (HDM).

f. The road is not a primary emergency vehicle route.

g. The road is not located on an established transit route.

h. At least two-thirds of the residents in the block within which a pavement undulation is proposed support the installation.

i. All residents immediately abutting the location where a pavement undulation is proposed support the installation.

j. The California Highway Patrol, the County Sheriff, and the agencies that provide fire and ambulance service to the area support the installation.

Pavement undulations (speed humps) shall be constructed in accordance with Figure 12, and signed and striped as specified by the Manual on Uniform Traffic

Control Devices.

Sec. 1-3 - PRIVATE ROAD STANDARDS

Private road standards, including plantings and erosion control measures, are the same as those for public roads except as specified in this section.

Solano County desires to minimize the number of connections to public roads. Therefore, where practical, connections to public roads shall be shared by more than one lot, and lots that have a suitable connection to a private road shall utilize the private road for access, and not make an additional public road connection.

The following requirements shall apply to projects where access is provided by an existing private road, or by a private road that is to be constructed as a condition of approval of a subdivision or other development.

Sec. 1-3.1 - ROADWAY STANDARDS

For projects serving one to four ~~potential~~ parcels, the road (also called a driveway) shall be built as required by the provisions of the California Fire Code Section 902 - Fire Department Access (including Appendix III-D), or Public Resources Code Section 4290 - Fire Safe Regulations, whichever applies. The road shall be constructed of 0.67 feet of compacted Class 2 aggregate base. The width of the road shall be ~~12~~20 feet, with 60 foot long by 8-foot-wide turnouts every 300 feet (for roads over 300 feet long), plus ~~4~~2-foot graded shoulders, and shall also have an unobstructed width of 2~~8~~0 feet.

For projects serving ~~two~~ five to ten ~~potential~~ parcels, the structural section shall be a ~~20~~24-foot-wide gravel road requirement or better over 0.67 feet of compacted Class 2 aggregate base, with 4-foot graded shoulders and shall also have an unobstructed width of 32-feet.

For projects serving more than ten ~~potential~~ parcels, the structural section shall be the same as that required for public roads.

~~The number of potential parcels shall be determined based on the County General Plan.~~

The maximum road grade shall be 18% for paved roads and 12% for unpaved roads, except for parcels within a State Responsibility Area (SRA), where the State Fire Code takes precedence.

Sec. 1-3.2 - INTERSECTIONS

Connecting radii at the intersection of a private road with a public road or with another private road, both for the edge of pavement and for the right-of-way limit, shall generally be not less than 20 feet. Where a private road connects to a County Road, the developer of the private road shall obtain an encroachment permit and comply with all of its requirements. Provisions shall be made for drainage along the affected County Road.

Sec. 1-3.3 - EASEMENT REQUIREMENTS

All private road construction shall be located within an easement established by an instrument of record. The Director shall determine the easement width. At minimum, easement width shall be 50-feet for roads with the potential of serving four or fewer parcels, and 60-feet for roads with the potential of serving five or more parcels, based on the existing zoning for those parcels. The easement width shall be increased where necessary to accommodate all elements of the roadway, including cut and fill slopes, roadside drainage facilities, medians, bridges (including sufficient width to allow maintenance personnel and equipment to get under the bridge), and public utilities. At intersections, the right-of-way shall include connecting curves with the same radii as the edge of pavement connections.

Easements shall be labeled accordingly to ensure the correct depiction of 'Public' ~~and~~ and 'Private' entities.'

~~All road easements shall provide for access by utility companies and public safety operations and shall be designated as "Public Utility and Access Easements".~~

Sec. 1-3.5 - ADEQUATE ACCESS

The following requirements shall apply where parcels are required to have adequate access in the Solano County Subdivision Ordinance.

Adequate access shall consist of an easement established by an instrument of record and to the benefit of all those properties intended to use the easement for access. ~~This easement shall be at least 60 feet in width except where the potential parcels do not exceed four, in which case the easement shall be at least 50 feet in width.~~ The easement shall be shown, together with the recording information, on the Parcel Map or Final Map. The easement shall be improved, at a minimum, as required by the provisions of the Uniform Fire Code Section 902 - Fire Department Access, or Public Resources Code Section 4290 - Fire Safe Regulations, whichever applies.

Sec. 1-4 – ROAD MAINTENANCE AGREEMENTS

Sec. 1-4.1 – NEW LAND DEVELOPMENT

The cost of maintaining private roads and other facilities constructed in conjunction with a subdivision or other private development, including plantings and erosion control measures, shall be the responsibility of the developer for a period of one year after approval of the improvements by the Director. The developer shall provide the County with a bond or other security acceptable to the Director in an amount of ten percent of the total value of the improvements that were constructed, as determined by the Director. Any repair work to be done within the one-year period shall be performed by the developer to the satisfaction of the County. Bond reequipments shall be established to a term of no longer than 3 years and at an estimated cost of a department solicited contract with prevailing wages.

Prior to recordation of the Final Map or Parcel Map, a Road Maintenance Agreement that requires all lot owners in the subdivision to participate in the maintenance of private roads and associated facilities serving the subdivision shall be recorded. The Maintenance Agreement shall be submitted to the Director for review and approval prior to recordation. Reference to the Road Maintenance Agreement shall be made on the Supplemental Map Sheet in compliance with the SMA and the County Subdivision Ordinance.

Sec. 1-4.2 – EXISTING LANDS

For applications of development (new or changes to) on existing parcels where primary access is provided through a Private Road shared by other parcels, the applicant shall be conditioned to pay its fair share of the Private Road maintenance costs in proportion to the additional use made under the application as defined by California Civil Code 845, as amended from time to time.

The Director of Resource Management may waive this standard if one of the following conditions apply:

a. An existing recorded Private Road Maintenance agreement over the Private Road in question exists
b. Circumstances of the application require that the Director condition the application to execute a Private Road Maintenance Agreement with all parcel owners. The Maintenance Agreement shall be submitted to the Director for review and approval prior to recording.~~xxxxx~~

Sec. 1-5 - TRAFFIC

Sec. 1-5.1 – LEVEL OF SERVICE

Road lighting shall be installed along streets in areas designated as "RE-1" The goal of Solano County is to maintain a Level of Service C on all roads and intersections. In addition to meeting the design widths and standards contained in this document, all projects shall be designed to maintain a Level of Service C, except where the existing level of service is already below C, the project shall be designed such that there will be no decrease in the existing level of service. Levels of Service shall be calculated using the Transportation Research Board's most recent Highway Capacity Manual.

Sec. 1-5.2 – VEHICLE MILES TRAVELED (VMT)

For the County's VMT Policy, refer to Appendix XX.

Sec. 1-5.3 – CEQA REQUIREMENTS

~~xxxx~~Since the adoption of SB 743, all land use projects in California subject to CEQA must evaluate Vehicle Miles Traveled (VMT) instead of Level of Service (LOS) to determine transportation-related environmental impacts. A VMT analysis is required when a proposed development could significantly increase the amount of driving in an area—typically measured against local or regional thresholds. This shift is designed to promote infill development, reduce greenhouse gas emissions, and support alternative modes of transportation.

In Solano County, VMT analysis is generally triggered for residential, commercial, or mixed-use projects located in areas with high VMT or lacking access to public transit. Projects near major transit corridors or within pre-identified low-VMT zones may be screened out and exempt from full analysis. If a project exceeds VMT thresholds established by cities or agencies like the Solano Transportation Authority, it may require mitigation measures or an Environmental Impact Report (EIR). The intent is to guide growth in a way that aligns with the state's broader climate and mobility goals.

Sec. 1-5.4 – VMT ANALYSIS FOR LAND USE PROJECTS

~~xxxx~~For land use projects subject to CEQA, Vehicle Miles Traveled (VMT) is now the standard metric used to evaluate transportation impacts. Projects such as residential developments, commercial centers, or mixed-use communities must demonstrate that they do not significantly increase VMT compared to regional or local thresholds. This analysis is especially important for projects located in suburban or rural areas, where driving is more common and alternative transportation options are limited. Projects that generate high VMT may be required to incorporate mitigation measures—such as improved bike/pedestrian infrastructure, increased transit access, or transportation demand management strategies—to reduce environmental

impacts and comply with CEQA. In contrast, projects located in transit-rich or infill areas may be eligible for screening exemptions, streamlining their approval process.

~~Sec. 1-5.5 – MINIMUM REQUIREMENTS FOR TRAFFIC IMPACT STUDIES~~

~~xxxx~~

Sec. 1-6 - DRAINAGE

Drainage which affects public or private roads, and which is generated from within a project or is traversing a project site shall be accommodated by an engineered drainage system, natural watercourse, or a combination of both. In addition, in some circumstances off-site drainage improvements may be required. Both on-site and off-site drainage improvements shall be coordinated with drainage facilities located within road rights-of-way and easements, to ensure that the improvements do not adversely affect the road or other properties.

An engineered drainage system shall consist of open channels or subsurface drainage systems, plus their appurtenant facilities. Open channels are generally appropriate for use in rural areas. In urban areas, subsurface drainage systems shall be used to accommodate runoffs.

All drainage facilities or improvements shall be subject to the approval of the Director.

The data for calculating runoff shall be taken from the Solano County Water Agency Hydrology Manual.

Sec. 1-6.1 - OPEN CHANNELS

All open channels shall be designed to convey the flows from a storm with a return period of 100 years with 0.5 feet of freeboard. The design period shall be based on the basin time of concentration, or the 24-hour storm, whichever is more conservative.

All conveyance calculations shall be based on ultimate development of the project site.

The minimum channel slope shall be 0.50 percent. When an unpaved channel is subject to erosion, the channel shall be paved, or other erosion control methods installed as approved by the County.

Sec. 1-6.2 - CULVERTS

Culverts shall be designed to pass a ten-year storm without head on the inlet under free outfall conditions, and a one-hundred-year storm with a head not higher than the outside edge of the graded shoulder and such that no significant localized flooding problems occur. Culverts installed in conjunction with an open channel drainage system shall also conform to the requirements for that system.

Crossroad drainage culverts shall be at least 18 inches in diameter. All other culverts shall be at least 15 inches in diameter. An arch pipe with an equivalent capacity may be used in both cases.

Corrugated steel or corrugated polyethylene pipe may be used for road culverts. Corrugated steel pipes shall have a 50-year service life in accordance with California Test Method No. 643.B. Corrugated polyethylene pipes shall meet specifications in accordance with AASHTO M294, Type S.

Erosion protection (such as rock slope protection, sack concrete, or a headwall) shall be placed at all culvert inlets and outlets where the channel is subject to erosion, and at culvert inlets and outlets where abrupt changes in channel alignment occur.

Paved inverts are required for metal pipe culverts when the velocity in the channel is five feet per second or more unless it can be shown that the stream does not carry abrasive materials.

Sec. 1-6.3 - SUBSURFACE DRAINAGE SYSTEMS

Subsurface drainage systems shall be designed to carry a ten-year storm without head and a one-hundred-year storm using the head available in the appurtenant structures. Discharges to a creek shall assume a one-hundred-year hydraulic gradient in the creek when calculating the gradient of a storm drainage system.

Concrete pipe shall be used for subsurface drainage systems. Concrete pipe shall be Class III minimum. All pipes shall be at least 15 inches in diameter. The minimum velocity in the pipe shall be 2.5 feet per second at a ten-year storm design flow.

Sec. 1-6.4 - MINIMUM COVER

The minimum cover over pipes installed within the road right-of-way shall not be less than that required by the manufacturer.

Sec. 1-6.5 - CURBS and GUTTERS

Where curbs and gutters are required, as described in Section 1-2.15, they shall be designed to carry a ten-year storm without water encroaching upon the traveled way, and a hundred- year storm without overtopping the curb. In all cases, drainage

water will not be allowed to travel more than 400 feet in gutters.

Sec. 1-6.6 - INCREASED RUNOFF

Peak runoff from the project area shall be calculated for the pre-development and post-development conditions. The return period used shall be as shown under the heading "Open Channels" in this section, or such other procedure as shall be approved by the County. If the pre and post development calculations show an increase in runoff, the preparation of a drainage plan shall be required. This plan shall recommend mitigation measures that result in no net increase in peak runoff due to the development.

Mitigation measures normally include installation of a retention basin or a detention basin. In some instances, downstream drainage improvements may be installed in lieu of providing for no net increase in runoff. Please refer to Detention Pond Sizing memorandum in the Appendix ~~xxx~~.

Sec. 1-7 - BRIDGES

The clear width of bridges located on public roads shall comply with the current edition of the AASHTO Policy on Geometric Design of Highways and Streets, except that the width of the traveled way upon which the bridge width is based shall be as described in these Standards, and that the clear width shall be 28 feet minimum. The clear width of bridges located on private roads shall equal the traveled way width plus two feet on each side, but with a clear width not less than 28 feet.

Bridges shall be designed in accordance with the latest revision of the Caltrans manuals entitled Bridge Design Specifications, Bridge Design Aids, and Bridge Design Details, and the Caltrans Standard Plans and Standard Specifications.

Bridges shall be designed to pass a fifty-year storm with a minimum of two feet of freeboard and pass a one-hundred-year storm with no freeboard. Streams, which carry large floating debris, may require greater freeboard. Abutments shall be protected from erosion damage. This may necessitate the use of rock slope protection or other suitable materials and methods. Abutments on fill material will not be allowed unless supported on piles and the fill is adequately protected from erosion.

Bridges shall be protected with Type 80 concrete barriers and metal beam guardrails at all approaches in accordance with Caltrans Standard Plans and practice. Metal tube bridge railings will be installed in all locations where significant bicycle or pedestrian traffic is anticipated.

Road rights-of-way and easements shall provide sufficient width to accommodate bridges, where necessary. This width shall include adequate area both upstream and downstream of a bridge in order to construct and maintain associated channel improvements. In addition, sufficient area shall be provided to allow for future maintenance of the improvements. This shall include a minimum of 20 feet from the top of the bank along channel areas to be maintained, and sufficient area for personnel and equipment to be able to access the bridge, including the bridge abutments and underside, and the channel flowline.

Sec. 1-8 - BICYCLE AND PEDESTRIAN FACILITIES

The Solano Countywide Bicycle Plan prepared by the Solano Transportation Authority shall generally guide the location of bicycle facilities. The Solano Countywide Pedestrian Plan prepared by the Solano Transportation Authority shall generally guide the location of pedestrian facilities.

Bicycle facilities shall be designed in accordance with Class 1, Class 2 or Class 3 bikeway standards contained in the Caltrans Highway Design Manual.

Bridges that carry significant bicycle or pedestrian traffic shall have tubular hand railing installed on the barrier rails.

TABLE 1 – SUMMARY OF THE ROAD IMPROVEMENT STANDARDS

	ADT	Traveled Way	Paved Shoulder	Gravel Shoulder	Total Road Width	Road Surface	Right-of-Way
PUBLIC ROAD (< 35 MPH)	< 250	20’	0’	4’	28’	AC	60’
	251 – 750	22’	0’	4’	30’	AC	60’
	751 – 4,000	24’	0’	4’	32’	AC	70’
	4,001 – 10,000	24’	4’	4’	40’	AC	80’
	> 10,000	48’	8’	4’	72’	AC	100’
PUBLIC ROAD (> 35 MPH)	< 250	22’	0’	4’	30’	AC	60’
	251 – 750	24’	0’	4’	32’	AC	60’
	751 – 4,000	24’	0’	4’	32’	AC	70’
	4,001 – 10,000	24’	4’	4’	40’	AC	80’
	> 10,000	48’	8’	4’	72’	AC	100’
PUBLIC ROAD (Enhanced Width)	< 250	24’	2’	4’	36’	AC	60’
	251 – 750	24’	2’	4’	36’	AC	60’
	751 – 4,000	24’	4’	4’	40’	AC	70’
	4,001 – 10,000	24’	8’	4’	48’	AC	80’
	> 10,000	48’	8’	4’	72’	AC	100’
	Potential # of Parcels	Traveled Way	Paved Shoulder	Gravel Shoulder	Total Road Width	Road Surface	Right-of-Way
PRIVATE ROADS	1 – 4	20’	0’	4’	28’ + TO’s	AB	50’
	5 – 10	24’	0’	4’	32’	AC	60’
	11 +	Same as Public Road Requirements					

Table 1 Notes:

AB = Class II Aggregate Base
AC = Asphalt Concrete Pavement
ADT = Average Daily Traffic

TO = Turnout

~~1. All widths are in feet.~~

~~2.~~1. All widths shown in Table 1 above are minimums. Roadway and right-of-way widths shall be increased to accommodate on-road parking, bicycle ~~traffic~~ and pedestrian traffic, where warranted. Roads in areas planned or zoned for commercial or industrial uses shall have a width of traveled way and right-of-way four feet greater than the minimums shown in the table above. Actual right-of-way widths shall also be increased where necessary to accommodate all elements of a roadway, including cut and fill slopes, roadside drainage facilities, medians, bridges (including sufficient width to allow maintenance personnel and equipment to get under the bridge), and public utilities. Rights-of-way shall generally be obtained in fee title, where possible. The Director of Transportation may, where warranted, impose additional or more stringent standards beyond those shown here.

~~3. For surface type, AC indicates asphalt concrete pavement, CS indicates double chip seal, and AB indicates compacted Class 2 aggregate base. For road width, TO indicates turnout.~~

~~4.~~2. Residential roads in areas zoned for RE-1/2 or greater density shall have concrete curbs, gutters and sidewalks. Concrete curbs, gutters and sidewalks shall also be installed where a significant number of other properties in the neighborhood have existing curbs, gutters and/or sidewalks, in commercial and industrial areas where warranted, and in other areas where required by the Director. Roadway widths in areas with curbs, gutters and sidewalks shall be increased to accommodate on-road parking, when warranted.

3. This table is intended to be a quick reference of information contained in the Road Improvement Standards. Refer to the Road Improvement Standards for further information. In the event of a conflict between this chart and the text of the Road Improvement Standards, the text shall control.

4. Projects within the State Responsibility Area (SRA), must comply with the State's Fire Safe Standards, as outlined in the State Fire Code, which takes precedence and supersedes this code.

~~5.~~

SECTION 2 - SURVEYING AND MAPPING STANDARDS

The following Surveying and Mapping Standards are intended to supplement and clarify the requirements of pertinent laws and the accepted Standard Practices of Professional Land Surveyors in compliance with all provisions of the Professional Land Surveyors Act, Subdivision Map Act and the Solano County Subdivision Ordinance not covered in this section shall be required.

Said standards shall apply to all Maps, Plats and Exhibits submitted for review by the Office of the County Surveyor. Such documents may include Corner Records, Record of Surveys, Final/Parcel Maps, Legal Descriptions & Plats and any other conveyance document and/or exhibits.

Sec. 2-1 – DEFINITIONS

Board Rules means Title 16, Sections 400 – 476 of the California Code of Regulations.

County Code means the codification of the General Ordinances of the County of Solano as approved and amended from time to time by the Board of Supervisors.

Director means the Director of Transportation for Solano County, or his/her designee. This position is held ex-officio as defined in Chapter 2 of County Code by the Director of Resource Management.

Land Surveyor means Licensed Land Surveyor or Registered Civil Engineer authorized to practice Land Surveying in the State of California.

Lot / Parcel for the purpose of this document is synonymous.

Office of the County Surveyor means the County Surveyor as defined in Chapter 2 of County Code.

Professional Land Surveyor's Act (PLS Act) means Sections 8700 – 8805 of the California Business and Professions Code.

Subdivision Map Act (SMA) means Sections 66410 – 66499 of California Government Code.

Subdivision Ordinance means Chapter 26 of County Code.

Sec. 2-2 – GENERAL SURVEY REQUIREMENTS

Sec. 2-2.1 – PARCEL/FINAL MAPS REQUIRE FIELD SURVEY

All Parcel/Final Maps filed within the unincorporated area of Solano County shall be based upon a field survey.

Sec. 2-2.2 - BASIS OF BEARINGS

The basis of bearings shall be identified by a statement on the map and shall be taken from a line between two (2) monuments of record wherever possible. The Basis of Bearings shall be obtained from one of the following:

a. A filed map
b. An astronomical observation
c. California coordinate system
d. County Surveyor's or Recorder's records.
e. Global Positioning Survey

Where no monuments exist (artificial or natural), it is permissible to use the best available evidence such as old existing fences commonly accepted as being the property line. The County Surveyor at his/her discretion, may accept or reject said lines used as the Basis of Bearings.

Sec. 2-2.3 - TYPE OF MONUMENTS

The Professional Land Surveyors Act and the Subdivision Map Act require that set monuments be durable. All monuments set shall be at minimum 5/8-inch re-bar, 1-inch O.D. pipe, 4-inch x 4-inch concrete monument, or other suitable permanent points established in bedrock or concrete. Minimum length shall be twenty-four (24) inches unless surface conditions dictate a different length. The use of less durable or conspicuous types of monuments may be allowed only in unique situations and shall be approved by the County Surveyor. All set monuments shall be physically identified on the map/plat giving their material composition, outside dimensions, including length and the certificate number of the Land Surveyor.

Sec. 2-2.4 - MONUMENTATION OF ALL CORNERS

All parcel, lot, block or boundary lines surveyed, shall be monumented at every change of direction. If it is impractical to maintain a monument at the corner itself, then a witness corner shall be set.

Sec. 2-2.5 - TIME OF MONUMENTATION

Prior to submitting the Map for a land division to the Office of the County Surveyor for recordation, the field survey shall be complete, and all points and lines shall be established as per Section 8771 of the PLS Act. Monumentation of Subdivisions shall conform to Section 66495 of the Subdivision Map Act.

Sec. 2-2.6 - DESCRIPTION OF MONUMENTS FOUND

All monuments found shall be physically identified and any information relating to all such found monuments shall be noted with a statement such as "no record" in cases where no record exists or "found _____, tagged P.L.S. or R.C.E." along with the record reference.

Sec. 2-2.7 - MONUMENTS ACCEPTED

If found monuments are accepted as actual corners or line monuments, they shall be so noted on the map.

Sec. 2-~~1~~2.8 - LOT DIMENSIONS AND SIZE

Sufficient data shall be shown to readily determine the bearing and length of every lot, block, or boundary line. Dimensions of lots shall be given as total dimensions, corner to corner, and shall be shown in feet and hundredths of a foot, or in meters and decimals of a meter.

Lots shall show total acreage to the nearest hundredth of an acre. Bearing and length of straight lines, and delta, radii and arc length for all curves as may be necessary to determine the location of the centers of curves and tangent point shall be shown.

Sec. 2-~~1~~2.9 - INTER-VISIBLE MONUMENTS

In open country, the line of sight between 1/4 corners is sufficient for practical survey retracement, however, in hilly country, monuments shall be set so that at least two points are inter-visible.

Sec. 2-2~~1~~.10 - MONUMENT RIGHT-OF-WAY LINES

Where the line being surveyed falls within the right-of-way, monument wells shall be set on the right-of-way line and referenced to the line being surveyed.

Sec. 2-~~1~~2.11 - SURVEY ACCURACY

Generally, the degree of accuracy of the fieldwork shall not be less than 1:20,000. The County Surveyor may determine that due to severe terrain problems, a lesser degree of accuracy is permitted.

Sec. 2-~~1~~2.12 - CLOSE FINAL PLAT

All traverses shall be adjusted to close on the final map/plat. Closure Calculations, signed and sealed, shall be submitted for review for all Maps/Plats and Conveyance Documents.

Sec. 2-3 - MAPPING REQUIREMENTS

Sec. 2-3.1 – SIGNATURES

All signatures shall be made in waterproof black or blue opaque ink. Verification of a professionals' signature may be required at the ~~distraction~~ discretion of the County Surveyor.

Sec. 2-~~2~~3.2 - BOUNDARY LINE

The exterior boundary line of a subdivision shall be shown on ~~f~~Final M~~m~~aps and P~~p~~arcel M~~m~~aps as a black opaque ~~ink~~ line that is at least three times the width of any other line on the map excluding the line of the one-inch border ~~lines~~.

Sec. 2-~~2~~3.3 - KEY MAP

When the F~~f~~inal M~~m~~ap or P~~p~~arcel M~~m~~ap consists of more than two sheets exclusive of the title sheet, a key map with lot lines showing the relation of the sheets shall be placed on the first map sheet. Every sheet comprising the map shall bear a sheet number and shall indicate the total number of sheets comprising the map. A location map indicating the geographical location of the proposed subdivision, and the access roads thereto shall be placed on the first map sheet.

Sec. 2-~~2~~3.4 - RIGHT-OF-WAY DATA

Final M~~m~~aps and P~~p~~arcel M~~m~~aps shall show the total width of each road, the width of the portion of each road offered for dedication, the width of the existing right-of-way of each road, the width on each side of the centerline of each road, and the width of rights-of-way of railroads, flood control or drainage channels and any other rights-of-way, in the form of easements or fee, appearing on the map.

Sec. 2-~~2~~3.5 - DATA FOR LOTS

Sufficient data shall be shown on the final map or parcel map to determine readily the bearing and length of each lot line, and the bearing of radial lines on each lot corner or curve. Each lot shall be shown entirely on one sheet. If a remainder parcel is indicated by deed reference in lieu of a field survey, that reference shall appear on the final map or parcel map.

Sec. 2-~~23~~.6 – EASEMENTS

The location on the final map or parcel map of all existing or proposed easements which are to remain after recordation, including any required easements outside of the subdivision, shall be shown by means of appropriate broken lines, together with the name of the owner, the use of the easement and the record reference, if any. The owner's certificate on the final map or parcel map shall indicate the easements being offered for dedication. A statement identifying any easements of record to be vacated pursuant to Section 66499.20-3 and 66499.20- 2of the Subdivision Map Act shall be placed on the Title Sheet.

Sec. 2-~~23~~.7 - LABELING- EASEMENTS

For lots having a net area of less than ten acres, the widths of easements, the lengths and bearings of the lines thereof and sufficient ties to locate the easements shall be clearly labeled and identified on the final map or parcel map. For lots having a net area of ten acres or more, at the discretion of the County Surveyor, only easement widths need be shown.

Sec. 2-~~23~~.8 - LOT IDENTIFIER

Each lot on the F~~f~~inal M~~m~~ap or P~~p~~arcel M~~m~~ap shall be identified by the same number or other designation used to identify it on the approved T~~t~~entative M~~m~~ap.

Sec. 2-~~23~~.9 – ORIENTATION

Each sheet of the final map or parcel map shall be so oriented that the north arrow points toward the top of the sheet or toward the left of the sheet. The title block shall be readable from the bottom of the sheet and all other lettering and data shall be readable from the bottom of the sheet or from the right side of the sheet.

Sec. 2-~~23~~.10 - ADDITIONAL INFORMATION

The ~~final~~ Final M~~m~~ap or ~~p~~Parcel ~~m~~Map, at minimum shall also contain the following information:

a. Date of preparation, north point and scale.

~~a.~~b. All dimensions in feet and hundredths of a foot or in meters and decimals of a meter.

~~b. Dimensions in feet and hundredths of a foot or in meters and decimals of a meter.~~

c. Dimensions and areas of all lots.

- Dimensions in feet and hundredths of a foot or in meters and decimals of a meter.
- ~~c.~~ Net area of all lots having a gross area of at least one acre to the nearest one hundredth of an acre.

d. Bearings and distances for the center lines of all roads adjoining the survey.

e. Radius, arc length and central angle of all curves~~, except that where arc segments of a larger curve are shown, only the arc length and central angle need to be indicated~~.

f. Precise location and adequate descriptions~~s~~ of all permanent monuments, set and/or found.~~.~~

g. Ties to all adjacent subdivisions and rights-of-way, together with record references.

~~h. Net area of all lots having a gross area of at least one acre to the nearest one hundredth of an acre.~~

~~i.~~h. References to all controlling recorded maps and deeds for all or any portion of the existing boundaries of the parent parcel.

Sec. 2-~~2~~3.11 – DEDICATIONS

Dedications or offers to dedicate real property ~~-~~for public purposes shall be made by certificate on the Ffinal ~~m~~Map or the ~~p~~Parcel ~~m~~Map, provided that with dedications or offers to dedicate to an entity not controlled by the Solano County Board of Supervisors, or that involve real property located outside the subdivision, they may be by separate instrument recorded prior to or simultaneously with the final or parcel map.

Sec. 2-~~2~~3.12 - REFERENCE ADJOINING SURVEYS

When a survey is in or adjacent to a Record of Survey, Parcel Map, or Final Map,

the map and lot numbers should be shown by "ghosting" or shadow lettering, and the survey shall show bearing and distance ties to said map or maps.

Sec. 2-~~2~~3.13 - SHOW DISCREPANCIES

Where an apparent discrepancy occurs with a previously recorded survey map, deed or adjoining deeds, the record distance and related record bearing shall be shown in parenthesis along with the recording data of said documents.

Sec. 2-~~2~~3.14 - IDENTIFY ROADS

All Parcel Maps and Final Maps shall show the names and numbers of all Public Roads. Private Roads shall be so labeled and shall show the name approved by the County.

Sec. 2-~~2~~3.15 - IDENTIFY SURVEY

The name and legal designation of the tract or grant being surveyed shall be shown in the title. This may include any or all of the following: Subdivision, Rancho, Section, Township, County, State or any other pertinent designation to positively identify the area being surveyed.

Sec. 2-~~2~~3.16 - TOWNSHIP SURVEYS

The establishment of all corners and lines of G~~g~~overnment L~~l~~ots, S~~s~~ections, R~~r~~anchos, and ~~t~~Townships shall conform to the Professional Standard of C along with the practice and instructions as ~~stated~~ described in the "Manual of Instructions for the Survey of the Public Lands of the United States."