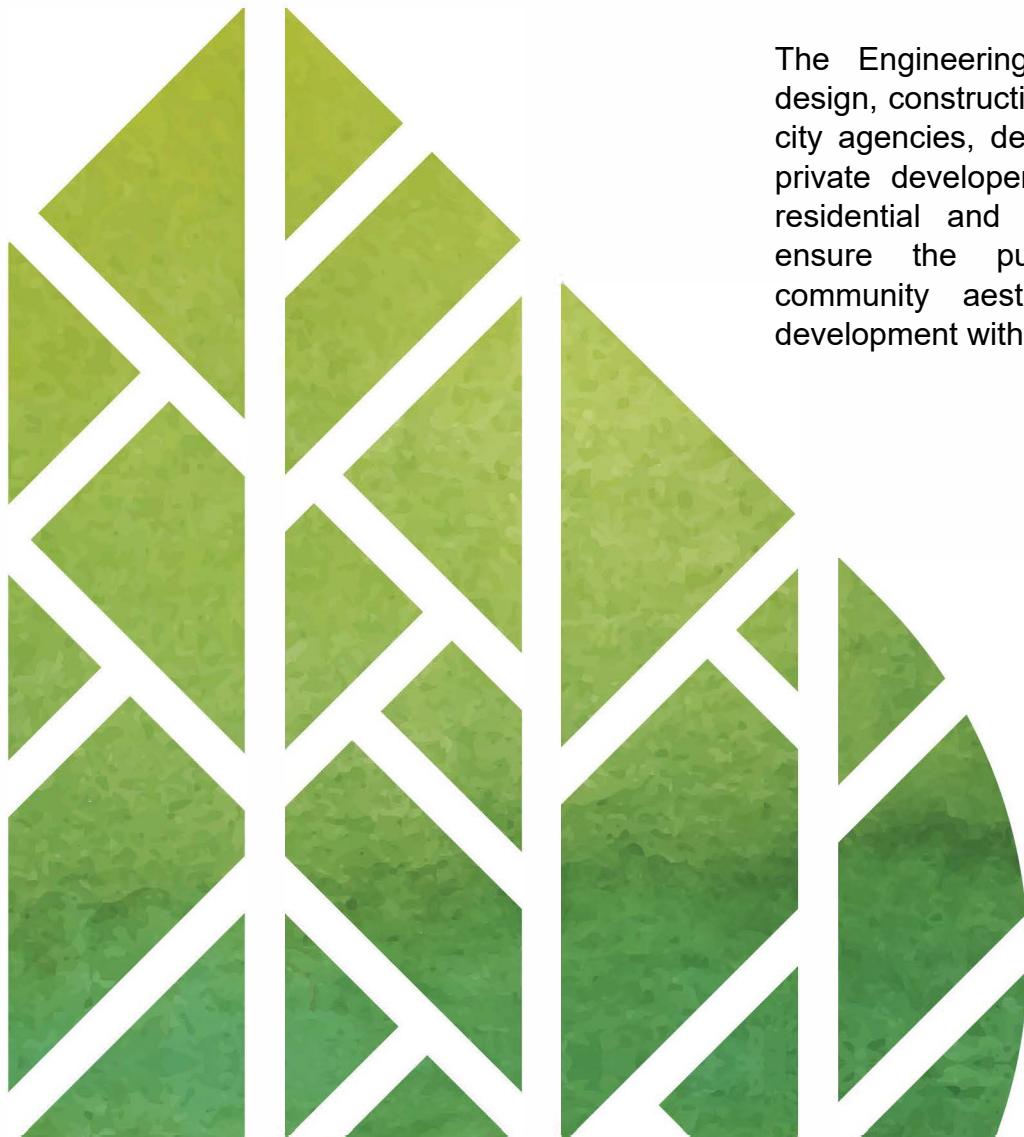




CITY OF ASPEN

Engineering Standards

The Engineering Standards provide policies, design, construction and excavation guidelines to city agencies, design professionals, contractors, private developers, and community groups for residential and commercial development that ensure the public welfare, preserve the community aesthetic, and promote efficient development within the city limits of Aspen.



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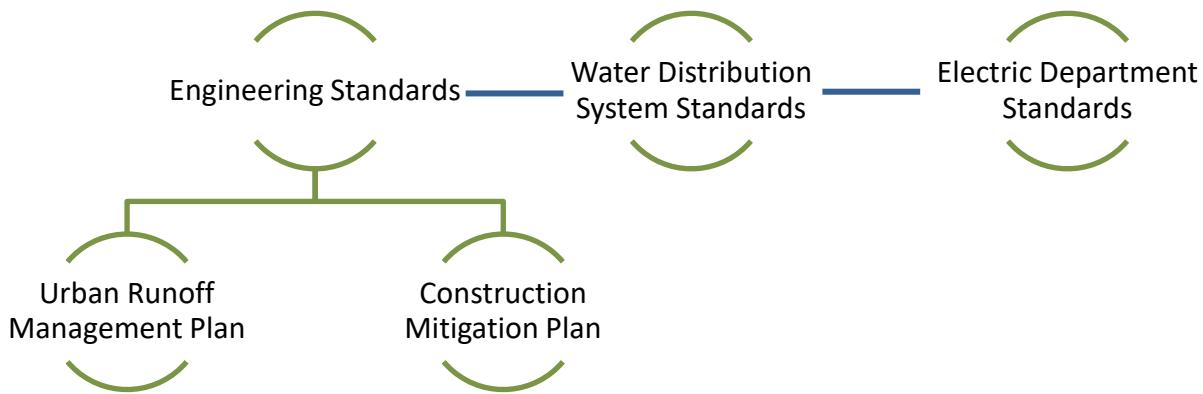
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Introduction

Objective

The *Engineering Standards* provide policies, design, construction and excavation guidelines to city agencies, design professionals, private developers, and community groups for residential and commercial development that ensure the public welfare, preserve the community aesthetic, and promote efficient development within the city limits of Aspen. They also provide the framework on how to navigate through the Engineering Department's requirements. Below is a chart that shows how the standards fit into the other Engineering Department's requirements.



The *Engineering Standards* are intended to supplement rather than replace existing engineering and environmental standards and requirements, including but not limited to MUTCD (Manual of Uniform Traffic Control Devices), AASHTO (American Association of State Highway and Transportation Officials) Policy on Geometric Design of Highways and Streets (Green Book) and Public Rights-of-Way Accessibility Guidelines (PROWAG).

Sustainable Development

Conventional development and construction processes are increasingly identified as potentially adverse to the environment. Sustainable development is generally understood to mean development that occurs with the goal of meeting human needs while ensuring efficient use of resources and preserving environmental quality, natural resources, and livability for present and future generations. The City of Aspen ("the City") has taken progressive steps in requiring buildings to be constructed in an energy-efficient manner and to reduce reliance on future operational resources, such as non-renewable energy sources, water consumption, and toxic materials. This includes the encouragement of reducing, reusing and recycling materials as part of the building process.

In keeping with the principle to develop in ways that reduce environmental impact, stormwater management is a key factor that is gaining increasing recognition. To develop sustainably, sites should be designed to more closely mimic natural processes and reduce reliance on the use of structural management techniques to treat stormwater runoff. The Urban Runoff Management

Plan introduces better site design practices and requires treatment of stormwater runoff to remove pollutants. This philosophy refocuses design from the structural management of runoff as an afterthought to the mimicking of natural processes as part of the overall site design.

Additionally, as documented in the Aspen Area Community Plan (AACP), the City is committed to providing an efficient, multi-modal, and integrated transportation system that reduces congestion and air pollution. This comes from the City's desire to maintain a quality of life that reflects how a small town looks and feels, while accommodating the functioning of a resort area.

Aspen's long-standing commitment to alternative modes of transportation helps reduce traffic congestion, improve air quality, reduce greenhouse gas emissions, promote public health, and reduce our dependence on non-renewable resources.

Using the environmentally sensitive site design techniques outlined in these *Engineering Standards*, the following will be achieved:

- Streets designed as public spaces that enrich the urban experience
- Reduced demand on the City's stormwater system and the cost of constructing expensive pipe systems;
- Increased urban green space;
- Improved pedestrian areas to encourage alternative modes of transportation;
- Foster positive connections between people and nature;
- Reduced outdoor water consumption;
- Improved water and air quality and reduced heat island effect; and
- Address the requirements of federal and state regulations to protect public health, restore and protect watershed health, and provide handicapped-accessible access.

References

City of Aspen Municipal Code

Aspen Area Community Plan

Urban Runoff Management Plan

Construction Management Plan Requirements Manual

Surface Drainage Master Plan

Aspen Consolidated Sanitation District: Pipeline and Manhole Design and Construction Specifications

Water Distribution System Standards (2018 or most recent version)

Electric Standards and Specifications for Electric Installation and Use

Aspen Fire Department. – Title 11

Public Rights-of-Way Accessibility Guidelines (PROWAG)

Association of Pedestrian and Bicycle Professionals (APBP) Essentials of Bike Parking: Selecting and Installing Bike Parking that Works

NACTO Urban Bikeway Design Guide

NACTO Urban Street Design Guide

FHWA's Small Town and Rural Multimodal Network Guide

AASHTO (American Association of State Highway and Transportation Officials)

MUTCD (Manual of Uniform Traffic Control Devices)

Chapter 1 Submittal Requirements

1.1 Plan Submittal Standards

1.1.1 General Requirements

All civil plans submitted to the Building/Engineering Department for permit/land use approvals shall be prepared as follows:

- Under the direct supervision of an Engineer (not to be confused with the City Engineer) who is professionally registered in the state of Colorado and licensed in areas covered in the plan; it shall be signed, sealed, and dated by the Engineer.
- With adequate information and detail to evaluate submitted designs and ensure accurate and functional construction of public improvements.
- For level 2 major projects as defined by the URMP, public improvements such as, but not limited to, sidewalks, parking, curbs and gutters, utility infrastructure, and drainage infrastructure are required.
- Drawings shall be submitted as required by the Building and Engineering departments, which could include only an electronic copy or both hard and electronic copies depending on the type of submittal.
- Plans are to be layered in electronic CADD format by improvement type as shown in Appendix C. Separate layers shall be provided for individual improvement categories including – without limitation – base mapping, transportation, landscaping, water, wastewater, and stormwater.
- Hard-copy drawing format shall measure 24 inches by 36 inches and must be clean, clear, and free from objectionable backgrounds.
- Symbols and line types shall comply with the City drafting standards as specified in Appendix C and shall graphically distinguish between existing and proposed items.
- All drawings are to be numbered in consecutive order with a "C" designation for all civil drawings.
- Abbreviations reflected on the construction plans are to correspond to those presented in the drafting standards located in Appendix C.
- No hand-drawn or adhesively attached information, such as Kroy lettering, adhesive backed reproductive film, or tape, may be placed on construction plans.

1.1.2 Drawing Layout

1.1.2.1 Plan Drawing

The plan view must be drawn to a scale that displays the plan in a way that is clearly legible. Recommended scale is 1 inch equals 5, 10, or 20 feet.

The Plan view contains the following information:

- 1 Existing and proposed improvements and structures; including, without limitation, all grading, transportation, landscaping, City-operated and non-City-operated public utilities (including storm sewer, telephone, gas, electric, cable television, fiber optics, raw water, water and sewer); floodways, floodplains, driveway locations, street lights, roadways, sidewalks, curbs, and gutters; traffic signal poles and controllers; and pavement edges, trees, and other significant features.
- 2 Match lines that connect information between drawings.
- 3 Utility information is required according to the following (for proposed unless otherwise noted):
 - a Pipe type, size, class, and joint restraint.
 - b Angles at alignment changes.
 - c Horizontal locations of soil borings.
 - d Horizontal locations of structures.
 - e Existing and proposed contours of at least one (1) foot intervals (steep slopes may have alternate intervals as approved by the City Engineer).
 - f Existing and proposed storm drainage facilities and details, including storm sewers, inlets, manholes, culverts, swales, detention ponds, and drainage ways.
 - g Horizontal and vertical locations and sizing of manholes and inlets for storm drainage.
 - h Horizontal and vertical location of existing and proposed drainage outfall points.
- 4 Proposed and existing transportation, along with surface improvements information; including, without limitation:
 - a Survey lines and stations based on centerline or flowline stationing, cul-de-sacs, horizontal curves, and other departures from normal street cross sections.
 - b Stations and elevations of flowlines at all existing and proposed curb returns, such as horizontal points of curvature (PCs), points of tangency (PTs), and points of compound curvature (PCCs) at the high or low point on all vertical curves; at inlets (including invert); and at intervals of no more than ten (10) feet along the streets. For larger projects, the City may consider intervals up to 25 feet.
 - c Curb return radii.
 - d ADA ramps. Include 8 spot elevations: 2 points at edge of asphalt, 2 points at flowline, 2 points at top of ramp, 2 points that show a landing with 2% maximum slopes in any direction.
 - e Complete horizontal curve data: radius (R), delta (D), arc length (L), and tangent length (T).
 - f All crown lines, where they depart from the normal cross sections (transitions to existing roadways), with appropriate transition starting elevation.
 - g Centerline stations at all intersecting streets.

- h Drainage facility stations, including inlets, manholes, and stormwater outfalls, as well as directional drainage flow arrows.
- i Full width of right-of-way, intersecting roadways, street cross sections, sidewalks and trails, existing curb cuts, and other relevant features along all roadways abutting the project.
- j Permanent traffic control devices, including striping, markings, signage, and signals.

1.1.2.2 Profile Drawing

- 1 The profile view is to be located directly below the plan view along a matching survey line and stationing and is to be drawn at a horizontal scale that matches the plan view and a vertical scale of one (1) inch equals five (5) feet. The profile view shall contain the following information:
 - 2 Original and proposed ground elevations.
 - 3 Stationing sequence, preferably left to right.
 - 4 Elevations labeled on both left and right sides of the drawing sheet.
 - 5 Match lines.
 - 6 Elevations based on centerline (if needed), flowline, or invert of pipe. (Top of pipe is acceptable only for existing utilities.)
 - 7 Stations and elevations of existing and proposed grade breaks.
 - 8 Crossings of existing and proposed utilities.
 - 9 Elevations of inlets, tops of curbs, flowlines, inverts, and connection locations.
 - 10 Interference drawings that show all crossings for proposed and existing grades.
 - 11 Slopes or grades of stormwater sewers.
 - 12 Existing and proposed finished grades over utilities.
 - 13 Street profiles, including:
 - a Stations and elevations of existing and proposed horizontal PC, PT, PCC, and PRC.
 - b Vertical curves with VPI, VPC, VPT, high point, or low point (not middle ordinate) stations and elevations.
 - c Centerline stations of all intersecting streets.
 - d Grades for all profiles.
 - e Curb flowlines.
 - f Curb return profiles to ensure positive drainage at ramp locations.
 - 14 Driveway profile.
 - 15 ADA ramp profile (must profile greatest longitudinal slope of ramp)

1.1.2.3 Detailed Drawings

Detailed drawings are required for construction details for critical design features such as concrete paving sections, mechanical pipeline connections, and detention ponding release

structures. Detailed drawings are to include dimensioning, materials, specifications, and specific construction notes appropriate to each construction detail.

1.1.2.4 Cross-sectional Drawings

Cross-sectional drawings are required with all construction plans that include varying or transitional features, such as street sections, fill slopes, and drainage channels. Cross-sectional drawings reflect dimensions, elevations, stationing, and any other detailed information necessary to ensure accurate construction, including:

- Cross sections through street, sidewalk, curb and gutter at ten (10) foot intervals. Spot elevations are required at the crown, edge of asphalt, flowline, top of curb, and each edge of sidewalk. Cross sections shall show all subgrade utilities and call out all vertical separation distance. Distance shall be measured from outside diameter to outside diameter.
- Cross sections through alleys at ten (10) foot intervals and at the centerline of each drive entrance and/or pedestrian access.

1.2 Permit Plan and Report Submittal Requirements

All permit applications that must receive an engineering review as part of the Building Permit Application process and have limiting site constraints are required to schedule and participate in a Pre-application Meeting with the Development Engineer. The owner's representative and, preferably, the engineer should attend this meeting. A sufficiency checklist and any necessary supporting documents should be completed prior to this meeting, as they will be reviewed during the meeting.

Building permit submittals must include all required information from the sufficiency checklist and requirements within this document. Construction shall not commence on any improvements proposed or required until said engineering documentation has been received and approved by the City Engineer. Incomplete permits will not be accepted. Plan and report requirements are described below and a model plan set can be found on the City of Aspen Engineering website: <https://www.cityofaspen.com/DocumentCenter/View/526>.

Landscape permit submittals must include all required information from the landscape sufficiency checklist and requirements within this document. Construction shall not commence on any improvements proposed or required until said engineering documentation have been received and approved by the City Engineer. Incomplete permits will not be accepted. Plan and report requirements are described below.

In addition to reviews and approvals from the City Engineer, the permit process does include reviews and approvals from referral agencies.

1.2.1 Survey Plan

Projects must submit a property survey based on Chapter 2 of these standards.

1.2.2 Site Grading Plan

Any proposed construction project that disturbs more than 200 square feet of exterior area must comply with the grading plan requirements outlined in Appendix A of the URMP. Additionally, the grading plan for building permits, landscape permits, and land use submittals (as required by Title 26) must be in compliance with Chapter 5.

1.2.3 Soils Report

All development and redevelopment projects in the City of Aspen must submit a soils report stamped by a Colorado Professional Engineer, as required by the URMP. Please refer to Section 1.3.9 of the URMP for the soils report requirements.

1.2.4 Excavation Stabilization Plan

An Excavation Stabilization Plan is required if depths of excavation exceed five (5) feet and a layback of 1.5:1 cannot be achieved without negatively impacting trees, neighboring properties, infrastructure, etc. 1:1 layback will be accepted if verified by the Geotechnical engineer. Layback cannot impact trees. If there are tree conflicts, please contact the Parks and Open Space Technician of the City Parks Department at (970) 429-2025.

The Excavation Stabilization Plan must adhere to the requirements listed in the Excavation Stabilization Requirements checklist found in Appendix A and in the Municipal Code, Title 21.12.140. Guidelines for excavation stabilization are not provided in this manual but can be found in OSHA Regulations (Standards – 29 CFR), Sloping and Benching – 1926 Subpart P, App. B.

1.2.5 Drainage Plan and Report

Drainage plan and report requirements are outlined in the URMP.

1.2.6 Erosion Control Plan

An Erosion Control Plan shall be submitted per the requirements specified as part of the Construction Management Plan.

1.2.7 Landscaping Plan

For major projects as defined by the URMP, a landscape plan is required. Additionally, when applications include streetscaping improvements or landscaping that has an impact on public right-of-way or public easements, a landscaping plan is required. For minor projects as defined by the URMP, the need for a landscape plan will be required based on the extent of site disturbance. Refer to the URMP for these requirements.

The landscape plan is to be prepared in compliance with City of Aspen Municipal Code Title 13, Parks Department requirements, and these *Engineering Standards*. To ensure there are no drainage conflicts in the plan, the Landscape plan must be overlaid on the drainage plan.

1.2.8 Utilities Plan

A utility plan shall be submitted when improvements to connections or abandonments to utilities are proposed. A utility plan is also required when conflicts occur with existing utilities which require redesign and or relocation of existing infrastructure. Storm sewers shall be designed in accordance with the URMP. Other utilities must be designed in accordance with the respective utility provider standards.

If conflicts or utility crossings are expected, the project must obtain a right-of-way permit and testhole all applicable utilities prior to design submittal. The location of all testholed utilities must be included in the utility plan.

1.2.9 Construction Management Plan

Construction projects that exceed 1,000 square feet of soil disturbance or 400 square feet of building demolition, improvement, or renovation (interior and/or exterior) must submit a construction management plan in accordance with the requirements found in the Construction Management Plan Requirements Manual. The Construction Management Plan is a combination of diagrams, documents, drawings, and specifications that clearly define the steps that will be taken to demonstrate how the impacts of the construction project to the community will be managed and minimized.

1.2.10 Transportation Striping and Signage Plan

When projects include transportation traffic control measures, such as stop signs, centerline striping, and trail signage, a Striping and Signage Plan must be submitted. The plan is to be prepared according to Section 4.9 and in compliance with the Manual on Uniform Traffic Control Devices.

1.2.11 As-built Drawings

Surveyed as-built drawings, stamped by a PE or PLS, are required for all major projects as defined by the URMP. Refer to the URMP Grading and Drainage Certificate for project closeout requirements prior to issuance of a Certificate of Occupancy or Certificate of Completion.

As-built drawings shall be submitted prior to issuance of a Certificate of Occupancy. Drawings shall be submitted as required by the Building and Engineering departments, which could include only an electronic copy or both hard and electronic copies.

Drawings shall be submitted in both hard copy and electronic, computer-aided design and drafting (CADD) formats to allow information to be transferred to the City's geographic information system as well as facilitate digital scanning. They shall also be layered in electronic CADD format by improvement type as shown in Appendix C. Separate layers shall be provided for individual improvement categories including – without limitation – base mapping, transportation, landscaping, water, wastewater, and stormwater.

Applicants must provide the information listed in the Grading and Drainage Certificate found in the URMP.

1.3 Land Use Plan and Report Submittal Requirements

The following information is required in order to adequately describe proposed utility systems, drainage plans, surface improvements or other construction projects contemplated within the proposed subdivision/project to assure that the proposed subdivision/project is capable of being constructed without an adverse effect on the surrounding area.

This may include, but is not limited to, a traffic impact study (if required), drainage report, mudflow study (if required), and/or avalanche study (if required). Additional information on geological or soil stability and similar matters may be required.

1.3.1 Drainage

A conceptual drainage report and plan are required. A checklist of what these documents need to include can be found in Appendix A of the URMP. The purpose is to provide preliminary engineering that adequately defines the drainage for the project. This includes the following:

- Stormwater collection system, stormwater/water quality control facilities, irrigation ditches, flood control systems, and street facilities.
- Existing and proposed grading contour lines in one (1) foot contours or five (5) foot intervals where the slope is in excess of 30%.
- Floodplain zone lines and floodway lines are to be delineated according to the applicable Flood Insurance Rate Map as issued by the Federal Emergency Management agency or other documents adopted by the City as outlined in the Municipal Code, Title 8, Chapter 8.20.020.
- Location of all drainage channels and surface and sub-surface drainage structures.
- Under proposed conditions, all areas subject to sheet flooding at a depth of six (6) inches or greater during a 100-year event shall be shown as flood prone and identified as subject to sheet flooding.
- Constructed drainage facilities or areas reserved for drainage must be provided with private drainage easements or be classified as a separate type of common area reserved for drainage.
- All proposed dedications of stormwater control areas shall be identified as "ROW" or "Easement."

1.3.2 Hazards

All projects shall be evaluated for all hazards described within this Chapter and any other hazards that may pose a threat to public safety or the natural environment. This includes the designation of all areas that constitute natural hazard areas, including but not limited to snowslides, avalanches, mudslides, and/or rockslides.

1.3.3 Transportation

The following information is required in order to adequately describe the transportation infrastructure associated with the project:

- Proposed sidewalks or pedestrian access and circulation.
- All existing and proposed streets and alleys, including widths, centerline of roadway pavement (if project impacts centerline of street), and road right-of-way (including curve data)
- All existing and proposed streets shall be marked on the plans as being publicly or privately maintained so that such responsibilities are clearly defined.
- Access for the project shall be clearly marked.
- All proposed dedications of streets, easements, and alleys shall be identified as "ROW" or "Easement."
- Signing and striping plan.

1.3.4 Plat

The following information is required on the plat:

- Compliant City of Aspen survey (refer to the survey checklist located in Appendix A).
- The location and boundaries of the proposed subdivision/planned development.
- The name, address, and telephone number of the owner/applicant, designer of the proposed subdivision, and the licensed surveyor.
- Any other significant manmade or natural features within or adjacent to the proposed subdivision including raw water ditches.
- Proposed lot lines and areas or structures reserved or dedicated for public or common use in the proposed project.
- Unless already submitted as part of the approved plan set, a Final Landscaping Plan must be submitted that includes the location, size, and type of existing vegetation and other natural landscape features and the proposed limits of any excavation or regrading in the proposed project, including the location of trees with a trunk diameter of six (6) inches or more measured four and one-half (4½) feet above the ground and an indication of which trees are proposed to be removed. Where large groves are to remain undisturbed, single trees need not be located.
- Site data tabulation listing acreage of land in the proposed subdivision, number, type, and typical size of lots, structures, and/or dwelling units; ground coverage of proposed structures and improvements, including parking areas, streets, sidewalks and open space; and the amount of open space that is being provided.
- In the case of a division of land into condominium interests, apartments, or other multi-family or time-share dwelling units, the location of all proposed structures, parking areas, and/or areas for common use.

- Where the proposed subdivision covers only a part of the applicant's adjacent holdings, a sketch plan for such other lands shall be submitted and the proposed streets, utilities, easements, and other improvements of the tract under review shall be considered with reference to the proposed development of the adjacent holdings.
- A certificate by the registered land surveyor as to the accuracy of the survey and plat and a statement that the survey was performed in accordance with Title 38, Article 51, C.R.S. 1973, as amended from time to time.
- A certificate by a Corporate Title insurer that the person or persons dedicating to the public the public right-of-way, areas, or facilities as shown thereon are the owners thereof in fee simple, free and clear of all liens and encumbrances.
- A certificate showing review of the final plat by the City Engineer that states "Engineering Department Review: This plat was reviewed for the depiction of the Engineering Department survey requirements on this _____ day of _____."
- A certificate showing approval of the final plat by Community Development Director.
- If the subdivision was approved by ordinance, a certificate showing approval of the plat and acceptance of dedications and easements by the City Council (when required), with signature by the Mayor and attestation by the City Clerk.
- A certificate of filing for the County Clerk and Recorder.

1.3.5 Utilities

In order to assess the feasibility of providing utility service to any project or development and to identify the impact of any development application on the existing and planned public utility systems, a utility plan shall be submitted when improvements involving connections to or abandonments of utilities are proposed. The plan shall contain a note stating: "Utilities shall comply with the City of Aspen Engineering Standards and respective utility provider standards."

Storm sewers shall be designed in accordance with the URMP. Other utilities must be designed in accordance with the respective utility provider standards.

Letters must be submitted from the public or private utility companies that will service the proposed subdivision with gas, electricity, telephones, sanitary sewer, water, and fire protection facilities that state the aforementioned can service the proposed subdivision. Additionally, any agreements with utility or ditch companies must be submitted.

Plans shall show:

- Easements, utility pipes, and mains shall be marked on the plans as being publicly or privately maintained so that such responsibilities are clearly defined.
- Existing and proposed utilities.
- All utilities shall be identified as "ROW" or "Easement."

1.3.6 Construction Management Plan

Although a complete construction mitigation plan is not required for land use, the project must identify impacts during construction. This includes duration and length of encroachments, including parking and pedestrian walkways and the duration schedule of significant noise impacts.

2.1 General

2.1.1 Survey Control

Construction plans shall refer to the Colorado State Plane Coordinate System horizontally to NAD83 and vertically to NAVD 88 and are to include at least one horizontal and one vertical control point that presents appropriate x, y, and z coordinates.

Base map and survey control monuments are to be tied to the City of Aspen's control network and should be used as a basis for construction plan drawings.

2.1.2 Survey Monuments

The external boundaries of all subdivisions, blocks, and lots shall be monumented on the ground by reasonably permanent monuments that are solidly embedded in the ground. These monuments shall be set not more than 1,400 feet apart along any straight boundary line, at all angle points, and at the beginning, end, and points at which the direction of any boundary, or the radius of any curved boundary, changes.

All monuments shall be set in accordance with the provisions of Section 38-51-101 C.R.S. 1973, as amended from time to time, unless otherwise provided for in Title 26 of the municipal code.

2.2 Surveys

All maps that require recordation shall be on mylars measuring 24 inches by 36 inches at the time of approval. A minimum of two (2) sets of mylars and an electronic version as required by Section 1.1.1, General Requirements, shall be submitted (for maps that require recordation) once the reviewer is satisfied that all redline corrections have been made. The mylars shall have original signatures, notary stamps, and Colorado Professional Land Surveyor (P.L.S.) seals on each set. All seals and stamps shall be in black, non-smearable ink and shall be legible. All lettering shall be solid black and a minimum of 11 pt. type. The contents of maps that require recordation shall include a compliant City of Aspen survey (refer to engineering dept. survey checklist in Appendix A).

2.3 Plats

2.3.1 Condominium Subdivision Plat

When a development is to include a condominium form of ownership, a condominium subdivision plat shall be on mylars measuring 24 inches by 36 inches at the time of approval. A minimum of two (2) sets of mylars shall be submitted once the reviewer is satisfied that all redline corrections have been made. The mylars shall have original signatures, notary stamps, and Colorado Professional Land Surveyor (P.L.S.) seals on each set. All seals and stamps shall be

in black, non-smearable ink and shall be legible. All lettering shall be solid black and a minimum of 11 pt. type. The contents of the plat shall include:

- Title on the top center of the front page with lettering not less than one (1) inch; a purpose under the title that clearly describes the purpose of the plat; under the purpose, a legal description of the property.
- Contact persons and the name of the owner.
- Surveyor's name and address.
- Scale: The plan view must be drawn to a scale that displays the plan in a way that is clearly legible. Recommended scales include 1 inch equals 5, 10, or 20 feet.
- Orientation: Plats should be oriented to the true North.
- Survey performed or verified within the last 12 months.
- Vicinity map showing the property surveyed in reference to nearby highway(s) or major street intersections (shown at a legible scale).
- Monuments placed (or a reference monument or witness to the corner) at all corners of the boundary of the property, unless already marked or referenced by an existing monument or witness to the corner.
- Boundary, field, and recorded bearing and distances around the property. All curves shall be circular arcs and shall be defined by the radius, central angle, tangent, arc, and chord distances.
- Legend of symbols scale and north arrow.
- Survey tied to two City monuments.
- Overlaps and gores along the exterior of the boundaries.
- Existing building(s) locations and dimensions with ties.
- Basis of bearing and point of beginning graphically.
- Label easements and encroachments; add reference numbers as applicable. All labels shall be within 25 feet of the property line
- Indication of access to public right-of-way on land, such as curb cuts and driveways, and to and from waters adjoining the surveyed tract.
- Utility agreements and/or reference to associated agreements with utility providers or ditch companies, including reception numbers.
- Common elements, along with limited and general common elements (i.e., sidewalks, parking, open space, etc.)
- List all documents used in the survey with recording information.
- A certificate by the registered land surveyor as to the accuracy of the survey and plat and a statement that the survey was performed in accordance with Title 38, Article 51, C.R.S. 1973, as amended from time to time.

- A certificate by a Corporate Title insurer that the person or persons dedicating to the public the public right-of-way, areas, or facilities as shown thereon are the owners thereof in fee simple, free and clear of all liens and encumbrances.
- A certificate showing review of the final plat by the City Engineer that states “Engineering Department Review: This plat was reviewed for the depiction of the Engineering Department survey requirements on this _____ day of _____.”
- A certificate showing approval of the final plat by Community Development Director.
- A certificate of filing for the County Clerk and Recorder.

2.4 Building Permit Surveys

2.4.1 General

Prior to submission of an application for building permit, all plats, plans, and agreements required by Title 26 must be recorded according to City of Aspen Municipal Code Title 26 and Section 2.4 of this document.

2.4.2 Survey for Building Permit

Unless waived by the City, applications for building permits must include an improvement survey that complies with the Engineering Department Improvement Survey Checklist located in Appendix A.

2.5 Easements

2.5.1 General

All public utilities – including, without limitation, water, wastewater, raw water, electric and storm drainage systems – shall be located within public right-of-way or public utility easements. If during building permit process, it is discovered that a public utility is not located within an easement, the City may require that an easement is created for that utility. Additionally, existing prescriptive easements for water, electric and raw water will require a dedication of an easement for the perspective utility.

Raw water includes irrigation ditches, reuse lines, well water, intake lines and associated infrastructure.

Whenever a subdivision includes any part of a planned utility, drainage system, existing or planned street, or transit alignment designated on an adopted plan, an easement shall be provided to accommodate the plan within the subdivision.

Trees planted in public utility easements shall be located at least ten (10) feet away from existing or future utilities. Structures and other landscaping proposed in public utility easements shall comply with the standards as set forth in Section 5.7, the City of Aspen Municipal Code Title 21, the *Water Distribution System Standards*, the *Raw Water Standards* and the *Electric Standards*.

2.5.2 Utility Easements – Dimensions

Where applicable, projects shall provide for public utility easements. Storm drainage systems and associated infrastructure are also considered as a public utility. Public utility easements are to be placed longitudinally along one side of any property line. Dimensions for public utility easements include the following:

- Public utility easements shall provide a minimum parallel separation of six (6) feet between the edge of any utility line and the easement boundary.
- Ten (10) feet in width on each side of all rear lot lines and five (5) feet in width on each side of lot lines shall be provided where necessary.
- Where the rear or side lot lines abut property outside of the subdivision on which there are no rear or side lot line easements at least five (5) feet in width, the easements on the rear and side lot lines in the subdivision shall be 20 feet and ten (10) feet in width, respectively.
- Water (includes, but not limited to, potable, raw water, pressurized raw water and reuse water) and sewer (including storm) easements shall be a minimum of 25 feet in width. Water line easements for lines greater than 12 inches shall be 30 feet in width. Wider easements may be required to satisfy standards for utility separations, trench excavations, or adequate maintenance access in cases where there are deep utilities, steep slopes, or multiple utilities in the same easement.
- Ditches and creeks easements shall be a minimum of 20 feet in width: ten (10) feet on either side of the waterway's centerline. Depending on topography, wider easements may be required to ensure there is enough space to perform maintenance activities.
- Fire hydrants require a square easement with a dimension of ten (10) feet by ten (10) feet.
- Subgrade vaults require ten (10) feet clearance in front of the doors of the pad mounted transformer and three (3) feet clearance on the other three sides of the subgrade vault.

A variance may be considered if the setbacks for a property conflict with the above easement dimensions and the applicant can demonstrate how the easements will be alternatively accommodated.

2.5.3 Other Easements

Easement areas for retaining, mud, or debris walls; ski access; irrigation ditches or channels; and/or natural creek or stream traverses shall be large enough to accommodate said application (or structure) and allow ample access for maintenance purposes.

Emergency access easements shall be 20 feet in width and shall be provided where required by the City's Fire Marshal and Section 4.7 of this document.

"T" intersections and cul-de-sacs in which utilities or drainage improvements could be extended shall have an easement of 20 feet in width.

Chapter 3 Utilities

3.1 General

If a development requires that any public utilities, including water, wastewater, storm drainage, gas, electric, raw water and telecommunication system line laterals be installed, relocated, replaced, or upgraded, then the scope of this work must conform to the minimum clearance standards mandated by each utility provider. Any deteriorated public and private utility infrastructure must be replaced if it is associated with the development project.

All improvements proposed to the City's public utilities system shall conform to the goals, policies, and standards including Water Distribution, Wastewater Collection, Stormwater Master Plans, Raw Water, Electric and applicable City Department Guidelines.

3.2 Location

All new utility lines shall be placed underground. Transformers, switching boxes, terminal boxes, meter cabinets, pedestals, street lighting, water tanks, vent pipes, water pump stations and other electric and water facilities necessarily appurtenant to such underground utilities may be placed at grade.

Where existing utilities are overhead, the placement of new poles or replacement of existing poles that are increased in height are prohibited. In order to comply with the National Electrical Safety Code (NESC), exemptions may be granted. Exemptions may also be granted when an additional pole is required to underground sections of existing overhead lines. Routine maintenance and safety repairs are not affected by this section. Extensions of utility lines including service lines for new or upgraded construction shall be extended underground. Altering aboveground single-phase electrical infrastructure to three-phase is prohibited. These modifications are considered substantial expansions and as a result require undergrounding.

Utility locations must adhere to criteria set below:

3.2.1 General

- 1 The location of all facilities within the public right of way shall comply with the details and specifications shown on the construction plans approved by the City Engineer or designee.
- 2 All new underground facilities, including laterals up to the structure or building being served must be electronically locatable when installed.
- 3 It is city policy to discourage the placement of utility lines and other facilities within the landscape buffer between sidewalk and back of curb unless no other reasonable location for the placement of such lines or facilities exists.
- 4 The minimum allowable bury depth of the utility shall be maintained (Table 1). Any variance from these standards requires prior approval from the City Engineer or their designee.

- 5 If a variance in the alignment is required to clear a conflict, prior to proceeding, the permittee shall:
 - a Notify the City Engineer or designee within twenty-four (24) hours of identifying the conflict.
 - b Receive an approval for a variance from a City Engineering, Water and/or Electric inspector. Once a variance is approved by the City, it shall become the approved alignment. A city inspector shall be on site during the work associated with the variance.
- 6 If the designed alignment conflicts with other facilities not shown on the approved plans, the permittee shall submit an alignment modification request and the change shall be approved by the City Engineer or designee prior to proceeding.
- 7 Joint use trenches should be used for dry utilities when possible.
- 8 All underground cables and wires shall be placed in a conduit and shall have a warning ribbon placed in the trench 18 inches above the utility.
- 9 The permittee's proposed facilities shall follow the guidelines specified in the tables below.

Table 1 – Minimum depth to top of line (feet)*

	Communications	Electric	Gas	Storm	Water**	Sanitary
Minimum depth to top of line	3	4 (Holy cross and Aspen electric primary line) 2 (Aspen electric secondary line)	2 (2.5 max)	2	7 (10 max)	7

* These depths are based on 2018 Utility Standards. Please confirm depths with utility provider for any updates.

** Includes, but not limited to, potable, raw water, pressurized raw water and re-use water

Table 2 – Minimum horizontal separation for parallel utilities (feet)*

	Communications	Electric	Gas	Storm	Water**	Sanitary
Communications	1	1	3	2	2	2
Electric	1	1	1	1	Depth of water line minus 4'	Depth of sanitary water line minus 4'
Gas	2	3	-	2	2	2
Storm	2	2	2	-	10	
Water	***	***	2	10	10	10
Sanitary	***	***	***	2	10	-

* These depths are based on 2018 Utility Standards. Please confirm depths with utility provider for any updates.

** Includes, but not limited to, potable, raw water, pressurized raw water and re-use water.

*** Horizontal separation is not applicable, because vertical separation is achieved. For example, a shallow communications line can be located above a water line as long as vertical separation is achieved

Table 3 – Minimum vertical separation at utility crossings (feet)*

	Communications	Electric	Gas	Storm	Water**	Sanitary
Communications	1	1	1	2	2 above	2
Electric	1	1	1	2	2 above	2
Gas	1	1	1	2	2 above	2
Storm	2	2	2	2	2 above	2
Water	2 below	2 below	2 below	2 below	2	2 above
Sanitary	2	2	2	2 below	2	2

* The table is intended to be read by first selecting a row and then a column. For example: Water is required to be placed two (2) feet below communications, two (2) feet away from other water lines, and two (2) feet above sanitary.

All depths are based on 2018 Utility Standards. Please confirm depths with utility provider for any updates.

** Includes, but not limited to, potable, raw water, pressurized raw water and re-use water

3.2.2 Above-ground Structures

- 1** A detailed plan is required for all above-ground structures. The plan shall show dimensions of the cabinet, base and the proposed location.
- 2** All above-ground structures shall be located outside of the public right-of-way and within a private easement on the property being served.
- 3** The location of above-ground structures shall not interfere with sight distance requirements for intersecting streets and access drives.
- 4** Above-ground structures shall be located to minimize the aesthetic impacts to the landscape.
- 5** For major projects as defined by the URMP, existing above-ground utilities serving the property located within the public right-of-way must be relocated to private property.

3.2.3 Underground Access Structures (Vaults and Hand-Holes)

- 1** Underground access structures shall be placed in line with the utility alignment (see utility provider specs for any exceptions). Horizontal adjustments to accommodate underground access structures are discouraged and shall only be permitted when conditions warrant and at the City Engineer's discretion. The placement of each access structure shall require field approval prior to placement.
- 2** All roadway access lids shall be circular and made out of aluminum or cast iron.
- 3** The maximum separation between access structures shall be 300 feet. An exemption to this provision shall be granted by the City Engineer if the following criteria are met:
 - a** The access structure is required to provide service to a building or a customer within a building;
 - b** The width of the property frontage does not allow the permittee to meet the minimum separation requirement while still providing service at a reasonable cost;
 - c** No access structure currently exists within 100 feet of the boundaries of the property to be served (see utility provider specs for any exceptions);

- d Other conduit owned or leased by the permittee is not available for the permittee's use; and
- e Options to provide service to the building from other directions are not reasonably available to the permittee. In no case shall an exemption, granted pursuant to this section, authorize access structures to be separated by less than 250 feet (see utility provider specs for any exceptions).

4 Access structures shall be placed a minimum of 50 feet from all intersections, unless otherwise approved by the City Engineer or designee.

5 The maximum size of an access structure and access lid shall be the minimum necessary for the facilities being installed, as determined by the City Engineer or designee. In making its determination, the City Engineer or designee shall consider any information submitted by the permittee to justify the size of the access structure or access lid (see utility provider specs for any exceptions).

6 Access lids shall not be placed in sidewalks or bike lanes. In case lids need to be placed in sidewalks, they shall be flush with the existing surface.

7 All access lids within travel lanes shall be placed outside of the wheel path (refer to Appendix B, Exhibit C).

8 Access lids shall be placed at an elevation of +0 inch to -3/8 inch relative to the surrounding pavement surface.

3.3 Easements for Utilities

See Chapter 2 - Survey.

3.4 References

The following list of references (not exclusive) will help assist in the design of utilities within the City of Aspen:

- City of Aspen Municipal Code Title 25 – Utilities
- City of Aspen Water Distribution Standards – 2012 (as updated from time to time)
- Aspen Consolidated Sanitation District – www.aspensan.com
- City of Aspen Municipal Code Section 26.575.150 – Commercial Lighting

4.1 General

The City of Aspen emphasizes a balanced idea of street design by ranking the following goals:

- 1 Safety
- 2 Environment
- 3 Pedestrian
- 4 Transportation
- 5 Parking

Practitioners (and the public) have learned that investment in high-quality street infrastructure can yield benefits well beyond simple mobility: public health, improved physical environment, and economic benefits enhance the potential for increased property values and retail activity.

This chapter is intended to provide minimum standards for streets and traffic control for transportation improvements, as well as for quality and consistency. It is expected that design engineers will meet or exceed the minimum requirements to bring quality and sustainable improvements to the community.

This chapter should be used in combination with City of Aspen Municipal Code Chapter 26.410 Residential Design Standards and Municipal Code Chapter 26.412 Commercial Design Review. Code standards include, but are not limited to site design for building orientation, setbacks, fences, parking, garages, carports, and signs.

4.1.1.1 Site Access

When evaluating the access for a project, consideration should be given to the following:

- Existence of any current traffic problems in the local area, such as a high-accident location.
- Applicability of context-sensitive design practices compatible with adjacent neighborhoods or other areas that may be impacted by the project's traffic.
- Close proximity of proposed site driveway(s) to other driveways or intersections.
- Adequacy of the project site design to fully satisfy on-site truck-loading demand.
- Adequacy of the project site design to provide at least the minimum required throat depth at project driveways.
- Adequacy of on-site vehicle, bicycle, and pedestrian circulation and provision of safe pedestrian paths from residential areas to school sites, public streets to commercial and residential areas, and the project site to nearby transit facilities.
- Project site design that permits adequate emergency access and/or response times.

4.1.2 Access Compliance and Permitting

All accesses and curb cuts shall be designed and constructed in compliance with these standards and the requirements set forth in the City of Aspen Municipal Code. All accesses and curb cuts proposed and constructed on City streets and alleys require permits, as set forth in City of Aspen Municipal Code Title 21.

4.1.3 Number of Curb Cuts and Widths

In general, curb cuts are discouraged and must comply with the Access Design Specifications below. When alley or private road access is not available, curb cuts may be considered. Table 4 describes the number of curb cuts and allocated widths for residential areas within the City of Aspen.

Table 4 – Curb Cut Guidelines

Area	Residential	
Frontage (feet)	60', < 60'	> 60'
Number of Cuts (per property)	1	1
Length of Cut (feet)	10'	10' or *18'

**An 18 foot curb cut length is allowed if the driveway services a two-stall garage, two single-stall garages, or two parking spaces.*

For commercial and lodge properties, curb cuts will not be allowed where there is alley or private road access. For properties that do not have alley or private road access, one curb cut will be considered after an evaluation of site access is performed (refer to previous section).

4.1.4 Access Design Specifications (Non-emergency)

All driveway ramps and curb cuts (including any access infrastructure) shall be designed according to the criteria below and standard ramp driveway details provided in Appendix C.

Access design specifications include the following criteria:

- For all uses that have access from an alley or private road, the parking, garages, and carports shall be accessed from an alley or private road.
- Accesses shall intersect City streets at a 90-degree angle for a minimum of 18 feet longitudinally.
- An access cut on a lot shall be set back a minimum of 50 feet from the point of curvature on the accessed street at the intersection corner or from a blind corner.
- A minimum of 25 feet shall exist between any two (2) curb cuts whether on one (1) or more properties, except when common driveways may be used on adjoining properties.
- No driveway or other curb cut shall be allowed on State Highway 82.
- Maximum allowable slope of a driveway shall not exceed 12%.

- Maximum allowable slope of a driveway shall not exceed 5% in areas that are five (5) feet or less from sidewalk.
- Maximum allowable slope across a parking lane within the City Right-of-Way is 7%.
- Maximum allowable slope across a sidewalk is 2% within the City Right-of-Way. Driveways parallel to public sidewalks must be separated from such walks by a five (5) foot landscaped area or a solid wall at least three (3) feet in height.
- The driveway or walkway section within the ROW must be slip resistant.
- In alleys, the material of the driveway section that extends beyond the property line shall match the roadway material.
- Guardrails, retaining walls, curbing or equivalent errant vehicle protection must be provided for driveways that have steep (i.e. 3:1 or greater) side slopes.
- Culverts under driveways must have a minimum diameter of 15 inches.
- For lots that have more than one street for access, access off the local street will be required. If both streets are local, then the engineering department will determine the best street for access based on the traffic volumes of each street and any safety concerns about each street.

4.1.5 Site Distance

All access points and curb cuts shall provide adequate sight distance as set forth in AASHTO. Intersection sight distance standards as located in Appendix C.

4.2 Street Geometric Design

4.2.1 Classification of Streets

The streets in the City of Aspen are classified into alleys, local, commercial, and collector streets. Typical cross sections are shown in Appendix C. If it is determined that the cross section needs to accommodate a bike lane, the typical cross section provided will not apply. Instead a new cross section will be developed to accommodate this additional use.

An **alley** is a narrow street that usually runs through the middle of a block, gives access to the rear of lots or buildings, and is typically not intended for general traffic circulation. Alleys in Aspen are inverted (center is lower than sides) and are approximately 20 ft. wide. They are typically gravel in residential areas and paved in commercial areas. For snow removal and utility repair purposes, concrete is not permitted in alleys. This includes concrete valley pans in the center of alleys. Alleys shall be provided in subdivisions where commercial and industrial development is expected, except when other provisions are made and approved for service access.

Local streets in the City of Aspen are designed to provide traffic service for residential areas. They may have stop signs and are characterized by two moving traffic lanes that are a minimum of 11 ft. wide in each direction. The street cross-section is symmetrical to the street crown with a typical transverse slope across the traffic lanes ranging from 2% to 3.5%, increasing to 4% across the parking lane, which is eight (8) feet wide. In a rural setting, roadside ditches collect the street runoff without curbs and gutters.

Residential/Collector streets in the City of Aspen are designed to provide service to residential areas and to serve the main thoroughfares of the City. An example of a residential/collector street is Cemetery Lane. The cross section of a residential/collector street is similar to a local street, except that there is potentially a parking lane. Width is eight (8) feet for parallel parking or 18 feet for head-in parking at an angle.

Commercial streets in the City of Aspen are designed to provide service to business areas. A commercial street provides two moving traffic lanes of a minimum of 11 feet wide in each direction. The street cross section is symmetrical to the street crown with a transverse slope similar to local streets. Parking lanes are adjacent to the curbs and gutters. There is a five (5) feet or wider landscaping strip between sidewalks and parking lanes.

4.2.2 Right-of-way

Right-of-way shall be dedicated for the entire width for all roadways. Refer to Appendix C for typical roadway sections. Table 5 is based on the typical roadway sections in Appendix C.

Table 5 - Right-of-way Widths

Design Standards	Commercial	Residential/Collector	Local	Alley
Right-of-way Width	89 feet	72 - 89 feet (depending on use)	72 feet	20 feet

- Half-street dedications shall be prohibited unless they are for the purpose of increasing the width of an inadequate existing right-of-way.
- When a street is dedicated that ends in a subdivision or is on the perimeter of a subdivision, the last foot of the street on the terminal end or outside perimeter of the subdivision shall be dedicated to the City of Aspen in fee simple and shall be designated for use by outlots. The City shall use the dedicated land for public road and access purposes.
- Sufficient right-of-way shall be dedicated to accommodate turn bypasses and turn lanes when they are required.

4.2.3 Cul-de-sacs and Dead-end Streets

Cul-de-sacs shall not exceed 400 feet in length and shall have a minimum turnaround diameter of 100 feet. A cul-de-sac of less than 200 feet in length in a single-family detached residential area does not require a turnaround if the City Engineer determines a "T," "Y," or other design is adequate turnaround for the vehicles expected to use the cul-de-sac.

Dead-end streets (except cul-de-sacs) shall be prohibited unless they are designed to connect with future streets on adjacent lands that have not been platted. In cases where this type of dead-end street is allowed, a temporary turnaround of 100 feet shall be constructed.

Refer to Section 2.5 for specification regarding easement size.

4.2.4 Horizontal Alignment

Horizontal design standards for all city streets shall comply with Table 6 – Horizontal Alignment Standards.

Table 6 – Horizontal Alignment Standards

Design Standards	Commercial	Residential/Collector	Local	Alley
Design Speed	20 mph	20 mph	20 mph	10 mph
Minimum Travel Lane Widths	11'	11'	11'	16'
Parking Lane (from curb face)	8'-18'	8'-18'	8'-18'	NA
Minimum Curb Return Radius	15'	15'	15'	10'

- Streets shall conform to approved plans for street extensions and shall bear a logical relationship to the topography and to the location of existing or planned streets on adjacent properties.
- Subdivision design shall minimize the number of local streets that intersect residential/collector and commercial streets.
- All streets shall intersect at right angles (90°) at a distance of 50 feet from the edge of the intersection.
- Curb return radii and corner setbacks for other types of intersections shall be based upon the expected types of vehicle usage, traffic volumes, and traffic patterns using accepted engineering standards. In cases where streets intersect at acute angles, appropriate increases in curb return radii shall be made for the necessary turning movements.
- Turn bypasses or left turn lanes shall be required at the intersections of commercial or residential/collector streets if design conditions indicate they are needed.
- Parking lanes shall not be located within 20 feet of a crosswalk at an intersection or within 30 feet of any signal, stop sign, or yield sign.
- Streets with no parking lane shall have at minimum a two (2) feet wide gravel shoulder.

4.2.5 Vertical Alignment

Vertical design standards shall comply with Table 7 – Vertical Alignment Standards.

Table 7 – Vertical Alignment Standards

Design Standards	Commercial	Residential/Collector	Local	Alley
Design Speed	20 mph	20 – 30 mph	20 mph	10 mph
Minimum Grades	0.75%	0.75%	0.75%	0.75%
Maximum Grades	10%	10%	10%	12%

4.2.6 Cross-slopes

The minimum and maximum rate of cross-slope applicable to the traveled roadway is described in Table 8 – Street Cross-slopes and in Appendix C.

Table 8 – Street Cross-slopes

Design Standards	Commercial	Residential/Collector	Local	Alley
Minimum Cross-slopes	2%	2%	2%	2%
Maximum Cross-slopes	4%	4%	4%	5%

- Superelevation design shall be in accordance with AASHTO and City Engineer guidelines.

4.2.7 Drainage

All streets shall accommodate stormwater drainage according to the City of Aspen Urban Runoff Management Plan.

4.2.8 Site Distance

All streets and alleys shall provide adequate site distance as set forth in AASHTO. Intersection sight distance standards are located in Appendix C.

4.2.9 Clear Zone

A clear zone is the total roadside border area, starting at the edge of the travel way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired minimum width is dependent upon traffic volumes and speeds and on the roadside geometry. Simply stated, it is an unobstructed, relatively flat area beyond the edge of the travelway that allows a driver to stop safely or regain control of a vehicle that leaves the travelway.

The clear zone will be evaluated on a case by case basis, but as a general rule, for roads without curb and gutter and with speed limits of 20 mph (or less) the clear zone will be defined as seven (7) feet. A minimum horizontal clearance of two (2) feet shall be maintained from the face of curb. For all other areas the clear zone will be evaluated based on use, volumes, and guidance as provided by AASHTO.

4.3 Curb and Gutter

In accordance with the City's Curb and Gutter Plan, property owners are required to install and maintain a sidewalk, curb, and gutter along the street frontage adjacent to their properties. Properties within certain areas of the City are not required to install a curb and gutter. These locations are shown on the "No Curb and Gutter Zones" map located in Appendix A.

Curbs and gutters do not need to be installed as part of the project if (i) the property is outside of the City's sidewalk, curb, and gutter zones, or (ii) the cost of installing (excluding permit fees, tree removal fees, etc) the curb and gutter and sidewalk exceeds 50 percent of the project cost excluding the cost of the sidewalk, curb, and gutter. For example, the project would not need to install a curb and gutter if the project cost is \$20,000 and the cost to install the curb and gutter is greater than \$10,000. (iii) The property can demonstrate an alternative method to convey drainage (i.e., swales).

For major projects as defined by the URMP, a drainage study must be provided that delineates the drainage sub basin, runoff flows, and the flow capacity of the curb and gutter. Spread criteria for streets are located in Chapter 4 of the URMP. For redevelopment projects, instead of providing the flow capacity, a project may choose to not have an opening (door or window) lower than 12 inches from the flowline. Alternatively, the project can provide flood protection for openings subject to street flooding.

Curbs and gutters must be installed according to the details located in Appendix C. For proper form placement, curbs and gutters installed adjacent to existing asphalt require a two (2) foot full depth asphalt patch followed by a 12 inch sheer step. The minimum milling depth of the sheer step is two (2) inches. No asphalt seams are allowed within the wheel path. The Sheer Step detail is located in Appendix C.

The minimum longitudinal slopes for curbs and gutters are 0.75%.

If no curb and gutter exists in the area or on the block, design of the curb and gutter beyond the immediately adjacent property may be necessary. Additionally, if the grades for the new curb and gutter do not match the grades of adjacent properties, the curb and gutter will need to be designed for the adjacent property. This is necessary in order to ensure that the location and elevation of the new curb and gutter are coordinated with the future curb and gutter on adjacent properties.

Where minimum grades cannot be achieved, a variance request must be submitted.

4.4 Parking

4.4.1 Off-street Parking Design

Each off-street parking space shall consist of an open area as measured in the table below:

Table 9 – Parking Lot Design Standards

Angle of Parking Space	Minimum One-Way Drive Aisle	Minimum Two-Way Drive Aisle	Minimum Parking Stall Size and Clearance
0 (Parallel)	11'	22'	8.5' x 22'
45	11'	22'	8.5' x 18' 8' x 16' compact (up to 25%* of required parking in lots with more than 15 parking spaces and clearly marked as such) 7' height clearance for enclosed parking
60	16'	24'	8.5' x 18' 8' x 16' compact (up to 25%* of required parking in lots with more than 15 parking spaces and clearly marked as such) 7' height clearance for enclosed parking
75	22'	24'	8.5' x 18' 8' x 16' compact (up to 25%* of required parking in lots with more than 15 parking spaces and clearly marked as such) 7' height clearance for enclosed parking
90	24'	24'	8.5' x 18' 8' x 16' compact (up to 25%* of required parking in lots with more than 15 parking spaces and clearly marked as such) 7' height clearance for enclosed parking
Cross-over drive aisle	18'	24'	N/A
Drive aisle with no parking	11'	22'	N/A

* Private apartment complex parking lots are excluded from the compact vehicles requirement

- Off-street parking must be paved with all-weather surfacing or be covered with gravel.

- Parking spaces, aisles, and turning areas shall be entirely within lot lines and shall not encroach on any public right-of-way. No parked vehicle shall overhang any public right-of-way.
- All driveway and parking grades shall meet the requirements per Section Chapter 4.
- Proper drainage and stormwater management shall be provided according to The City of Aspen Urban Runoff Management Plan.
- All required parking and access areas shall be designed to accommodate on-site snow storage per Section 5.8.
- Wheel or bumper guards or other approved barriers shall be located so that no part of any vehicle shall extend beyond the boundary lines of the parking area, intrude on pedestrian ways, or come in contact with walls, fences, or plantings.

4.4.2 Off-street Parking Location

Refer to City of Aspen Municipal Code Section Title 26.515 for parking requirements.

4.5 Pedestrian Facilities

This Section sets forth the minimum criteria to be used in the design of all sidewalks, access ramps, and other pedestrian facilities within City Right-of-Way or public easement areas. This section should be used in combination with AASHTO and the Americans with Disabilities Act "Standards for Accessible Design Requirements." All pedestrian facilities proposed and constructed require permits as set forth in City of Aspen Municipal Code Title 21.

4.5.1 Sidewalk Master Plan

Property owners are required to install a sidewalk along street frontage adjacent to their property, unless the area of the city is considered "Sidewalk Free" in accordance with the City Sidewalk map located in Appendix A.

A sidewalk does not need to be installed as part of the project if the cost of installing (excluding permit fees, tree removal fees, etc) the sidewalk and curb and gutter exceeds 50 percent of the project cost excluding the cost of the sidewalk, curb, and gutter. For example, the project would not need to install a sidewalk if the project cost is \$20,000 and the cost to install sidewalk is more than \$10,000.

4.5.2 Sidewalk Layout and Design

Sidewalks are an integral component of the City's pedestrian-friendly atmosphere. However, the placement of sidewalks must be performed in a way that does not conflict with the City's Urban Forest goals or the City's ditches. The City will allow variances from the layout and design requirements below in an effort to save trees identified as important by the City's Forester. In these cases, it is important to consult with both the Parks and Engineering Departments to ensure that the placement of sidewalks meets both pedestrian and urban forest goals.

- Sidewalks must be four (4) inches thick and follow the details in Appendix C.
- Sidewalks shall be placed so that there is a minimum buffer of five (5) feet between the back of the curb and the sidewalk; this is to allow for adequate landscaping and snow storage buffer behind the curb gutters and travel paths. Attached sidewalks will not be permitted; however, the City does understand there may be circumstances where it is unavoidable. In these circumstances a variance request must be submitted.
- Minimum sidewalk width is required based on Table 10.

Table 10 – Minimum Sidewalk Width

Adjacent Land Use	Commercial/Residential	Multi-family	Residential
Sidewalk Width	8 ft	6 ft	5 ft

- All sidewalks that cross over driveways and alleys shall be designed in accordance with the details located in Appendix C.
- Maximum cross slopes shall be 2%. Longitudinal slope of attached sidewalks shall be consistent with the street slopes and be constructed to meet ADA requirements. Sidewalks detached from the curb, with greater than 5% longitudinal slope, shall be constructed to meet ADA requirements.
- When there are site constraints, and minimum widths cannot be achieved, the sidewalk width may be accomplished in landscape areas with the use of approved materials (i.e., pavers) as approved by the City Engineer and Parks Department. This includes the use of alternate materials in place of tree grates. However, the alternate materials for the landscape area must be consistent with the same materials for the sidewalk area. For example, if there is an available width of 12 feet (usually within a commercial area) it will have a seven (7) feet sidewalk made of pavers and additional one (1) feet pavers in the landscape area to create an eight (8) feet walk width and the remaining width of four (4) feet will be dedicated to landscaping.
- For symmetry, a corner is required to have a curb-extension (bulb-out) if the corner across the street has a curb-extension.
- Tree grates shall have a maximum horizontal opening of half (0.5) inch.

4.5.3 Curb Returns

In certain areas, to be determined by the City Engineer, the City may require the curb return radius to be reduced from the values given in Table 6 in order to reduce pedestrian travel time and distance.

4.5.4 Pedestrian Crossings

All crosswalks shall be marked in accordance with Section 4.9. Crosswalks will be required at school areas and high pedestrian areas as designated by the City Engineer.

4.5.5 Pedestrian Ramps

Pedestrian ramps must be installed at intersections for all construction, reconstruction, or major projects as defined by the URMP. Pedestrian ramps for streets with curbs and gutters must be constructed at all intersections with sidewalk and curb returns in accordance with the details in Appendix C. All street intersections with sidewalks must have directional crossing ramps. Diagonal ramps will not be permitted. Height of the curb in front of the ramp section must be depressed to flowline elevation (no lip).

4.6 Bike Amenities

4.6.1 Paths

All off street multi-use bike paths shall be 12 feet in width and designed according to Aspen Parks Department requirements. On street bike lanes are installed by the City as part of an overall bike connectivity plan.

4.6.2 Ramps

Bike path ramps follow the same design approach as Section 4.6.5 except that the width of the ramp will match the width of the bike path.

4.6.3 Parking

The City of Aspen adopts the Association of Pedestrian and Bicycle Professionals (APBP) Essentials of Bike Parking guideline. Please refer to this document for direction on bike rack selection and installation.

4.7 Emergency Access Design

All developments shall provide adequate emergency vehicle access by meeting all applicable standards set forth in City of Aspen Municipal Code Title 11 and the following criteria:

Adequate emergency access is a minimum maintained 20-foot-wide unobstructed fire apparatus access road with an unobstructed clearance of 13.5 feet that is capable of supporting the weight (54,000 lbs. on two axles) of fire apparatus

An emergency access lane shall be provided whenever a structure is located more than 150 feet from the road (i.e., public road, privately maintained roadway.)

Emergency access lanes shall provide the shortest practical direct access to points of concern and be entirely contained within a minimum, continuous 20-foot-wide emergency access easement or public right-of-way.

An emergency access lane shall consist of either of the following (provided that everything accessed from the lane is able to be sprinkled):

- Two concrete strips at least four (4) feet wide, with a four (4) foot separation between them and a two (2) foot shoulder on each side. Vegetation other than grass shall not be permitted in the separation area or on the shoulder areas.
- A minimum continuous paved surface width of 16 feet.
- Access lane shall provide a minimum inside turning radius of 29 feet.
- If the length of the emergency access lane exceeds 150 feet (without an emergency vehicle outlet), then a turnaround with a minimum radius of 50 feet shall be provided.
- The grade for an emergency vehicle shall not exceed 10%.

Any alteration from the above guidelines shall require specific written approval from the Fire Marshal of the Aspen Fire Protection District.

4.8 Traffic Signs and Striping

4.8.1 Application

A complete signing and striping plan(s) shall be submitted as part of the project or development construction plans and approved by the Engineering Department prior to installation. The plan shall include sign and pavement types, location details (horizontal and vertical), reflectorization, and lighting (if needed). Unless any signing or striping is affected by the project, residential projects are exempt from this requirement.

The applicant for construction approval shall be responsible for the installation of all traffic control devices, street name signs, and markings prior to the opening of roadways, bike paths, etc. All signs, sign materials, and barricade warning lights shall conform to the standards set forth MUTCD (current edition), as well as these standards.

4.8.2 Signing and Striping Types

Highway signs are of three general types: regulatory signs, which are used to indicate the rules for traffic movement; warning signs, which are used to indicate conditions that may involve risk to highway users; and guide signs, which are used to direct traffic along a route or toward a destination.

Pavement marking types include centerline stripes, lane lines, edge striping, obstructions, stop lines, crosswalk lines, and various word and symbol markings.

New street signs shall be designed to match existing street signs.

Chapter 5 Grading

5.1 General

This section provides a summary of grading standards within the City of Aspen. All grading is subject to design review to determine compatibility with Engineering Department Standards and existing topography, to review the extent of existing vegetation removal, and to preserve significant features on the site.

The design and location of any proposed structure, building envelope, road, driveway, trail, or similar development must be compatible with the significant natural or scenic features of the site.

The Engineering Department requires all grading plans for major projects as defined by the URMP to be stamped by a Colorado professional engineer (PE).

5.2 Grading Standards

All temporary grading shall be in compliance with currently adopted OSHA standards.

Finished grades of 1:1 and 2:1 are subject to severe erosion as a result the maximum finished grade permitted is 3:1 (horizontal:vertical) unless otherwise approved by the City Engineer with surface stabilization and provided that no grading exceeds a one to one (1:1) ratio.

Grading around existing vegetation to be preserved on site shall be outside the critical root zone, unless otherwise approved by the City Forester. The critical root zone may be defined as a radius equal to one (1) foot for each inch of caliper measured one (1) foot above the natural grade, or as defined by the City Forester. A tree removal permit must be obtained from the City Parks Department before any trees or other vegetation are removed or altered.

Grading that is detrimental to existing natural features is discouraged. Those areas of a site that are determined to remain in a natural state shall be protected during construction. A site-specific construction disturbance plan shall be prepared that outlines the areas to be disturbed and the methods and devices used to protect the remaining portions of the site. The disturbance plan shall be included with the building permit plans and the Construction Management Plans.

Further grading and stormwater requirements, design considerations and procedures can be found in Chapter 8 of the URMP. All grading designs should incorporate the 9 steps of the Water Quality Low Impact Design Requirements listed in the URMP.

5.3 Retaining Walls

5.3.1 Application

All retaining walls are reviewed by the City to determine compatibility with the existing topography and the materials in use. New and existing structures should be able to accomplish their various construction needs within the confines of their property boundaries and required

setbacks. The City is aware that, from time to time, a project may be constrained to the point where occupation of the public right-of-way is unavoidable.

5.3.2 Height Guidelines

Retaining walls located within a public right-of-way must be approved according to City of Aspen Municipal Code Title 21.

Within a property, retaining walls shall not exceed the height limitations set forth in City of Aspen Municipal Code Title 26.575.020 – Calculations and Measurements.

5.3.3 Submittal Requirements

Retaining wall requirements for private property are outlined in the International Building Code. For walls located in the City Right-of-Way, the plans, profiles, sections, details, interference drawings, and engineering analyses and calculations for each wall type shall be stamped by a licensed Colorado Professional Engineer if the wall height exceeds four (4) feet, as measured from finish grade.

All engineered retaining wall submittals for the Right-of-Way shall include:

- A typical section detail for each type of wall proposed.
- Calculated factor of safety for overturning and sliding.
- Design parameters such as ϕ , γ , c , etc.
- Any necessary design assumptions such as unique drainage conditions, load surcharge, utility impact, etc.
- Height, batter, adjacent slopes, bench widths, etc.

Furthermore, for walls located in the Right-of-Way and at the request of the City Engineer, additional submittal requirements may be imposed including – but not limited to – comprehensive design calculations, wall profiles, and additional sections. In general, these supplemental requirements will be requested for multi-tier, steep-slope, and load-surcharged walls, or for walls of extended length. Additionally, walls within the Right-of-Way must comply with the requirements outlined in the International Building Code.

5.3.4 Location of Walls

Retaining walls shall be located within the property and setback areas unless otherwise approved by the City Engineer and Community Development Department. Additionally, where possible, retaining walls shall be located in an area unencumbered by easements.

Retaining walls should not be located within utility easements. If the utility provider approves the use of a retaining wall within a utility easement, the applicant may need to provide a permanent utility easement encroachment including indemnification for the utility.

5.3.5 Boulder Retaining Walls

Boulder retaining walls in the Right-of-Way, shall comply with the standards of this Section but the height listed for retaining walls is the exposed height of either a single or the combined height of combination walls. If the batter (slope of the face of the wall) is greater than one to one (1:1), a PE stamp is required.

5.3.6 Combination Retaining Walls

A retaining wall in the Right-of-Way should be considered a combination wall if the upper wall falls within a prism defined as starting one (1) foot behind the face of the lower wall at the lowest finished grade line and then back at a 1.5:1 angle from this starting point. Combination retaining walls shall comply with the standards in this section, but the minimum bench of combination retaining walls shall be four (4) feet. All combination retaining walls shall have a PE stamp.

5.4 Silva Cells

5.4.1 Application

Silva Cells are applicable in situations where tree-rooting potential is insufficient in designated planter areas adjacent to sidewalks. They are generally required where a non-compactated continuous root zone cannot be provided, including when in the City Right-of-Way or as may be required in private properties as a condition of the development review approval. Refer to the details located in Appendix C.

5.4.2 Definition

Silva Cells are a horticultural medium that meets pavement design and installation requirements yet possesses qualities that allow tree roots to grow in a continuous base course under pavements, thereby minimizing the potential for sidewalk heaving while maximizing soil volume.

5.4.3 Design

The volume of soil required depends on the expected size of the tree. The details in Appendix C provide guidelines for the minimum amount of soil required based on tree size at maturity. The City Engineer, City Forester, or his or her designee shall make final determination as to the requirement for Silva cells.

In areas where the Silva Cell crosses a utility, the cells shall be designed in a manner where access to the utility can be achieved.

5.4.4 Approval and Inspections

Final approval of the preparation of the Silva Cells and installation thereof shall be required and shall be made by the City Engineer, City Forester, or his or her designee. The City may also require testing of material, on-site inspections, and/or documentation from installers as deemed necessary to ensure proper application of the Silva Cells.

5.5 Earth Retention

New and existing structures should be able to accomplish their various construction needs within the confines of their property boundaries and required setbacks. The City is aware that, from time to time, a project may be constrained to the point where occupation or disturbance of the public right-of-way is unavoidable. Of particular concern to the City is the utilization of a public right-of-way for the purpose of earth retention associated with the project site. The City may allow earth retention systems to encroach into the right-of-way provided that the terms of Section 21.12.140 of the municipal code are conformed to as determined by the City Engineer or City Council.

Additionally, earth retention systems shall be designed in a manner so that the system does not interfere with various utilities and shall be located outside of utility easements.

5.6 Snowmelt Systems

Surface runoff originating from snowmelt systems shall meet all criteria set forth in the Urban Runoff Management Plan. Portions of snowmelt systems located over utility easements require a separate mechanical zone. Additionally, the utility provider may require a permanent utility encroachment that includes indemnification for the utility provider.

5.6.1 Located on City Right-of-Way

Proposed snowmelt systems located on a public right-of-way require Engineering Department approval. All snowmelt systems within the City Right-of-Way shall not drain to an unheated portion of sidewalk, hardscape, or roadway. Snowmelt systems for driveways and walkways cannot cross sidewalks. All snowmelt systems in the ROW require a ROW permit and permanent encroachment according to City of Aspen Municipal Code Title 21. Additionally, these systems will need to have a separate mechanical zone for the ROW.

If the City or associated utility provider needs to improve the ROW or access subsurface utilities, and the associated construction requires removal of a snowmelt system, then the property owner will be responsible for the replacement/ restoration of the system.

5.6.2 Located on Private Property

Snowmelt systems on private property shall not drain to the ROW. Additionally, any snowmelt system located in a utility easement must have a separate zone for that portion of the easement. Additionally, the utility provider may require a permanent utility encroachment that includes indemnification for the utility provider.

5.7 Landscaping

Tree species shall be selected based upon site conditions. Large shade trees are favored if adequate space above and below ground is available. Appropriate tree species for the City of Aspen can be found in the Aspen Arbor Guide located online or at the Parks Department.

Unless otherwise authorized by the City Forester, the following species and types of trees and woody plants shall not be planted or allowed to grow upon public street right-of-way within the City of Aspen unless in existence prior to January 1, 1990.

- Most of the poplar species (*Populus* sp.), including but not limited to Aspen, Silver Poplar, and Lombardy Poplar.
- Any of the willow species (*Salix* sp.).
- Any weeping or pendulous-type tree (i.e., Weeping Birch).
- Any tree with a bushy growth habit that cannot be maintained to a single leader or trunk.
- Any shrub or hedge that, by its habit of growth, would obstruct, restrict, or conflict with necessary and safe use of the public right-of way.
- Any coniferous tree including but not limited to Pine, Spruce, Fir, and Juniper.

To ensure trees have adequate room to grow and for public safety reasons, properties must meet the following requirements:

- Unless otherwise authorized by the City Forester, all newly planted street trees shall be planted midway between the sidewalk and the curb, when available, at least three (3) feet from back of curb. Most trees, unless authorized by the City Forester, shall be planted 15 to 20 feet over center from the adjacent trees, dedicated by the available space within the improved right-of-way.
- No trees will be planted closer than 5 feet to any driveway or alley, nor shall it be planted in such a manner that eventual growth cannot be reasonably maintained so as to avert interference with, or obstruction to, any improvements installed for the public benefit such as traffic and street signs and lights, fire hydrants, overhead utility wires, street lights, utility poles, etc.
- No landscaping (including boulders and fencing) higher than 36 inches shall be placed within the site triangle of an intersection. The site triangle shall be measured from the edge of the travel way and extend 30 feet from the intersection. Intersections may include driveways. Refer to Appendix C.
- At edges of streets where a space of less than three (3) feet in width exists between the curb and the abutting private property line, no trees or woody plants shall be planted on the public area unless approved by the city forester.
- No trees shall be planted within the clear zone as defined in Chapter 4. Tree limbs should have a minimum of seven (7) feet vertical clearance between finish grade and bottom branch.
- Planting areas at sidewalk grade adjoining the curb shall be a minimum of five (5) feet in width.
- In curb and gutter areas trees shall be planted three (3) feet from face of curb.
- 30 inches of good soil is required in the five (5) foot buffer area.

- Gravel, crushed stone, washed rock, and similar materials shall not be allowed in the sidewalk area at grade. Such materials shall not be allowed in lieu of landscaping unless approved as part of an overall plan.
- All landscaping shall be properly irrigated.
- Landscaping shall not interfere with utilities or ditches and shall follow guidelines outlined in Section 2.5.

All trees planted within the City ROW inside of a hard surface parkway must design and install the trees within a Silva Cell or equivalent as approved by the Parks Dept. Specifications are located in Section 5.4 of these *Engineering Standards*. These specs allow for the planting of trees and proper base for sidewalk installation, pavers, driveways, etc.

For projects with existing trees that will remain, Silva Cells may still be required. These cases will be evaluated by the City Forester as they arise.

All landscaping plans must be approved by the Parks Dept.

5.8 Snow Storage

A minimum functional area equaling 30% of the paved area shall be provided contiguous to the paved area and designed to accommodate snow storage (unheated areas). For heated areas, the functional area can be reduced to 10%. Fire hydrant areas and associated easements shall not be used toward the functional area described above.

Chapter 6 Hazard Mitigation

6.1 General

Properties within the city limits are susceptible to natural hazards that require adequate planning and design to mitigate. Structures, both new and renovated, should plan accordingly for every natural hazard applicable to their location. In addition to the information contained herein, projects must also conform to City of Aspen Municipal Code 26.435 – Development in Environmentally Sensitive Areas (ESA) and 26.480 – Subdivision, and 26.445 – Planned Development, as applicable.

6.2 Definition

A geological hazard is one of several types of adverse geological condition capable of causing damage or loss of property and life. The types of hazards include: fault ruptures, landslides, rock falls, rockslides, debris flow, mudslides, and other hazards that involve the composition, structure, physical properties, and/or dynamics of earth materials.

6.3 Hazard Mitigation Submittal Requirements

All projects shall be evaluated for all hazards described within this chapter and any other hazards that may pose a threat to public safety or the natural environment. Resources that can help with property evaluations include:

- The City of Aspen Surface Drainage Master Plan – 2001
- Geologic maps published by the U.S. Geological Survey
- Engineering Department Plat #1000-008

6.3.1 Mudflow and Flooding

Guidance on mudflow requirements within the City of Aspen can be found in Chapter 7 – Mudflow Analysis of the Urban Runoff Management Plan. Guidance on flooding requirements within the City of Aspen can be found in Chapter 6 – Floodplains of the Urban Runoff Management Plan.

6.3.2 Avalanche

Within the city limits are various slopes that, under the right conditions, will produce avalanches. General information regarding avalanche-prone slopes can be found in Engineering Department Plat #1000-008. If a project is in close proximity to an avalanche area, a detailed evaluation and mitigation plan shall be required during the development stage and included with the initial permit submittal.

6.3.3 Fault Ruptures, Landslides, Rock Falls, Rockslides, and Debris Flows

Submit a site-specific engineering geology report that includes hazard mitigation measures that include slope stabilization methods, avoidance, or other measures that will achieve hazard mitigation. The engineering geology report must be prepared – and signed – by a geologist with hazard mitigation technique experience.

Areas with slopes greater than 30% will require a slope stability study. This study will be forwarded to the Colorado Geological Survey (CGS) for review. The review fees by CGS will be invoiced to the applicant directly. The City may also request a soils report that meets requirements set forth in Section 1.2.3.

Chapter 7 Construction and Excavation

7.1 Purpose

This section establishes the minimum construction and excavation standards for all work in the public right-of-way. All proposed work submitted for approval under Title 21 of the City of Aspen municipal code shall conform to the criteria set forth herein. Additional standards may be applicable for work involving water or electric utility service or main lines.

7.2 General

- 1 Testing, in compliance with the city's testing schedule, which is attached hereto as Exhibit A, Appendix B, shall be performed by an independent testing agency acceptable to the City Engineer or designee, and results shall be provided to the City Engineer or designee within two (2) working days of completion of testing and prior to the next phase of construction. Any work in which untested and uninspected materials are used shall be performed at the Contractor's risk and may be considered as unacceptable and unauthorized work. For example, a subgrade test is required prior to asphalt placement.
- 2 Any damage not documented during the pre-construction inspection shall be repaired by the permittee at the sole expense of the permittee.
- 3 Utility markings shall be limited to the boundaries of the construction area and shall be removed by a method approved by the City Engineer within forty-five (45) days of the completion of work.
- 4 A permittee shall advise the City Engineer or designee at least forty-eight (48) hours in advance of the date the work will start and shall notify the City Engineer or designee at least forty-eight (48) hours in advance if this date is changed or cancelled. Inspections required on the permit shall be scheduled by permittee at least forty-eight (48) hours in advance.
- 5 Each permittee shall utilize erosion and sediment control measures to prevent erosion and degradation of water quality.
- 6 Ditches shall be protected from construction impacts with measures such as fencing, silt fences, waddles, etc.
- 7 The city shall restrict any work within the public right-of-way from November 1 to April 1.
- 8 Each permittee shall maintain its work site so that:
 - a Trash and construction materials are contained and not blown off the work site.
 - b Trash is removed from a work site often enough so that it does not become a health, fire, or safety hazard.

- 9 Each permittee shall utilize its best efforts to eliminate the tracking of mud or debris upon any street or sidewalk. Streets and sidewalks shall be cleaned of mud and debris at the end of each day. All equipment and trucks tracking mud and debris into a public right-of-way shall be cleaned of mud and debris at the end of each day or as otherwise directed by the City Engineer or designee.
- 10 Backhoe equipment outriggers shall be fitted with rubber pads or other like protective material whenever outriggers are placed on any paved surface. Tracked vehicles that may damage pavement surfaces shall not be permitted on paved surfaces unless specific precautions are taken to protect the surface. The permittee shall be responsible for any damage caused to the pavement by the operation of such equipment. Should the permittee fail to make such repairs, within three (3) days, to the satisfaction of the City Engineer, the city may repair any damage and charge the permittee pursuant to Section 21.12.270 of the Aspen Municipal Code.
- 11 As the work progresses, all public rights-of-way and other property shall be cleaned of all rubbish, excess dirt, rock and other debris, at the sole expense of the permittee.
- 12 No permittee shall disturb any surface monuments, property markers or survey hubs or points found on the line of work unless prior approval is obtained from the City Engineer. Any monument, hub or point which is disturbed by a permittee shall be replaced by a Colorado Registered Land Surveyor at the sole expense of the permittee.
- 13 Each permittee shall provide employee and construction vehicle parking so that there is limited parking in the neighborhood adjacent to the work site. Permittee shall obtain parking permits from the Parking Department for construction parking. There shall be no parking on sidewalks or unpaved portions of city right-of-way.
- 14 Each permittee shall provide necessary sanitary facilities for workers, the location of which shall be approved by the City Engineer or designee and set forth in the permit.
- 15 As-built drawings shall be required for all work involving changes to finish grade of streets, curbs, gutters and sidewalks. All as-built information shall be provided by the permittee to the City in a format acceptable to the City Engineer or designee, and approved by the City Engineer or designee prior to use of the facility.

7.3 Pavement Removal

- 1 All asphalt pavement cuts shall be rectangular in shape with sides parallel and perpendicular to the flow of traffic. All cuts shall be in straight lines. Irregular shaped cuts with more than four (4) sides or cuts within existing patches shall not be allowed. See Exhibit B, Appendix B.
- 2 In order to provide straight edges, all asphalt pavement cuts shall be saw cut, rotomilled or another approved method which assures a straight edge for the required depth of the cut.
- 3 Asphalt pavement cuts shall be such that no longitudinal joint lies within the wheel track.
- 4 Concrete pavement shall be removed and replaced from existing panel joints only.

7.4 Boring

- 1 Boring is not the preferred method for utility installation. Boring is not allowed in commercial core alleys due to the concentration of utility lines.
- 2 For boring projects, parallel utility lines within ten (10) feet of the proposed conduit are required to be testholed every 150 feet along the route as well as at every utility crossing. For regular excavation projects, if horizontal separation is met, locate testholes are required for field verification of all tie-in points, utility crossings and potential conflicts.
- 3 Upon completion of the boring, the permittee shall certify that all utility lines to adjacent properties have not been damaged by the boring in a signed affidavit in a form acceptable to the City Engineer.
- 4 If any boring operation disturbs other utilities or facilities in the public right-of-way, the permittee shall immediately inform the owner of the damaged utility or facility. The permittee shall provide the City Engineer written notice that the owner of the damaged utility or facility has been notified.
- 5 Waste material from boring shall be contained within the work site and shall not be allowed to discharge onto private property, curb, gutter, roadway or any other city right-of-way.

7.5 Excavation and Backfill

7.5.1 Excavation

- 1 Excavation projects must meet the requirements outlined in the Senate Bill 18-167 (Colorado Subsurface Utility Law)
- 2 A project is classified as a Subsurface Utility Engineering (SUE) project if it meets all of the conditions below:
 - a The project involves a construction contract with a public entity
 - b The project involved primarily horizontal construction and does not involve primarily the construction of buildings
 - c The project has an anticipated excavation footprint that exceeds two feet in depth and that is a contiguous one thousand square feet OR involves utility boring
 - d The project requires the design services of a licensed Professional Engineer.
- 3 A licensed Professional Engineer designing for a SUE project needs to:
 - a Notify the Notification Association with a SUE notification
 - b Meet or exceed the ASCE 38 standards for defining the underground facility location in the stamped plans for all underground facilities within the proposed excavation area OR document the reasons why any underground facilities depicted in the stamped plans do not meet or exceed ASCE 38 utility quality level B or its successor utility quality level
 - c Attempt to achieve ASCE 38 utility quality level B or its successor utility quality level on all utilities within the proposed excavation area unless a reasonable rationale by a licensed professional engineer is given for not doing so

- d Document the reasons why any underground facilities depicted in the stamped plans do not meet or exceed ASCE 38 utility quality level A or its successor utility quality level for underground facilities at the point of a potential conflict with the installation of a gravity-fed system.
- 4 All trench excavation shall be made by open cut to the depth required to construct the facility and provide adequate bracing of trench walls. All excavation, trenching, shoring, and stockpiling of excavated materials shall be in strict compliance with the applicable Occupational Safety and Health Administration (OSHA) rules and regulations.
- 5 The permittee shall furnish, place, and maintain all supports and shoring required for the sides of the excavation, as to ensure worker safety and prevent damage to the work or adjoining property.
- 6 The length of an open trench shall be limited to the amount of pipe or conduit that can be placed and backfilled in a single day. However, in no case shall the length of the open trench exceed 100 feet unless otherwise approved by the City Engineer or designee. No open trench shall be left unprotected overnight.
- 7 A maximum of two (2) excavations shall be open at any time for access structure installation and conduit splicing, unless otherwise approved by the City Engineer or designee.
- 8 Only material that will be hauled or backfilled within one (1) day shall be stockpiled in the public right-of-way and must be approved by the City Engineer or designee. The City Engineer or designee, in conjunction with all affected city agencies, shall approve all proposed construction staging areas.
- 9 All open excavations shall be properly barricaded, according to current MUTCD guidelines, to protect vehicles and pedestrians.
- 10 Current field moisture and density test results (taken within forty-eight (48) hours of the scheduled construction date) for top one (1) foot of subgrade shall be provided to the City Engineer or designee prior to placing forms. If any lift of the top one (1) foot of subgrade does not meet moisture or density requirements, then the material shall be scarified, wetted and re-compacted accordingly. If subgrade requires stabilization, the method shall be approved by the City Engineer or designee prior to proceeding.

7.5.2 Backfilling

- 1 Select Backfill**
 - a** In cases where CLSM is not used, CDOT standard Class 6 backfill shall be placed in maximum eight (8) inches loose lifts and compacted. All construction involving excavation and backfill shall meet CDOT Standard Specifications for Road and Bridge Construction, current edition, ("CDOT Standard Specifications") Section 203.
 - b** The permittee shall provide compaction testing for all backfill work per the Minimum Testing Requirements table in Exhibit A.
 - c** Each lift not tested in accordance with the testing frequency and lifts required may be rejected by the City Engineer or designee.

- d Excavation and backfill shall be accomplished on the same day in order to minimize impact to the public right-of-way. In instances where the City Engineer or designee determines that this cannot be accomplished, the permittee shall submit a plan for approval by the City Engineer or designee showing how traffic will be handled around the work zone.

2 Controlled Low Strength Material (CLSM)

- a Excavations that are less than 100 cubic yards in volume and are located within the roadway pavement may be backfilled with controlled low strength material (flow fill).
- b Controlled low strength material shall consist of a controlled, low strength, self-leveling material composed of various combinations of cement, fly ash, aggregate, water and chemical admixtures. It shall have a design compressive strength between 50 to 150 psi at twenty-eight (28) days when tested in accordance with ASTM 4832. The mix shall result in a product having a slump in the range of seven (7) to ten (10) inches at the time of placement. The permittee shall submit the mix design for approval by the City Engineer or designee prior to placement.
- c The maximum layer thickness for CLSM shall be three (3) feet. Additional layers shall not be placed until the backfill has lost sufficient moisture to be walked on without indenting more than two (2) inches.
- d If excavation under an emergency situation occurs between November 1 - April 1, the top 12 inches of the excavation will be filled with high strength (>150 psi) flow fill. The permittee shall replace the flow fill patch with a permanent asphalt patch per these standards, after April 1st.

3 Bridging Plates

- a Substantial bridging, properly anchored and capable of carrying the legal limit loading, in addition to adequate trench bracing, shall be used to bridge across trenches at street crossings where trench backfill and temporary patches have not been completed during regular working hours. Safe and convenient passage for pedestrians and access to all properties shall be maintained.
- b The bridging plate shall be secured to the pavement with anchored pins so that it does not slip. The bridging plate shall extend over supporting pavement by a minimum of one (1) foot on all sides. Cold mixed asphalt shall be ramped a minimum of two (2) feet in the travel direction.
- c The use of bridging plates shall not be allowed from October 1 to April 1. Use of bridging plates shall only be allowed with the prior approval of the City Engineer or designee.
- d The permittee's design engineer shall certify in writing the suitability of the plates for the specific use by the permittee.

7.6 Repairing Streets

7.6.1 Asphalt Pavements

- 1 The minimum patch dimensions shall be two (2) feet beyond each side of the trench or excavation but shall not extend into an adjacent undisturbed lane or cross the street center line. The minimum milling depth of the patch is two (2) inches. Patch must follow the Trench and T-Top Patch detail located in Appendix C.
- 2 The longitudinal edges of the patch shall not fall within the existing three (3) feet wheel paths as defined in Exhibit C, Appendix B. If the extent of the patch falls within the wheel path, the patch shall extend to the centerline of the vehicle track or the full width of the lane.
- 3 Prior to placing the permanent patch, the existing pavement shall be milled to a neat, straight-line, square to the travel lane.
- 4 A tack coat shall be applied to all edges of the existing pavement and gutter prior to placing the patch. After placing the new asphalt, all seams (joints) between the new and existing pavements shall be sealed with an asphalt tack coat or rubberized crack seal material.
- 5 Asphalt mix shall be CDOT, SX mix (1/2 inch) 58-28, 75 gyration design for small projects. For big projects, CDOT, SX mix (1/2 inch) 64-34, 75 gyration design shall be used. If this mix is not available, the asphalt mix design shall be submitted and approved by the City Engineer prior to placement.
- 6 Hot mix asphalt shall be placed only on properly prepared unfrozen surfaces which are free of water, snow, and ice. The table below specifies the minimum air and surface temperatures required for asphalt placement.

Table 11 – Minimum surface and air temperature for asphalt placement

Compacted Layer Thickness in inches	Top Layer	Other Layers
<1½	60 °F	50 °F
1½ - <3	50 °F	40 °F
>3	45 °F	35 °F

- 7 Compaction shall be between 92% and 96% of AASHTO T 209. Average compaction of less than 92% of AASHTO T 209 shall be cause for rejection.
- 8 Compaction equipment shall be capable of compacting corners and edges of patch.
- 9 Hot bituminous patches shall be placed in two compacted lifts. The first lift will extend two (2) inches below the bottom of the existing pavement. The top lift shall match the thickness of the existing pavement mat and installed as shown in Exhibit F, Appendix B.
- 10 Patches shall also have a cross slope section consistent with the design of the existing roadway.
- 11 A cold mix asphaltic material may only be used as a temporary patch and the cold mix material shall be approved by the City Engineer.

- 12 Temporary or permanent asphalt patches shall be placed within twenty-four (24) hours of trench backfilling. Whenever permanent patches are not constructed within twenty-four (24) hours following trench backfilling operations, temporary pavement patches consisting of a minimum of three (3) inches of hot or cold plant mix or steel plates must be placed to provide the required number of paved travel lanes. Temporary pavement patches may be left in place for a maximum of five (5) working days following completion of backfilling operations unless otherwise approved by the City Engineer or designee.
- 13 The permittee shall monitor temporary patches on a daily basis. Any temporary patches exhibiting ruts, humps, or depressions shall be repaired or replaced immediately.
- 14 A permanent hot patch shall be made within five (5) days after the area is open to traffic, weather permitting.
- 15 If final patching is not completed within the specified time, no non-emergency permits shall be granted to the permittee until all outstanding work is completed.
- 16 Upon completion of the permanent patch, the surface shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, or irregularities. When a straight edge ten (10) feet long is laid across the permanent patch parallel to the centerline of the street and in a direction transverse to the centerline, the surface shall not vary more than 1/4 inch from the lower edge of the straight edge. Patches exhibiting deviations greater than 1/4 inch shall be replaced prior to acceptance of the patch. If the existing street exceeds the above tolerances, then the patch shall be equal or better than the condition of the surrounding pavement. In most cases, and particularly in the cases of extensive excavation and repairs, it is desirable to survey the existing pavement condition with a representative of the city prior to the work. After completion of the work, survey the pavement condition again to verify that the pavement condition has been maintained or improved. In the case of minor repairs, these pavement surveys can be made by visual observation.

7.6.2 Restoration of Locate Testholes

- 1 Locate testholes shall not be located within the wheel path of a travel lane as defined in Exhibit C.
- 2 All locate testholes in the pavement section shall be cored with a circular coring saw with a maximum diameter of ten (10) inches. The plug shall be carefully removed without causing damage.
- 3 Excavations for testholes shall be backfilled with controlled low strength material (flowable fill) only. Native material removed shall not be used to backfill the hole.
- 4 The removed pavement shall be replaced by one of the following methods as directed by the City Engineer:
 - a The full depth section or the top three (3) inches of pavement of the removed original core shall be replaced and grouted with a high strength, quick set epoxy or mortar, as approved by the City Engineer, such that the surface is flush with the surrounding pavement; or

- b** The pavement shall be patched with hot mix asphalt of similar aggregate size to the surrounding pavement and compacted in maximum three (3) inch lifts with a "pogo stick" compactor capable of fitting into the core hole such that the surface is flush with the surrounding pavement.
- 5 A city inspector shall be on site during the repair of all locate testholes. The City Engineer may waive this provision if the contractor demonstrates competent performance of the repair.
- 6 Where possible, locate testholes shall be located under existing pavement marking and such marking replaced in kind at the completion of the repair to camouflage the pavement disturbance. If the permittee requests, city crews may install the new pavement markings at the sole expense of the permittee.
- 7 Initial locate testholes may be temporarily repaired, meeting all applicable safety requirements, for no more than thirty (30) days unless additional time is authorized by the City Engineer or designee in writing. Initial locate testholes may be reused during construction.

7.6.3 Concrete Flatwork

- 1 Concrete material and placement shall be CDOT Class D, with 4500 psi compressive strength.
- 2 Weather protection shall be provided in compliance with CDOT Standard Specifications Section 601.
- 3 Permittee shall schedule a form inspection and obtain approval prior to pouring.
- 4 Damaged concrete pavement shall be removed and replaced as a full panel section with dowels set into adjacent panels in compliance with CDOT M&S Standards.
- 5 Damaged flatwork and curb and gutter shall be replaced in full sections from existing contraction joints. Partial section replacement shall not be permitted.
- 6 Concrete removed adjacent to asphalt pavements shall be sawcut along the abutting edge prior to removal in order to remove without damage to the pavement. The sawcut edge shall not be used as a form for the new concrete. Temporary formwork shall be placed along the sawcut edge in the desired alignment. The top edge of the replaced concrete section shall be straight and true without warping or irregularity. After the formwork is removed, the gap shall be filled with asphalt. Damage caused to the edge of the asphalt pavement shall result in the assessment of a restoration for asphalt resurfacing per Section II.
- 7 Subgrade elevation shall be brought up to +/- 0.1 foot of final grade per plans, with approved materials prior to placing forms.
- 8 No water shall be placed on concrete surface to assist finishing.
- 9 Steel trowels shall not be used to finish exterior concrete surfaces.
- 10 Variations of concrete surface shall not exceed 1/8 inch in ten (10) feet.
- 11 Liquid membrane curing compound shall be placed in compliance with CDOT Standard Specifications Section 412 at a rate to completely coat all exposed concrete surfaces.

7.7 Sidewalk, Curb, and Gutter

- 1 Permittee shall be responsible for repairing sidewalk, curb or gutter damaged from work activities of permittee.
- 2 Permittee shall be responsible for installation of new sidewalk, curb and gutter per City of Aspen Municipal Code 21.16.030 and for repair of sidewalk, curb and gutter per City of Aspen Municipal Code 21.16.080.
- 3 Sidewalks must be constructed with four (4) inch thick concrete and must have 4500 psi compressive strength within 28-day maximum curing period. 80 percent of this strength must be achieved in 7 days following placement of concrete. Sidewalk width varies based on the land uses, see Section 4.5.2. Sidewalks must follow the details in Appendix C.
- 4 Sidewalks must be placed next to the property lines in order to provide an adequate landscaping and snow storage buffer behind the curb, gutters and travel paths.
- 5 For proper form placement, curbs and gutters installed adjacent to existing asphalt require a two (2) foot full depth asphalt patch followed by a twelve (12) inches sheer step. The minimum milling depth of the sheer step is two (2) inches. No asphalt seams are allowed within the wheel path. The Sheer Step detail is located in Appendix C.
- 6 Extenuating circumstances may require the permittee to take steps to mitigate the impacts of sidewalk construction to trees, other vegetation, and/or drainage.

7.8 Driveways

- 1 Location and number of driveway(s) per lot are determined by City of Aspen Municipal Code 21.16.060. See Section 4.1.3 for driveway widths.
- 2 Where curbs exist or are required, driveways shall be paved for their full width from curb to property line.
- 3 Where a driveway crosses a sidewalk, the sidewalk shall be increased to a minimum of six (6) inches of concrete.
- 4 There shall be a minimum of 25 feet between any two (2) curb cuts whether on one (1) or more properties, except common driveways may be used on adjoining properties. Distance between curb cuts will be such as to maximize the amount of on-street parking.

7.9 Landscape Areas

- 1 Excessive, unnecessary disturbance to landscaping and other existing improvements may result in a stop work order until repairs are made to the satisfaction of the City Engineer or designee.
- 2 Landscape restoration shall be completed within two (2) weeks of completion of work at each site, weather permitting.
- 3 Irrigation shall be maintained throughout construction to ensure that no landscaping is affected during the construction phase.

- 4 A permittee shall work with adjacent property owners to coordinate any construction activity that disrupts adjacent property owners landscaping.
- 5 Existing trees and landscape:
 - a All trees growing in the public right-of-way must be shown on the plans. If requested, it will be determined if the trees may be removed as part of the redevelopment project. A tree removal permit with a required mitigation plan must be submitted to the Parks Department for approval and the permit issued prior to removal of any trees.
 - b A vegetation protection fence shall be erected at the drip line of each individual tree or groupings of trees remaining on-site during the improvements. No excavation, storage of materials, storage of construction backfill, storage of equipment, foot or vehicle traffic is allowed within the drip line of any tree. This fence must be inspected by the city forester or his/her designee before any construction activities are to commence.
- 6 Tree Permit and landscaping in the right-of-way permit:
 - a Permits must be issued prior to any tree planting, pruning or removal.
 - b Failure to obtain a permit prior to installation of landscaping improvements will result in a fine and the possibility of removal of to date work.

7.10 Street Closures

- 1 Street closures are not permitted (City of Aspen Municipal Code 21.12.120). However, the Engineering Department may permit lane closures. When lane closures are permitted, the applicant must:
 - a Obtain approval for the closure on the dates specified by the permit with the Engineering Department, School District and the Roaring Fork Transit Authority (RFTA) at least one week in advance.
 - b Notify Aspen Communication Center at 920-5310 one day prior to closure and the time of re-opening.
 - c Set and maintain, at applicant's expense, necessary barricades, flashers, construction signs, and flaggers; and take all necessary precautions in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).
 - d Complete the work between 7:00a.m. - 7:00p.m., Monday through Saturday, unless otherwise approved by the Engineering Department for work activity outside the specified time frame.

7.11 Traffic Control

- 1 When it is necessary to close travel lanes or sidewalks and/or bike paths, the permittee shall submit traffic control plans, in compliance with the MUTCD, showing all work and including the following information:
 - a Each lane closure scenario, including work zones for locate testhole work.
 - b Lane configurations and access locations specific to the actual work zone.

- c Any upstream intersections within five hundred (500) feet of the work zone, showing all impacted inbound lanes to the intersection.
 - d Pedestrian route detours showing the nearest crossing intersections at each end of the work zone.
 - e Proposed hours of operation of each traffic control setup.
- 2 All traffic control plans shall be prepared under the supervision of a certified Work Site Traffic Control Supervisor. Documentation of certification shall be submitted with the traffic control plan(s).
- 3 Lane closures shall be permitted in the commercial core and Main Street corridor only between 9:00 a.m. and 3:00 p.m. Monday thru Friday.
- 4 When planning construction phasing and developing traffic control plans, the permittee shall make every effort to minimize the impact to the motoring public and maintain the capacity of the roadway system. The City Engineer may require that a traffic control plan be modified to comply with this requirement.
- 5 When the traffic control plan requires the modification of any traffic signal timing plans, the permittee shall notify the Colorado Department of Transportation (CDOT) to coordinate the re-timing of the signal. All costs associated with such work shall be borne by the permittee.
- 6 All signs and devices shall conform to the Manual on Uniform Traffic Control Devices. The devices and signs shall be clean, legible, properly mounted and meet a quality standard rating of "acceptable" per the requirements of American Traffic Safety Services Association (ATSSA) Quality Standard for Work Zone Traffic Control Devices. All signs and devices used for night operations shall meet the retro-reflective requirements of CDOT Standard Specifications Section 713.04.
- 7 No permittee shall block access to any private property, fire hydrant, fire station, utility structure, or any other emergency response equipment unless the permittee provides the City Engineer with written approval from the affected agency and/or property owner.
- 8 When necessary for public safety and when required by the City Engineer, the permittee shall employ flag persons, whom are certified, to control traffic around or through the work site.
- 9 The permittee shall be responsible for maintaining all work area signage and barricading required throughout the duration of work. During non-work hours, all signs that are not appropriate shall be removed, covered or turned around so that they do not face traffic.
- 10 Any deficiencies noted by the City Engineer or designee shall be corrected immediately by the permittee. If the permittee is not available or cannot be found, the City Engineer or designee may make the required corrections and charge the cost thereof to the permittee pursuant to Section 21.12.120 of the City of Aspen Municipal Code.

11 The proposed phasing of construction and length of the active work zone shall be submitted by the permittee to the City Engineer for review and approval. Permittees shall make every effort to minimize the impact to the use of the public right-of-way and adjacent properties. The City Engineer may require that the permittee modify the proposed construction phasing in order to minimize the impact during construction.

7.12 Pedestrian Access

- 1** Pedestrian ramps must be installed at intersections where new construction is occurring or whenever sidewalk, curb and gutter is being reconstructed.
- 2** Pedestrian ramps for streets with curb and gutter must be constructed at all intersections with sidewalks in accordance with this document.
- 3** Pedestrian corridors at street intersections having functional classification as Residential, Local, Collector, Arterial or any other heavily traveled corridor must have directional crossing ramps. Avoid design and placement of diagonal ramps.
- 4** Height of the curb in front of the ramp section must be depressed to flow line elevation (no lip). Bike path ramps follow the same design approach; the only change must be the width which will match the width of the bike path.
- 5** Pedestrian ramps and adjacent gutter must be poured monolithically.

7.13 Restricted Rights-of-Way

Those public rights-of-way in and around the streets listed on the hereto attached Exhibit E shall be subject to Section 21.12.090 of the City of Aspen Municipal Code.

Appendix A Checklists and Maps



CITY OF ASPEN ENGINEERING DEPARTMENT

Excavation Stabilization Requirements

All drawings must be 24 inches by 36 inches in size. All Excavation Stabilization Plans must be included in the permit sets. If excavation stabilization extends into ROW, an Earth Retention permit shall be required.

As an alternative to the use of stabilization elements (i.e., soil nails, etc.), stabilization may be achieved using the techniques outlined in **OSHA Regulations (Standards – 29 CFR), Sloping and Benching – 1926 Subpart P, App. B.**

The permit application needs to include an Excavation Stabilization Plan that has been prepared and stamped by a Colorado Professional Engineer (Refer to OSHA Department of Labor Sloping and Benching Requirements 1926 Subpart P Appendix B for guidance). This is a general list of **required information**. More information may be required, as each project is individually evaluated. The plan's objective is to reduce the likelihood that building excavations may damage adjacent properties or trees or cause road closures. This includes demonstrating that there will be no adverse effect (including potential deflection) on any adjacent properties.

- Extent of the excavation
- Cross section(s) of the excavation cut
- Spot elevations of the top and bottom of cuts
- Location of construction fences
- Site-specific construction drawings of excavation stabilization measures
- Necessary erosion control measures
- Location and depth of utilities located within 12 feet of the proposed system
- How service lines will be accommodated with the proposed system
- Monitoring plan for adjacent properties
- A depiction of the surcharge restricted areas (note restricted areas can not include alleys or areas receiving traffic)
- Plan must demonstrate a maximum deflection of .003 foot per foot of depth at the ROW. No deflection is permitted adjacent to private property unless permission is received from neighboring property.
- Stabilization utilizing the existing foundation system needs to account for additional bracing of the existing foundation being used
- Micropiles on property line shall be capped at existing grade
- Temporary shoring requires a minimum Factor of Safety of 1.3 and a minimum design life of 12 weeks
- If excavation will be phased, please provide an interim excavation/stabilization plan

Neighbor Notification

The Contractor must comply with the neighbor notification requirements stated in Section 3307 of the 2003 International Building Code.

Stabilization elements may be allowed in the ROW and are subject to Sec. 2.12.140 of the Aspen Municipal Code.

Stabilization elements (i.e., soil nails, etc.) are allowed in setbacks, but they must be covered.




CITY OF ASPEN ENGINEERING DEPARTMENT

Survey Checklist

- Title, Purpose and legal description at the top of the first page
- Survey performed or verified within the last 12 months.
- Surveyor's certificate stating that the error of closure is less than 1/15,000.
- Vicinity map showing the property surveyed in reference to nearby highway(s) or major street intersections (shown at a legible scale).
- Monuments placed (or a reference monument or witness to the corner) at all corners of the boundary of the property, unless already marked or referenced by an existing monument witness to the corner.
- Legend of symbols, scale, and north arrow.
- Overlaps and gores along the exterior of the boundaries.
- Legal description of property.
- Survey tied to City (City of Aspen, GPS Control Monumentation, dated 12-2-2009 on the Engineering website) monuments. Use 1988 NAVD datum.
- Existing building(s) locations and dimensions with ties.
- All improvements within five (5) feet extending beyond the property boundaries, including parking areas.
- Gross land area to the nearest thousandth of an acre.
- One (1) foot contours and the datum of the elevations.
- Basis of bearing tied to two City (City of Aspen GPS Control Monumentation, dated 12-2-2009 on the Engineering website) monuments and point of beginning graphically.
- Show all roads (edge of pavement as applicable), right-of-way, and distance to the nearest intersecting street if within 200 feet of property.
- Label easements and encroachments add reference numbers as applicable.
- Indication of access to a public right-of-way on land, such as curb cuts and driveways, and to and from waters adjoining the surveyed tract.
- List setbacks and building envelopes.
- Names of adjoining platted lands or subdivision names.

- Location, species, and trunk diameter of trees at four and a half (4 ½) feet from the ground, as well as the current extent of drip lines. Include neighboring trees whose driplines extend onto subject property.
- Natural hazards: Identify the areas that constitute natural hazard areas including but not limited to snow slide, avalanche, mudslide, and rockslide. References include the City on the 2001 Surface Drainage Master Plan and the 2009 Percent Slope Map. Differentiate and tabulate areas with slopes from 0%–20%, 20%–30%, 30%–40%, and areas with slopes greater than 40%.
- Flood zone designation (with proper annotation based on federal Flood Insurance Rate Maps or the state or local equivalent, by scaled map location and graphic plotting only.)
- Location of all utilities existing on or serving the surveyed property, as determined by observed evidence (including locates and potholing) and observed evidence together with evidence from plans obtained from utility companies or provided by the client, along with markings by utility companies and other appropriate sources (with reference as to the source of information).
- List all documents used in the survey with recording information.
- Label and delineate Public and Private roads.
- Ponds, ditches, spring and rivers.






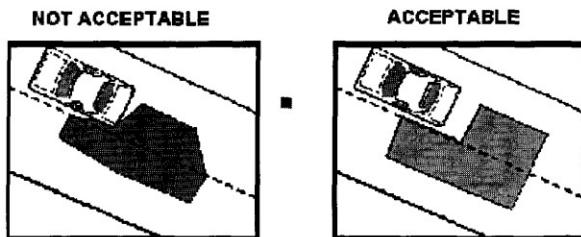
Exhibit A – City of Aspen Engineering Department Minimum Testing Requirements

ALL TESTING TO BE PERFORMED PER CURRENT CDOT STANDARDS

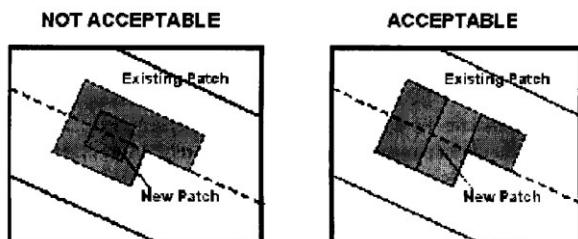
ITEM	TYPE OF TEST	MINIMUM FREQUENCY
All excavation backfill - gas, elec., water, storm & san. sewer, cable TV, phone, etc.	Moisture/Density (Compaction Test)	1 per 150 lineal ft., and within 2 ft. of all structures; minimum 2 tests per lift
Inlets/structures		
Concrete testing	Rebar Inspection Air and Slump Cylinders	Visual/Documentation 1st 3 loads, every 5 th load thereafter 1 set of 4 per 100 yds ³ , or fraction thereof
Soil testing	Moisture/Density (Compaction)	minimum 2 tests per lift
Sidewalk, Curb & Gutter		
Soil testing	Moisture/Density (Compaction)	1 per 150 lineal ft., minimum. 2 tests per lift
Concrete testing	Air and Slump Cylinders	First truck. Every 50 yds ³ after first truck. 1 set of 4 per 50 yds ³ , or fraction thereof
Roadway		
Subgrade testing	Moisture/Density (Compaction) Proof-roll	1 per 300 lane feet, min. 2 tests per lift All subgrade
Base course testing	Moisture/Density (Compaction) Gradation/Atterberg limits Proof-roll	1 per 300 lane feet, min. 2 test per lift 1 per 500 tons All base course
Concrete testing	Air and Slump Slump Cylinders	1 st 3 loads, if pass, 1 per 50yds ³ Every load 1 set of 4 per 50 yds ³ , or fraction thereof
Asphalt testing	Density Extraction/Gradation, Marshall Cores for thickness/density	1 per 300 lane feet, min. 2 tests per lift 1 per 500 tons As directed by the City only, if directed then 3 per 1000 lane feet, or fraction thereof.

Exhibit B - Approach to Street Repairs

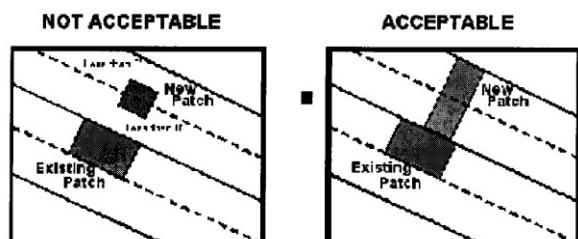
Existing pavements should be removed to clean, straight lines parallel and perpendicular to the flow of traffic. Do not construct patches with angled sides and irregular shapes. If the extent of the patch falls within the wheel path, the patch shall extend to the full width of the lane.



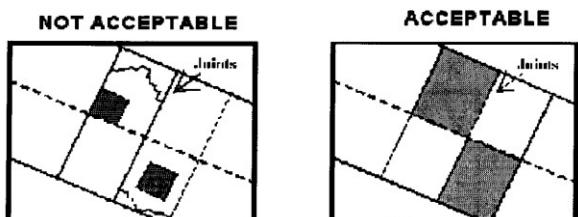
Avoid patches within existing patches. If this cannot be avoided, make the boundaries of the patches coincide.



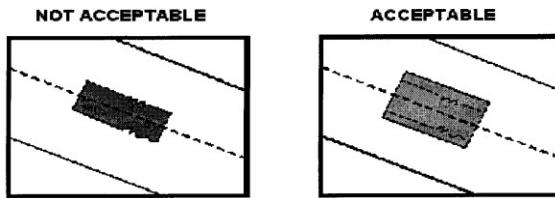
Do not "leave" strips of pavement less than one-half ($\frac{1}{2}$) a lane in width from the edge of the new patch to the edge of an existing patch or the lip of the gutter.



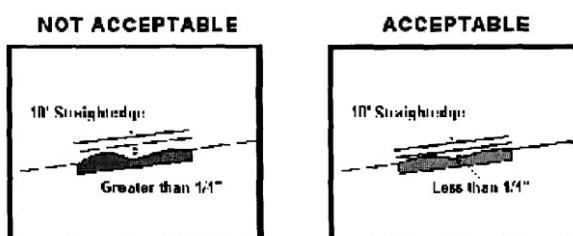
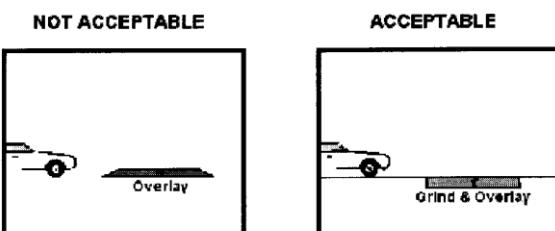
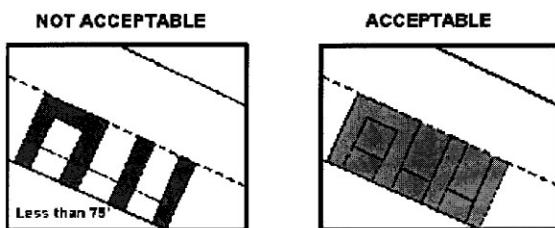
In concrete pavements, remove sections to existing joints in the case of concrete in good repair. In damaged concrete, the limits of removal should be determined in the field by a representative of the City Engineer.



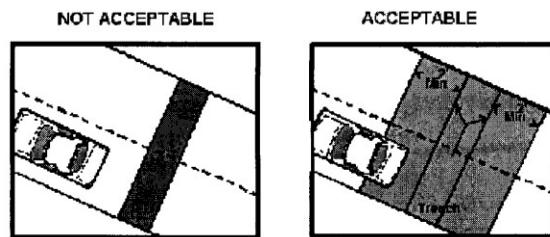
Asphalt and concrete pavements should be removed by saw cutting or grinding. Avoid breaking away the edges of the existing pavement or damaging the remaining pavement with heavy construction equipment.



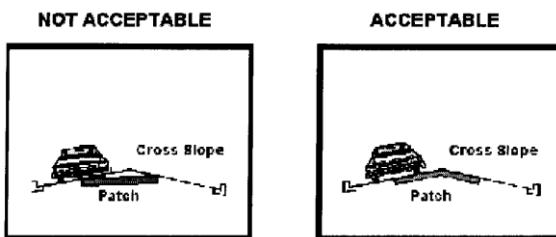
In the case of a series of patches or patches for service lines off a main trench, repair the pavement over the patches by grinding and overlay when the spacing between the patches is less than 75 feet (in cases where the existing pavement is in poor condition and may require overlay within the next few years, this requirement may be modified or waived by the City Engineer).



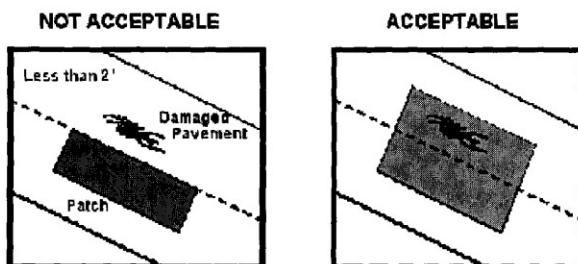
Transverse patches on arterial and collector streets shall be overlaid across the entire street width for a distance of two (2) feet minimum on all sides of the trench.



Patches should have a smooth longitudinal grade consistent with the existing roadway. Patches should also have a cross-slope or cross-section consistent with the design of the existing roadway.



When the proposed excavation falls within ten (10) feet of a section of failed pavement, the failed area shall be removed to sound pavement and patched.



Avoid frequent changes in width of patches. For future maintenance, this simplifies removal of adjacent pavement failures.

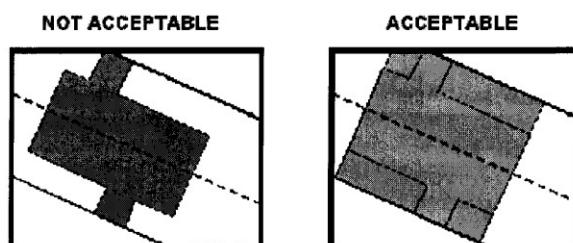


Exhibit C – Vehicle Track Diagram

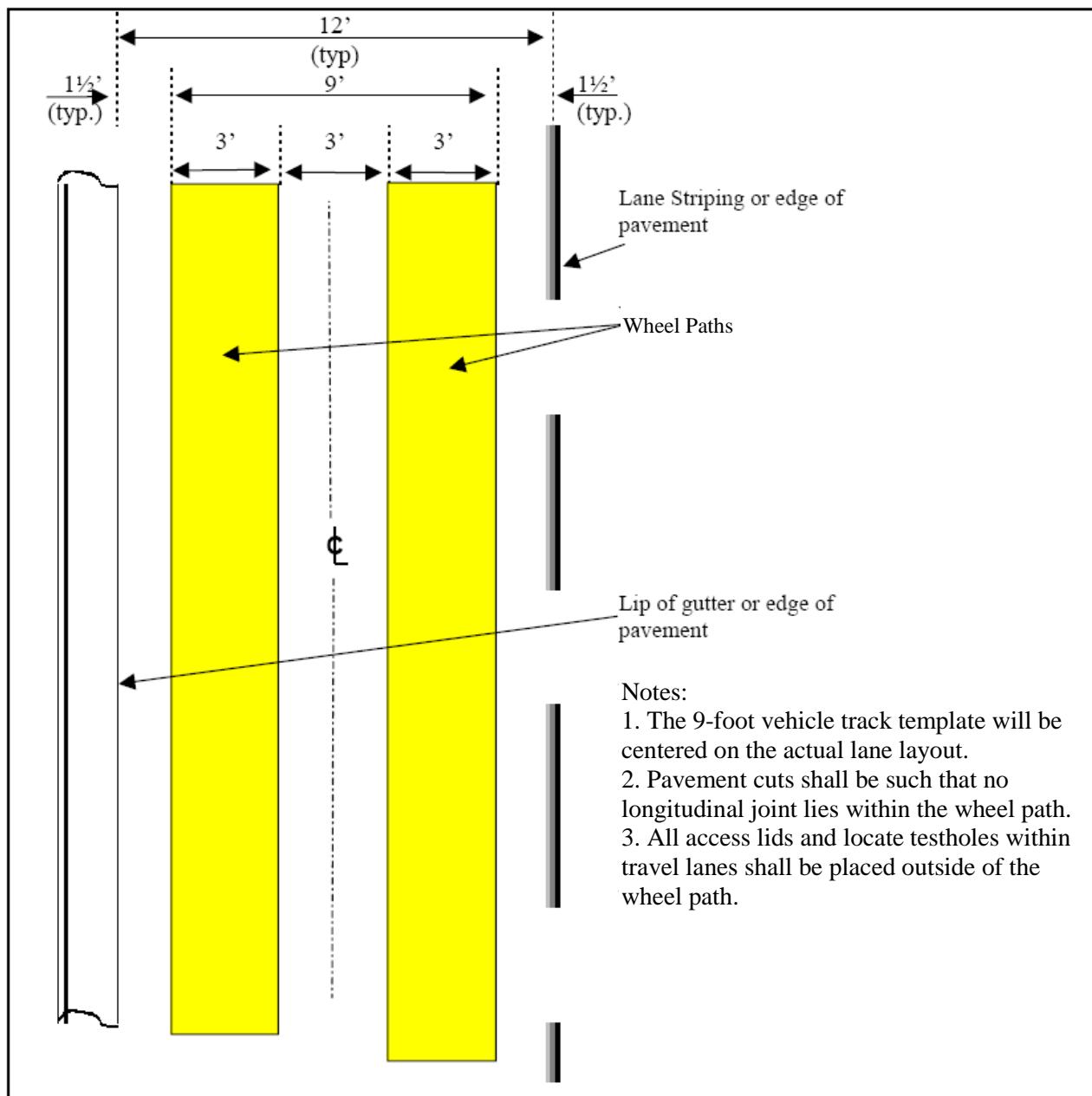


Exhibit D - Traffic Control Plan – Example

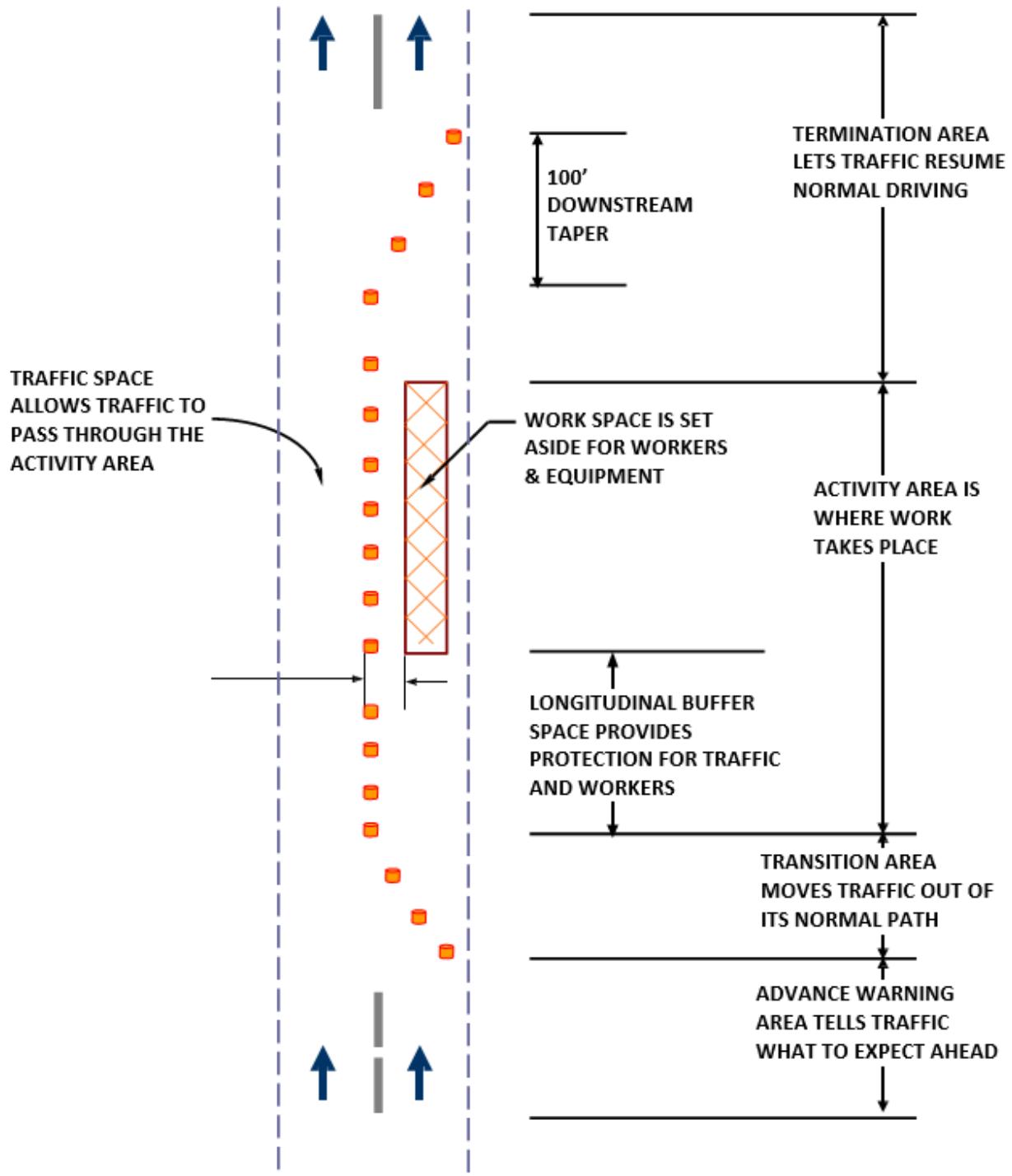


Exhibit E - Restricted Rights-of-Way

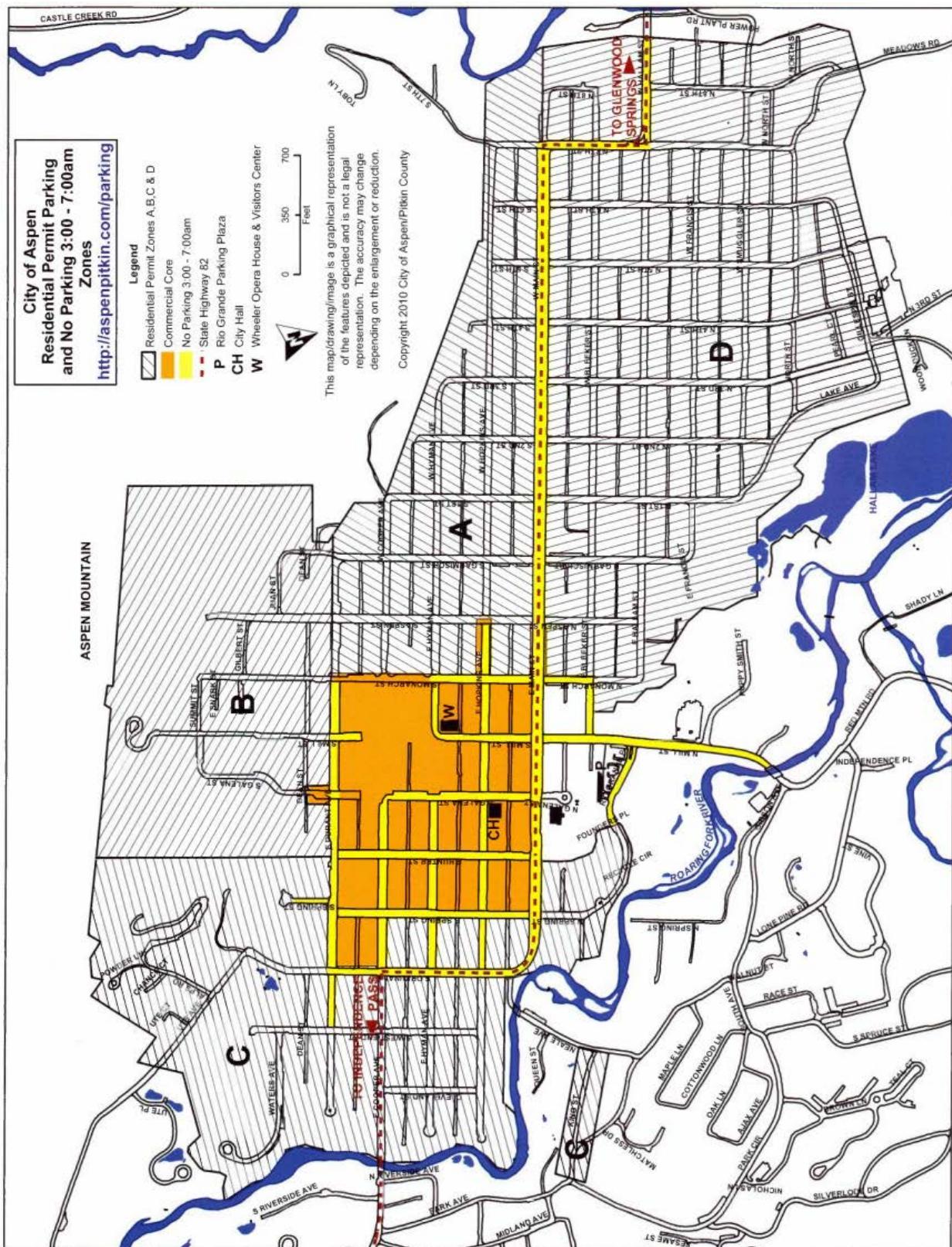


Exhibit F - Minimum Street Sections*

STREET FUNCTIONAL CLASSIFICATION	FULL DEPTH SECTION (DEEP STRENGTH PAVEMENT)	COMPOSITE SECTION (MINIMUM PAVING SECTION)
- ALLEYWAY - COMMON ACCESS - PAVEMENT APRON	4 INCH CDOT SX MIX (2 INCH BASE LIFT + 2 INCH TOP LIFT) ON WELL COMPACTED, NON-EXPANSIVE BASE MATERIAL	3 INCH CDOT SX MIX (SINGLE LIFT) ON WELL COMPACTED, NON-EXPANSIVE BASE MATERIAL
- RESIDENTIAL	5 INCH CDOT SX MIX (3 INCH BASE LIFT + 2 INCH TOP LIFT) ON 6 INCHES OF SCARIFIED & RECOMPACTED, NON-EXPANSIVE BASE MATERIAL	4 INCH CDOT SX MIX (2 INCH BASE LIFT + 2 INCH TOP LIFT) ON 6 INCH LIFT OF COMPACTED CDOT CLASS 6 ROAD BASE OVER NON-EXPANSIVE SUB-BASE MATERIAL
- COLLECTOR - LOCAL	5 INCH CDOT SX MIX (3 INCH BASE LIFT + 2 INCH TOP LIFT) ON 8 INCHES OF SCARIFIED & RECOMPACTED, NON-EXPANSIVE BASE MATERIAL	4 INCH CDOT SX MIX (2 INCH BASE LIFT + 2 INCH TOP LIFT) ON 6 INCH LIFT OF COMPACTED CDOT CLASS 6 ROAD BASE OVER NON-EXPANSIVE SUB-BASE MATERIAL
- ARTERIAL	6.5 INCH CDOT SX MIX (4 INCH BASE LIFT + 2.5 INCH TOP LIFT) ON 2 INCH LIFT OF SCARIFIED & RECOMPACTED, NON-EXPANSIVE EXISTING BASE MATERIAL	5 INCH CDOT SX MIX (3 INCH BASE LIFT + 2 INCH TOP LIFT) ON 10 INCH LIFT OF IMPORTED AND COMPACTED CDOT CLASS 6 ROAD BASE OVER NON-EXPANSIVE SUB-BASE MATERIAL

**This table does not apply to trenches in the roadway. For the Trench and T-top Patch detail, see Appendix C, detail 207A.*

Appendix C Details

Sheet Number

<u>Title</u>
ENG - 100
ENG - 101A
ENG - 101B
ENG - 101C
ENG - 201A
ENG - 201B
ENG - 202A
ENG - 202B
ENG - 202C
ENG - 202D
ENG - 202E
ENG - 202F
ENG - 202G
ENG - 202H
ENG - 202I
ENG - 202J
ENG - 203A
ENG - 203B
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ENG - 205B
ENG - 206
ENG - 207A
ENG - 207B
ENG - 207C
ENG - 301A
ENG - 301B
ENG - 302A
ENG - 302B
ENG - 303A
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SYMBOL LEGEND
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MOUNTABLE CURB AND GUTTER DETAILS
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BI-DIRECTIONAL RAMP FOR WIDE (>8') ATTACHED SIDEWALK
BI-DIRECTIONAL RAMP FOR NARROW (<8') ATTACHED SIDEWALK - OPTION 1
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DETECABLE WARNING PAD DETAILS
ALLEY/DRIVEWAY RAMP DESIGN FOR ATTACHED SIDEWALK
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CROSSSPAN WITH CURB RETURNS
DETACHED SIDEWALK DETAILS
MULTI-USE TRAIL DETAIL
CURB CUT LAYOUT DETAILS
LOCAL/RESIDENTIAL/COMMERCIAL STREET CROSS SECTION (W/ C&G)
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SINGLE FIXTURE LIGHT POLE DETAIL
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SILVA CELL DETAIL (TREE PLANTING ADJACENT TO SIDEWALK, STREET & LS)
FLOATING SIDEWALK DETAIL

INDEX OF SHEETS

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS #ENG - 100	REVISIONS	
			DATE	COMMENTS

AAC = Aluminum Arch Culvert
ABC = Aggregate Base Course
ACM = Asbestos Containing Material
ACP = Asbestos Cement Pipe
ADA = Americanc w/ Disabilities Act
ADT = Avg. Daily Trips
Alt = Alternate
APWA = Amr. Public Works Assoc.
ASD = Allowable Stress Design
ATB = Asphalt Treated Base
BM = Benchmark
Bbl = Barrels
BLM = Bureau of Land Management
BMP = Best Management Practices
BT = Begin Transition
BVCE = Beginning Vertical Curve
Elevation
BVCS = Beginning Vertical Curve
Station
CL = Centerline
C&G = Curb and Gutter
CBC = Concrete Box Culvert
CF = Cubic Feet
CFS = Cubic Feet per Second
CIP = Cast in Place
CLOMR = Conditional Letter of
Mapping Revision
COM = Communications
Conc = Concrete
CMP = Corrugated Metal Pipe
CMU = Concrete Masonary Unit
CPE = Corrugated Polyethelyene Pipe
CSP = Corrugated Steel Pipe
CTB = Cement Treated Base
CY = Cubic Yard
dB = Decibels
Deg, ° = Degrees
DHV = Design Hour Volume
Dia = Diameter
D.I.P. or DIP = Ductile Iron Pipe
DOW = Division of Wildlife
DTM = Digital Terrain Model
DWG = Drawing
EA = Environmental Assessment
EB = East Bound
EG = Existing Grade
ELEV = Elevation
EOC = Edge of Concrete
EOP = Edge of Pavement
EPA = Enviro. Protection Agency
ES = Electric Service
Est = Estimate
EVCE = End Vertical Curve Elev. EVCS
End Vertical Curve Station
Ex or Exist = Existing
Ext = Exterior
FAA = Federal Aviation Admin.
FEMA = Federal Emer. Manag. Agency
FES = Flared End Section
FG = Finished Grade
FH = Fire Hydrant
FL = Flowline
FPS = Feet per Second
Ft = Feet
G= Gas
Gal = Gallons
Galv = Galvanized

GB = Grade Break	PI = Point of Intersection
GIS = Geographical Infor. System	PM = Project Manager
GPM = Gallons per Minute	POC = Point on Curve
GPS = Global Positioning System	POT = Point on Tangent
GS = Gas Service	PRC = Point of Reverse Curve
GSP = Galvanized Steel Pipe	Prop = Proposed
GV = Gate Valve	PRV = Pressure Reducing Valve
HAZMAT = Hazardous Materials	psf = Pounds per square feet
HCL = Horizontal Control Line	psi = pounds per square inch
HDPE = High Density Polyethylene	PT = Point of Tangency
HMA = Hot Mixed Asphalt	P.U.D. = Planned Unit Development
HORIZ = Horizontal	PVC = Polyvinyl Chloride
HOV = High Occupancy Vehicle	PVI = Point of Vertical Intersection
HP = High Point	PVT = Point of Vertical Tangency
Hyd = Hydrant	Q = Peak Discharge
Hwy = Highway	QA/QC = Quality Assurance/Quality
ID = Inside Diameter	Control
Int = Intersection	Qty = Quantity
Inv = Invert	RAD = Radius
IP = Inlet Protection	RCP = Reinforced Concrete Pipe
JB = Junction Box	RFTA = Roaring Fork Transit Authority
Kip = Thousand Pounds	R.O.W. or ROW = Right of Way
KW = Kilowatt	RSS = Reinforced Soil Slope
L = Length	SAC = Steel Arch Culvert
Lb = Pounds	San = Sanitary
Lb/Ft = Pounds per Foot	SB = South Bound
LEED = Leadership in Energy and Envir.	SCF = Sediment Control Fence
Design	SDR = Standard Dimension Ratio
LF = Linear Foot	SA = Sanitary Sewer and/or Sewer Service
LOMR = Letter of Mapping Revision	SS = Storm Sewer
LPFM = Low Pressure Force Main	SSMH = Sanitary Sewer Manhole
LP = Low Point	Sta = Station
LS = Lump Sum	STBK = Setback
LT = Light Pole	SW = Sidewalk
LTB = Lime Treated Base	SY = Square Yards
Lum = Lumen	sym = Symmetrical
m = Meters	TAN = Tangent
Max = Maximum	TBC = Top Back of Curb
MH = Manhole	TBLK = Thrust Block
MISC = Miscellaneous	TCP = Traffic Control Plan
MP = Mile Post	Temp = Temporary
MPH = Miles per Hour	Typ = Typical
MW = Monitoring Well	UCTV = Underground Cable Television
MUTCD = Manual on Uniform Traffic	UE = Underground Electric
Control Devices	USACE = US Army Corps of Engineers
NAVD = North American Vertical Datum	USGS = US Geological Survey
NB = North Bound	VC = Vertical Curve
NEPA = National Enviro. Policy Act	VCP = Vitrified Clay Pipe
NFPA = National Fire Protection Association	VTC = Vehicle Tracking Control
NGVD = National Geodetic Vert. Datum	W = Water
1929	WB = West Bound
NIP = Nail in Place	WL = Water Line
No., # = Number	WS = Water Service
NPDES = National Pollutant Discharge	WQCD = Water Quality Control Division
Elimination System	WS = Water Surface
NTP = Notice to Proceed	yd = Yard
N.T.S. = Not to Scale	
OC = On Center	
OD = Outside Diameter	
OP = Outlet Protection	
PC = Point of Curvature	
PCC = Point of Compound Curvature	
Ped = Pedestrian	

ABBREVIATION LEGEND



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

CITY OF ASPEN STANDARD DETAILS

#:ENG - 101A

Existing Conditions

Minor Index Contour	—————
Major Index Contour	—————
Right-of-Way	—————
Easement	—————
Building Envelope	—————
Centerline	—————
Fence	— X — X — X — X —
Sanitary Sewer Line (Green)	— XSA — XSA — XSA —
Water Line (Blue)	— XWL — XWL — XWL —
Storm Sewer Line (Green)	— XSS — XSS — XSS —
Gas Line (Yellow)	— XGAS — XGAS — XGAS —
High Pressure Gas Line (Yellow)	— XGAS — HP —
Underground Electric (Red)	— XEL — XEL — XEL —
Overhead Electric (Red)	— XOE — XOE — XOE —
Cable TV	— XTV — XTV — XTV —
Electric, Telephone, Cable	— XETC — XETC — XETC —
Elec, Tele, Cable, Gas	— XETCG — XETCG —
Irrigation Pipe (Purple)	— XIRR — XIRR — XIRR —
Phone (Orange)	— XUT — XUT — XUT —
Fiber Optics (Orange)	— XFO — XFO — XFO —
Swale, Ditch or Small Stream	— . . . → — . . . → — . . . → —
Zone of Influence	— ZOI — ZOI — ZOI —
Top of Slope	— TOS — TOS — TOS —
15' Setback	— 15' STBK — 15' STBK —

Proposed Conditions

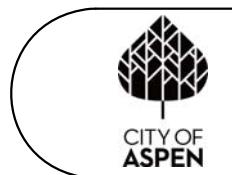
Minor Index Contour	—
Major Index Contour	—
Right-of-Way	—
Easement	—
Building Envelope	—
Centerline	—
Fence	— X — X — X — X —
Sanitary Sewer Line (Green)	— SA — SA — SA —
Sanitary Sewer W/M&S*	— 12"XXX — SA —
Water Line (Blue)	— WL — WL — WL —
Water Line W/M&S*	— 12"XXX — WL —
Storm Sewer Line (Green)	— SS — SS — SS —
Storm Sewer Line W/M&S*	— 12"XXX — SS —
Gas Line (Yellow)	— GAS — GAS — GAS —
Gas Line W/M&S*	— 2"XXX — GAS —
High Pressure Gas Line (Yellow)	— GAS — GAS — GAS —
Underground Electric (Red)	— UEL — UEL — UEL —
Overhead Electric (Red)	— OEL — OEL — OEL —
Cable TV	— UTV — UTV — UTV —
Electric, Telephone, Cable	— ETC — ETC — ETC —
Elec., Tele, Cable, Gas	— ETCG — ETCG — ETCG —
Irrigation Pipe (Purple)	— IRR — IRR — IRR —
Phone (Orange)	— TEL — TEL — TEL —
Swale, Ditch or Small Stream	— . . . → — . . . → — . . . → —
Fiber Optics (Orange)	— FO — FO — FO —

Linetype Notes:

1. Water, Sewer, Storm Drain and Irrigation Mains and Services to have proper pipe sizes and materials referenced in the linetype.
2. Complete linetype file is available through the City of Aspen Engineering Department.
3. All linetypes depicting existing features shall be shaded. Utilities shall additionally meet UNCC color coding requirements.

*Material and Size

LINETYPE LEGEND



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

CREATION DATE: 11/01/13

CITY OF ASPEN STANDARD DETAILS

#:ENG - 101B

LAST MODIFICATION DATE:

INITIALS:

Water Symbols

Existing	Proposed	Description
		Fire Hydrant
		Water Meter
		Gate Valve
		Butterfly Valve
		Air Relief Valve
		Tee
		Cross
		22-1/2° Bend
		45° Bend
		90° Bend
		Reducer
		Plug
		Sleeve
		Thrustblock

Sanitary Sewer / Storm Drain Symbols

Existing	Proposed	Description
○	●	Manhole
○	●	Clean Out
└	┘	Wye Branch
----	----	San. Sew. Crossing
→	→	Flared End Section

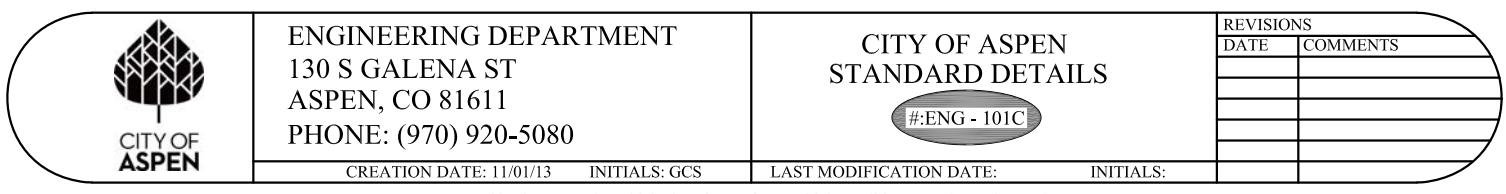
Dry Utility & Traffic Symbols

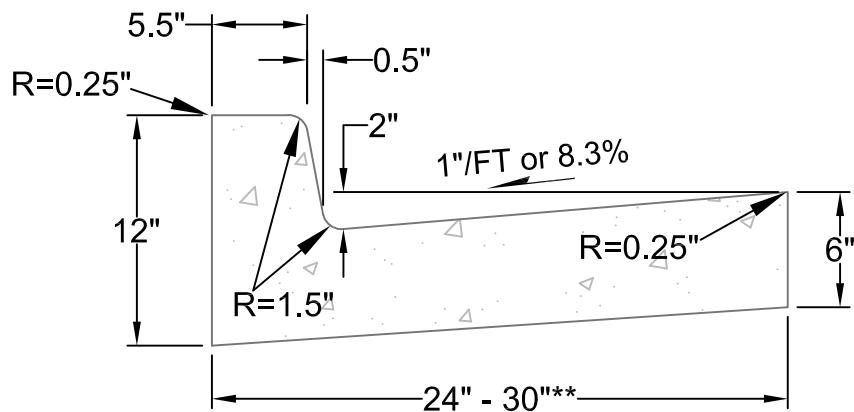
Existing	Proposed	Description
		Telephone Riser
		Transformer Box
		Signal Controller
		Street Light
		Light Post
		Utility Guy Wire
		Power Pole
		Mast Arm
		Traffic Flow Arrow
		Handicap
		Bike Lane
		Bus Pad
		Sign 1
		Sign2
		Mailbox

Subsurface/Surface Symbols

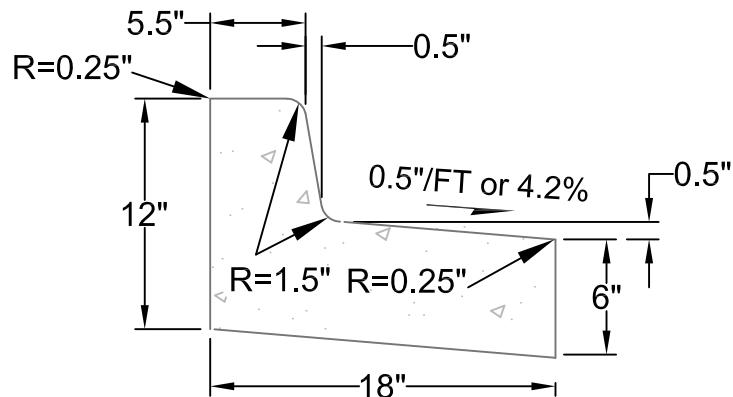
Symbol	Description
	Bedding
	Riprap
	Grade
	Spot Grade
	Asphalt
	Gravel Path
	Concrete
	Deciduous Trees
	Coniferous Trees
	Bushes
	Embankment
	Wetlands
	Grass
	Benchmark
	Survey Control Point
	Property Pin
	Test Hole

SYMBOL LEGEND





BARRIER CURB & GUTTER - TYPE A
(Catch Type for Typical Edge of Street)



BARRIER CURB & GUTTER - TYPE B
(Spill Type for Raised Medians)

Note: Concrete must conform to CDOT Class "D" (minimum 28-day compressive strength of 4500 psi). 80% of this strength must be gained in the first 7 days.

**Width of Curb and Gutter dependent on designated location for installation

BARRIER CURB AND GUTTER DETAILS



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

CREATION DATE: 11/01/13 INITIALS: GCS

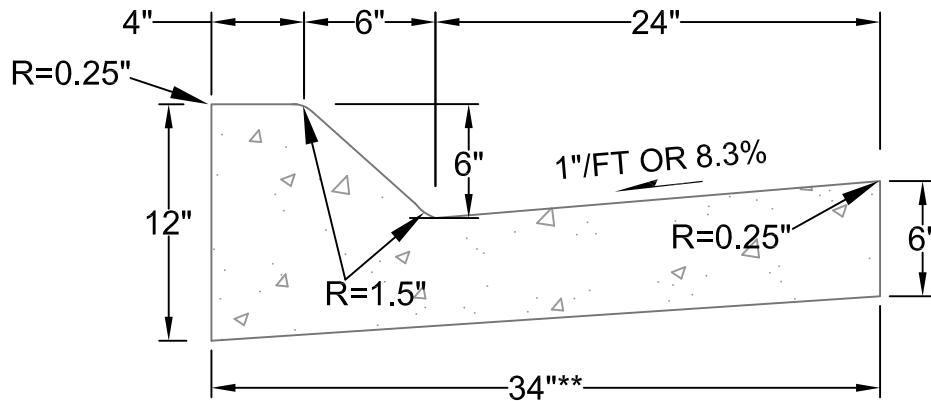
CITY OF ASPEN
STANDARD DETAILS

#:ENG - 201A

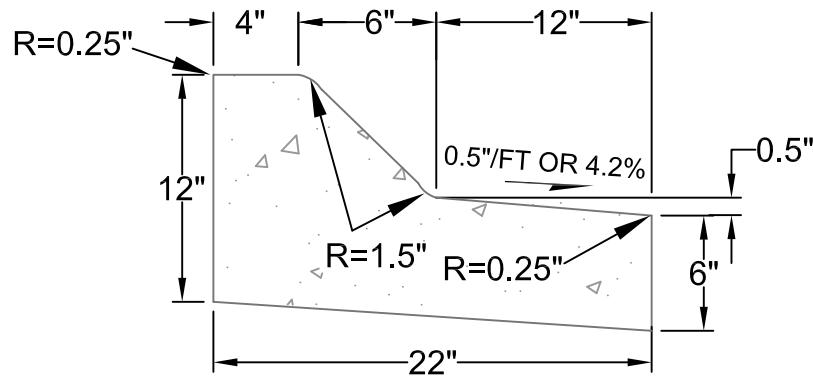
LAST MODIFICATION DATE: 2/20/18

INITIALS: JAD

REVISIONS	
DATE	COMMENTS
XX/XX/XX	



MOUNTABLE CURB & GUTTER - TYPE A
(Catch Type for Typical Edge of Street)



MOUNTABLE CURB & GUTTER - TYPE B
(Spill Type for Raised Medians)

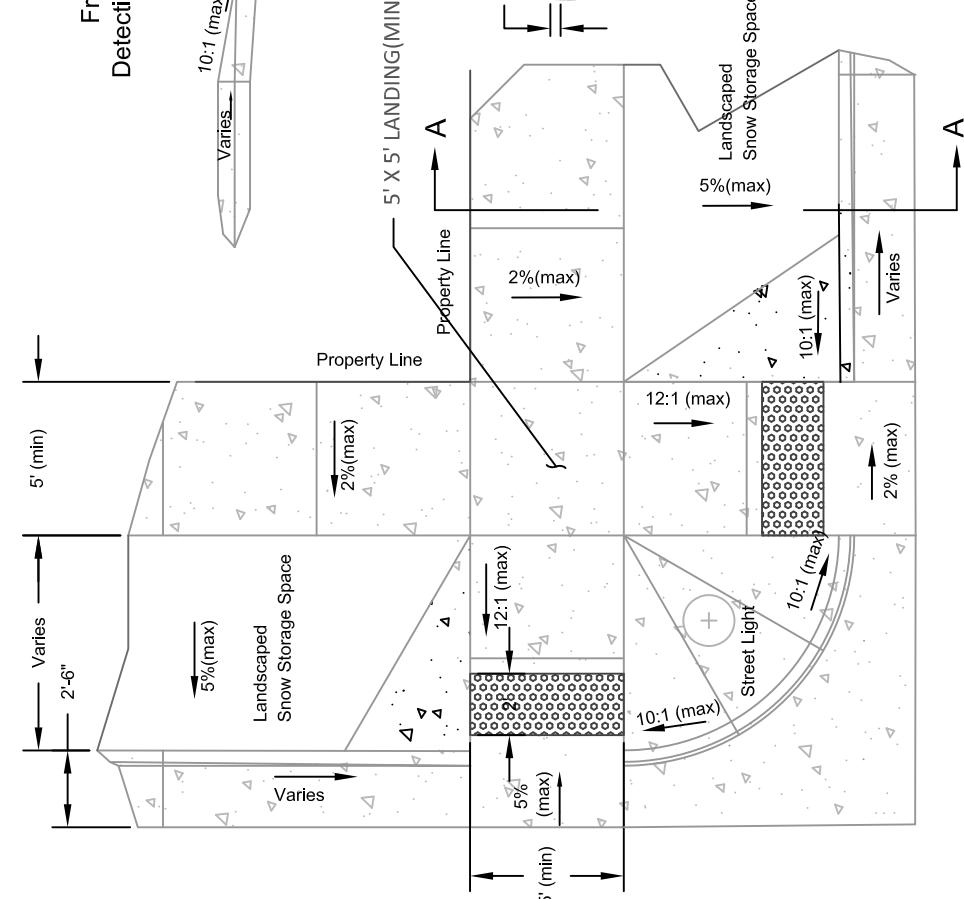
Note: Concrete must conform to CDOT Class "D" (minimum 28-day compressive strength of 4500 psi). 80% of this strength must be gained in the first 7 days.

**Width of Curb and Gutter dependent on designated location for installation

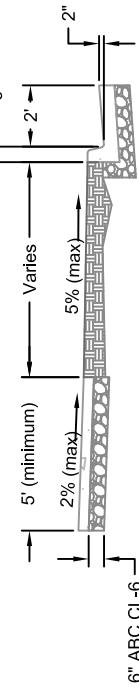
MOUNTABLE CURB AND GUTTER DETAILS

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;"> #:ENG - 201B </div>	REVISIONS <table border="1"> <tr> <th>DATE</th><th>COMMENTS</th></tr> <tr> <td>XX/XX/XX</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </table>	DATE	COMMENTS	XX/XX/XX											
DATE	COMMENTS																
XX/XX/XX																	
CREATION DATE: 11/01/13 INITIALS: GCS	LAST MODIFICATION DATE: 03/20/18 INITIALS: JAD																

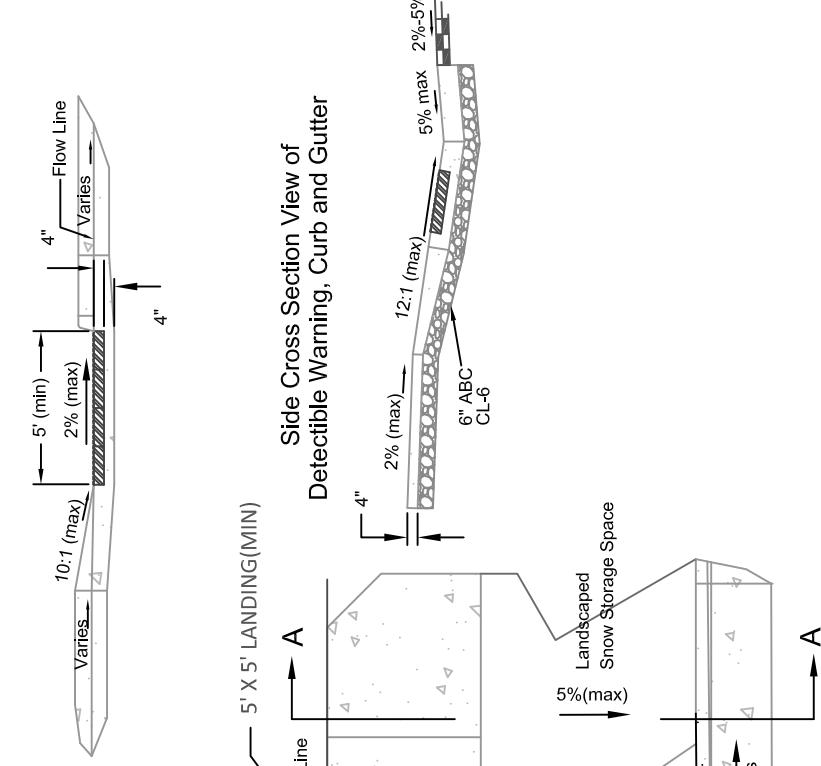
Plan:



Section A - A



Front Cross Section View of
Detectable Warning, Curb and Gutter



Notes:

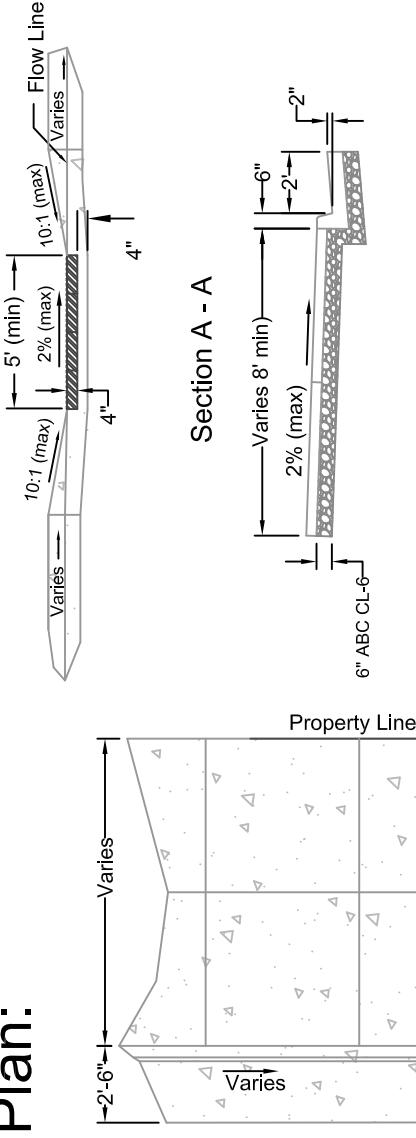
1. The rate of change of grade between the gutter and the ramp shall not exceed 11% over a 2 foot interval
2. Cross slope shall not exceed 2% and adequate drainage shall be maintained
3. Attached ramp details may only be used where attached sidewalk currently exists or where detached ramps are unfeasible (to be determined by the city engineer)
4. Street light installation locations shall be confirmed with COA electric and streets department prior to installation
5. Detectable warning pad shall be placed 0-2 inches behind back of curb
6. Concrete conforming to CDOT class "D" shall be used for all flatwork construction. all sidewalks shall have a minimum thickness of 4 inches
7. Base for flatwork shall be a minimum of 6 inches CDOT ABC CL-6, compacted to 95% of modified proctor density within 2% of optimum moisture using ASTM D-1557 method "C" or 3/4" crushed screened rock. Sub base shall be scarified and compacted
8. Coarse broom finish shall be provided and compacted
9. Inlets may be required to minimize ponding at ramps. City of Aspen Engineering Department to determine if construction of inlet(s) adjacent to pedestrian ramp(s) may be necessary
10. See standard detail 201A - 203A for details associated with sidewalk and curb and gutter installation
11. See standard detail 202G for details associated with detectable warning
12. Deeproot UB-8-2 root barrier shall be installed along sidewalk edge when planting trees adjacent to sidewalk.
13. Curb returns may be installed where conflicts with infrastructure exist.
14. ADA ramps and adjacent gutter must be poured monolithically.
15. Height of the curb in front of the ramp section must be depressed to flow line elevation (no lip).
16. The height of the curb at the corner should not exceed 3/4"

BI-DIRECTIONAL DETACHED SIDEWALK

CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS #ENG - 202A	REVISIONS	
			DATE	COMMENTS
CREATION DATE: 11/01/13	INITIALS: GGS	LAST MODIFICATION DATE: 3/20/18	INITIALS: JAD	xx/xx/xx

Plan:

Front Cross Section View of Detectible Warning, Curb and Gutter



Notes:

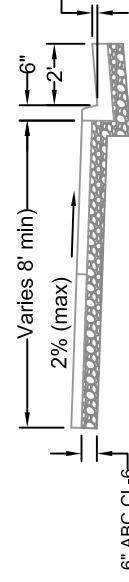
1. The rate of change of grade between the gutter and the ramp shall not exceed 11% over a 2 foot interval
2. Cross slope shall not exceed 2% and adequate drainage shall be maintained

3. Attached ramp details may only be used where attached sidewalk currently exists or where detached ramps are unfeasible (to be determined by the city engineer)
4. Street light installation locations shall be confirmed with COA electric and streets department prior to installation
5. Detectable warning pad shall be placed 0.2 inches behind back of curb

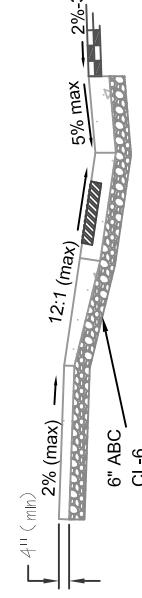
6. Concrete conforming to CDOT class "D" shall be used for all flatwork construction. All sidewalks shall have a minimum thickness of 4 inches
7. Base for flatwork shall be a minimum of 6 inches CDOT ABC CL-6, compacted to 95% of modified proctor density within 2% of optimum moisture using ASTM D-1557 method "C" or 3/4" crushed screened rock. Sub base shall be scarified and compacted
8. Coarse broom finish shall be provided perpendicular to the direction of pedestrian travel on sidewalk and ramps and perpendicular to the direction of water flow on curb and gutter
9. Inlets may be required to minimize ponding at ramps. City of Aspen Engineering Department to determine if construction of inlet(s) adjacent to pedestrian ramp(s) may be necessary

10. See standard detail 201A - 203A for details associated with sidewalk and curb and gutter installation
11. See standard detail 202G for details associated with detectable warning
12. Deeproot UB18-2 root barrier shall be installed along sidewalk edge when planting trees adjacent to sidewalk.
13. Attached sidewalks are not permitted. This detail is provided for properties which have obtained an approved variance for an attached sidewalk.
14. Curb returns may be installed where conflicts with infrastructure exist.
15. ADA ramps and adjacent gutter must be poured monolithically.
16. Height of the curb in front of the ramp section must be depressed to flow line elevation (no lip).
17. The height of the curb at the corner should not exceed 3/4"

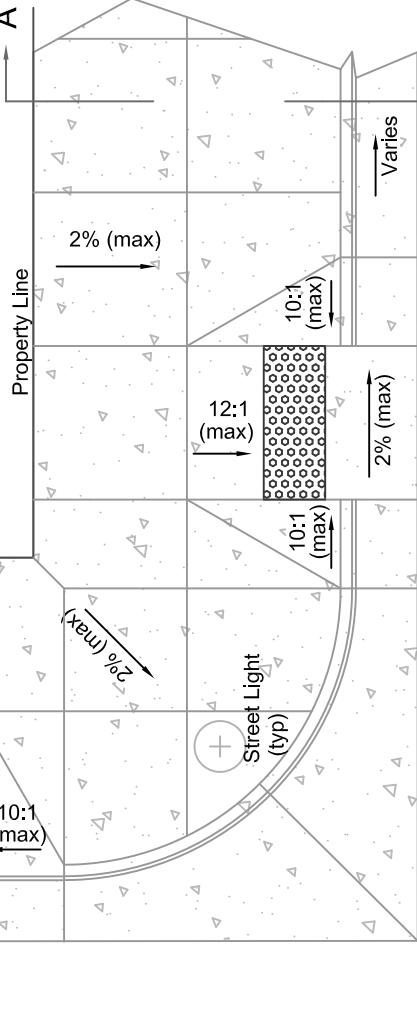
Section A-A



Side Cross Section View of Detectible Warning, Curb and Gutter



Property Line



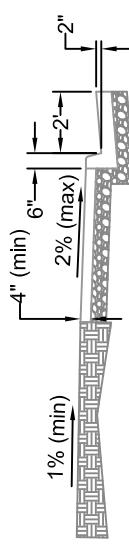
BI-DIRECTIONAL RAMP FOR WIDE (>8") ATTACHED SIDEWALK

CITY OF ASPEN STANDARD DETAILS	CITY OF ASPEN STANDARD DETAILS	REVISIONS	
		DATE	COMMENTS
#ENG - 202B	xx/xx/xx		
CREATION DATE: 11/01/13	INITIALS: GGS	LAST MODIFICATION DATE: 03/20/18	INITIALS: JAD

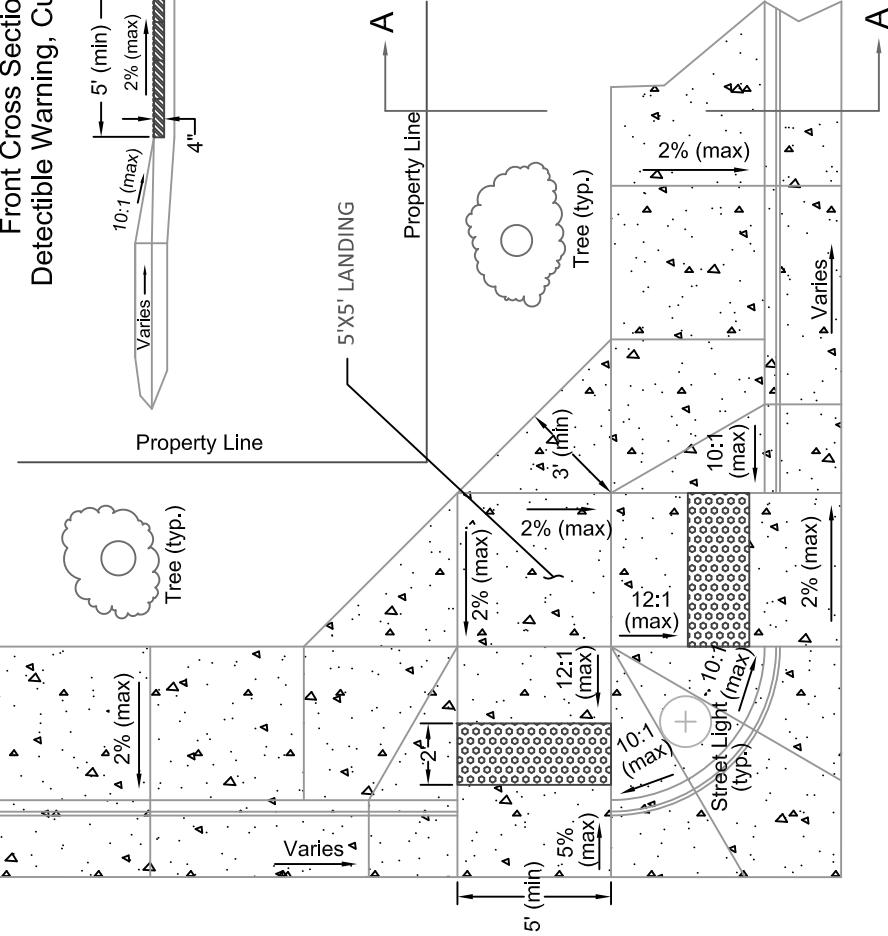
Plan:

Section A - A

Side Cross Section View of Detachable Warning Club and Glitter



Front Cross Section View of Detectible Warning, Curb and Gutter

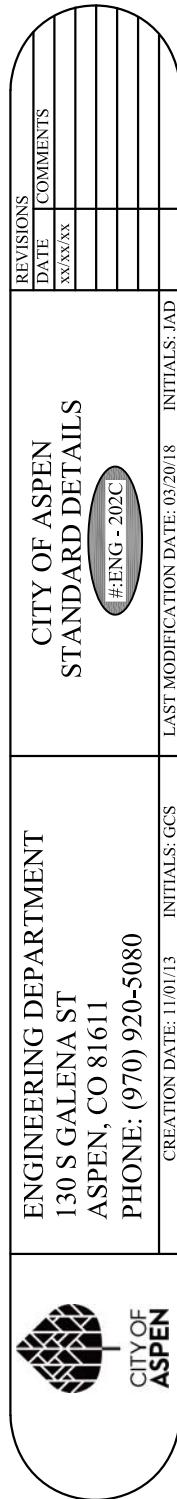


Notes:

Notes:

1. The rate of change of grade between the gutter and the ramp shall not exceed 11% over a 2 foot interval
2. Cross slope shall not exceed 2% and adequate drainage shall be maintained
3. Attached ramp details may only be used where attached sidewalk currently exists or where detached ramps are unfeasible (to be determined by the city engineer)
4. Street light installation locations shall be confirmed with COA electric and streets department prior to installation
5. Detectable warning pad shall be placed 0-2 inches behind back of curb
6. Concrete conforming to CDOT class "D" shall be used for all flatwork construction. All sidewalks shall have a minimum thickness of 4 inches
7. Base for flatwork shall be a minimum of 6 inches CDOT ABC CL-6, compacted to 95% of modified proctor density within 2% of optimum moisture using ASTM D-1557 method "C" or $3/4"$ crushed screened rock. Sub base shall be scarified and compacted
8. Coarse broom finish shall be provided perpendicular to the direction of pedestrian travel on sidewalk and ramps and perpendicular to the direction of water flow on curb and gutter
9. Inlets may be required to minimize ponding at ramps. City of Aspen Engineering Department to determine if construction of inlet(s) adjacent to pedestrian ramp(s) may be necessary
10. See standard detail 201A - 203A for details associated with sidewalk and curb and gutter installation
11. See standard detail 202G for details associated with detectable warning
12. Deerroot UB18-2 root barrier shall be installed along sidewalk edge when planting trees adjacent to sidewalk.
13. Attached sidewalks are not permitted. This detail is provided for properties which have obtained an approved variance for an attached sidewalk.
14. Curb returns may be installed where conflicts with infrastructure exist.
15. ADA ramps and adjacent gutter must be poured monolithically.
16. Height of the curb in front of the ramp section must be depressed to flow line elevation (no lip).
17. The height of the curb at the corner should not exceed $3/4"$

NARROW (<8') ALIACHED SIDEWALK
OPTION 1



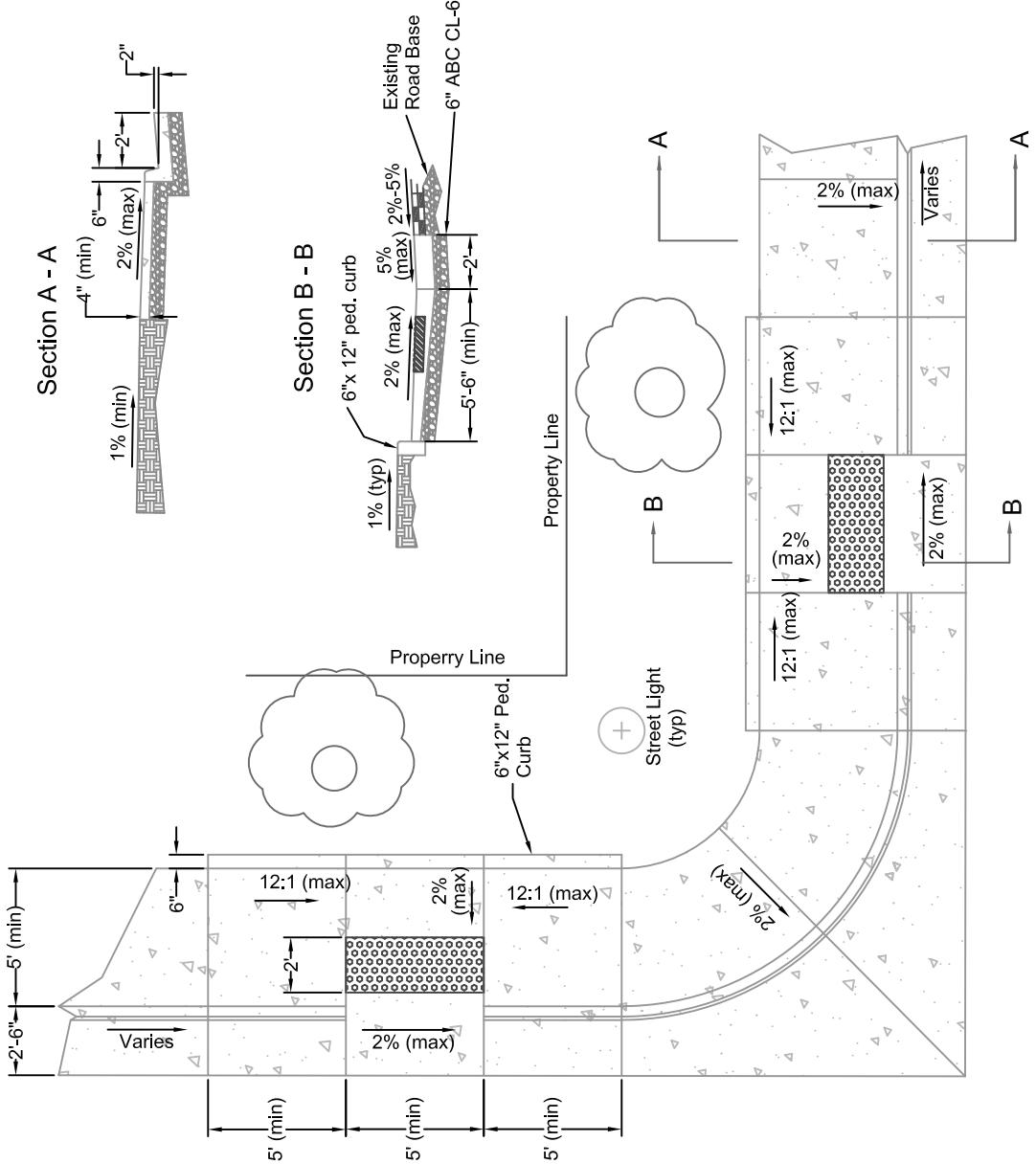
ENGINEERING DEPARTMENT
130 S GALLENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

CITY OF ASPEN
STANDARD DETAILS

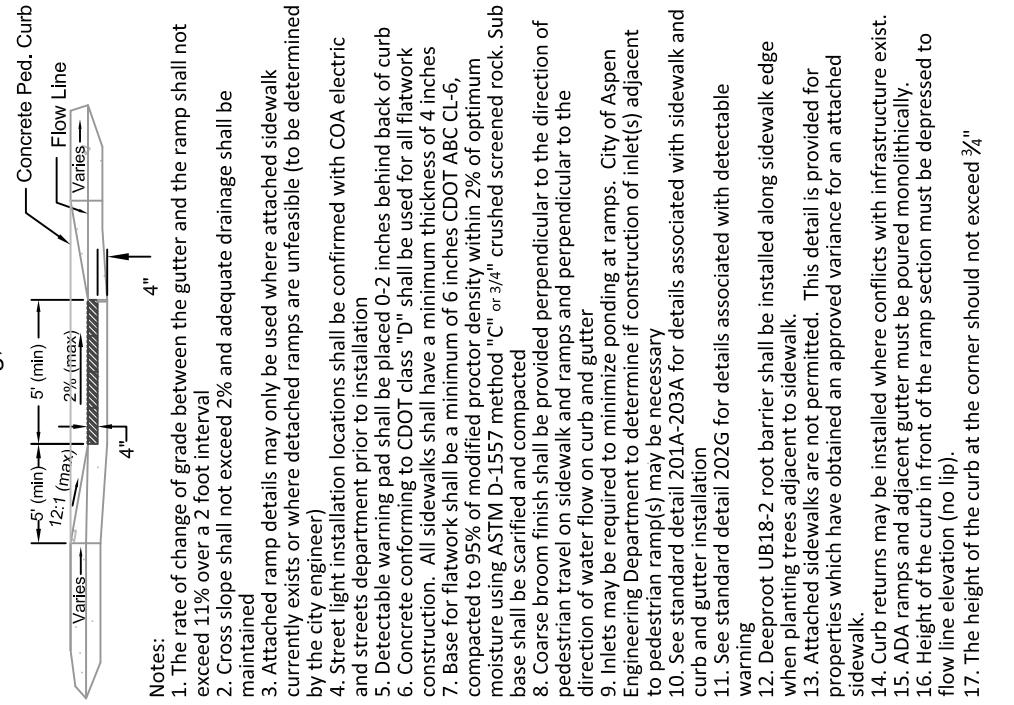
CREATION DATE: 11/01/13 INITIALS: GCS LAST MODIFICATION DATE: 03/20/18 INITIALS: JAD

#:ENG - 202C

Plan:

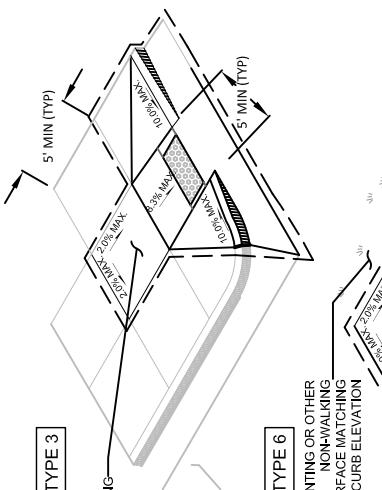


Front Cross Section View of Detectible Warning, Curb and Gu...

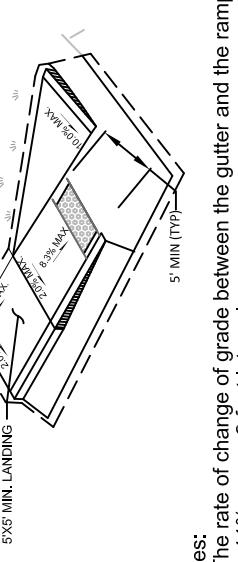


NARROW (<8') ATTACHED SIDEWALK
OPTION 2

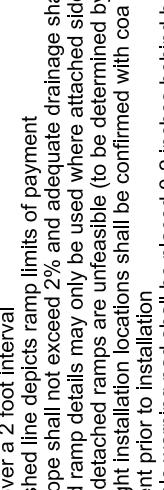
ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080		CITY OF ASPEN STANDARD DETAILS #ENG - 202D	
CREATION DATE: 11/01/13	INITIALS: GCS	LAST MODIFICATION DATE: 03/20/18	INITIALS: JAD
		REVISIONS DATE XX/XX/XX	



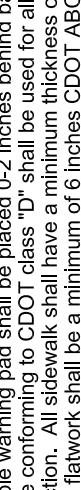
TYPE 3



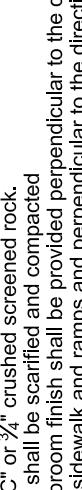
Notes:
1. The "rate of change"



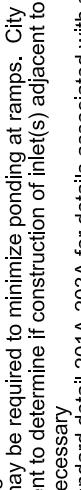
able warning pad shall be placed 0-2 inches behind back of curb
prior to installation.



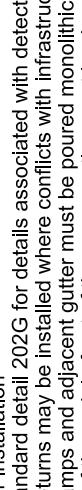
flatwork shall be a minimum of 6 inches CDOT ABC CL-6, compacted to modified proctor density within 2% of optimum moisture using astm D-1557



sidewalk and ramps and perpendicular to the direction of water flow on gutter



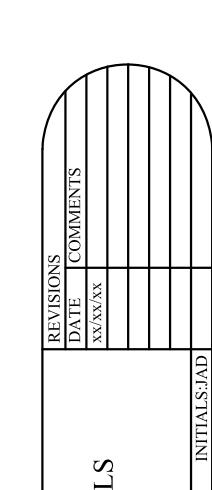
See standard detail 201A-203A for details associated with sidewalk and curb installation.



umps and adjacent gutter must be poured monolithically. of the curb in front of the ramp section must be depressed to flow line



g trees adjacent to sidewalk.



**CITY OF ASPEN
STANDARDS DEPARTMENT**

ENGINEERING DEPARTMENT
130 S GAIENA ST

The logo for the City of Aspen, featuring a circular emblem with a stylized mountain or leaf pattern on the left and the text "CITY OF" stacked above "ASPEN" on the right.

SINGLE DIRECTION CURB RAMPS



TYPE 10

The diagram illustrates a ramp transition with the following key dimensions and slope requirements:

- 5' x 5' MIN. LANDING (3" MIN HEIGHT)***: The landing area at the top of the ramp.
- 8.3% MAX RAMP SLOPE (TYP) (SEE NOTE XX)**: The maximum slope for the ramp surface.
- 5% MAX CROSS SLOPE (SEE NOTE XX)**: The maximum slope for the ramp transition area.
- 10.0% MAX**: The maximum slope for the ramp transition area.
- 2.0% MAX**: The maximum slope for the ramp transition area.
- 2.0% MAX**: The maximum slope for the ramp transition area.
- 2.0% MAX**: The maximum slope for the ramp transition area.
- 8.3% MAX RAMP SLOPE (TYP)**: The maximum slope for the ramp surface.
- 3' (MIN)**: The minimum width of the landing area.

TYPE 12

The diagram illustrates a 5' x 5' minimum landing area with a 3' minimum height. It features two slope options: a 2.0% maximum slope and an 8.3% maximum slope. The 2.0% MAX. slope is indicated by a dashed line, while the 8.3% MAX. slope is indicated by a solid line. The landing area is bounded by a thick black line. A shaded rectangular region is located in the center of the landing area. Arrows point from the text labels to the corresponding slope lines. The text labels are: "5' x 5' MIN. LANDING (3' MIN. HEIGHT)" on the left, "2.0% MAX." and "8.3% MAX." for the top slope, "2.0% MAX." and "8.3% MAX." for the bottom slope, and "5' MIN. (TYP)" on the right.

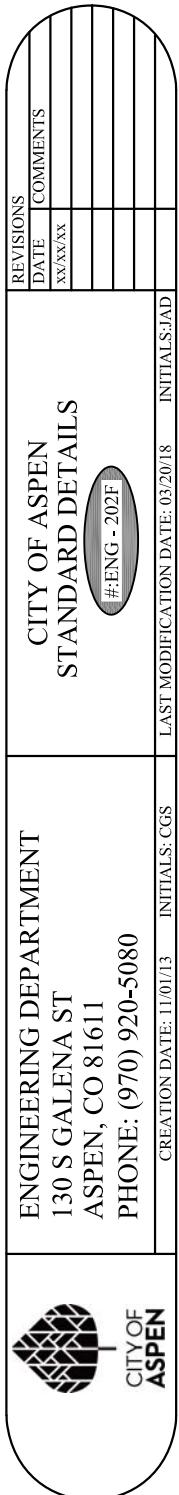
PLANTING OR OTHER
NON-WALKING
SURFACE MATCHING
CURB ELEVATION

TYPE 11

Notes:
1. The rate of ablation of clouds between the shutter and the room shall not exceed 110' W/H 45 DEVEL

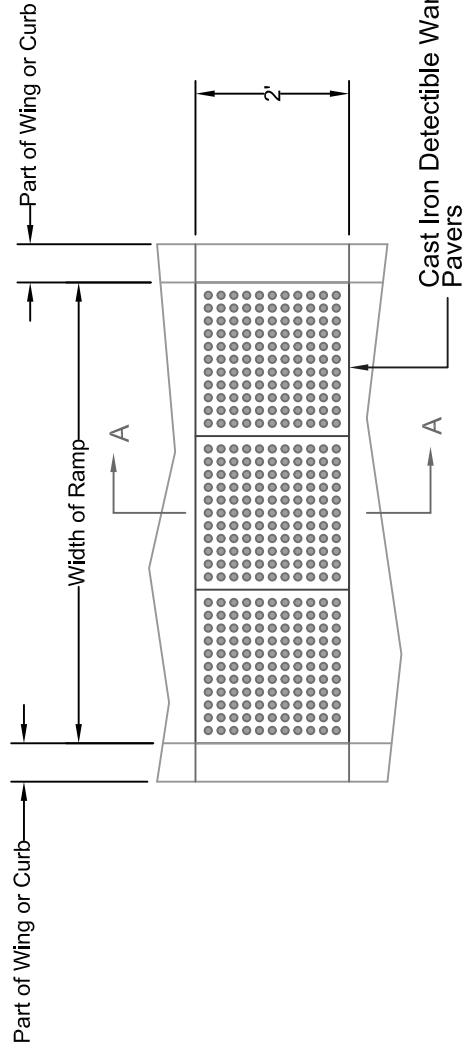
- i. The rate of change of grade between the gutter and the ramp shall not exceed 1% over a 2 foot interval
2. Bold dashed line depicts ramp limits of payment
3. Cross slope shall not exceed 2% and adequate drainage shall be maintained
4. Attached ramp details may only be used where attached sidewalk currently exists or where detached ramps are unfeasible (to be determined by the city engineer)
5. Street light installation locations shall be confirmed with coa electric and streets department prior to installation
6. Detectable warning pad shall be placed 0-2 inches behind back of curb
7. Concrete conforming to CDOT class "D" shall be used for all flatwork construction. All sidewalk shall have a minimum thickness of 4 inches
8. Base for flatwork shall be a minimum of 6 inches CDOT ABC CL-6, compacted to 95% of modified proctor density within 2% of optimum moisture using ASTM D-1557 method "C" or $\frac{3}{4}$ " crushed screened rock. Sub base shall be scarified and compacted
9. Coarse broom finish shall be provided perpendicular to the direction of pedestrian travel on sidewalk and ramps and perpendicular to the direction of water flow on curb and gutter
10. City of aspen engineering department to determine if construction of inlet(s) adjacent to pedestrian ramp(s) may be necessary
11. See standard details 20-A-203A for details associated with sidewalk and curb and gutter installation
12. See standard detail 202G for details associated with the detectable warning
13. Curb returns may be installed where conflicts with infrastructure exist.
14. Ramp Type 12 is discouraged due to drainage and maintenance concerns.
15. ADA ramps and adjacent gutter must be poured monolithically.
16. Height of the curb in front of the ramp section must be depressed to flow line elevation (no lip).
17. Deeproot UB18-2 root barrier shall be installed along sidewalk edge when planting trees adjacent to sidewalk.

ALTERNATIVE BI-DIRECTIONAL CURB RAMPS

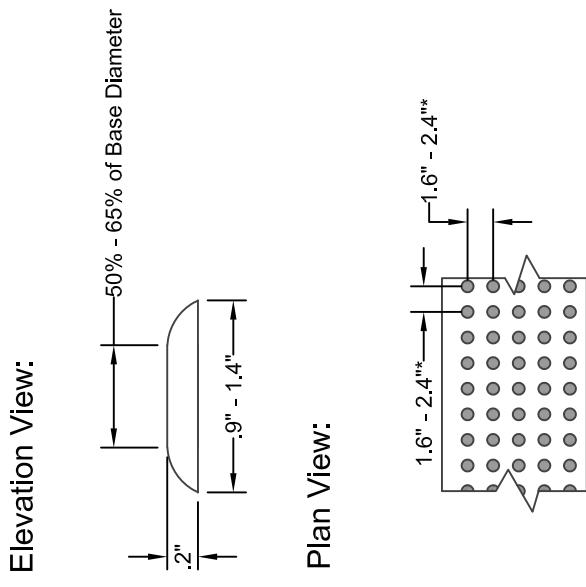


ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS #ENG - 202F
CREATION DATE: 11/01/13	INITIALS: CGS
	LAST MODIFICATION DATE: 03/20/18
	INITIALS: JAD

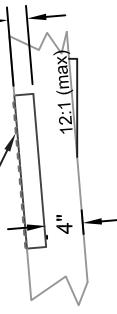
Plan:



Dome and Layout Details:



Section A - A:



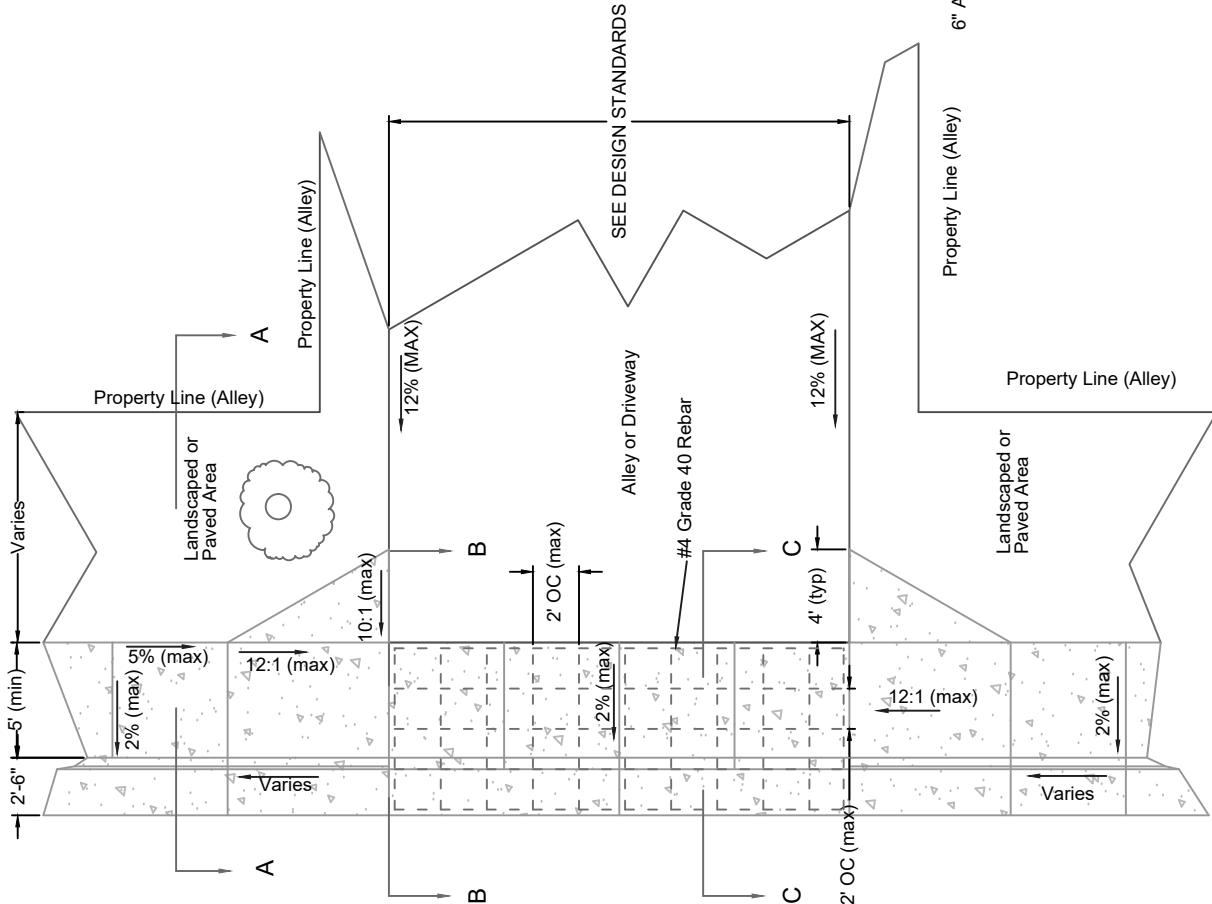
NOTES:

1. Detectable warning pad shall be installed at all curb ramps. Edge of pad shall be located 6-8" from curb flow line.
2. Detectable warning pad shall be two feet in length and shall cover the width of the ramp. Pad shall be cast iron, with a truncated dome surface and dimensions and layout as shown.
3. Longitudinal ramp slopes (including detectable warning pad) shall not be steeper than 12:1. Cross slopes may not be steeper than 2%.
4. Detectable Warning shall be cast iron material
5. Concrete jointing shall be established at each corner of the detectable warning pad, 4 total, and extend in a perpendicular or parallel direction to the pad.

DETECTABLE WARNING PAD DETAILS

CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS #ENG - 202G	REVISIONS	
			DATE	COMMENTS
CREATION DATE: 11/01/13	INITIALS: GCS	LAST MODIFICATION DATE: 04/28/15	INITIALS: JAD	www.aspenpitkin.com/departments/engineering/design-construction/

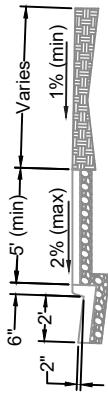
Plan:



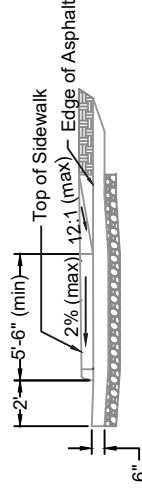
NOTES:

1. This detail is to be used only where site conditions prohibit installation of detached sidewalk. Prohibitive site conditions must be verified by City Engineering Staff.
 2. Reinforcement is to consist of #4 Grade 60 rebar placed a maximum of 24" O.C. Rebar shall be placed a minimum of 2" above bottom of slab, clear zone, and minimum of 2" below top of slab.
 3. Base for sidewalk out of vehicle travel path is to consist of 6" (min) of ABC CL-6 over scarified and compacted subbase. Base for reinforced section is to consist of 8" (min) of ABC CL-6 over scarified and compacted subbase. Base is to be compacted to 95% of modified proctor density as defined by ASTM D-1557 method "C" or $\frac{3}{4}$ " crushed screened rock.
 4. The minimum slope necessary to maintain drainage is to be used throughout. Ramp longitudinal slope is not to exceed 12:1. Sidewalk cross slope is not to exceed 2%.
 5. Concrete conforming to CDOT class "D" is to be used for all ramp construction. Minimum thickness shall be 4" for sidewalk, 8" for ramp and reinforced section.
 6. Rebar splices shall have a minimum 12" overlap.
 7. There must be a minimum of 12" vertical rise between flowline of gutter and lowest point on any adjacent structure.
 8. Landscaping features shall be located outside the sight triangle, as described within the City of Aspen Design Standards.
 9. The slope of the gutter needs to be 1" per foot or 8.3%

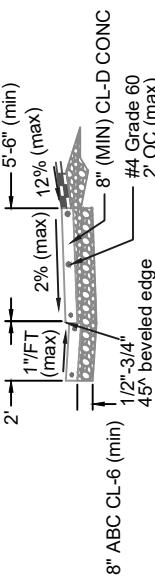
Section A - A



Section B - B



Section C - C



Side Cross Section View of Ramp and Crossing

ALLEY/DRIVEWAY RAMP DESIGN FOR ATTACHED SIDEWALK



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

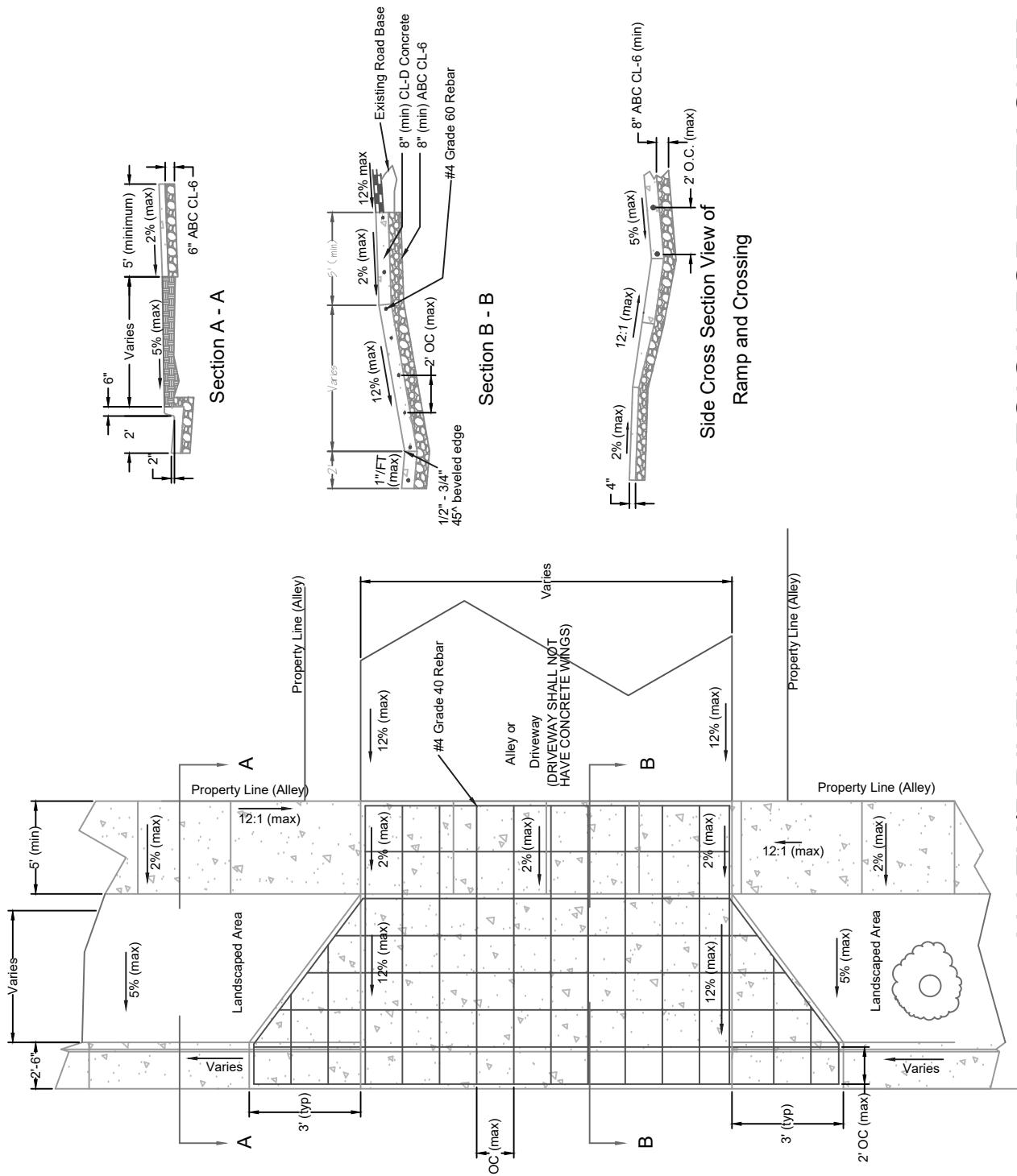
CITY OF ASPEN
STANDARD DETAILS

ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080		CITY OF ASPEN STANDARD DETAILS #ENG - 202H	
CREATION DATE: 11/01/13	INITIALS: GCS	LAST MODIFICATION DATE: 04/29/15	INITIALS: JAD
		REVISIONS	COMMENTS
		DATE xx/xx/xx	

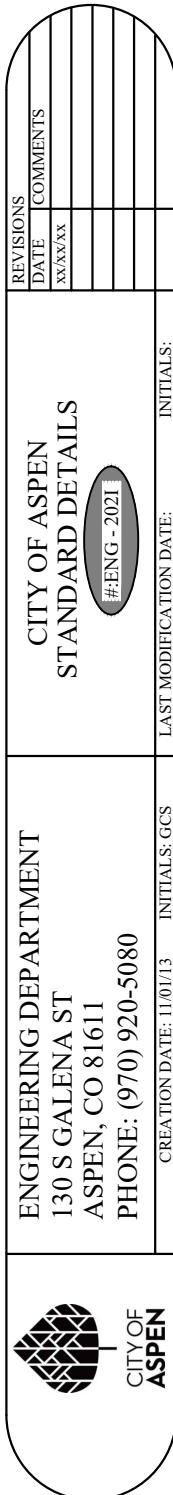
Plan:

NOTES:

1. This detail is to be used where detached sidewalk is present or where attached sidewalk can be swept out to conform to this plan.
2. Reinforcement is to consist of #4 Grade 60 rebar placed a maximum of 24" O.C. Rebar shall be placed a minimum of 2" from bottom of slab, clear zone, and minimum of 2" from top of slab.
3. Base for sidewalk out of vehicle travel path is to consist of 6"(min) of ABC CL-6 over scarified and compacted subbase. Base for reinforced section is to consist of 8" (min) of ABC CL-6 over scarified and compacted subbase. Base is to be compacted to 95% of modified proctor density as defined by ASTM D-1557 method "C" or $\frac{3}{4}$ " crushed screened rock.
4. The minimum slope necessary to maintain drainage is to be used throughout. Ramp longitudinal slope is not to exceed 12:1. Sidewalk cross slope is not to exceed 2%.
5. Concrete conforming to CDOT class "D" is to be used for all flatwork construction. Minimum thickness shall be 4" for sidewalk, 8" for ramp and reinforced section.
6. Rebar splices shall have a minimum 12" overlap.
7. There must be an minimum 12" vertical rise from flowline to lowest point on any adjacent structure.
8. A coarse broom finish is to be provided perpendicular to water flow on curb and gutter and perpendicular to the direction of pedestrian travel on sidewalk.
9. Landscape features shall not be located outside the sight triangle, as described in the City of Aspen Design Standards.
10. DeepRoot UB18-2 Root Barrier shall be installed along sidewalk edge when trees planted adjacent to sidewalk.
11. The slope of the gutter needs to be 1" per foot or 8.33%.



ALLEY/DRIVEWAY RAMP DESIGN FOR DETACHED SIDEWALK



ENGINEERING DEPARTMENT
130 S GALENA ST
AUGSBURG COLLEGE

111

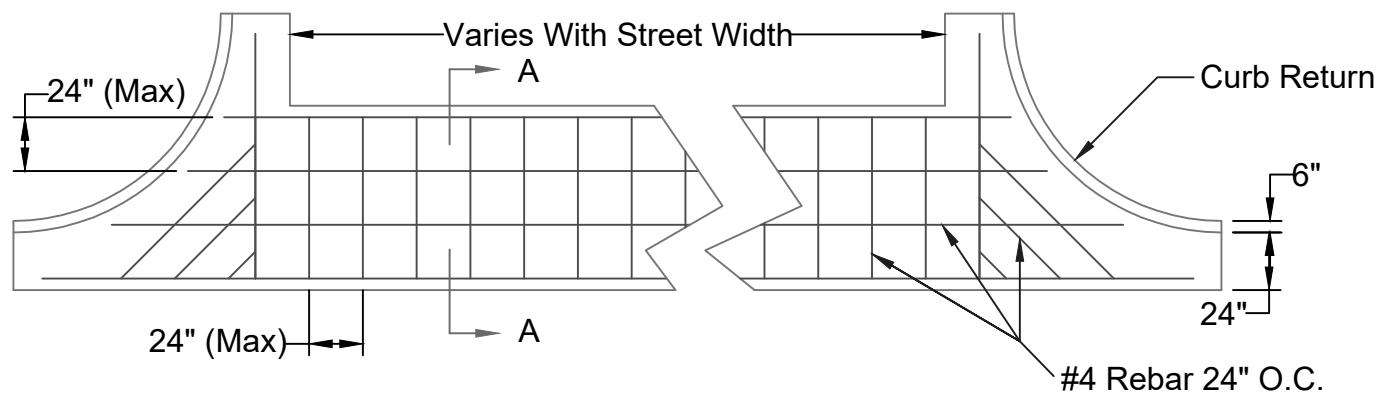
UN, CO 8161

ASPEN, CO 81611

WWW.ASPENPTKIN.COM/DEPARTMENTS/ENGINEERING/DESIGN-CONSTRUCTION/CONDNDATE: 11/01/13 INITIALS: GCS LAST MODIFICATION DATE:

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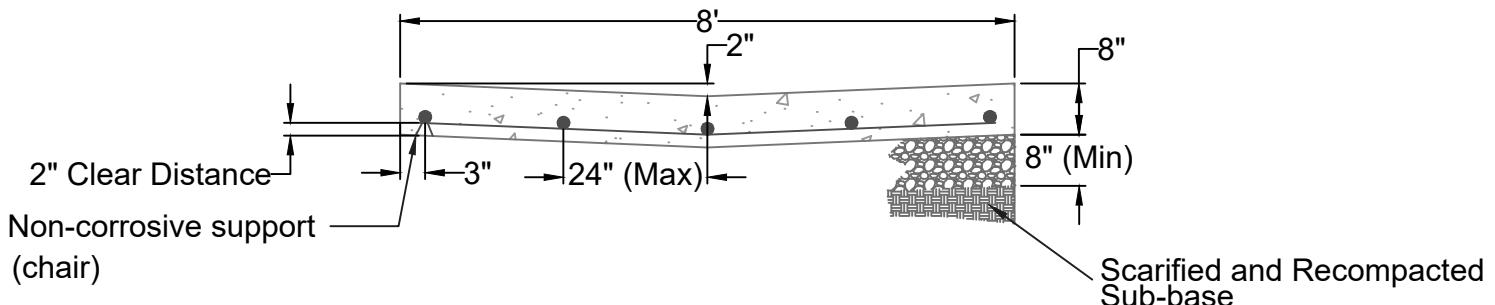
Plan View



NOTES:

1. Steel reinforcement is #4 Grade 60 rebar placed a maximum of 24" O.C.
2. Rebar splices must maintain a 12" minimum overlap.
3. Base shall be either $\frac{3}{4}$ " crushed screened rock or ABC CL-6 compacted to 95% of maximum modified proctor density within 2% of optimum moisture as defined by ASTM 1557 Method "C".
4. Sub-base must be scarified and re-compacted and pass a proof rolling by a fully loaded tandem axle dump truck. Proof rolling must be witnessed and documented by Engineering Department staff.
5. Concrete must conform to CDOT class "D" (minimum 28-day compressive strength of 4500psi). 80% of this strength must be gained in the first 7 days.

Section A - A



CROSS PAN WITH CURB RETURNS



ENGINEERING DEPARTMENT
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ASPEN, CO 81611
PHONE: (970) 920-5080

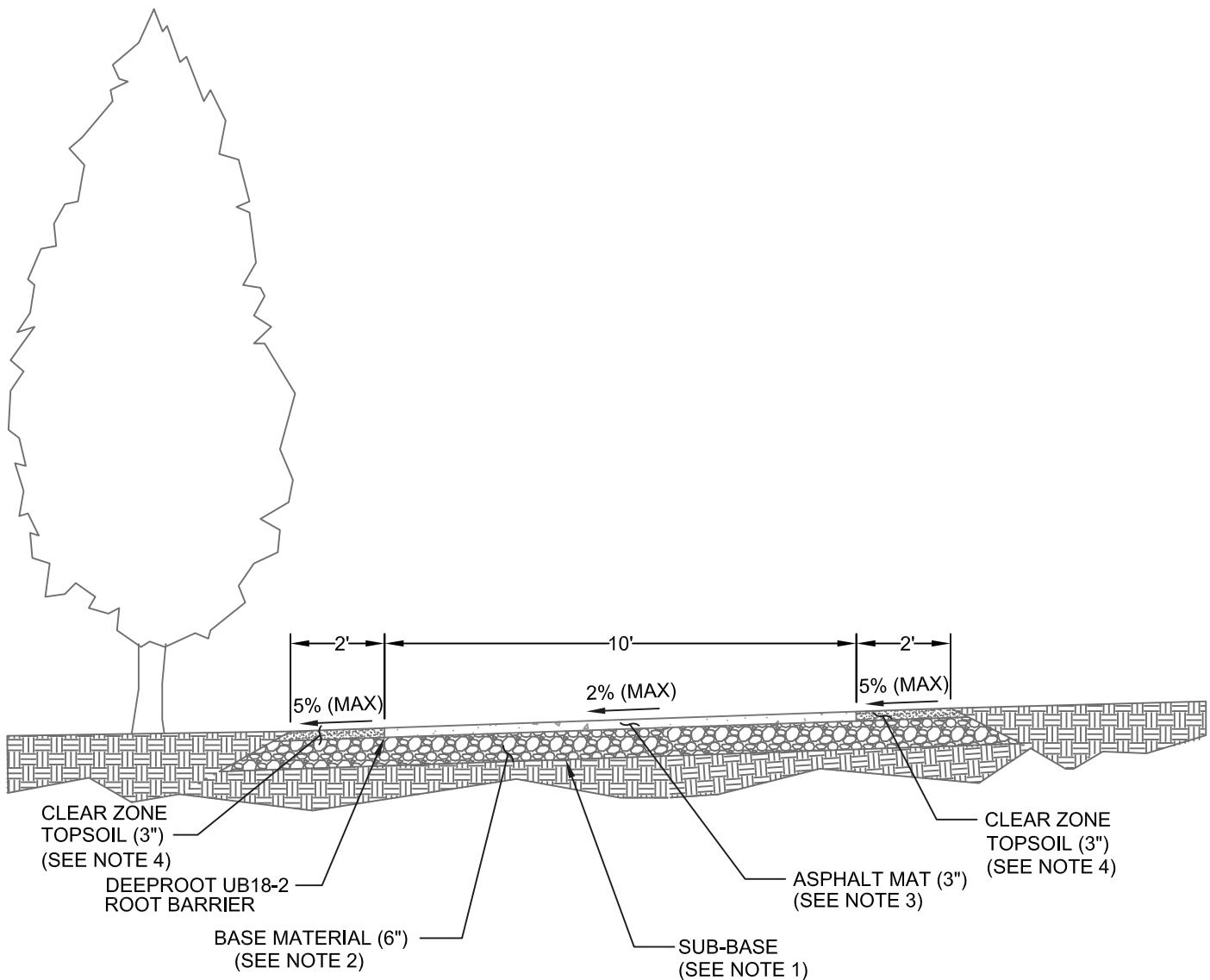
CREATION DATE: 11/01/13 INITIALS: GCS

CITY OF ASPEN
STANDARD DETAILS

#:ENG - 202J

LAST MODIFICATION DATE: INITIALS:

REVISIONS	
DATE	COMMENTS
xx/xx/xx	

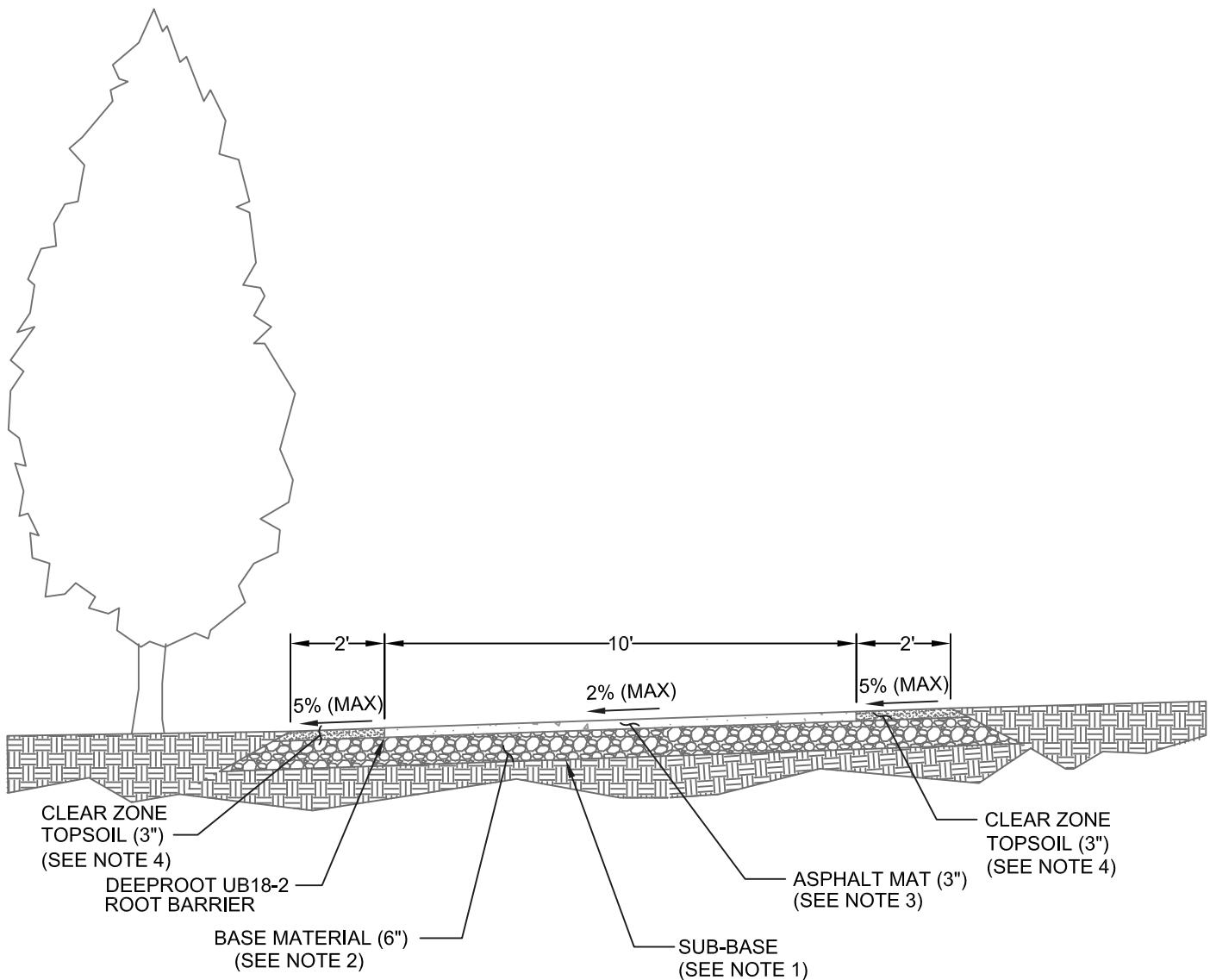


NOTES:

1. Sub-base soils must be scarified, moisture conditioned, and recompacted. Engineer shall inspect prior to placement of base materials.
2. Aggregate base course (ABC) CDOT Class 6 compacted to 95% modified proctor density within 2% optimum moisture using ASTM D-1557 Method "C" or compacted $\frac{3}{4}$ " crushed screened rock.
3. Hot mix asphalt per City of Aspen Trails Pavement Specification (Section 703 CDOT Standards Specifications to Road and Bridge Construction, 2011). Refer to surface smoothness requirements.
4. Clear zone distance shall be increased near certain landscaping and trees, project manager shall make final determination of clear zone distances during construction.
5. Contact Parks Department Staff to determine if installation of DeepRoot Barrier is required. (970) 920-5120

DETACHED SIDEWALK DETAILS

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;"> #:ENG - 203A </div>	REVISIONS <table border="1"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>XX/XX/XX</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	XX/XX/XX											
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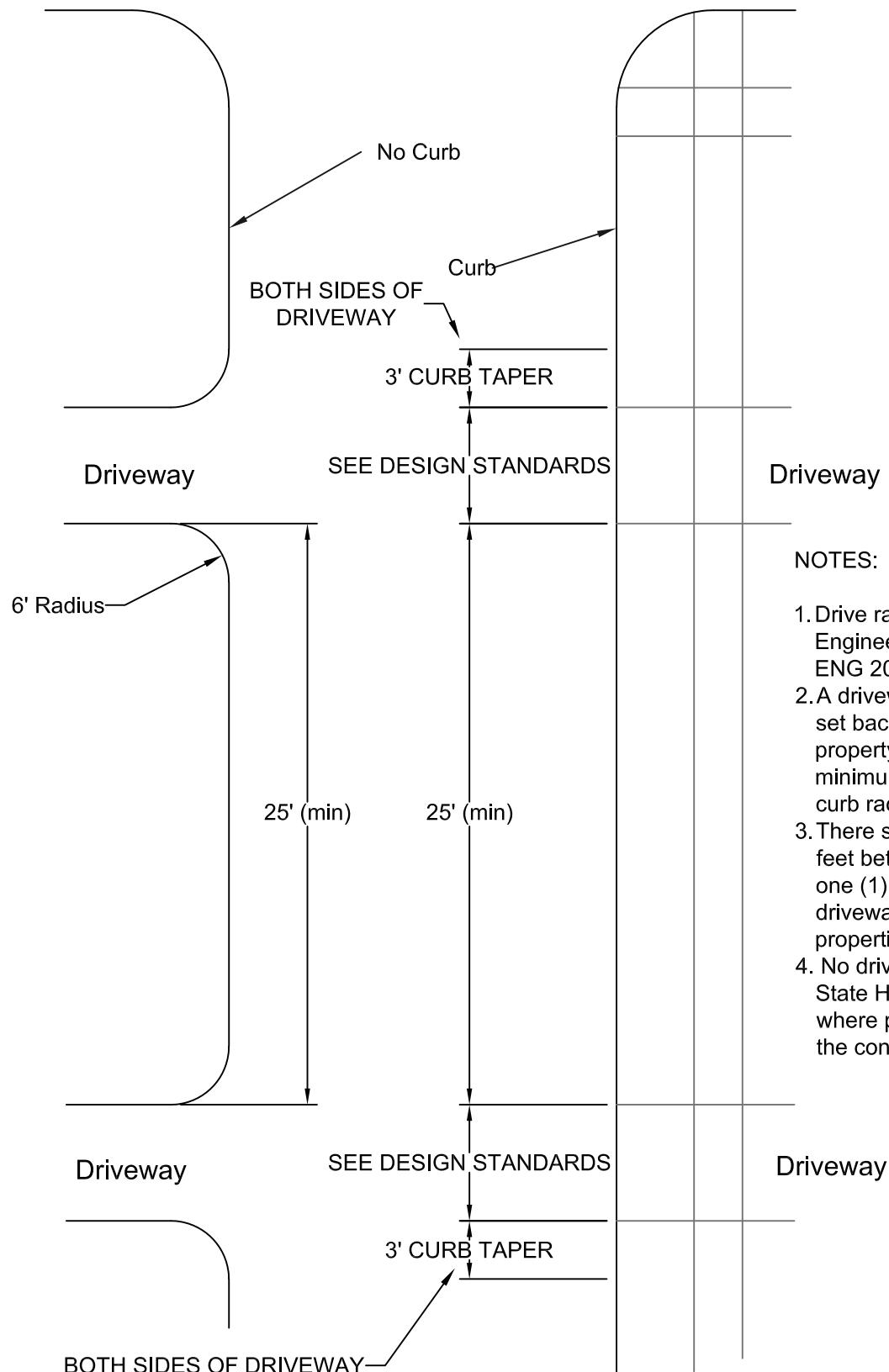


NOTES:

1. Sub-base soils must be scarified, moisture conditioned, and recompacted. Engineer shall inspect prior to placement of base materials.
2. Aggregate base course (ABC) CDOT Class 6 compacted to 95% modified proctor density within 2% optimum moisture using ASTM D-1557 Method "C" or compacted $\frac{3}{4}$ " crushed screened rock.
3. Hot mix asphalt per City of Aspen Trails Pavement Specification (Section 703 CDOT Standards Specifications to Road and Bridge Construction, 2011). Refer to surface smoothness requirements.
4. Clear zone distance shall be increased near certain landscaping and trees, project manager shall make final determination of clear zone distances during construction.
5. Contact Parks Department Staff to determine if installation of DeepRoot Barrier is required. (970) 920-5120

MULTI-USE TRAIL DETAIL

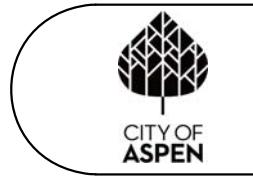
 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;">#:ENG - 203B</div>	REVISIONS <table border="1"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>XX/XX/XX</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	XX/XX/XX											
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CREATION DATE: 02/04/15 INITIALS: GCS WWW.ASPENPITKIN.COM/DEPARTMENTS/ENGINEERING/DESIGN-CONSTRUCTION/	LAST MODIFICATION DATE: _____ INITIALS: _____																



NOTES:

1. Drive ramp details are available from the Engineering Department as part of drawing set ENG 202A.
2. A driveway or curb cut on a corner lot shall be set back a minimum of ten (10) feet from the property line at the corner and shall be a minimum of fifty (50) feet from the end of the curb radius.
3. There shall be a minimum of twenty-five (25) feet between any two (2) curb cuts whether on one (1) or more properties, except common driveways may be used on adjoining properties.
4. No driveway or curb cut shall be allowed on State Highway 82 or other designated arterial where public alley access exists, anything to the contrary notwithstanding.

CURB CUT LAYOUT DETAILS



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

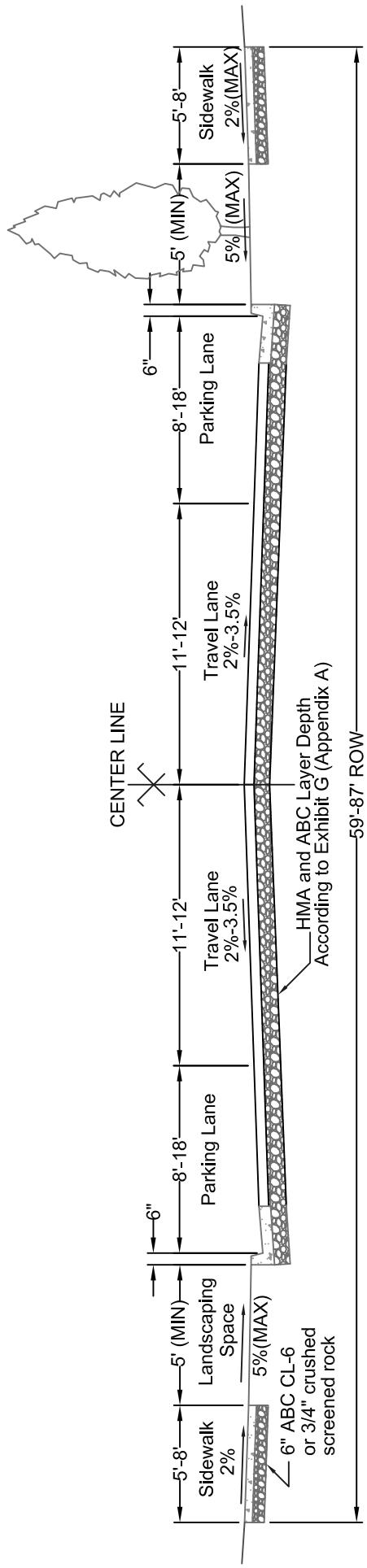
CREATION DATE: 11/01/13 INITIALS: GCS

CITY OF ASPEN
STANDARD DETAILS

#:ENG - 204A

LAST MODIFICATION DATE: INITIALS:

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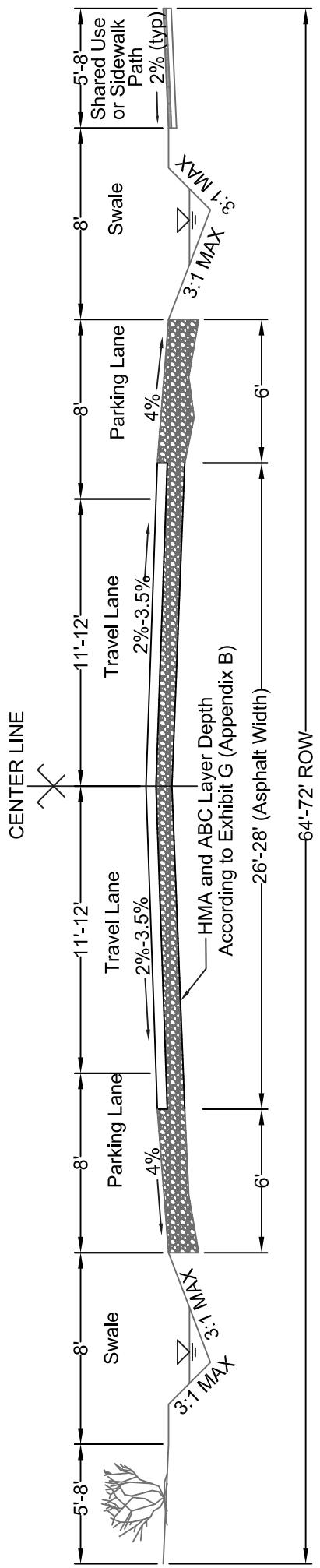


NOTES:

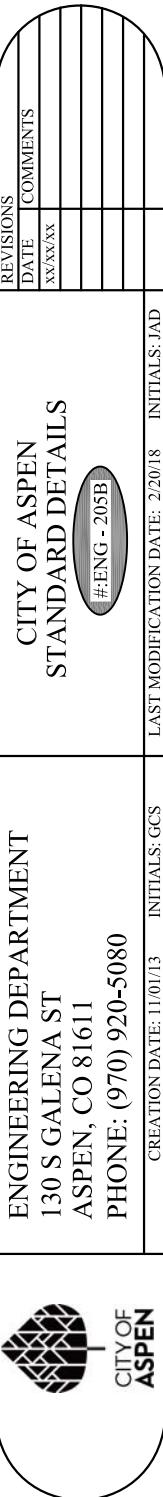
1. This design is to be used on residential streets where an urban design is appropriate.
2. Materials and finishing are to be governed by COA Engineering Standards, most recent edition.
3. Travel lane width dependent on existing lane widths and site conditions.
4. Sidewalk width dependent on zoning designation. See City of Aspen Engineering Standards.

LOCAL/RESIDENTIAL/COMMERCIAL STREET CROSS SECTION (W/ C&G)

CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS #ENG - 205A	REVISIONS	
			DATE	COMMENTS
CREATION DATE: 11/01/13	INITIALS: GGS	LAST MODIFICATION DATE: 2/20/18	INITIALS: JAD	xx/xx/xx



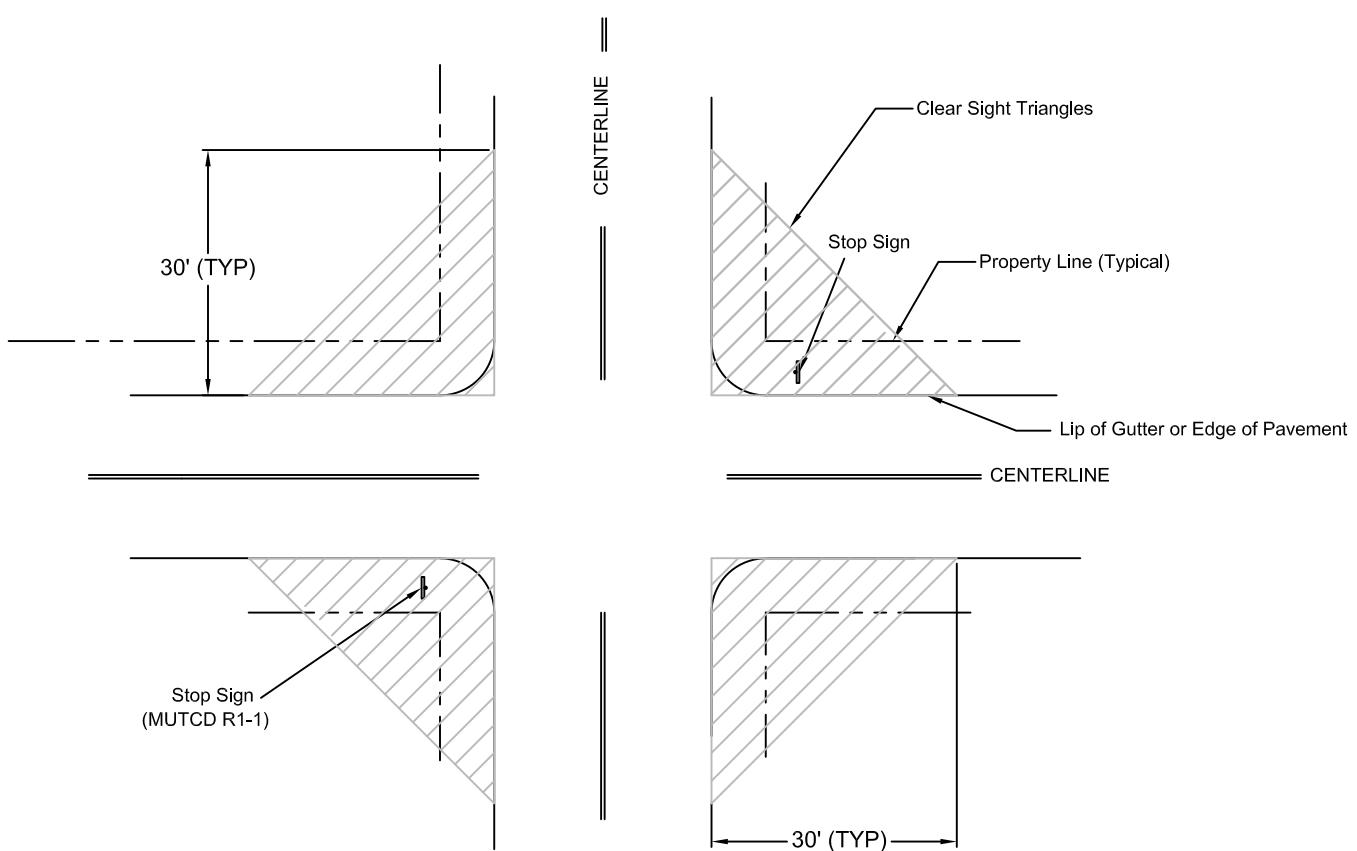
RESIDENTIAL/LOCAL STREET CROSS SECTION (W/OUT C&G)



NOTES:

1. This design is to be used on residential streets where a rural design is appropriate.
2. Materials and finishing are to be governed by COA Engineering Standards, most recent edition.
3. Travel lane width dependent on existing lane widths and site conditions.

ENGINEERING DEPARTMENT
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PHONE: (970) 920-5080
CREATION DATE: 11/01/13
INITIALS: G

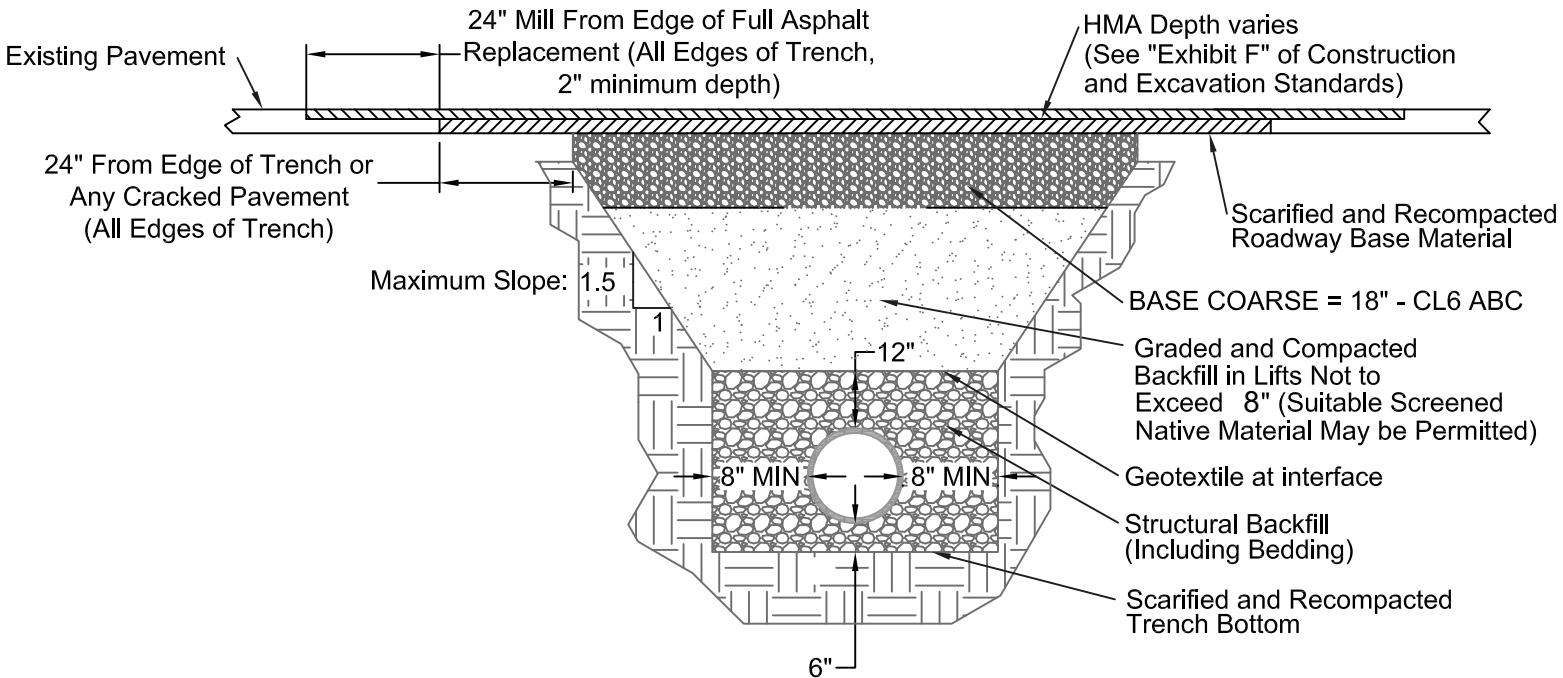


NOTES:

1. This detail is to be applied to developments of properties adjacent to intersections.
2. Clear Sight Triangle will be free of obstructions 36" or higher as measured from existing ground elevation. Exceptions include streetlights and traffic control devices.
3. For situations not covered by this detail set, contractor/designer must show compliance with the Intersection Design Section of AASHTO's Policy on Geometric Design of Highways and Streets, most recent edition.

CLEAR SIGHT TRIANGLES (FOR DEVELOPMENT ADJACENT TO INTERSECTIONS)

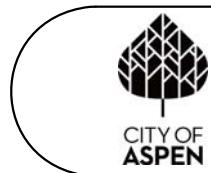
 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;"> #:ENG - 206A </div>	REVISIONS <table border="1"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>XX/XX/XX</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	XX/XX/XX											
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CREATION DATE: 11/01/13 INITIALS: GCS	LAST MODIFICATION DATE: _____	INITIALS: _____															



Notes:

1. Trench must be sloped as shown or braced for the safety of construction workers. Trenching will be subject to most recent Confined Space and OSHA regulations
2. Existing pavement shall be sawcut and replaced to create the full depth replacement shown.
3. Stress cracking of existing pavement may occur during excavation for a variety of reasons. If this occurs, the contractor must sawcut at least 12" beyond the limit of visible cracks and remove all stressed pavement.
4. Hot bituminous patch shall be a minimum of 5" thick and placed in two lifts as shown. Thicker patches may be necessary depending on the type of street.
5. For a major utility project, a full set of modified proctor curves must be submitted, and backfill must be compacted to within 92%-96% of maximum density within 2% of optimum moisture as defined by ASTM 1557 Method "C". If curves are not submitted, backfill for trench and base for patch shall conform to CDOT's aggregate base course class 6 (ABC CL-6) designation and shall be compacted to 92%-96% of maximum density within 2% of optimum moisture. Flow fill may be used as an alternative, but must contain at least 80 lbs. of cement per cubic yard and retain a 9" maximum slump. Use of flow fill must be approved by utility provider and City of Aspen Engineering Department.
6. Bedding for flexible lines shall be $\frac{3}{4}$ " crushed screened rock, free of fines. Or per direction of utility provider.
7. Trench bottom must be scarified and recompacted after excavation or after any dewatering action to ensure adequate support of utility bedding.
8. Patching of trenched areas within the City of Aspen Right of Way must also meet the requirements set forth in this document.
9. Water lines shall be a minimum of 7 feet below the ground surface. Refer to the Water Distribution Standards for additional water line requirements.
10. Milling must occur after backfilling and before paving. Milling must extend 2' beyond each side of trench.
11. The depth of the milling shall be the same thickness as the top lift of asphalt (2" minimum).
12. Edges of replacement asphalt shall not terminate in the wheel path.

TRENCH AND T-TOP PATCHING DETAILS



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

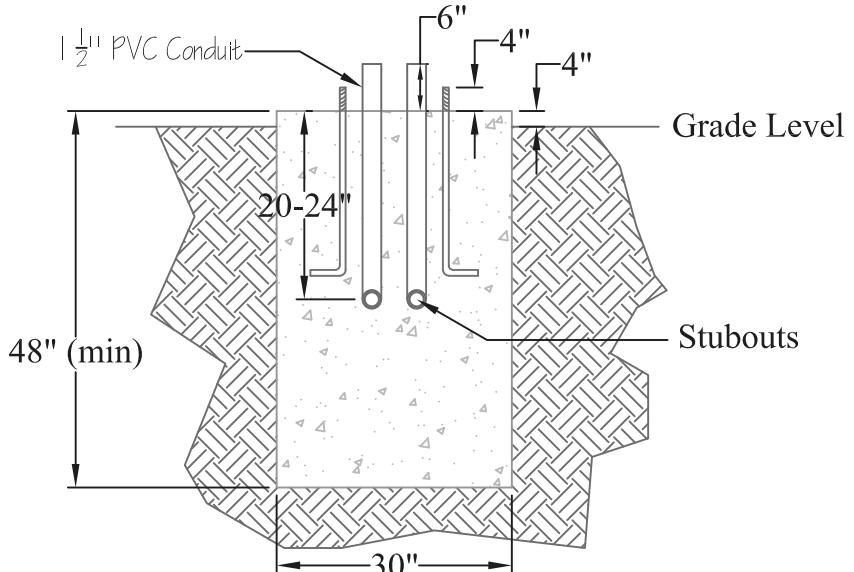
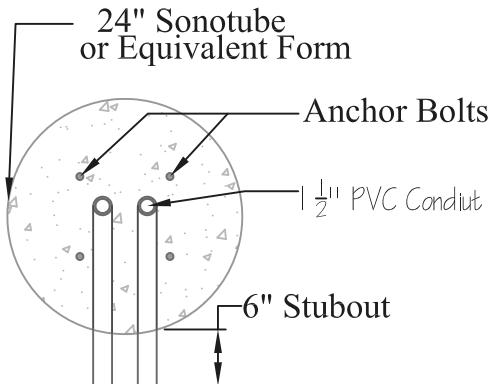
CREATION DATE: 11/01/13 INITIALS: GCS

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CITY OF ASPEN
STANDARD DETAILS

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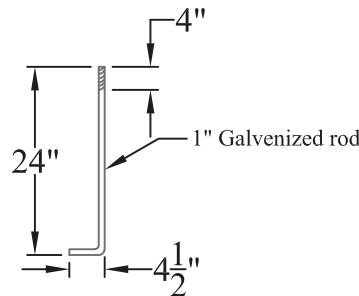


Plan View

Section View

Notes:

1. Bolts will be provided with pole.
2. Concrete for base shall conform to CDOT's Class "D" (minimum 28-day compressive strength of 4500 psi).
3. Stubouts are 6" in length and are made 20" below grade for single fixture light poles and 24" below grade for new double fixture light poles.



Anchor Bolt
Detail

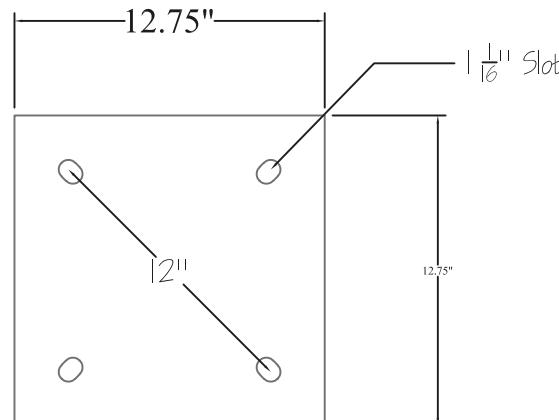
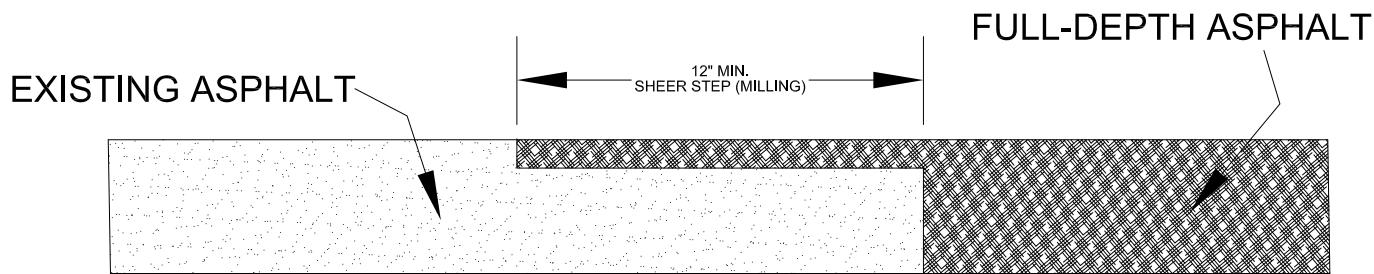


Plate Detail

BASE FOR LIGHT POLE

 CITY OF ASPEN	ENGINEERING DEPARTMENT 517 E HOPKINS STREET ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;"> #:ENG - 207B </div>	REVISIONS <table border="1"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>XX/XX/XX</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	XX/XX/XX											
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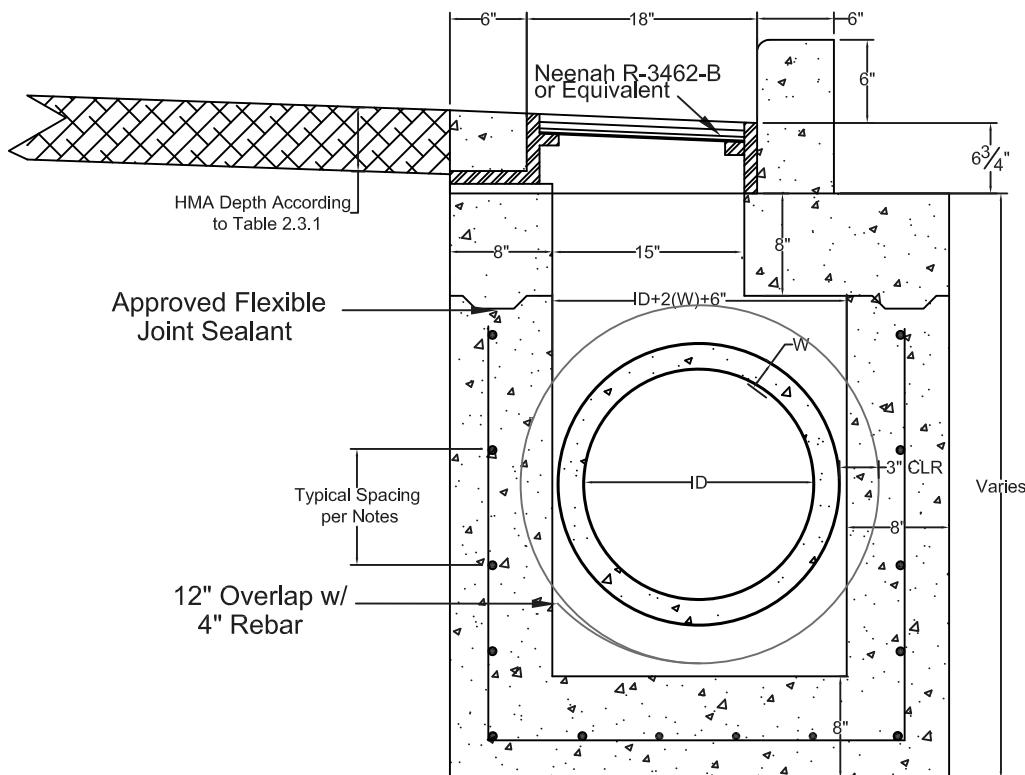
1. The sawcut shall be full depth and 12" minimum from the existing edge of asphalt.
2. The depth of the milling shall be the same as the thickness of the top lift of asphalt: 2" minimum.
3. The width of the milling area shall be 12" minimum, but can be up to the full width of existing asphalt.
4. Within through lanes the longitudinal seams at the edges of the milled areas shall be parallel to the direction of travel and the transverse seams at the ends of the milled areas shall be perpendicular to the

SHEER STEP ASPHALT PATCH DETAIL

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;">  </div>	REVISIONS	
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			XX/XX/XX	

CREATION DATE: 03/19/18 INITIALS: JAD

LAST MODIFICATION DATE: INITIALS:



Notes:

1. Concrete must conform to CDOT class "D" (minimum 28-day compressive strength of 4500psi). 80% of this strength must be gained in the first 7 days.
2. Base course under manhole must be compacted to 95% of maximum modified proctor density within 2% of optimum moisture as defined by ASTM 1557 Method "C".
3. Steel reinforcement:
 - #4 rebar 9" O.C. x 9" O.C. for floor slab
 - #4 rebar 9" O.C. horizontally and vertically for walls
 - #4 rebar at opening (2 above @ 3" spacing & 1 each side)
 - #5 rebar 6" O.C. in both directions for top slab
 - #5 rebar bent rectangularly with 8" overlap to support frame and grate opening
 - Vertical steel shall be placed at centerline of wall. All reinforcing bars shall have a 2 IN. minimum clearance. All reinforcing bars shall be epoxy coated.
 - Rebar splices must maintain a 12" minimum overlap
4. Inlets >5' deep shall have non-slip steps down one side a maximum of 16" O.C.
5. All inlets shall have a "No Dumping, Drains to River" Notice Plate, surface mounted to the top of the curb.

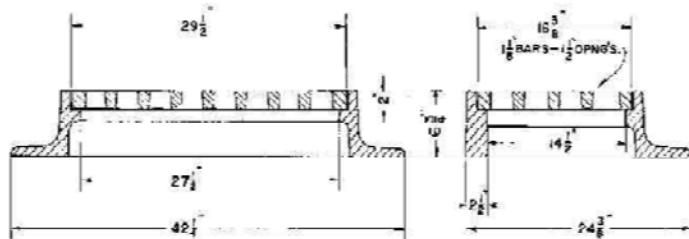
STORM DRAIN INLET DETAIL

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="text-align: center;">  #:ENG - 301A </div>	REVISIONS <table border="1"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>XX/XX/XX</td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	XX/XX/XX											
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R-3462-B

Single Gutter Inlet Frame, Grate

Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3462-B	R	1.8	7.6

STORM GRATE DETAIL



ENGINEERING DEPARTMENT
130 S GALENA ST
ASPEN, CO 81611
PHONE: (970) 920-5080

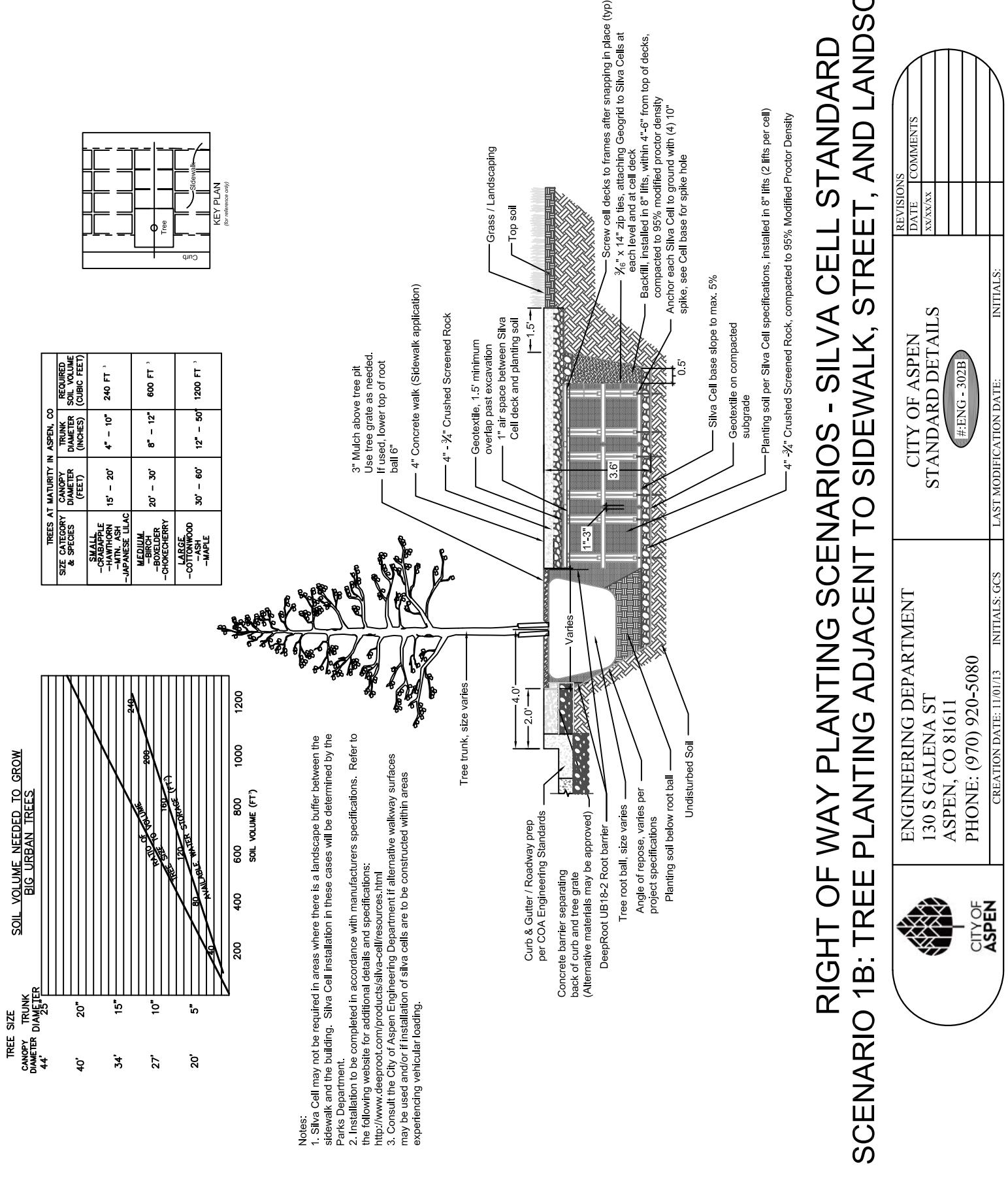
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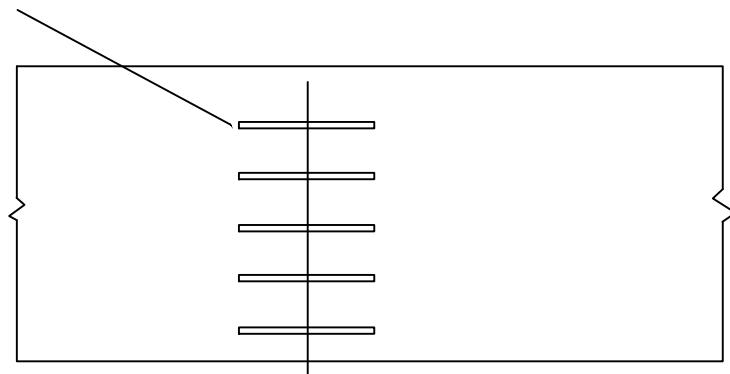
CITY OF ASPEN
STANDARD DETAILS

#:ENG - 301B

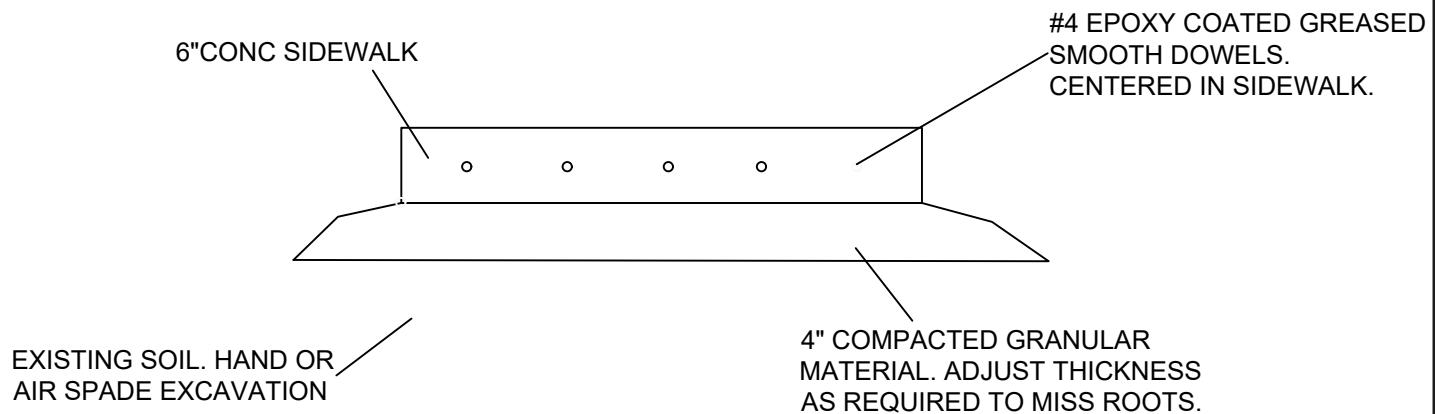
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DATE	COMMENTS
XX/XX/XX	



#4 EPOXY COATED GREASED Smooth
DOWELS 12" ON CENTER. 2' MIN.
LENGTH CENTERED ON JOINT



SIDEWALK PLAN VIEW
NTS



SIDEWALK CROSS SECTION
NTS

NOTES:

1. ONLY ONE SIDE OF THE SMOOTH DOWEL BARS NEED TO BE GREASED. GREASE SHOULD BE APPLIED TO THE SAME SIDE OF ALL BARS.
2. CONCRETE MUST CONFORM TO CDOT CLASS "D" (MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4500 PSI). 80% OF THIS STRENGTH MUST BE GAINED IN THE FIRST 7 DAYS.
3. DOWELS MUST BE PLACED AT ALL JOINTS INCLUDING BETWEEN THE EXISTING AND PROPOSED SIDEWALK.

**WIDTH OF SIDEWALK DEPENDANT UPON LOCATION.

**FLOATING SIDEWALK DESIGN
(FOR DEVELOPMENT NEAR TREES)**

 CITY OF ASPEN	ENGINEERING DEPARTMENT 130 S GALENA ST ASPEN, CO 81611 PHONE: (970) 920-5080	CITY OF ASPEN STANDARD DETAILS <div style="border: 1px solid black; border-radius: 50%; padding: 2px; text-align: center;">#:ENG - 303A</div>	REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th><th>COMMENTS</th></tr> </thead> <tbody> <tr> <td>xx/xx/xx</td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> </tbody> </table>	DATE	COMMENTS	xx/xx/xx											
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CITY OF ASPEN

