



HIDEOUT, UTAH PLANNING COMMISSION REGULAR MEETING AND PUBLIC HEARING (RESCHEDULED) December 16, 2024 Agenda

PUBLIC NOTICE IS HEREBY GIVEN that the Planning Commission of Hideout, Utah will hold its Rescheduled Regular Meeting and Public Hearings electronically and in-person at Hideout Town Hall, located at 10860 N. Hideout Trail, Hideout Utah, for the purposes and at the times as described below on Monday, December 16, 2024.

All public meetings are available via ZOOM conference call and YouTube Live.

Interested parties may join by dialing in as follows:

Zoom Meeting URL: <https://zoom.us/j/4356594739>
To join by telephone dial: US: +1 408 638 0986 **Meeting ID:** 435 659 4739
YouTube Live Channel: <https://www.youtube.com/channel/UCKdWnJad-WwvcAK75QjRb1w/>

Regular Meeting and Public Hearing 6:00 PM

- I. Call to Order
- II. Roll Call
- III. Approval of Meeting Minutes
 - 1. [November 21, 2024 Planning Commission Minutes DRAFT](#)
- IV. Agenda Items
 - 1. [Consideration of establishing the 2025 Planning Commission Regular Meeting Schedule](#)
- V. Public Hearings
 - 1. [Consideration and possible recommendation to the Hideout Town Council of a resolution adopting the Hideout Town Engineering Standard Specifications and Drawings Manual and an ordinance amending Title 10 related to Engineering, Development and Design Standards.](#)
- VI. Meeting Adjournment

Pursuant to the Americans with Disabilities Act, individuals needing special accommodations during the meeting should notify the Mayor or Town Clerk at 435-659-4739 at least 24 hours prior to the meeting.

File Attachments for Item:

1. November 21, 2024 Planning Commission Minutes DRAFT

Minutes
Town of Hideout Planning Commission
Regular Meeting and Public Hearing
November 21, 2024
6:00 PM

The Planning Commission of Hideout, Wasatch County, Utah met in Regular Meeting and Public Hearing on November 21, 2024 at 6:00 PM in person and electronically via Zoom meeting.

Regular Meeting and Public Hearing

I. Call to Order

Chair Tony Matyszczyk called the meeting to order at 6:01 PM and reminded participants that this was a hybrid meeting held both electronically and in-person.

II. Roll Call

Present: Chair Tony Matyszczyk
Commissioner Rachel Cooper
Commissioner Joel Pieper
Commissioner Glynnis Tihansky
Commissioner Donna Turner

Excused: Commissioner Peter Ginsberg (alternate)
Commissioner Chase Winder (alternate)

Staff Present: Alicia Fairbourne, Recorder for Hideout
Kathleen Hopkins, Deputy Recorder for Hideout

Staff Attending Remotely: Jan McCosh, Town Administrator
Polly McLean, Town Attorney
Thomas Eddington, Town Planner
Gordon Miner, Town Engineer

Public Present: Jim Lopiccola, Marisa Lopiccola and William Woolf.

Public Attending Remotely: Jay Springer, Andy Badger, Brant Swander, Tim Schoen, Diane Schoen, Jerry Crylen, Kurt Basford, Nate Brockbank, David Chawaga, Trish Crossin, Eric Davenport, Earl Dickerson, Scott DuBois, Jonathan Gunn, Carol Haselton, Tom Longhi, Jack Walkenhorst, Paul Watson and others who may not have signed in using proper names in Zoom.

III. Approval of Meeting Minutes

1. October 17, 2024 Planning Commission Minutes DRAFT

There were no comments on the October 17, 2024 draft minutes.

1 *Motion: Commissioner Turner moved to approve the October 17, 2024 Planning Commission*
2 *Minutes. Commissioner Pieper made the second. Voting Yes: Commissioner Cooper, Chair*
3 *Matyszczyk, Commissioner Pieper and Commissioner Turner. Voting No: None. Abstaining*
4 *from Voting: Commissioner Tihansky. Absent from Voting: None. The motion carried.*

5 **IV. Public Hearings**

6 Chair Matyszczyk stated that due to the full agenda, each discussion item would be limited to
7 thirty minutes, and items may be continued to the next meeting as necessary.

8 **1. Discussion and possible recommendation to Town Council regarding a final Subdivision**
9 **approval for the Shoreline Phase 4 subdivision.**

10 Chair Matyszczyk reported the applicant had requested this matter be continued to a date certain
11 of December 19, 2024 at 6:00 PM.

12 *Motion: Commissioner Pieper moved to continue the discussion and possible recommendation*
13 *to Town Council regarding a final Subdivision Approval of Shoreline Phase 4 subdivision to*
14 *the December 19, 2024 6:00 PM Planning Commission meeting. Commissioner Cooper made*
15 *the second. Voting Yes: Commissioner Cooper, Chair Matyszczyk, Commissioner Pieper,*
16 *Commissioner Tihansky and Commissioner Turner. Voting No: None. Abstaining from*
17 *Voting: None. Absent from Voting: None. The motion carried.*

18
19 **2. Discussion and possible recommendation to the Hideout Town Council of an Ordinance**
20 **regarding updates related to subdivision procedures pursuant to Senate Bill 174 (2023) and**
21 **House Bill 476 (2024), including technical corrections, and amendments to Hideout Municipal**
22 **Code Titles 3, 8, 9, 10, 11, 12, and 13.**

23 Chair Matyszczyk introduced Mr. Jay Springer to lead the discussion of this matter.

24 Mr. Springer, an attorney with Smith Hartvigsen, provided an update on the procedures and
25 proposed amendments to Town Code required to comply with this new state legislation. He
26 reviewed the current markups to sections of Town Code which had changed since the October
27 Planning Commission meeting, noted he had made a preliminary presentation to the Town Council
28 on this material, and reminded the Planning Commissioners of the December 31, 2024 deadline
29 for adoption. He reiterated these procedure changes were limited to single-family, two-family and
30 townhome subdivisions.

31 Town Attorney Polly McLean requested several clarifications which Mr. Springer agreed to
32 incorporate. Chair Matyszczyk asked what would happen if these changes were not approved; Mr.
33 Springer responded the State statutes would still need to be complied with, however without the
34 specific procedures detailed in the proposed Code changes which could be less favorable to the
35 Town. Chair Matyszczyk also asked how applications under review prior to the December 31,
36 2024 deadline would be treated. Mr. Springer replied such applications would be considered under
37 the Code in place when submitted.

Ms. McLean shared a draft enabling Ordinance which would be included in the updated meeting materials. Commissioner Glynnis Tihansky asked for clarification on how the Planning Commission would be designated as the Administrative Land Use Authority but not make final approvals. Mr. Springer explained the preliminary presentations made to the Planning Commission would include all the detailed information necessary so that the Final Approval would be administrative and would not be substantively different than what the Planning Commission approved as Preliminary.

The meeting was opened for public comment at 6:29 PM; there was no public comment, and the public hearing was closed at 6:31 PM.

Motion: Commissioner Pieper moved to make a positive recommendation to Town Council regarding updates related to subdivision procedures pursuant to Senate Bill 174 (2023) and House Bill 476 (2024), including technical corrections, and amendments to Hideout Municipal Code Titles 3, 8, 9, 10, 11, 12, and 13, including the draft Ordinance as discussed. Commissioner Turner made the second. Voting Yes: Commissioner Cooper, Commissioner Pieper and Commissioner Turner. Voting No: Chair Matyszczyk and Commissioner Tihansky. Abstaining from Voting: None. Absent from Voting: None. The motion carried.

Ms. McLean asked why Chair Matyszczyk and Commissioner Tihansky had voted against the proposal. Chair Matyszczyk responded that he felt the new legislation was an overreach by the State in favor of developers; Commissioner Tihansky stated she felt the Town Council should have the final say on such matters.

3. Consideration of a proposal for a conditional use permit from Rocky Mountain Power regarding the Wildfire Mitigation Project, which would rebuild existing 46kV transmission lines.

Town Planner Thomas Eddington referred to the materials distributed prior to the meeting and discussed the planned project for Rocky Mountain Power (RMP) to rebuild a portion of an existing 5.8-mile 46kV transmission line including approximately 3.5 miles located throughout Hideout. Per Town zoning and State code requirements, a Conditional Use Permit (CUP) is required for this type of work.

This work would be conducted within the existing 40-foot easements where these existing overhead electrical lines were located, with 42 poles to be upgraded from existing wooden poles to Corten steel poles. Mr. Eddington referred to the map which showed the pole locations, and a table which detailed each new pole height, which in general would all be taller than the existing by between 5- and 15 feet. Mr. Eddington also noted the Open House hosted by RMP earlier this year where the project was presented to the community.

Messrs. Andy Badger and Brant Swander, representatives of RMP, were introduced and answered a variety of questions. They confirmed all new poles would be Corten steel, access to the right-of-way would be coordinated with property owners, and all disturbed areas would be re-vegetated. Any trees removed from areas below the transmission lines within the utility easement would not be replaced as part of this project which was intended to mitigate wildfire risks.

1 Mr. Eddington discussed the proposed conditions of approval listed in the Staff Report.
2 Commissioner Donna Turner asked how the new steel poles would mitigate wildfire risk, and if
3 this was a State-wide program or just related to our area. Mr. Badger stated this was a State-wide
4 initiative passed in 2020 and required RMP to develop such a plan, which included higher
5 transmission lines for greater ground clearance and replacement of wood poles which were more
6 likely to burn in a fire event.

7 In response to a question from Commissioner Joel Pieper regarding other upgrades along SR-248,
8 Mr. Badger responded there would be future work undertaken for other lines that were not
9 included in this project. Commissioner Tihansky asked if the taller were engineered to withstand
10 high winds. Mr. Badger replied that engineering had factored in wind conditions.

11 There being no further questions from the Planning Commissioners, the Public Hearing was
12 opened at 6:56 PM.

13 Mr. Jim Lopiccola, resident in Lakeview Estates, asked why these lines could not be buried, and
14 shared his concerns with the higher profile poles having a negative impact on his views and
15 property values. Mr. Badger replied that burial of transmission lines was very expensive with costs
16 passed on to rate payers (approximately \$40 million), and maintenance was more difficult for
17 buried lines.

18 Mr. Badger stated the RMP team had walked the existing easement and was confident the new
19 poles would each be located within 5-feet or so of the existing poles.

20 Mr. David Chawaga, resident on Star Gazer Drive Circle shared his concerns with the larger poles
21 having a negative impact on his views and property values. Chair Matyszczyk stated this was a
22 State mandated project. Mr. Badger noted these lines had been in place for decades and could not
23 be relocated.

24 Mr. Lopiccola asked if the pole heights had to be increased as much as indicated. Mr. Badger
25 responded the design plan accounted for the area's topography, ground clearance maintenance,
26 pole stress factors and weight which all needed to meet acceptable standards for fire mitigation.
27 In response to a question from Mr. Eddington regarding whether this project planned for any
28 redundancies, Mr. Badger stated no, this project did not include such planning. In response to a
29 question from Commissioner Pieper regarding the age of the current poles, Mr. Swander stated
30 some were as old as 69 years.

31 There being no further public comment, the Public Hearing was closed at 7:13 PM.

32 Mr. Eddington stated that this land use approval (Conditional Use Permit) was solely a matter for
33 the Planning Commission and would not go to the Town Council. Commissioner Rachel Cooper
34 suggested ongoing communication be provided to Hideout residents as construction commences.
35 She also asked if there would be any service disruptions planned during construction. Mr. Swander
36 expected there would be a one-to-three-hour service outage when service was transferred to the
37 new lines, and advance notice would be provided to the Town and residents. Upon completion of
38 all approvals, the RMP team hoped to begin the project in the spring of 2025.

39 Commissioner Turner asked what would happen if this approval was not granted. Mr. Badger
40 responded the project was within RMP's rights to operate and maintain these lines, and other legal
41 and administrative avenues could be pursued to move forward without the Town's approval. He
42 noted similar CUP approvals had already been received by Summit and Wasatch Counties.

1 Ms. McLean stated CUP standards are defined by State Code, and as long as the applicant can
2 show impacts can be reasonably mitigated, there really are no grounds for the Town not to grant
3 the approval. Mr. Eddington reviewed the proposed conditions for approval detailed in the Staff
4 Report, and suggested clarifications to item 3 regarding access to the construction sites from
5 private lands, and item 5 regarding a minimum 10-foot trail access throughout the area.

6 Commissioner Tihansky asked if a condition should be added requiring RMP to provide a
7 proposed timeline and project updates. Mr. Badger stated it was his experience to work closely
8 with communities on such communication, however the inclusion of specific conditions of use
9 was not the norm. He agreed to provide these communications and timelines as available.
10 Commissioner Cooper asked how long the project would take; Mr. Swander estimated it would
11 take approximately two to three months.

12 *Motion: Commissioner Tihansky moved to approve a conditional use permit from Rocky*
13 *Mountain Power regarding the Wildfire Mitigation Project, which would rebuild existing 46kV*
14 *transmission lines, with clarifications to items 3 and 5 in the conditions as discussed.*
15 *Commissioner Pieper made the second. Voting Yes: Commissioner Cooper, Chair Matyszczyk,*
16 *Commissioner Pieper, Commissioner Tihansky and Commissioner Turner. Voting No: None.*
17 *Abstaining from Voting: None. Absent from Voting: None. The motion carried.*

18 **4. Discussion regarding an amendment of the Official Town of Hideout Zoning Map to rezone**
19 **parcel 00-0020-8164 (Wildhorse Development) from Mountain (M) zone to Neighborhood**
20 **Mixed Use (NMU). This development is located on the northern side of SR-248, between the**
21 **Woolf property and the Klaim Subdivision.**

22 Mr. Eddington provided an overview of the updated design for the proposed mixed commercial
23 project which reflected a lower building height to comply with a twenty-foot height restriction
24 easement and a larger footprint than the prior submission. He noted the revised plan included more
25 retaining walls in the front and back of the building. He also discussed several issues which had
26 been highlighted in the Staff Report regarding 30% maximum slopes and setbacks which did not
27 conform to existing zoning code.

28 Ms. McLean reminded the Planning Commissioners this was a work session only to provide
29 feedback on the concept. The matter would not be voted on until a more complete proposal was
30 provided.

31 Mr. Tim Schoen and Ms. Diane Schoen, applicants, were in attendance and introduced members
32 of their team including Mr. Tom Longhi, architect, Mr. Jerry Crylen, development advisor, and
33 Kurt Basford, architect. Mr. Schoen discussed the evolution of the project which the team had
34 been working on for eighteen months and in which they attempted to meet the objectives set forth
35 in Hideout's General Plan, including bringing commercial development to the Town. Mr. Crylen
36 discussed some of the constraints presented by the building height restriction which led to a
37 redesign of a single-story structure, as well as the steep slopes of the property which have re-sited
38 the building beyond the previously proposed footprint. He also noted the current proposal reflected
39 the Fire District's request for a secondary access road. The proposed plan would require variances
40 from the current zoning code to accommodate the retaining walls and setback requirements from
41 the property line along the SR-248 boundary.

1 Commissioner Tihansky stated she liked the new design but asked how it might be reconfigured
2 to minimize retaining walls. Mr. Basford replied the retaining wall design would be terraced, and
3 he discussed some of the challenges with stretching the new design along the property and finding
4 the best elevation to accommodate the design.

5 Commissioner Pieper asked for clarification on the setbacks, and if they were measured from the
6 building or the exterior plaza structure before the retaining walls. Mr. Eddington stated the zoning
7 required 25-foot setbacks, but the setback along the SR-248 right-of-way required a 50-foot
8 setback pursuant to Town Code. Mr. Crylen noted the building was sited 150 feet from SR-248
9 (the paved road), which would not encroach on the neighboring property.

10 Commissioner Tihansky asked about the roof over the patio, whether it would abate the noise
11 coming from SR-248. Commissioner Cooper asked if a smaller building could reduce the amount
12 of retaining walls. Discussion ensued regarding economic viability for a smaller project, as well
13 as the need for more detailed analysis for the cut and fill required and a potential reduction of
14 retaining walls.

15 Ms. McLean stated the Town could grant variances through a development agreement, but
16 reminded the Planning Commissioners any re-zoning variance approvals would set a precedent
17 for future development requests. She added the plans presented were still preliminary and did not
18 provide details on the extent of potential variances to be requested.

19 Commissioner Turner stated she liked the look of the new design but was not comfortable with
20 the degree of variance which might be requested. Mr. Schoen stated some of the variance matters
21 could be mitigated upon completion of the civil engineering work.

22 Mr. Crylen pointed out the current design did not propose utilizing any of the adjacent Town-
23 owned parcel for additional parking.

24 There being no further questions from the Planning Commissioners, the Public Hearing was
25 opened at 8:10 PM.

26 Mr. William Woolf, resident and property owner on SR-248 adjacent to this property under
27 discussion, shared his concerns with variances on setbacks, slopes and easements which were
28 attempting to shoehorn a project that did not fit with the land. He also shared his concerns with
29 the precedent that would be set by granting such variance requests. He asked that any structures
30 specifically not exceed 20 feet from existing grade, and all heights be checked from existing grades
31 be verified as compliant.

32 Mr. Earl Dickerson, resident in Klaim subdivision, shared his observations that the proposed deck
33 area would be too close to SR-248 and would be negatively impacted by noise and exhaust from
34 the highway. He asked if there was not a restaurant in the development, what type of business
35 would go into the development.

36 There was no other public comment, the public hearing was closed at 8:16 PM.

37 Ms. McLean suggested the matter be continued to a date uncertain and re-noticed when new
38 materials were submitted. Mr. Longhi asked for guidance on which variance requests were “no-
39 go’s” and which might be more flexible. Mr. Eddington requested more detailed cross-section
40 drawings to understand retaining wall heights and agreed to send the applicant links to zoning
41 code.

Motion: Commissioner Tihansky moved to continue to a date uncertain the discussion regarding an amendment of the Official Town of Hideout Zoning Map to rezone parcel 00-0020-8164 (Wildhorse Development) from Mountain (M) zone to Neighborhood Mixed Use (NMU). This development is located on the northern side of SR-248, between the Woolf property and the Klaim Subdivision. Commissioner Pieper made the second. Voting Yes: Commissioner Cooper, Chair Matyszczyk, Commissioner Pieper, Commissioner Tihansky and Commissioner Turner. Voting No: None. Abstaining from Voting: None. Absent from Voting: None. The motion carried.

V. Agenda Items

- 1. Presentation and discussion of a concept plan for the Elk Horn Springs Development on parcels 00-0020-8182 and 00-0020-8184 ("the Salzman Property").**

Mr. Eddington reviewed this matter and introduced the applicant Nate Brockbank and his team members Eric Davenport and Paul Watson who were all in attendance. It was noted that this project now included a second parcel.

Commissioner Tihansky noted this was the last piece of undeveloped land in Hideout and stated her desire to ensure the land was not stripped down unnecessarily for development, that the hilltop previously discussed remain intact, and as much open space as possible be preserved.

Discussion ensued regarding the current proposed map, density and open space. Mr. Brockbank discussed the planned design which limited retaining walls to four feet, and noted the rear lot setbacks could be altered in order to minimize land disturbance. Mr. Eddington asked about the roads and slopes; Mr. Watson reviewed the map with retaining wall design details. In response to a question from Commissioner Tihansky regarding the existing home on the property, Mr. Brockbank stated he expected it would be sold.

Mr. Eddington suggested options for staggering lots to provide additional areas of open space. Discussion ensued regarding distance of the commercial area from SR-248 and potential uses for the 17 acres to be dedicated to the Town which could include a community clubhouse for public use. Mr. Brockbank thanked the Planning Commissioners for their feedback and stated he would come back with updated plans.

VI. Meeting Adjournment

There being no further business, Chair Matyszczyk asked for a motion to adjourn.

Motion: Commissioner Tihansky moved to adjourn the meeting. Commissioner Turner made the second. Voting Yes: Commissioner Cooper, Chair Matyszczyk, Commissioner Pieper, Commissioner Tihansky and Commissioner Turner. Voting No: None. Absent from Voting: None. The motion carried.

The meeting adjourned at 9:08 PM.

Kathleen Hopkins
Deputy Recorder for Hideout

File Attachments for Item:

1. Consideration of establishing the 2025 Planning Commission Regular Meeting Schedule

2025 ANNUAL MEETING SCHEDULE FOR THE MEETINGS OF THE PLANNING COMMISSION OF HIDEOUT UTAH

Pursuant to §52-4-202 of the Utah Code, the Town of Hideout hereby gives notice that the Hideout Planning Commission will generally hold its regular Planning Commission meetings for the 2025 calendar year on the third Thursday of each month. The regular meetings generally begin at 6:00 pm and are held electronically via Zoom and in-person at Hideout Town Hall, located at 10860 N. Hideout Trail, Hideout Utah, 84036 unless otherwise noticed.

January 16, 2025	July 17, 2025
February 20, 2025	August 21, 2025
March 20, 2025	September 18, 2025
April 17, 2025	October 16, 2025
May 15, 2025	November 20, 2025
June 19, 2025	December 18, 2025

Zoom Meeting URL: <https://zoom.us/j/4356594739>
To join by telephone dial: US: +1 408 638 0986 **Meeting ID:** 435 659 4739
YouTube Live Channel: <https://www.youtube.com/channel/UCKdWnJad-WwvcAK75QjRb1w/>

File Attachments for Item:

1. Consideration and possible recommendation to the Hideout Town Council of a resolution adopting the Hideout Town Engineering Standard Specifications and Drawings Manual and an ordinance amending Title 10 related to Engineering, Development and Design Standards.



Staff Report for Proposed Changes to the Municipal Code

To: Chairman Tony Matyszczyk
Hideout Planning Commission

From: Thomas Eddington Jr., AICP, ASLA
Town Planner

Re: Proposed Changes to the Hideout Municipal Code, Titles 8, 9, and 10

Date: December 16, 2024 Planning Commission Meeting

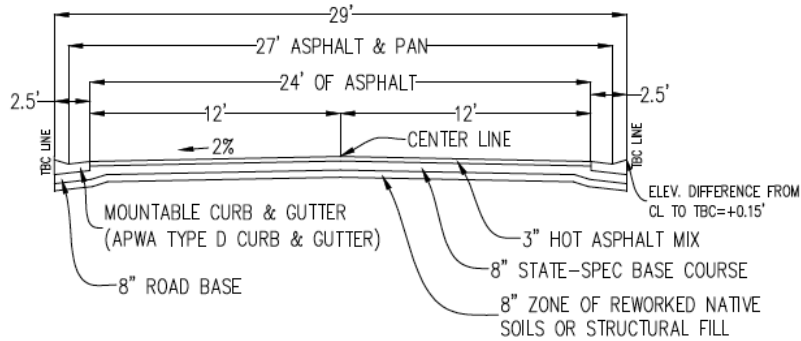
The following is a series of recommendations by the Town Engineer, Gordon Miner, to remove the engineering standards that are currently included in the Town's Municipal Code and incorporate them into an engineering Standard Specifications and Drawing Manual. This is a common practice that creates an easy-to-use manual for future development projects. Rather than have designers and developers look through multiple code sections, all engineering standards are easily reviewed in one document.

The Town Engineer will be at this meeting to walk the Planning Commission through the proposed changes to the code.

Most of the Town's Engineering Standards will remain essentially the same and will generally be relocated in the new Standard Specifications and Drawing Manual. However, the Town Planner and Engineer would like the Planning Commissioners to specifically look at the newly proposed road widths which are slightly wider than current standards. In addition, the Planning Commission should review and discuss curbs for streets. Historically, the Town has required a rolled curb and gutter, which is essentially a slightly sloped gutter that helps to direct stormwater. The Standard Specifications and Drawing Manual currently detail a high-back curb (i.e., a 6" high curb that cannot be traversed in a car) that requires defined curb cuts for driveways.

The images on the following page are for comparison and discussion purposes.

A typical road section to date (from the Shoreline Development plan set):



29' ROAD CROSS SECTION – PUBLIC STREET

The proposed road section:

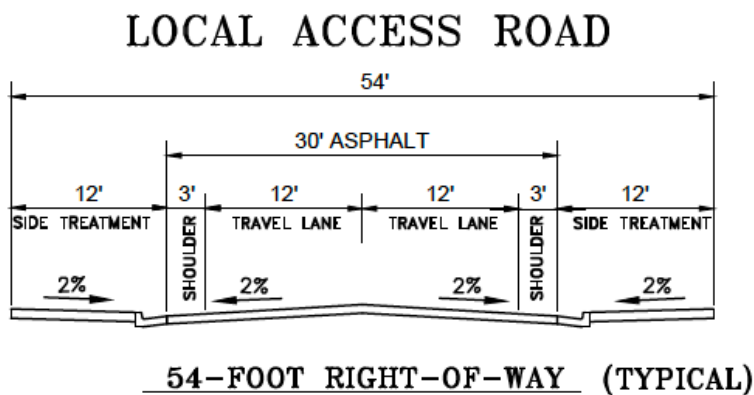
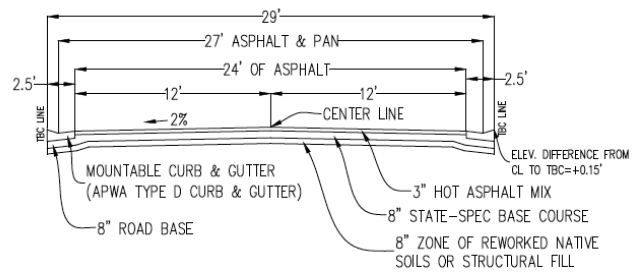


Exhibit A, following this page, provides a visual comparison for local, minor collector and major collector roads.

Recommendation

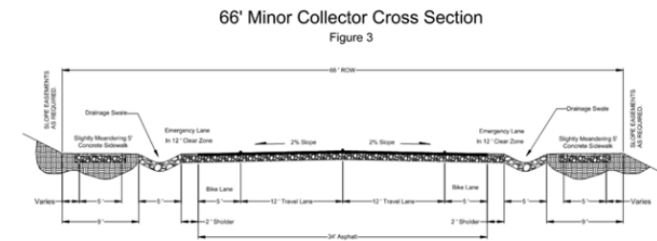
The Planning Commission should review the roads and curbs, in particular, and provide direction and forward a recommendation to the Town Council for these, and all, proposed changes to the Hideout Municipal Code.

Current Standards

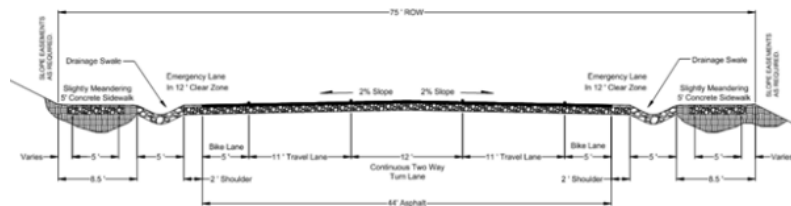


29' ROAD CROSS SECTION – PUBLIC STREET

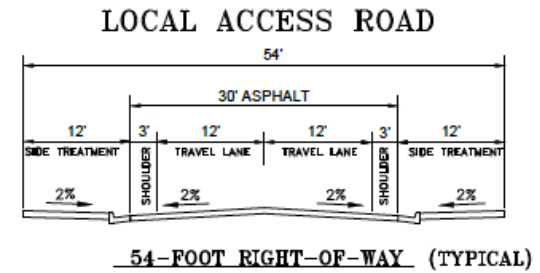
From Shoreline Submittals for Phase 3



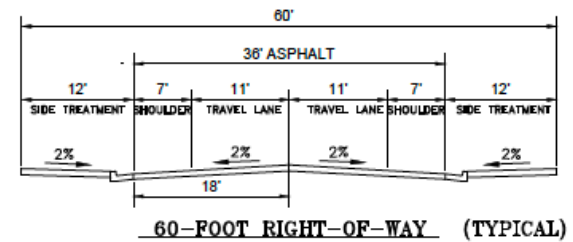
75' Major Collector Cross Section
Figure 2



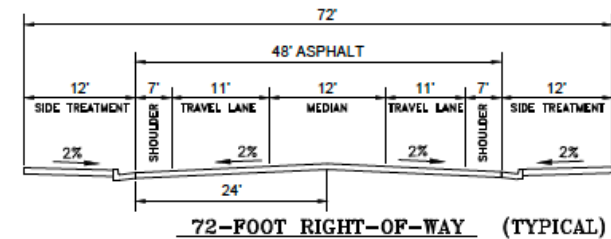
Proposed Standards



MINOR COLLECTOR



MAJOR COLLECTOR





HIDEOUT UTAH

**Adopted:
December XX, 2024**

Hideout Town
Engineering Department

STANDARD SPECIFICATIONS AND DRAWINGS MANUAL

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1.0 GENERAL

1.1 DEFINITIONS

ACCESS: Any driveway or other point of entry or exit, such as a street, road, or highway that connects to the general street system. Where two public streets intersect, the secondary street is considered the access.

ACKNOWLEDGEMENT: Recognition by the Town that the Engineer of Record, has certified his or her construction Plans and supporting information to be in compliance with the Hideout Town Code and Standard Specifications and Drawings.

APPLICANT: Any person, corporation, entity, designee, or agency applying for a permit.

APPROVED EQUAL: Equipment or material which, in the opinion of the Town's Representative, is equal in quality, durability, appearance, strength, design, performance, physical dimensions, and arrangement to the equipment or material specified, and will function adequately in accordance with the general design.

AS-BUILT DRAWINGS: Drawings which show the Project as actually-constructed, and which include any and all changes made to the construction Plans before and during construction.

BEST MANAGEMENT PRACTICE (BMP): Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the State.

TOWN INSPECTOR: The authorized representative of the Town or Engineer assigned to make detailed inspections of the Work performed, or of materials furnished by the Contractor.

TOWN/OWNER: Wherever, in the Contract Documents the word "Town", "Town", or "Owner" appears, it shall be interpreted to mean "Hideout Town", unless otherwise denoted.

CONSTRUCTION ACTIVITIES: Clearing, dredging, excavating, and grading of land and other activities associated with buildings, structures or other types of real property such as utilities, bridges, dams, and roads. Includes mobilization/demobilization and any other activity that occurs on site.

DRIVEWAY: A grade-separated access constructed within the right-of-way connecting the public street with adjacent property.

EASEMENT: An interest in real property that conveys use, but not ownership, of a portion of an owner's property.

EIGHTIETH PERCENTILE STORM EVENT: The depth of rainfall which is not exceeded in 80 percent of all runoff-producing rainfall events within the time period analyzed. In other words, 80 percent of the rainfall storm events that produce runoff are less than or equal to this depth. In Hideout Town, this depth is 0.50 inches.

ENGINEER: The Town Engineer or his or her representative.

ENGINEER-OF-RECORD: The professional engineer, licensed in the State of Utah, who prepared, or directly supervised the preparation of the engineering Plans and documents presented to the Town for acknowledgement, and who shall accept sole responsibility for the completeness and accuracy of the Plans and documents presented to the Town.

ESSENTIAL INFRASTRUCTURE: Essential infrastructure during construction includes temporary all weather surface roads, fire hydrants, and street signs for emergency wayfinding. The access requirements of IFC Chapter 5 and Appendix D must be installed and approved prior to final inspection and the issuance of a Certificate of Occupancy. Temporary roads are required to be capable of supporting vehicle loading under all weather conditions, and must meet the following criteria:

- A. The surface of the road should be capable of carrying the load of the anticipated emergency response vehicles and be drivable in all kinds of weather.
- B. Compacted road base to APWA Standards at least 8 inches thick.
- C. Access roads shall be maintained for emergency and fire access throughout the duration of the project.
- D. Fire hydrants must be installed and functional prior to combustible materials arrival on the site.

FINAL ACCEPTANCE OF PUBLIC INFRASTRUCTURE: The date specified in writing by the Engineer when all work, including all punch list work designated by the Engineer, is complete and accepted by the Town after the completion of the warranty period following the Project Acceptance for Maintenance.

INSPECTED AND ACCEPTED or ACCEPTANCE: Town recognition of infrastructure conformance to all applicable Town Standards.

INTERSECTION: The general area where two or more streets join or cross at grade.

LAW: Any applicable Town, County, State, or Federal statutes or regulations governing anything relating to the Work embodied in the Agreement.

PARTIAL STREET: A street that has full frontage improvements on one side and has at least 25 feet of pavement.

PAVEMENT: The uppermost layer of bituminous or Portland-cement concrete material placed on the traveled way or shoulders for a riding surface, whether rigid or flexible in composition. This term is used interchangeably with "surfacing."

PEER REVIEW: A process through which professional engineers, with expertise and experience in the appropriate fields of engineering equal to or greater than the Engineer-of-Record, evaluate, maintain, or monitor the quality and utilization of engineering services, prepare internal lessons learned, or exercise any combination of such responsibilities.

PROFESSIONAL ENGINEER: An engineer who is licensed to practice in the State of Utah.

PROFESSIONAL LAND SURVEYOR: A land surveyor who is licensed to practice in the State of Utah.

PUBLIC UTILITY EASEMENT (PUE): A property right provided for "dry" utilities (gas, power, telecom) that are regulated by the Public Service Commission. Town utilities are not public utilities.

RECOGNIZED-AND-GENERALLY-ACCEPTED GOOD ENGINEERING PRACTICES (RAGAGEPs): Practices that are based on established codes, standards, published technical reports or recommended practices or similar documents. RAGAGEPs are not practices from other cities or practices promoted by individuals based on their individual professional judgement.

RIGHT-OF-WAY (ROW): All public rights-of-way and easements, public footpaths, walkways and sidewalks, streets, roads, highways, alleys, and water or drainage ways. It does not, however, include Public Utility easements not within Public Ways of the Town.

STANDARD SPECIFICATIONS AND DRAWINGS: The Hideout Town Standard Specifications and Drawings and other specifications and drawings adopted by reference.

STREET: A general term for denoting a public way or private way for the purpose of transporting people, materials, and goods.

SUBGRADE: That portion of the roadbed surface which has been prepared, as specified, and upon which a layer of specified roadbed material or base, or sub-surfacing, or pavement is to be placed.

SUBSTANTIVE REVIEW: A general evaluation of the overall design and general compliance with the Town Code and engineering standards. It is not an exhaustive review for compliance with each specific provision of the Town Code, other applicable standards or regulations, or RAGAGEPs. Substantive review shall not shift the responsibility and liability for the completeness and accuracy of the Plans and related designs from the Engineer-of-Record to the Town.

SURFACE OR SURFACING: The uppermost layer of material placed on the traveled way or shoulders, and is usually of asphalt or concrete. This term is used interchangeably with "pavement."

WORK: The construction services performed including materials on Town infrastructure and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations to construct a project. The term also includes the supervision, inspection, and other on-site functions incidental to the actual construction.

1.2 ADOPTION OF THE HIDEOUT TOWN STANDARD SPECIFICATIONS AND DRAWINGS

Hideout Town has adopted the following as the basis for the Hideout Town Standard Specifications and Drawings, in the following hierarchy. In the event of a discrepancy, the strictest standard shall apply:

- A. Hideout Town Standard Specifications and Drawings Manual as included herein.
- B. Jordanelle Special Service District Design Standards, Construction Specifications, and Standard Drawings (JSSD)
- C. American Public Works Association Manual of Standard Specifications (APWA), current edition of the Utah Chapter of APWA and the Associated General Contractors (AGC) of America.
- D. APWA Manual of Standard Plans, current edition of the Utah Chapter of APWA and the Associated General Contractors of America.
- E. All storm-drainage-related work not specifically described in these Standards shall conform to Mile High Flood District Urban Storm Drainage Manual, current edition (MHFD Manual).
- F. Washington Department of Ecology, Technology Assessment Protocol Technology – Ecology (TAPE) Program, Storm Water Pre-Treatment Technologies, General Use Level Designations (GULD).
- G. Federal Highway Administration (FHWA) Hydraulic Engineering Circulars (HEC).
- H. International Fire Code (IFC), current edition, Appendix D.
- I. All transportation-related work not specifically described in these Standards shall conform to the latest editions of: policies and practices published by the American Association of State Highway Transportation Officials (AASHTO), or the Institute of Transportation Engineers (ITE), or the Utah Department of Transportation (UDOT) Roadway Design Manual, the selection of which shall be at the sole discretion of the Town Engineer.
- J. FHWA and Utah Manual on Uniform Traffic Control Devices for Highways and Streets (MUTCD).
- K. All work not specifically described in these Standards, JSSD, APWA, MHFD, AASHTO, ITE, IFC Appendix D, and MUTCD shall conform to RAGAGEPS.

The Hideout Town Standard Specifications and Drawings Manual is available for download at www.hideoututah.gov. The APWA Manual of Standard Specifications and Manual of Standard Plans are available for purchase at select cities within the State of Utah (see <http://utah.apwa.net/> for more information).

Contract Documents and Conditions of the Contract as found in the Current APWA Manual of Standard Specifications and Plans Manual are to be used as the basis for Town contracts. Modifications to these specifications may apply to specific projects.

1.3 AMENDMENTS TO THE APWA STANDARDS

- A. APWA Specifications
- B. APWA Plans
 1. Storm drain boxes shall have no dead volume. Pipe flow lines shall be flush with the floors of the boxes.

1.4 TOWN ENGINEER'S AUTHORITY

- A. The Town Engineer has the authority to provide substantive review of submitted construction Plans, studies, and supporting documentation.
- B. The Town Engineer shall provide feedback pursuant to his/her substantive review of the construction Plans, studies, and supporting documentation.
- C. Changes to address the Town Engineer's feedback shall be made to the construction Plans and returned to the Town Engineer for Town acknowledgement of the Construction Plans for construction.
- D. The Town Engineer has authority to issue Stop Work Orders when construction is progressing contrary to the Town Code, the Town's Standard Specifications and Drawings, or an acknowledged set of construction Plans.
- E. The Town Engineer has additional authority, such as stated in these Specifications and the Town Code.

1.5 CONSTRUCTION NOTES

A. TYPICAL

1. Contractor assumes all responsibility for job site conditions during construction of this project, including the safety and well-being of all persons and property. This responsibility shall apply continuously and not be limited to normal working hours.
2. Contractor shall obtain all applicable permits and/or written agreements necessary to complete the work.
3. Contractor shall schedule a pre-construction meeting with the Town's Engineering Department at least 5 business days prior to the start of construction. Contractor must attend and bring one set of the acknowledged construction Plans and a copy of the current Hideout Town Standard Specifications and Drawings Manual (available at hideout.tah.gov).
4. Contractor shall have in possession and on-site at all times one copy of the current acknowledged construction Plans stamped, signed, and dated by the Engineer of Record, the Applicant, and the Town.
5. Developer's Engineers (Civil and Geotechnical) shall perform sufficient inspections and surveys during grading and construction to render an opinion in writing as to adherence to the accepted Plans and compliance with the Town Standard Specifications and Drawings Manual.
6. Survey monuments must be installed in accordance with the current Wasatch County Surveyor's Office requirements.
7. All disturbed property survey markers shall be reset in their original locations upon completion of all construction activities.
8. Contractor shall provide all traffic control which must conform to the current MUTCD. Provide site specific Traffic Control Plans [prepared by an American Traffic Safety Services Association (ATSSA) or AGC Certified Individual] prior to installation of any traffic control device.

B. TRENCHES AND UTILITIES

1. Contractor is responsible to locate, avoid, protect, and repair all utilities encountered during construction, whether or not they are shown on the Plans. Locations of underground utilities shown on Plans are approximate and require field verification by Contractor.
2. All trenches within public right-of-way must be backfilled or securely plated per JSSD during non-working hours. Trenches outside these areas shall be back-filled or protected by approved temporary fencing and/or barricades during non-working hours. Trenches in roadway must be backfilled, compacted and asphalted per JSSD within 48 hours of road-cut. Paint striping shall be replaced in accordance with Town Standards within 48-hours of restoration of pavement.

C. ROADWAY CONSTRUCTION AND RESTORATION

1. Subgrade must be approved prior to construction of asphalt and untreated base course pavement sections. Subgrade approval requires that all utilities be installed, connections to main lines completed, inspected, and accepted by the Town.
2. Asphalt patching to roads between October 15 and April 15 will be considered temporary only, and must be replaced according to APWA Standards and Specifications between the following April 16 and June 1.
3. Material submittals are required for all items placed within the Town Right of Way. All submittals must be dated within 90 days of Construction Date (unless specified otherwise) and be submitted prior to the start of construction activities.
4. Moratorium Standard (New, Reconstructed, and Overlaid Streets): No cuts permitted for two (2) years from the time of construction/ reconstruction/overlay)
5. Special Restoration Standard: This standard applies to new, reconstructed, overlaid, and slurried streets:
 - a. *New, Reconstructed, and Overlaid Streets (for 5 years after end of moratorium):* The asphalt surface shall be milled a minimum depth of two (2) inches, and fifteen (15) feet each way from the edge of the cut. Milling shall be done in widths equivalent to existing striped traffic lanes.

The Town Engineer reserves the right to require additional area and/or depth if deemed appropriate to restore roadway to original condition. Approved fabric is required when existing pavement included a fabric prior to the permitted cut.

- b. *Slurried Streets (for one year after slurry application)*: The asphalt surface shall be re-slurried a minimum of fifteen (15) feet each way from the edge of the cut, in widths equivalent to existing striped traffic lanes.
6. Roads shall be opened for traffic during peak hours. Lane closures may only be in effect from 9am-3pm, and 7pm-7am.
7. Paint striping shall be replaced in accordance with Town Standards within 48-hours of restoration of pavement.

1.6 SUBMITTALS

- A. **ENGINEERING PLAN REVIEW CHECKLIST** – The Town provides an Engineering Plan Review Checklist with the permit application to assist developers and their professionals in the preparation of the engineering submittals for the acceptance of a development project. The Engineering Checklist does not replace the Town Code or Engineering Standards and Specifications. The Engineering Checklist must be completed and signed by the Applicant and the Engineer-of-Record.
- B. **SUPPLEMENTAL ENGINEERING REPORTS** – All engineering reports submitted for final acceptance shall be stamped, signed, and dated by a professional engineer **ON THE FIRST SUBMITTAL**.
 1. **Drainage Report** – Drainage reports must be prepared in accordance with the design criteria and methodologies specified in these Standards. Drainage reports shall include an Infiltration Feasibility Determination in accordance with Utah Rule 317-4-4. In addition to the required engineer's stamp, signature, and date, drainage reports must include a certification from the engineer stating:

I hereby certify that this report/design for the management of storm water and snow of this development was prepared by me, or under my direct supervision, according to applicable engineering standards. I understand that the Town assumes no responsibility or liability whatsoever for the feasibility and long-term viability of the facilities addressed herein.
 2. **Geotechnical Report** – Geotechnical reports shall include pavement designs that comply with the Town Standards. Geotechnical reports shall include percolation tests performed in accordance with Utah Rule 317-4-14, Appendix D, and shall be submitted on a signed "Percolation Test Certificate". The Percolation Test Certificate shall report the median measured percolation rate.
 3. **Traffic Impact Study (TIS)** – A traffic study is necessary to identify, review, and make recommendations for mitigation of the potential impacts a development may have on the roadway system. Identification of impacts and appropriate mitigation measures allows the Town to assess the existing and future system safety, performance, maintenance, and Town needs. TISs shall follow the Utah Department of Transportation's TIS Requirements, including the Levels of Study and associated Thresholds. Additional requirements and investigation may be imposed upon the applicant as necessary. Likely information presented in a TIS may include, but is not limited to, site location and proposed access point(s), phased and/or full development trip generation, connection point design elements, adjacent and relevant development, existing and future traffic volumes, assessment of the system impacts, and mitigation measures as appropriate.
 4. **Reimbursement Agreement Exhibits** – Reimbursements for all infrastructure upsizing (system improvements) beyond the project improvement needs must be presented to the Town Council at the plat or site plan step for authorization to have staff work on a reimbursement agreement with the applicant. Reimbursement agreements must be accepted by the Town Council and executed by both parties **before** construction can begin on the project. If the applicant wishes to begin construction before there is an agreement in place with the Town, they must sign a waiver stating they accept the risk that they may not be reimbursed for any improvements installed, even if they are system improvements. The following exhibits are required to initiate a reimbursement agreement:
 - a. **Exhibit A -- Itemized Schedule of Values** – Include quantities and unit prices of reimbursable items. Correlate it with an accompanying map. It shall be stamped, signed, and dated by the Engineer-of-Record.

- b. Exhibit B – Contractor bids or engineer estimates that support the prices shown in the Itemized Schedule of Values.
 - c. Exhibit C -- Map of Reimbursable Items – Show the locations of all of the reimbursable items. Correlate it with the accompanying Itemized Schedule of Values.
- C. BOUNDARY SURVEY – Boundary surveys, also known as record of survey, shall be stamped, signed, and dated by a professional land surveyor. If performed within the last 90 days, the survey shall have been filed in the Office of the County Surveyor and include evidence of filing.
- D. EASEMENT AGREEMENT – All easement agreements shall be submitted to the Town Engineer on the Town's Standard Easement template (available upon request from the Town Engineer) for Town acceptance. Easements in the name of the Town shall not be recorded by anyone except the Town. After Town acceptance, the recordation at the County Recorder's Office of which shall be referenced on the subject plat. Right-of-Discharge easements (available upon request from the Town Engineer) shall be granted to and indemnify the Town whenever storm water drainage, or snow, from Town ROW discharges, or is placed, onto private property.
- E. SUBDIVISION PLAT – Subdivision plats submitted for final acceptance shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.
- F. LEGAL DESCRIPTION – Legal descriptions submitted for final acceptance shall be accompanied by an illustration of the legal description, both of which shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.
- G. STORM WATER POLLUTION PREVENTION PLAN for Construction Activities (SWPPP) – SWPPPs shall NOT be part of the engineering design Plans. They shall be submitted by the general contractor prior to a pre-construction meeting. SWPPPs shall follow the Utah Division of Water Quality Template, and shall be prepared by a Utah-Registered SWPPP Writer.
- H. ENGINEERING DESIGN PLANS – Engineering Design Plans, including but not limited to:
1. Reference to the Town's Construction Notes (Section 1.4)
 2. Boundary Survey or ALTA Survey
 3. Topographical (existing conditions) Survey
 4. Subdivision Plat
 5. Demolition Plan (as necessary)
 6. Site Plan
 7. Grading, Drainage, and Snow Management Plan
 8. Utility Plan
 9. Signing and Striping Plan
 10. Plan/Profile Sheets
 11. Detail Sheets (not including copies of Town, JSSD, and APWA Standard Drawings). Standard Drawings shall be referenced in ONE place for all applicable infrastructure.

The Grading, Drainage, and Snow Management Plan shall include a certification from the Engineer-of-Record stating:

I hereby certify that this design for the management of storm water and snow from this development was prepared by me, or under my direct supervision, according to applicable engineering standards. I understand that the Town assumes no responsibility or liability whatsoever for the feasibility and long-term viability of the facilities addressed herein.

Certification of Peer Review

The Engineering Design Plans shall be peer reviewed and shall be certified by the Peer Reviewer with the following language.

The undersigned hereby certifies and verify that a thorough professional peer review of these plans and the required designs was conducted by me, a professional engineer with expertise and experience in the appropriate fields of engineering equal to or greater than the Engineer-of-Record, and that all appropriate corrections have been made to comply with the Hideout Town Code and Standard Specifications and Drawings.

The Engineering Design Plans, simultaneously with the acknowledgement by the Applicant and Town Engineer, shall be certified by the Engineer-of-Record with the following language.

Engineer's Certification

As the Engineer-of-Record, I hereby certify that these construction Plans and supporting information ("Plans") comply with the Hideout Town Code and Standard Specifications and Drawings ("Standards"). I understand and agree that:

1. The Town's acknowledgment of these Plans shall not be construed to be a permit for, or an approval of, any variance from any of the provisions of the Standards.
2. Any communication from the Town giving feedback on the Plans shall be construed as feedback only and shall not be interpreted as authorization to vary from or cancel the provisions of the Standards.
3. The Town's acknowledgement of these Plans or feedback from the Town on whether the Plans meet the Standards shall not prevent the Town from requiring the correction of errors in the Plans at any time, including after construction of improvements.
4. The Town's acknowledgement of these Plans does not constitute a permit from the Federal or State Government or permission to deviate from Federal or State Laws or Regulations.
5. The Town's acknowledgement of these Plans does not grant permission to work on the properties of others.

2.0 STORM DRAIN SYSTEM

2.1 HYDROLOGY

A. TABLE 1 – PRECIPITATION FOR USE WITH THE RATIONAL METHOD (inches)

Duration	Recurrence Interval (years)		
	2	10	100
5-min	0.16	0.27	0.54
10-min	0.24	0.42	0.82
15-min	0.31	0.52	1.02
30-min	0.41	0.70	1.37
60-min	0.50	0.86	1.69
2-hr	0.63	1.00	1.92
3-hr	0.72	1.10	1.97
6-hr	0.95	1.36	2.15
12-hr	1.21	1.68	2.57
24-hr	1.51	2.08	3.08

B. TABLE 2 – PRECIPITATION FOR USE WITH THE TR-55 METHOD (inches)

Duration	Precipitation (inches)		
	2-yr	10-yr	100-yr
5	0.004	0.005	0.006
10	0.006	0.006	0.006
15	0.007	0.007	0.008
20	0.008	0.008	0.008
25	0.008	0.008	0.011
30	0.009	0.010	0.011
35	0.009	0.010	0.011
40	0.010	0.011	0.011
45	0.011	0.012	0.014
50	0.012	0.013	0.017
55	0.013	0.014	0.017
60	0.014	0.016	0.020
65	0.140	0.241	0.473
70	0.114	0.195	0.384
75	0.078	0.133	0.262
80	0.049	0.084	0.165
85	0.033	0.057	0.112
90	0.023	0.040	0.079
95	0.016	0.028	0.055

Duration	Precipitation (inches)		
	2-yr	10-yr	100-yr
100	0.012	0.021	0.042
105	0.010	0.016	0.032
110	0.008	0.014	0.028
115	0.008	0.014	0.027
120	0.009	0.016	0.031
125	0.011	0.016	0.012
130	0.013	0.014	0.017
135	0.012	0.013	0.017
140	0.011	0.012	0.014
145	0.010	0.011	0.011
150	0.009	0.010	0.011
155	0.009	0.010	0.011
160	0.008	0.008	0.011
165	0.008	0.008	0.008
170	0.007	0.007	0.008
175	0.006	0.006	0.006
180	0.004	0.005	0.006
Total	0.72	1.10	1.96

*These design storms capture the critical elements of shorter-duration storms that often control in subbasins with short times of concentration.

TABLE 3 – DESIGN STORM FREQUENCIES

Type of Structure	Minimum Design Storm Frequency
Water Quality Treatment Devices	2-Year Storm – Peak Flow
Water Quality Capture Volume	0.50 inches using 2-yr Rational Coefficients
Storm Drain (gutters, street, inlets, M.I.s, pipes, etc.)	10-Year Storm – Peak Flow
Streets, channels, swales, creeks, bridges, culverts, and other surface routes	100-Year Storm – Peak Flow 10-Year Storm – Peak Flow for Erosion Protection
Flood Control Detention Systems	100-Year Storm – Critical intensity within 24 hours
Flood Control Retention Systems	100-Year 24-hour Storm Depth

C. TABLE 4 – RUNOFF COEFFICIENTS FOR USE WITH THE RATIONAL METHOD

Surface Type	2-Year Storm	10-Year Storm	100-Year Storm
Paved and Roof	0.79	0.83	0.87
Landscaped	0.14	0.28	0.57
Native Open Space	0.03	0.17	0.50
Retention Pond	0.84	0.87	0.89
Other	As Determined by the Town Engineer per MHFCD.		

D. REQUIRED MEHODOLOGIES

1. Runoff for areas less than 90 acres – Rational Method.
2. Runoff for areas 90 acres and greater – NRCS Technical Release 55 (TR-55) within Autodesk Storm and Sanitary Analysis (SSA) with a precipitation distribution and duration from Table 2. The NRCS Unit Hydrograph Transform Method shall be used with the lag time assumed to be equal to the time of concentration. The Muskingum-Cunge Routing Method shall be used for routing hydrographs. Pervious and directly-connected impervious areas must be modeled using separate subbasins. Composite Curve Numbers of these dissimilar areas is not allowed. Mapped Hydrologic Soil Groups (HSG) shall not be used on areas where soil has been or will be disturbed. In areas of disturbed soils, a site-specific soil study shall be conducted to determine its HSG. The applicant must provide the Town with pdf copies of all input and output computer files in sufficient detail and format to perform a design review.
3. Flood control detention for less than 90 acres – Federal Aviation Administration (FAA) Method modified with the Guo “Averaging Parameter” Method in Appendix A. Multi-stage control facilities shall be modeled using TR-55 per Section 2 above.
4. Flood control detention for greater than 90 acres – Regional flood control detention facilities shall be modeled using TR-55 per Section 2 above.
5. Water Quality Volume – $WQV = 0.50 \text{ in.} \times C_{2\text{-yr}} \times DCIA$, where:

$C_{2\text{-yr}}$ is the Rational Runoff Coefficient for the 2-year return period. See Table 4.

6. DCIA is the directly-connected (to the outfall) impervious area. For single-family residential (SFR) developments, this area shall be: the area of all of the streets between the backs of curbs; the area of all of the driveways, assuming 30-foot-wide driveway the depth of the setback plus 10 feet; and one-fourth of the roof areas. Developments other than SFR shall be calculated individually. The Water Quality Volume can be included as part of the flood control volume.

2.2 DESIGN REQUIRMENTS

A. GENERAL

1. The impact of any proposed storm drainage system on the existing storm drainage system will be reviewed by the Town Engineer. The developer may be required to add off-site storm drain project improvements to provide adequate drainage control for their development.
2. The peak flow from the 2-year storm must be treated for water quality using a water quality detention volume or a GULD water quality treatment device approved by the Washington Department of Ecology.
3. Areas that will be drained through the proposed development will be considered and the method of drainage for those areas will be determined by the Town Engineer. Accommodations for pre-existing pass-through drainage are project improvements.
4. Public storm drainage shall not flow onto private property and public and private storm drainage shall not be comingled unless the private property owner chooses to accept public storm drainage onto their property, grant an easement to the Town accepting the drainage as theirs, and release and indemnify the Town from potential liabilities associated with it.
5. Snow from public rights-of-way shall be stored on adjacent private properties. Private properties on which snow from public rights-of-way is stored shall grant an easement to the Town accepting the snow as theirs, and release and indemnify the Town from potential liabilities associated with it.

B. COLLECTION AND CONVEYANCE

1. The piped and surface drainage system together shall be capable of passing the storm runoff from a 100-year event without flooding buildings, with 1 foot of freeboard.
2. The piped system shall be sized for the 10-year event without pressurizing. If the developer desires, the piped system can be used to convey the 100-year event if it is sized from the top of the catchment to receive the 100-year event.
3. Except for when the piped system is sized for the 100-year event, the 100-year system shall remain on the surface, be directed to the street ROW, and shall terminate at a 100-year flood control pond.
4. Natural drainage channels shall be:
 - a. left in their natural state whenever possible. Street crossings are acceptable if sized with the 1 foot of freeboard AND debris flow is accounted for.
 - b. remediated as a project improvement with adjacent land development
 - c. modeled using HEC-RAS if directed by the Town Engineer

- d. protected from erosion pursuant to HEC-15 and North American Green methodologies. Drop structures shall be employed where possible.
 - e. configured with side slopes not exceeding 3:1.
- 5. Buildings shall not be located within 50 feet of one foot above the 100-year water surface elevation of open channels.
- 6. Inlet boxes shall be placed:
 - f. on lot lines.
 - g. at sags.
 - h. at curb returns, preferably on the upstream side.
 - i. a maximum spacing based on gutter-spread, not exceeding $\frac{1}{2}$ of the drive lane, calculations using HEC-22, Appendix A, Chart 1B.
 - j. to eliminate the need for street intersection waterways.
- 7. Street sags shall have an overland runoff route to a flood control pond or to another street.
- 8. Downhill cul-de-sacs shall have an overland runoff route sized for the 100-year event along a lot line with an easement in the name of the Town, but maintained by the property owner(s), with the required channel cross section recorded on the plat.
- 9. Cleanout boxes shall be:
 - a. placed at junctions and changes in alignment and slope.
 - b. placed a maximum of 400 feet apart.
 - c. self-cleaning. Storm drain boxes shall have no dead volume. Pipe flow lines shall be flush with the floors of the boxes.
 - d. labeled with "Storm Drain" on the manhole cover.
 - e. labeled with "[water quality message]" on hooded inlets.
- 10. Pipelines shall be placed within Town ROW and shall:
 - a. be located pursuant to the Town's Standard Drawings.
 - b. be made of reinforced concrete.
 - c. have a minimum diameter of 15 inches, or as shown in the Capital Facilities Plan.
 - d. have a minimum slope in accordance with HEC-22 Table 7-7 (3.0 fps flowing full).
 - e. have a maximum velocity of 20 feet per second.
 - f. have a minimum cover pursuant to the manufacture's recommendations, or below the roadbase, whichever is greater.
 - g. come together in cleanout boxes with crown elevations matching.
 - h. extend to property lines to accommodate future development.
 - i. Install fabricated galvanized steel trash gates over the ends of all exposed pipes 15 inches in diameter and larger.
 - j. include energy dissipation at enclosed-to-open-channel and open-channel-to-enclosed transitions pursuant to the MHFD Manual.
 - f. be inspected by video at the expense of the developer prior to acceptance.
- 11. Open channels shall:
 - k. have at least one foot of freeboard
 - l. be designed to protect from erosion pursuant to HEC 15

C. DETENTION, RETENTION, AND SNOW STORAGE

Detention and retention facilities shall be privately-owned-and-maintained unless specifically agreed to by the Town Council. Private surface ponds shall be designed the same as public ponds.

- 1. The maximum release rate from detention facilities shall be historical or based on the capacity of the downstream system, whichever is less, as calculated using the methods required above.
- 2. The WQV shall not be counted as part of the flood control volume.
- 3. Infiltration may be considered in detention and retention system volume calculations.
- 4. Flood control detention is not required when there is a surface runoff route directly to Jordanelle Reservoir, excluding all tributary channels that might receive flow downstream of the subject area.
- 5. Retention facilities must:
 - a. be assumed to be half of the full depth for infiltration calculations.
 - b. be designed using the median measured percolation rate divided by 2.
 - c. drain within 48 hours.
 - d. provide a means for inspecting water levels in underground retention systems.
 - e. , if underground, be protected on the upstream side with a water quality treatment device approved by Washington Department of Ecology, TAPE Program, Pre-treatment General-Use Level Designation.

6. Surface ponds shall:
 - a. have at least 1 foot of freeboard above the water surface elevation of the 100-year flow through the emergency spillway, assuming the primary outlets are plugged. Above ground detention ponds in parking lots shall have 1 foot of freeboard to the finished-floor elevation of adjacent structures.
 - b. have a maximum depth of 4 feet. In parking lots, the maximum depth is 8 inches in parking stalls.
 - c. have side slopes not exceeding 3h:1v,
 - d. have a bottom slope of at least 1.5 percent.
 - e. have a pipeline under the pond, or a concrete-lined low-flow channel through the bottom of the pond, to convey flows that are less than the capacity of the outlet.
 - f. have inside corner radii of at least 10 feet.
 - g. spill to a street or other safe discharge point approved by the Town Engineer.
 - h. have a structural BMP upstream of the orifice to catch trash and debris.
 - i. , if they are used, locate orifice plates such that they can be cleaned off when the pond is full. The minimum size of an orifice shall be 3.14 square inches. Every effort shall be made by the Engineer-of-Record to minimize the head over the orifice
 - j. be landscaped pursuant to Town Standards, except for above-ground detention in private parking lots.
 - k. have inlet and outlet structures that match the side slope and top-of-bank of the pond, with the following two options:
 - i. Grated: Grates shall be made of galvanized steel with the bars oriented parallel to the side slope of the pond, spaced a maximum of 2 inches apart, with sufficient supporting cross bars.
 - ii. Fenced: Fenced structures shall be surrounded by an 8-foot simulated wrought-iron aluminum fence, with a gate with a 3/8-inch padlock mechanism, and a 6-inch concrete mow strip.
 - l. have a maintenance access road and ramp into the bottom of the pond. Maintenance access roads shall:
 - i. be at least 15-feet wide.
 - ii. have an all-weather surface, such as reinforced sod, traversable architectural rock, or other traversable pervious surface, with a punch bearing capacity of at least 40,000 pounds.
 - iii. Have a maximum slope of 15 percent
 - iv. Have breakover angles pursuant to APWA Plan 225 for service truck access.
 - v. Provide a jet truck work zone that does not block a street lane, is not more that 7 feet from the front of the truck to the farthest inside wall of the box, and is not more than 15 feet from the side of the truck to the farthest inside wall of the box.
7. A detention pond is permitted to be located within a single residential lot, but only in a single-phase subdivision. The property owner of the residential lot on which a detention pond is located shall be responsible to maintain the pond and its underground infrastructure. This responsibility shall be noted on the subject lot on the plat.
8. Provide pervious, landscaped, and readily-accessible snow storage areas that are equivalent to at least fifteen percent of the total adjacent impervious areas, including public rights-of-way. Snow storage areas shall accommodate snow removal. Snow storage areas shall be shown on the subdivision plat. Easements and easement agreements, as necessary, shall be granted and shown on the subdivision plat. Easement agreements shall obligate the property owner for snow management and include a detailed description of snow removal methods and annual management.

3.0 DRINKING WATER SYSTEM

Private systems shall be designed the same as public systems. Private systems shall be inspected for cross connections the same as public systems. Systems that serve private development shall be master-metered and privately-owned-and-maintained.

3.1 DESIGN REQUIREMENTS

A. PIPELINES

1. Pipelines shall be as shown in the Capital Facilities Plan, or at least 8 inches in diameter unless the Town Engineer allows a smaller diameter down to 4 inches to improve water quality in dead-end lines. Pipelines that supply fire hydrants shall be at least 8 inches in diameter.
2. Pipelines in private streets shall be on the same sides as in public streets.
3. The minimum fire flow shall be pursuant to State Standards, or more if determined by the Fire Marshall.

4. The minimum operating pressure in all parts of the system shall be 40 pounds per square inch during peak day demand.
5. The minimum operating pressure in all parts of the system shall be 30 pounds per square inch during peak instantaneous demand.
6. The maximum operating pressure in all parts of the system shall be 120 pounds per square inch.
7. Systems shall be designed so that pressures conform to the pressure zones shown in the Town's Capital Facilities Plan.
8. The maximum flow velocity shall be 6 feet per second.
9. The impact of any proposed system on the existing system will be reviewed by the Town Engineer. The developer may be required to add infrastructure to mitigate impacts to the existing system and provide adequate water supply to their development.
10. If required by the Town Engineer, the Engineer-of-Record shall provide a computer network model, for the Town Engineer's review, of the proposed system showing compliance with this Standard. The Town will provide boundary conditions, based on the system, for the model.
11. Individual booster pumps are not allowed.
12. Permanent dead-ends shall not be longer than 600 feet.
13. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.
14. Pipelines shall extend to property lines to accommodate future development.
15. Public pipelines through private property shall be in dedicated home-owner-association or business-owner-association open space centered in a 20-foot-wide easement in favor of the Town.

B. VALVES

1. Valves smaller than 10 inches shall be gate valves. Valves 10 inches and larger shall be butterfly valves.
2. Valves shall be placed at intervals not exceeding 300 feet.
3. At junctions, valves shall be placed on all legs, minus one, as directed by the Town Engineer.
4. Valves shall be placed within 5 feet to 10 feet of the ends of casings.
5. Valves shall be placed at connections to the existing system.
6. Blow-offs shall be placed at the ends of and low points in pipelines. Fire hydrants may be used as blow-offs.
7. Air vacuum valve stations shall be placed at high points of the system and other locations as required for proper system operation.

C. FIRE HYDRANTS

1. Fire hydrants shall be placed at the ends of cul-de-sacs, the ends of dead-end streets, and every 1000 feet of off-site pipelines.
2. Fire hydrants shall be placed as directed by the Fire Marshall.
3. The minimum fire flow shall be pursuant to State Standards, or more if required by the Fire Marshall.

D. JSSD

4.0 SANITARY SEWER SYSTEM

JSSD

5.0 STREET SYSTEM

Private Streets -- Private streets shall be privately-owned-and-maintained. The pavement design (subbase, roadbase, and asphalt) for private streets shall be at least the same as public streets. The pavement width of private streets shall be at least as wide as required by the latest edition of Appendix D of the International Fire Code.

5.1 DESIGN REQUIREMENTS

- A. Because preference is given to pedestrians, a driveway approach is required for all private accesses (APWA Plan 225 for non-single-family residential accesses and private streets, and APWA Plan 221 for single-family residential accesses) unless recommended otherwise by the Town Engineer, based on site-specific considerations, such as:

1. speed, slope, and functional classifications of the adjacent street
 2. width of the proposed access
 3. volume of the proposed access
 4. drainage
- B. Curb returns adjacent to ADA ramps shall have a maximum slope of 2 percent where possible. Where the base of the curb ramp, or the edge of the flush landing must join an intersection of two streets with running grades greater than 2 percent, the base of the curb ramp or the edge of the flush landing may be warped to meet the street running grade. Every effort shall be made to minimize this grade by warping the street cross slope plus or minus 4 percent on both legs of the intersection.
- C. The following Table 5 serves as a guide to design professionals by providing a summary of the Town's Street Design Standards. These Standards are required unless specifically accepted otherwise by the Town Council. In the absence of standards specified by the Town, street design shall conform to the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) "A Policy on Geometric Design of Highways and Streets." Selections from other published professional standards, i.e. ITE, ASCE, may be considered at the sole discretion of the Town Engineer.
- D. A physical traffic calming measure is required on street segments longer than 1000 feet without at least a 45-degree turn.
- E. Partial streets are allowed when developing a street along a property line and the other property owner is unwilling to participate in the development. But, storm drainage must still be managed according to these Standards, which might require additional right-of-way and infrastructure.
- F. School crosswalks and associated STOP bars shall be placed along Safe Routes to School routes. Other crosswalks shall be placed as directed by the Town Engineer.
- G. Street Names -- New street names shall not duplicate those names already existing. A street that is obviously a continuation of another street shall bear the same name. All street names shall be approved by the Planning Commission and the Wasatch County Information Systems Department.
- H. Relation to Adjoining Street System -- The arrangement of roads in new subdivisions shall provide for the continuation of existing streets to adjacent areas at the same (or at least the minimum) or greater width. Where the Planning Commission determines that it is necessary, for orderly development and the health and safety of the community, to provide street access to adjacent properties, proposed streets shall be extended by dedication to the boundaries of adjacent properties.
- I. Cuts in Pavement -- No cuts shall be made in street pavement for at least five years without approval by the Mayor with the advice of the Town Engineer, except to protect public health and safety.

TABLE 5 – GEOMETRIC DESIGN OF STREETS

DESIGN ELEMENT	LOCAL (Class II)	MINOR COLLECTOR (Class III)	MAJOR COLLECTOR (Class IV)
Average Daily Traffic Maximum	3,000	6,000	15,000
Design Speed (mph)	25	30	
Posted Speed (mph)	20	30	
Typical Section Elements			
Right-of-Way Width	54'	64'	73'
Pavement Width (excluding C&G)	30'	40'	54'
Number of Lanes	2	2	3
Side Cut/Fill Slopes (outside ROW)	3:1 up to 5 feet high and 2:1 above 5 feet high		
20 Year ESAL Requirement	60,000	50,000	250,000
Vertical Design Elements			
Vehicle Design	Passenger, School Buses, Delivery Trucks, Dump Trucks		
Minimum Centerline Grade		0.5%	
Maximum Centerline Grade	10%*		3%
Maximum Centerline Grade Across Designated Crosswalks	5%		4%
Maximum Grade in Cul-de-Sacs	5%	Cul-de-Sacs Not Allowed	
Maximum Centerline Grade Break w/o Vertical Curve	1%		0.5%
Maximum TBC Grade Break w/o a Vertical Curve**	2%		2%
Minimum Crest Vertical Curve "K" Value	12		19
Minimum Sag Vertical Curve "K" Value	16		37
Minimum Length of Vertical Curve	75		90
Horizontal Design Elements			
Minimum Mid-Block Centerline Curve Radius	198'		333'
Superelevation	Not Allowed		
Intersections			
Intersection Sight Distance	AASHTO "A Policy on Geometric Design", Latest Edition		
Corner Curb Radius	See Standard Drawing ST-5.		
Minimum Angle of Intersection	60°		80°
Maximum Centerline Offset	5'		2'
Maximum Centerline Grade***	5%		4%
Vertical Tie-In	Lower streets shall match the centerline crowns in an intersection. Higher streets shall tie in 10' off the centerline of local streets and at the edge of the outside travel lane of other streets.		

* 12% for lengths not exceeding 500 feet.

** Maximum grade break of 2% along TBC with Minimum length of 25 feet between breaks.

*** Grade must extend to the F/C/P of the intersecting street.

TABLE 6 – ACCESS MANAGEMENT

Hideout Town Access Management Standards										
Functional Classification	Minimum Driveway Spacing (feet) ^{1,2,3,4}			Cross Street Unsignalized Intersection Spacing (feet)	Geometric Design of Driveway Access ⁵					Minimum Signal Spacing (feet)
	Upstream and Downstream (feet)	Opposing Upstream (feet)	Opposing Downstream (feet)		Single-Family Residential Driveways			Other Driveways		
					Approach Width (feet) ⁶	Edge Clearance (feet) ⁷	Curb Return Radius (feet)	Approach Width (feet) ⁶	Edge Clearance (feet) ⁷	
Major Arterial w/o Median Barrier	350	175	160	660	12 min	6 min	10 min	Two Way	20 min	2640
Major Arterial w/ Median Barrier	200	130	160	400						2640
Minor Arterial w/o Median Barrier	200	115	105	660						1320
Minor Arterial w/ Median Barrier	150	65	105	400						1320
Collector w/o Median Barrier	150	105	90	250	30 max	15 max	One Way	16 min	20 min	1320
Collector w/ Median Barrier	85	70	70	150						1320
Minor Collector w/o Median Barrier	85	100	90	250						1320
Minor Collector w/ Median Barrier	50	50	70	150						1320
Local w/ or w/o Median Barrier	-	-	-	150						N/A

1. Driveway spacing is measured as shown in Figure 1.

2. Corner clearance requirements for access points should meet or exceed the minimum driveway spacing requirements. Curb cuts on major arterials should be spaced at distances greater than 230 feet apart, measured from face-of-curb to face-of-curb, with the preferred distance being 300 feet.

3. For corner properties, access to public streets should be provided from the lesser (lowest functional classification) street.

4. Driveways in right-turn lane transition areas are prohibited.

5. For the benefit of traffic safety and flow, access points may be required to be designed to prohibit certain types of turning movements.

6. Wider driveway widths may be permitted to accommodate additional turning and/or acceptance lanes.

7. Distance between side property line and edge nearest drive as measured along traveled way.

Figure 1: Measurements for Minimum Access Spacing Standards

J. STREET LIGHTING

When private street lighting is required by Town ordinance, the location and spacing of private street lighting shall be the same as public street lighting. Other aspects of private street lighting shall be at the discretion of the developer.

All public street lighting shall be installed in accordance with the most current Town Standards, Utah APWA, Rocky Mountain Power Standards and N.E.C. (National Electric Code). A streetlight plan showing wiring location, wiring type, voltage, power source location, conduit size and location shall be submitted to the Town and be approved prior to construction. No deviation to location of streetlight, pull boxes, conduits, etc., shall be permitted without prior written approval from the Town Engineer or his/her representative.

1. Location and Spacing

- a. Every intersection and access that has a street name sign, corner, and bend in road, shall have a street light.
- b. Shall be installed along property lines where attainable.
- c. Shall not be installed within 5 feet of a fire hydrant. The location shall be such that it does not hinder the operation of the fire hydrant and water line operation valves.
- d. Shall be a minimum of 5 feet from any tree, unless written approval is received from the Town Engineer. Branches may need to be pruned as determined by the Engineering Inspector in the field at the time of installation.
- e. Shall not be installed within 5 feet from the edge of any driveway.
- f. Any structure such as block walls, chain link fences, retaining walls, etc., shall leave a minimum of eighteen (18) inches to the face of the street light pole on all sides.
- g. Wherever there is an overhead utility that may conflict with the installation of the street light circuits and/or street light poles, those conflicts must be resolved between the developer and the utilities involved before the street light bases are constructed at no expense to the Town or Rocky Mountain Power. The resolution must be approved by the Town and Rocky Mountain Power.

2. Voltage – All street lights shall have 120 (nominal) volt input voltage.

3. Conductors

- a. The minimum wire size shall be #6 AWG RHW-2 copper lines from power source to the ground boxes.
- b. From the pole base or (if and hole) to the fixture head #10 or #12 THHN copper will be only allowed.
- c. No aluminum wire allowed.
- d. Wire to be black, white, green or phased taped at both ends.
- e. Run conduit to the back side of transformer. Leave 8 feet excess wire to transformer or 6 feet excess wire to secondary box as per Rocky Mountain Power ("RMP") requirements, so that RMP will make the connection. Contractor is able to use HDPE conduit so long as it is schedule 40, grey in color, the wire is the correct size and listed for this use. All installations of HDPE shall be installed according to the current edition of the NEC Section 353 and UL labeled and listed.
- f. Multiple Pole Installation: Wire size shall be designed by an electrical engineer with no more than a 3% of a drop in the nominal voltage at the base of each pole. The minimum wire size shall be a #6 AWG RHW copper wire suitable for wet conditions. Electrical engineer to submit design drawings to the Town for review.
- g. It shall be required that in the absence of an existing workable circuit to attach to, that all installations shall require new service for operation of the circuits in this case developer and/or his engineer shall contact Rocky Mountain Power. The new service shall be located within the utility right of way and shall be provided at the developers cost.
- h. All electrical work must be performed by a licensed electrician.
- i. All service point(s) shall be coordinated with Rocky Mountain Power and whenever possible be located near the center of the circuit. Service point(s) shall be shown on the Plans.
- j. Photo cells must face north.

4. Conduit

- a. All conduits shall be a minimum of 1-1/2 inch PVC, Schedule 40 and grey in color. Contractor is able to use HDPE conduit so long as it is 1-1/2 inch, schedule 40, grey in color, and the wire

- is the correct size and listed for this use. All installations of HDPE shall be installed according to the current edition of the NEC Section 353 and UL labeled and listed.
- b. 90° sweeps/bends shall have a maximum of 24 inch radius and a minimum of 18 inch radius.
 - c. Conduit shall have a minimum of 18 inches of cover in a utility trench and a maximum of 30 inches of cover (refer to details – diagram sheet.)*
 - d. All conduits shall have an approve cap or duct seal on ends to prevent debris from entering conduit during construction.
 - e. All empty conduits shall have a pull string.
 - f. Conduit shall extend a maximum of 3 inches and a minimum of 1 inch above the finished streetlight concrete base.
 - g. Multiple Pole Installations: Conduits will be allowed to be of a larger size as required to accommodate the larger wire sizes.
 - h. Mark all buried conduits by placing plastic marker tape (minimum 6" wide) along the entire length of run 12-inches below grade.
 - i. Inspection: Prior to backfilling, buried conduit shall be inspected and recorded by a Town GIS Technician.
5. Bases
- a. All bases shall be a maximum of 2 inches above sidewalk or top back of curb grade or whichever is higher.
 - b. Bases shall be located in the park strip as indicated on Town Standard Plan ST-6.
 - c. Allow the concrete pole base to cure for at least 7-days prior to installing the street light.
6. Ground Box
- a. Known as box, vault, flush mount, pull box, enclosure, and junction box.
 - b. Box and cover shall be Oldcastle Precast, Carson H Series #H1118-12 (11"W X 18" L 12" D) or approved equivalent with the words "Street Lighting" on the cover.
 - c. Lid must be secured with the proper stainless steel bolts.
 - d. 6" of gravel (3/4 minus) shall be placed prior to setting the ground box.
 - e. Top of ground box shall be placed at finished grade.
 - f. Conduit shall extend a maximum of 3 inches above the gravel in the base of the ground box and a minimum of 2 inches above gravel in the base of the ground box.
 - g. One ground box shall be installed within 4 to 10 feet of the power sources (as per Rocky Mountain Power specifications)
 - h. One ground box shall be installed within 2 feet of street light pole base. This item may be modified or deleted as determined by the Engineering Inspector in the field during construction, with input from the Town Street Light Manager.
 - i. Wire must extend 18 inches above grade to splice in ground box.
7. Connections
- a. Wire nuts are allowed in the pole base assembly.
 - b. Mechanical lugs NSI EC SLK – 2/0 Gel packs or equivalent may only be used in the ground box and shall meet NEC specifications, be UL labeled & listed and be designed for this purpose.
 - c. A Littelfuse LEBJJ fuse holder (or equivalent) with weatherproof rubber boots, mechanical connection, 600 volt rated and 30 AMP rated shall be used.
 - d. Fuse shall be 10 AMP BLN, 20 AMP BLN and 30 AMP BLN or equivalent one time fuse.
 - e. Fuse holder shall be placed on all hot leads.
 - f. Crimp connections not are allowed.
8. Grounding
- a. All grounding shall be installed according to the current Edition of the NEC Section 250 and UL labeled and listed.
 - b. The ground rod shall be a minimum of 2 inches above finished concrete grade for the street light base and a maximum of 3 inches above finished concrete grade for street light base. See detail sheet.
 - c. When non-metered street lights are installed, article 250.24 shall be applied for bonding & grounding applications for service supplied AC systems.
 - d. Conductor: Solid, cu, bare, soft drawn.
 - e. Ground Rod or Ground Ring:
 - i. Ground Rod – 8 feet x 5/8 inch diameter Copper weld/bonded, cu.
 - ii. Ground Ring – #6 AWG copper clad per NEC Section 250.
 - iii. At any time the Town may require third party testing at the expense of contractor in addition to any costs to remedy deficiency.
9. Clam: 5/8-inch copper-clad.
10. Burndy KA24U 14 – 1/10 AWG AL/CU mechanical lugs or equivalent shall be used to connect the ground wire to the group clip inside the street light pole.

Appendix A

Guo “Averaging Parameter” Method

DETENTION BASIN SIZING FOR SMALL URBAN CATCHMENTS

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Abstract

The Federal Aviation Administration (FAA) method for sizing small detention and retention basins is a volume-based approach that is sensitive to the release rate. In practice, such a release rate is often approximated by open channel hydraulics or culvert hydraulics. Without a consistent guideline, this practice of approximation can result in significant discrepancy or violation of the volume balance between the inflow and outflow hydrographs. In this study, a consistent procedure was developed to derive the average release from the allowable peak outflow. The required parameters for this method include peak inflow, design storm duration, and the time of concentration of the watershed. With this modification, the detention storage volume maximized by the FAA method can satisfy the volume conservation between hydrographs.

Key Words: Detention, Rational, FAA

INTRODUCTION

Urban stormwater facilities are designed to pass the peak flow through conveyance systems or to store a portion of the runoff volume in detention systems. For a small urban catchment with a tributary area less than 100 acres, the rational method is suitable for peak runoff predictions and the Federal Aviation Administration (FAA) method is recommended for detention storage volume predictions. The FAA's procedure is to maximize the required storage volume by the volume difference between the inflow and outflow volumes produced by a series of rain storms on the watershed. During the optimization process, the outflow volumes are calculated by an approximate average release from the detention basin. In current practice, there is not any guidance as to how to estimate the average release.

As a volume-based method, the FAA procedure has been widely used for small urban catchments in spite of its ambiguity in estimating the average release from the basin. For instance, the average release may be calculated by open channel flow, orifice formula, or culvert hydraulics. These hydraulic approaches result in violation of the hydrologic principle of volume conservation between the inflow and outflow hydrographs and inaccurate calculations on the required detention storage volume. To improve the current practice, this study suggests that the average release be a fraction of the allowable release rate. This fraction can be further derived by the volume conservation principle between inflow and outflow hydrographs during the maximization process. In this study, this ratio was found to vary with respect to storm duration, and is not a constant as recommended in many design criteria such as the Denver Design Criteria Manuals, and FAA Airfield and Heliports Design Criteria. The revised procedure can also be applied to other volume-based methods such as the capture runoff volume method (Guo and Urbonas, 1996) for sizing storm water quality control ponds. It provides a

consistent guideline to the estimation of the average release from a basin, and warrants volume conservation between the inflow and outflow hydrographs.

DETENTION STORAGE VOLUME BY THE FAA METHOD

The volume-based approach such as the FAA method is applicable to urban catchments with a tributary area less than 150 acres. To predict the peak runoff from such a small urban watershed, the Rational method states:

$$Q_d = \alpha C I_d A \quad (1)$$

The rainfall intensity in Eq 1 can be described as:

$$I_d = \frac{aP}{(b + T_d)^n} \quad (2)$$

in which α = unit conversion factor, equal to 1 for English units, and 1/360 for SI units, C = runoff coefficient, A = watershed area in acres (hectare), I_d = rainfall intensity in inch/hr (mm/hr), T_d = rainfall duration in minutes, Q_d = peak runoff rate in cfs (cms) and a , b , and n = constants on the Intensity- Duration- Frequency (IDF) formula.

Storm water detention process is to reduce the peak runoff and to delay the time to peak as well. In practice, the allowable release rate from a basin is defined by the downstream critical capacity, or the pre-development condition.

In this study, the average release is suggested to be a fraction of the allowable peak runoff, Q_a . Therefore, we have:

$$Q_m = mQ_a \quad (4)$$

in which Q_a = the allowable release which occurs at time T_a in Figure 1, Q_m = average release rate, and m = ratio of the average release to the allowable peak runoff rate. For a storm event, the detention storage volume is equal to the volume difference of the inflow and outflow as:

$$V_i = \alpha C I_d A T_d \quad (5)$$

$$V_o = Q_m T_d = mQ_a T_d \quad (6)$$

$$V_d = 60[\alpha C I_d A T_d - Q_m T_d] = 60[Q_d T_d - Q_m T_d] \quad (7)$$

in which V_i = inflow volume, V_o = outflow volume, and V_d = the required storage volume in cubic feet or cubic meter. The factor of 60 is to convert seconds to minutes. The reliability of Eq 7 depends on the specified average outflow in Eq 4. Without an adequate guidance, Eq 7 may lead to any result based on engineer's best estimation. Although an adjustment factor have been recommended to avoid underestimation of the detention volume by Urbonas and Stahle (1991) and Guo (1990), it is necessary to develop a consistent guideline for Eq 4.

MAXIMIZATION OF DETENTION STORAGE VOLUME

The peak runoff flow that occurs at the time of concentration, T_c is recommended for conveyance designs. It is well understood that the design storm duration for a detention basin is usually longer than T_c . As illustrated in Figure 1, the peak flow, Q_d , is produced by the design storm for the detention design. To estimate the required storage volume with no prior knowledge of the outlet hydraulics, it is suggested that the storage volume be calculated using the linear rising outflow hydrograph, i.e. line OB in Figure 1 (Malcom 1982) (Guo 1997). Based on the volume difference between the inflow and outflow hydrographs in Figure 1, the detention storage volume, i.e. the shaded area, is:

$$V_d = 60 \left[Q_d T_d - \frac{Q_a}{2} (T_d + T_c) \right] \quad (8)$$

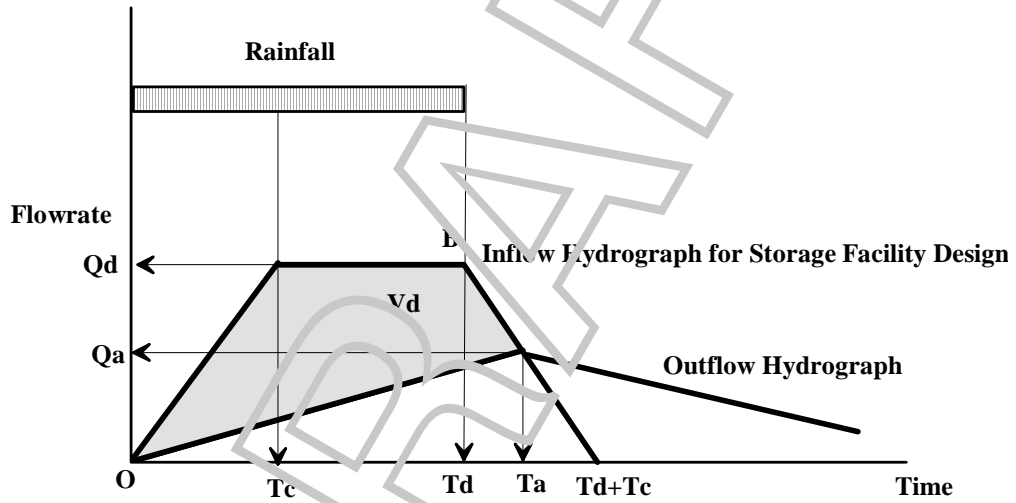


Figure 1. Detention Storage Volume Estimated by Hydrographs

Equating Eq 7 to Eq 8, the value of m is derived as:

$$m = \frac{1}{2} \left(1 + \frac{T_c}{T_d} \right) \quad \text{for } 0.5 \leq m \leq 1 \text{ and } T_d > T_c \quad (9)$$

Often the value of m is recommended to be a constant between 0.80 and 0.90 for all storm events (Urbanos and Stahre in 1991). Eq 19 indicates that the value of m varies with respect to the rain storm duration and can not be applied to a storm with duration less than T_c because the maximized operation of a detention basin requires the entire catchment to be tributary. The current practice does not have any limitation on storm duration and results in a maximization procedure starting from 5-minute rainfall. Eq. 9 begins with a value equal to unity when the storm duration is equal to T_c and then reduces to 0.5 when T_d is much longer than T_c . In comparison, the current practice of applying a constant value of m to all storm events can lead

to significant mistake. Substituting Eq 9 into Eq. 5 with the aid of Eq 3, the FAA method is modified to:

$$V_d = 60 \left[\alpha C I_d A - \frac{Q_a}{2} \left(1 + \frac{T_c}{T_d} \right) \right] T_d \quad (10)$$

The basic concept in the FAA method is to find the maximum volume difference between the inflow and outflow volumes under a series of storm events with different durations. Eq 10 shall be tested for a range of T_d until Eq 10 is maximized as:

$$V_m = 60 \left[\alpha C I_m A - \frac{Q_a}{2} \left(1 + \frac{T_c}{T_m} \right) \right] T_m \quad \text{at } T_d = T_m \quad (11)$$

where the subscript m represents the maximized solution.

DESIGN SCHEMATICS AND EXAMPLES

The example watershed used in this study is located in the City of Denver, Colorado. The 100-year IDF in Denver is specified by $a = 74.1$, $b = 10$, and $n = 0.786$. The developed watershed of 100 acres has a time of concentration of 25 minutes and runoff coefficient of 0.65. It produces a 100-year developed peak runoff of 296.86 cfs. The allowable release is 33% of the developed peak runoff. As a result, the allowable release rate is

$$Q_a = 0.33 Q_p = 97.96 \text{ cfs} \quad (12)$$

The detention volumes for various periods of storm duration are calculated in Table 1. The maximized volume is found to be 8.52 acre-ft for this example.

Duration	Rainfall Intensity	Inflow Volume	Average Parameter	Average Outflow	Outflow Volume	Storage Volume
minutes	inch/hr	acre-ft	M	cfs	acre-ft	acre-ft
		Eq5	Eq 9	Eq 4	Eq 6	Eq 10
50.00	2.97	13.28	0.75	72.36	4.98	8.30
60.00	2.63	14.12	0.71	68.34	5.65	8.47
70.00	2.37	14.33	0.68	65.47	6.31	8.52
80.00	2.16	15.45	0.66	63.32	6.98	8.47
90.00	1.99	16.00	0.64	61.64	7.64	8.36

Table 1. Example for Maximization of Detention Volume.

CONCLUSIONS

Different hydrologic methods were developed for different hydrologic conditions. In the development of technical design criteria, it is a continual effort to maintain consistency among various design methods. The FAA method intends to be a simplified volume-based approach.

However, the current practice falls short in the estimation of the average outflow. This study presents a modification to the volume-based approach such as the FAA method so that the estimated detention volume can be consistent with the hydrograph method. Modifications to the FAA procedures shall not change its original intention as a simplified approach. As a result, this study applies the volume conservation principle between the simplified hydrographs to relate the average outflow as a fraction of the allowable release rate.

In this study, it was found that the average outflow can be determined by the allowable release from the basin, design storm duration, and the time of concentration of the watershed. In practice, the average release was often considered to be the average flow rate over the base time of the outflow hydrograph. This study indicates that this average outflow in fact is the equivalent average release rate that drains the basin storage volume over the storm duration time. Secondly, the ratio of average release to allowable release was not so constant as recommended by the current practice. Instead, it varies between one and 0.5, depending on storm duration. Applying a constant ratio to all storm events may result in a significant discrepancy against the volume conservation between the inflow and outflow hydrographs. Eq 9 provides a consistent guideline that modifies the current FAA procedures to satisfy the hydrograph volume balance.

APPENDIX I. REFERENCES

1. Adams County, Colorado. (1990) "Storm Drainage Design and Technical Criteria."
2. Department of the army and the Air Force. (1977) "Surface Drainage Facilities for Airfields and Heliports." Technical Manual No 5-820-1, Washington DC.
3. Federal Aviation Administration, Department of Transportation. (1970) "Airport Drainage.", AC No. 150/5320-5B.
4. Guo, James C.Y. (1977). "Detention Basin Design and Sizing." Research Report, Department of Civil Engineering, University of Colorado at Denver, to be published by the Water Resources Publication, Inc. Littleton, Colorado.
5. Guo, James C.Y. and Urbona, Ben. (1996) "Maximized Detention Volume Determined by Runoff Capture Ratio." ASCE J. of Water Resources Planning and Management, Vol. 122, No. 1.
6. Malcom, H. Rooney. (1982) "Some Detention Design Ideals." ASCE Proceedings of the Conference on Stormwater Detention Facilities, held in New England College, Hanniker, New Hampshire, edited by William DeGroot.
7. Shueler, Thomas R., and Helfrich, Mike. (1989) "Design of Extended Detention Wet Pond System." Design of Urban Runoff Quality Controls, Edited by Larry A. Roesner, Ben Urbonas, and Michael B. Sonnen, American Society of Civil Engineers, New York, New York.
8. Urbonas, Ben and Stahre, Peter. (1991) "Storm Water Detention." Prentice Hall, Englewood Cliffs, New Jersey.

Appendix B

Subdivision Plat Template

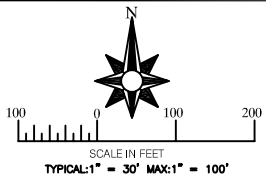
STANDARD PLAT FORMAT

PLAT REQUIREMENTS

- FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET FACES EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
- ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES AND CURVES USED TO DESCRIBE BOUNDARIES, BLOCKS, LOTS, STREETS, ALLEYS, EASEMENTS, AREAS TO BE RESERVED FOR PUBLIC USE AND OTHER IMPORTANT FEATURES.
- BOUNDARY LINES SHALL BE DRAWN HEAVIER THAN STREET AND LOT LINES.
- MONUMENTS SHALL BE INSTALLED BY THE SUBDIVIDER'S ENGINEER OR LAND SURVEYOR AT SUCH POINTS DESIGNATED ON THE FINAL PLAT AS ARE APPROVED BY THE PLANNING DEPARTMENT.
- MONUMENTS MUST BE PLACED PRIOR TO FINAL BOND RELEASE.
- THE WASATCH COUNTY RECORDER'S OFFICE MAY HAVE ADDITIONAL REQUIREMENTS FOR THIS PLAT

ITEMS REQUIRED FOR FINAL PLAT:

- SECTION INFORMATION - TWO OR MORE CORNERS IF POSSIBLE
- BASIS OF BEARING CLEARLY LABELED
- BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
- POINT OF BEGINNING CLEARLY LABELED
- BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
- BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED LAND
- THE 100-YR FLOOD LEVEL OF ALL WATERCOURSES INDICATED WITH VERTICAL DATUM
- SURROUNDING PROPERTY OWNERSHIP
- LOCATION OF AND DIMENSIONS TO THE NEAREST BENCH MARK OR MONUMENT ON TWO OPPOSITE SIDES OF THE PLAT
- PROPERTIES LOCATED IN THE SENSITIVE LANDS OVERLAY ZONE
- LOT SIZE CLEARLY LABELED IN SQ. FT. & ACRES WITH LENGTH & WIDTH
- NORTH ARROW
- DRAWING SCALE CLEARLY MARKED AND NOT LESS THAN 1" = 100'
- AREAS WITH SLOPES LESS THAN 30%, 30-40%, 40-50% AND > 50%
- IDENTIFIED NATURAL HAZARDS AND MITIGATION MEASURES FOR AREAS, SUBJECT TO AVALANCHE, LANDSLIDE, ROCK FALL, LIQUEFACTION, DEBRIS FLOWS, SURFACE FAULT RUPTURE, COLLAPSIBLE SOILS, SHRINK-SWELL SOILS, SHALLOW GROUNDWATER (WITHIN 3 FEET OF THE SURFACE), SURFACE WATER, STREAM BEDS (INCLUDING INTERMITTENT), SPRINGS, 100-YEAR FLOOD ZONES, AND DRINKING WATER SOURCE PROTECTION ZONES.
- STREET MONUMENTS
- BUILDING SETBACKS
- PUBLIC UTILITY EASEMENTS, ACCESS EASEMENTS, EXISTING EASEMENTS
- PROPOSED STREET NAMES
- INTERSECTION ADDRESSES
- LOT ADDRESSES
- TYPICAL LOT DETAILS SHOWING BOTH CORNER AND INTERIOR LOTS
- VICINITY MAP
- PLAT NOTES
- PHYSICAL MARKERS SHALL BE PLACED AT EACH LOT CORNER
- IF PROPERTY CONTROLLED BY PUBLIC AGENT OR UTILITY COMPANY, APPROVAL FOR LOCATION, IMPROVEMENT, AND MAINTENANCE MUST BE SHOWN
- ELECTRONIC COPY THAT IS COMPATIBLE WITH CITY'S AUTOCAD MAPPING SYSTEM SHALL BE SUBMITTED



LEGEND

3	2	EXISTING SECTION CORNER (FOUND)
10	11	(AS DESCRIBED)
		PHASE 1 BOUNDARY LINE
		STREET CENTERLINE
		PROPOSED STREET MONUMENT
		MONUMENT TO MONUMENT TIE
		PROPOSED FIRE HYDRANT
		PROPOSED STREET LIGHT
		PARCEL DEDICATION TO SARATOGA SPRINGS
		EXISTING RIGHT-OF-WAY OVER THE WEST 33.00 FEET OF THE PROPERTY IN SECTION 2
		BUILDING SETBACK LINE
		PUBLIC UTILITY EASEMENTS

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
CL1	200.00	202.46	57.59°57'	110.86	193.92	N49°15'01"E
CL2	200.00	111.64	31°58'58"	67.32	110.20	S15°43'28"E
CL3	345.00	191.93	31°52'30"	98.52	189.47	S15°47'45"E

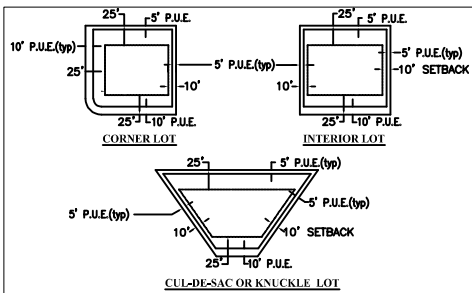
CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C6	225.00	59.81	15°13'53"	30.08	59.64	N50°39'03"E
C7	15.00	13.62	52°01'12"	7.32	13.16	S32°15'24"W
C8	50.00	5.12	05°51'42"	2.56	5.11	N09°10'38"E

DATA TABLE

INFORMATION	AC	SQ. FT.	TOTAL	%	NOTES
TOTAL PROJECT AREA	13.9	607182	100%		
SENSITIVE LANDS	0.2	7503	1%		7% OF OPEN SPACE
OPEN SPACE	2.3	101750	1%		
BUILDABLE LAND	6.1	354478	58%		
ROW AREA	3.5	150954	25%		
LANDSCAPING AREA	4.5	197518	33%		
LOTS			61		
NET DENSITY DWELLINGS BY ACRE			4.4		

TYPICAL SETBACK & P.U.E. DETAILS



EXAMPLE ONLY: CHECK CITY ZONING ORDINANCES FOR SETBACK AND P.U.E. STANDARDS THE SETBACK DETAIL IS NOT REQUIRED FOR COMMERCIAL SUBDIVISION PLATS.

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____ QUARTER OF SECTION _____, TOWNSHIP _____ SOUTH, RANGE _____ EAST, SALT LAKE BASE AND MERIDIAN HIDEOUT TOWN, WASATCH COUNTY, UTAH

VICINITY MAP

VICINITY MAP

STANDARD PLAT NOTES

- 1-FINAL PLATS NOT RECORDED WITHIN ONE (1) YEAR FROM THE DATE RECEIVING FINAL APPROVAL SHALL BE NULL AND VOID UNLESS PHYSICAL CONSTRUCTION HAS STARTED OR AN EXTENSION HAS BEEN REQUESTED AND GRANTED PRIOR TO THE ORIGINAL PLAT EXPIRATION DATE. IN CASES WHERE CONSTRUCTION HAS STARTED, PLAT APPROVAL SHALL AUTOMATICALLY BE EXTENDED FOR A SECOND YEAR FROM THE DATE OF THE FINAL APPROVAL. IF PHYSICAL CONSTRUCTION HAS NOT STARTED, APPLICANTS MAY REQUEST AND BE GRANTED A ONE (1) YEAR EXTENSION. HOWEVER, IF AN EXTENSION IS GRANTED, THE REQUIREMENT TO INCORPORATE UPDATED CITY STANDARDS, OR REFLECTIVE BONDS OR OTHER ASSURANCES MAY BE ENFORCED AS A CONDITION OF APPROVAL FOR THE EXTENSION.
- 2-PRIOR TO BUILDING PERMITS BEING ISSUED, SOIL AND/OR GEOTECHNICAL TESTING STUDIES MAY BE REQUIRED ON EACH LOT AS DETERMINED BY THE CITY BUILDING OFFICIAL.
- 3-THIS PLAT MAY BE SUBJECT TO A DEVELOPMENT AGREEMENT THAT SPECIFIES THE CONDITIONS OF DEVELOPING BUILDING, AND USING PROPERTY WITHIN THIS PLAT. SEE CITY RECORDER FOR DETAILS.
- 4-PLAT IS SUBJECT TO "INSTALLATION OF IMPROVEMENTS AND BOND AGREEMENT NO. _____," WHICH REQUIRES THE CONSTRUCTION AND WARRANTY OF IMPROVEMENTS IN THIS SUBDIVISION. THESE OBLIGATIONS RUN WITH THE LAND AND ARE BINDING ON SUCCESSORS, AGENTS, AND ASSIGNS OF DEVELOPER. THERE ARE NO THIRD PARTY RIGHTS OR BENEFICIARIES UNDER THIS AGREEMENT.
- 5-BUILDING PERMITS WILL NOT BE ISSUED UNTIL ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED PER CITY STANDARDS AND ALL FEES INCLUDING IMPACT AND CONNECTION FEES ARE PAID.
- 6-REFERENCES HEREIN TO DEVELOPER OR OWNER SHALL APPLY TO BUYER AND ANY SUCH REFERENCE SHALL ALSO APPLY TO SUCCESSORS, AGENTS, AND ASSIGNS.
- 7-NO CITY MAINTENANCE SHALL BE PROVIDED FOR STREETS AND IMPROVEMENTS DESIGNATED AS "PRIVATE" ON THIS PLAT.
- 8-ALL PRIVATE STREETS, PARKING AREAS, AND COMMON AREA ARE DEDICATED AS CITY UTILITY EASEMENTS. HEBER CITY HAS THE RIGHT OF ACCESS THROUGH THESE EASEMENTS TO ACCESS, MAINTAIN, AND REPAIR CITY UTILITIES. NO CHANGES TO TOPOGRAPHY, STRUCTURES, ABOVE OR BELOW GROUND ARE ALLOWED IN EASEMENTS WITHIN 10 FEET OF CITY UTILITIES WITHOUT WRITTEN PERMISSION FROM THE HEBER CITY ENGINEER. ANY OBSTACLES DETECTED WITHIN THESE EASEMENTS WITHOUT WRITTEN PERMISSION WILL BE REMOVED AT THE CURRENT PROPERTY OWNER'S EXPENSE. ALL STORM DRAIN UTILITIES AND THEIR MAINTENANCE WITHIN PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF PROPERTY OWNER. ALL SEWER LATERALS AND THEIR MAINTENANCE TO THE PUBLIC SEWER MAIN SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. ALL DRINKING WATER AND PRESSURIZED IRRIGATION SERVICES AND THEIR MAINTENANCE FROM THE WATER METER OR SERVICE VAULT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
- 9-A GEOTECHNICAL REPORT HAS BEEN COMPLETED BY _____ [GEOTECHNICAL ENGINEER], WHICH ADDRESSES SOIL AND GROUNDWATER CONDITIONS, PROVIDES ENGINEERING DESIGN CRITERIA, AND RECOMMENDS MITIGATION MEASURES IF PROBLEMATIC CONDITIONS WERE ENCOUNTERED. THE CITY ASSUMES NO LIABILITY OR RESPONSIBILITY FOR ANY RELIANCE ON THE INFORMATION OR LACK THEREOF IN THE REPORT.
- 10- AGRICULTURAL USES, OPERATIONS, AND RIGHTS ARE ADJACENT TO OR NEAR THE PLAT AND LOTS. THE LOTS IN THIS PLAT ARE SUBJECT TO THE SIGHTS, SOUNDS, ODORS, NUISANCES, AND ASPECTS ASSOCIATED WITH AGRICULTURAL OPERATIONS, USES, AND RIGHTS. THESE USES AND OPERATIONS MAY OCCUR AT ALL TIMES OF THE DAY AND NIGHT INCLUDING WEEKENDS AND HOLIDAYS. THE OWNER IS NOT RESPONSIBLE OR LIABLE FOR THESE USES AND IMPACTS AND WILL NOT RESTRICT ANY GRANDFATHERED AGRICULTURAL USE FROM CONTINUING TO OCCUR LAWFULLY.
- 11- DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES WITHIN THE FIRST 10 FEET.

NOTES FOR PLATS WITH COMMON AREA

- 11-ALL OPEN SPACE, COMMON SPACE, AND TRAIL IMPROVEMENTS LOCATED HEREIN ARE TO BE INSTALLED BY OWNER AND MAINTAINED BY A HOMEOWNERS ASSOCIATION UNLESS SPECIFIED OTHERWISE ON EACH IMPROVEMENT.
- 12-LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'S."
- 13-COMMON AREAS ARE CONVEYED TO (INSERT NAME OF HOA).

SURVEYOR'S CERTIFICATE

I, the undersigned surveyor, do hereby certify that I am a professional Land Surveyor and that I hold a license (number shown below) in accordance with Utah Code Title 58, Chapter 22 of the Professional Engineers and Land Surveyors Licensing Act. I further certify that, by authority of the owners, I have completed a survey of the property described on this subdivision plat in accordance with Section 17-23-17, have verified all measurements, have subdivided said tract of land into lots, streets, together with easements, and have placed monuments on the ground as represented on the plat. I further certify that every existing right-of-way and easement grant of record for underground facilities, as defined in Utah Code Section 54-8a-2, and for other utility facilities, is accurately described on this plat, and that this plat is true and correct to the best of my knowledge. I also certify that I have filed, within 90 days of the establishment or reestablishment of this subdivision boundary, a map of the survey I have completed with the Wasatch County Surveyor.

BOUNDARY DESCRIPTION

A parcel of land situated in the _____ Quarter of Section _____ Township _____ South, Range _____ East, Salt Lake Base and Meridian, said parcel being more particularly described as follows:

Beginning at a point...

Acres: _____, # of lots _____, # of parcels _____

SURVEYOR'S SEAL

OWNER'S DEDICATION

Know all men by these presents that the undersigned owner(s) of the above-described tract of land has/have caused the same to be subdivided into lots, parcels, and streets, together with easements and rights-of-way, to be hereafter known as:

XXXXX

and do hereby dedicate for the perpetual use of the public and City all parcels, lots, streets, easements, rights-of-way, and public amenities shown on this plat as intended for public or City use. The undersigned owner(s), agents, successors, and assigns shall voluntarily defend, indemnify, and save harmless the City against any easements or other encumbrances on a dedicated street, easement, or right-of-way that will interfere with the City's use, maintenance, and operation of the street or utilities. The undersigned owner(s), agents, successors, and assigns also hereby convey any other easements, as shown and/or noted on this plat, to the parties indicated and for the purposes shown and/or noted hereon. The undersigned owner(s), agents, successors, and assigns assume all liability with respect to the creation of this subdivision, the alteration of the ground surface, vegetation, drainage, or surface or sub-surface water flows within this subdivision, and the development activity within this subdivision by the undersigned owner(s), agents, successors, and assigns. The owner(s) hereby convey(s) the Common Area, as indicated hereon, to the (insert name of HOA), a Utah Nonprofit Corporation, with a registered address of (insert address).

In witness whereof I have set forth my hand this _____ day of _____, A.D. 20____.

Signature _____ Print Name _____ Title & Entity _____

Signature _____ Print Name _____ Title & Entity _____

OWNER'S ACKNOWLEDGMENT

STATE OF UTAH) S.S.
County of Utah

On this _____ day of _____, 20____, personally appeared before me _____ who being by me duly sworn, did prove to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the Instrument the person(s), or the entity upon behalf of which the person(s) acted, executed this plat with full authority of the owner(s).

I certify under PENALTY OF PERJURY under the laws of the State of Utah that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary Public Full Name: _____

Commission Number _____ My commission expires _____
A Notary Public Commissioned in Utah

APPROVAL BY LEGISLATIVE BODY

The Town Council of Hideout, County of Wasatch, approves this subdivision subject to the conditions and restrictions stated hereon, and hereby accepts the dedication of all streets, easements, and other parcels of land intended for the public purpose of the perpetual use of the public.

Mayor _____

Date _____

RECORDER'S SEAL

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____ QUARTER OF SECTION _____, TOWNSHIP _____ SOUTH, RANGE _____ EAST, SALT LAKE BASE AND MERIDIAN HIDEOUT TOWN, WASATCH COUNTY, UTAH

PLANNING DIRECTOR

Approved on this _____ day of _____, A.D. 20____

PLANNING DIRECTOR

TOWN ENGINEER

Approved on this _____ day of _____, A.D. 20____

TOWN ENGINEER

WASATCH CO. FIRE DISTRICT

Approved on this _____ day of _____, A.D. 20____

FIRE CHIEF

TOWN ATTORNEY

Approved on this _____ day of _____, A.D. 20____

TOWN ATTORNEY

COUNTY SURVEYOR

Approved on this _____ day of _____, A.D. 20____

COUNTY SURVEYOR

ENGINEER'S NAME: _____
ENGINEER'S ADDRESS: _____
DEVELOPER'S NAME: _____
DEVELOPER'S ADDRESS: _____

Each owner's signature must be notarized separately if multiple owners sign in front of different notaries. Please add an owner's acknowledgment signature block for each owner who signs the plat.

For Plats with an HOA

Appendix C

As-Built Drawing Checklist

AS-BUILT DRAWINGS REQUIREMENT CHECKLIST

Project Name: _____

Submittal # _____ Date: _____ Submitted by: _____

Received by: _____

As-Built (not record) Drawings, sealed by a Professional Engineer, shall include only the following information on at least two sheets in plan view, as indicated at a clearly readable scale (maximum 1"=60'). Multiple sheets of each type may be necessary to provide clearly readable drawings. Do not submit plan/profile sheets. Remove all unnecessary information from the drawings. Drawings must be field checked for completeness and accuracy.

AutoCad record electronic drawing files must be submitted and approved following approval of drawings.

As-built Drawing Plan Sheets: <u>GENERAL REQUIREMENTS</u>	TOWN USE ONLY	
	ACCEPTED	
The following must be shown on each sheet:	YES	NO
Title block including project/subdivision name, drawing title and sheet number, date, engineering firm's name and address	<input type="checkbox"/>	<input type="checkbox"/>
Developer and Contractor signature blocks stating "I have field verified that these record drawings are complete and accurately represent what was constructed for this project".	<input type="checkbox"/>	<input type="checkbox"/>
North arrow and drawing scale	<input type="checkbox"/>	<input type="checkbox"/>
Legend of symbols and abbreviations	<input type="checkbox"/>	<input type="checkbox"/>
Benchmark location and elevation	<input type="checkbox"/>	<input type="checkbox"/>
Subdivision boundary and lots (labeled)	<input type="checkbox"/>	<input type="checkbox"/>
Roadway improvements (curb & gutter, sidewalk, driveways). Label streets names.	<input type="checkbox"/>	<input type="checkbox"/>

As-built Drawing Plan Sheet 1: <u>OVERALL</u>	TOWN USE ONLY	
	ACCEPTED	
The following must be shown: (when applicable)	YES	NO
Street lights Indicate type: LP-1, LP-4 Show wiring to power source	<input type="checkbox"/>	<input type="checkbox"/>
Signage Indicate type ST-1, ST-2 or description	<input type="checkbox"/>	<input type="checkbox"/>
Asphalt striping and markings	<input type="checkbox"/>	<input type="checkbox"/>
Fencing Indicate size and type	<input type="checkbox"/>	<input type="checkbox"/>

Traffic calming devices	<input type="checkbox"/>	<input type="checkbox"/>
Pedestrian sidewalk ramps Indicate ADA truncated dome material type	<input type="checkbox"/>	<input type="checkbox"/>
Removal of unnecessary information	<input type="checkbox"/>	<input type="checkbox"/>

As-built Drawing Plan Sheet 2: <u>GRADING AND DRAINAGE</u>	TOWN USE ONLY	
	ACCEPTED	
	YES	NO
Finish contours – One foot intervals (labeled) and including all related flood and low impact infrastructure grades. Including but not limited to grades and measurements for Detention-retention storage, swales, channels, storage capacity, spillway, high-water levels, free-board, flood route, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Drain Structures: Provide all drainage structure elevations and dimensions for, including but limited to: Pipes, inlets, outlets, manholes, water quality devices, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Storm Drain Ponds, swales, spillways channels, etc - show contours, high-water mark, overflow and/or outfall structures, and as-built storage capacity.	<input type="checkbox"/>	<input type="checkbox"/>
Field Survey Drawing: The project engineer shall review as-built survey points and verify conformity to the constructed flood and water quality requirements. Provide a PDF copy of the site survey points and any linework.	<input type="checkbox"/>	<input type="checkbox"/>
Project As-built Drawing: Provide 11x17 PDF of project engineer's as-built, stamped and signed. Project engineer shall oversee and insure correction of all design plan non-conforming items prior to as-built submission. All minor constructed differences must be justified by project engineer. Justifications shall be explained in a stamped and signed PDF letter.	<input type="checkbox"/>	<input type="checkbox"/>
Removal of unnecessary information	<input type="checkbox"/>	<input type="checkbox"/>

As-built Drawing Plan Sheet 3: <u>DRINKING WATER</u> All valves, meters, air-vacs and drains must show measured dimensions from two stationary locations. Acceptable locations are: top back of curb @ property line, subdivision monument, manhole (sewer or storm drain), catch basin, street light, fire hydrant or corner of permanent building or structure.	TOWN USE ONLY ACCEPTED	
	YES	NO
Main drinking water lines. Label size and type.	<input type="checkbox"/>	<input type="checkbox"/>
Fire hydrants, Tees, crosses, bends and elbows.	<input type="checkbox"/>	<input type="checkbox"/>
Valves (gate, butterfly, blow-off, stop & waste, check).	<input type="checkbox"/>	<input type="checkbox"/>
Service lines and water meters.	<input type="checkbox"/>	<input type="checkbox"/>
Pressure reducing stations.	<input type="checkbox"/>	<input type="checkbox"/>
Air-vacs. Label size and type.	<input type="checkbox"/>	<input type="checkbox"/>
Removal of unnecessary information.	<input type="checkbox"/>	<input type="checkbox"/>

As-built Drawing Plan Sheet 4: <u>SANITARY SEWER</u>	TOWN USE ONLY ACCEPTED	
The following must be shown: (when applicable)	YES	NO
Main secondary sewer lines. Label size and type.	<input type="checkbox"/>	<input type="checkbox"/>
Manholes. Label size.	<input type="checkbox"/>	<input type="checkbox"/>
Service laterals.	<input type="checkbox"/>	<input type="checkbox"/>
Removal of unnecessary information	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Drawings Approved By: _____

Date: _____

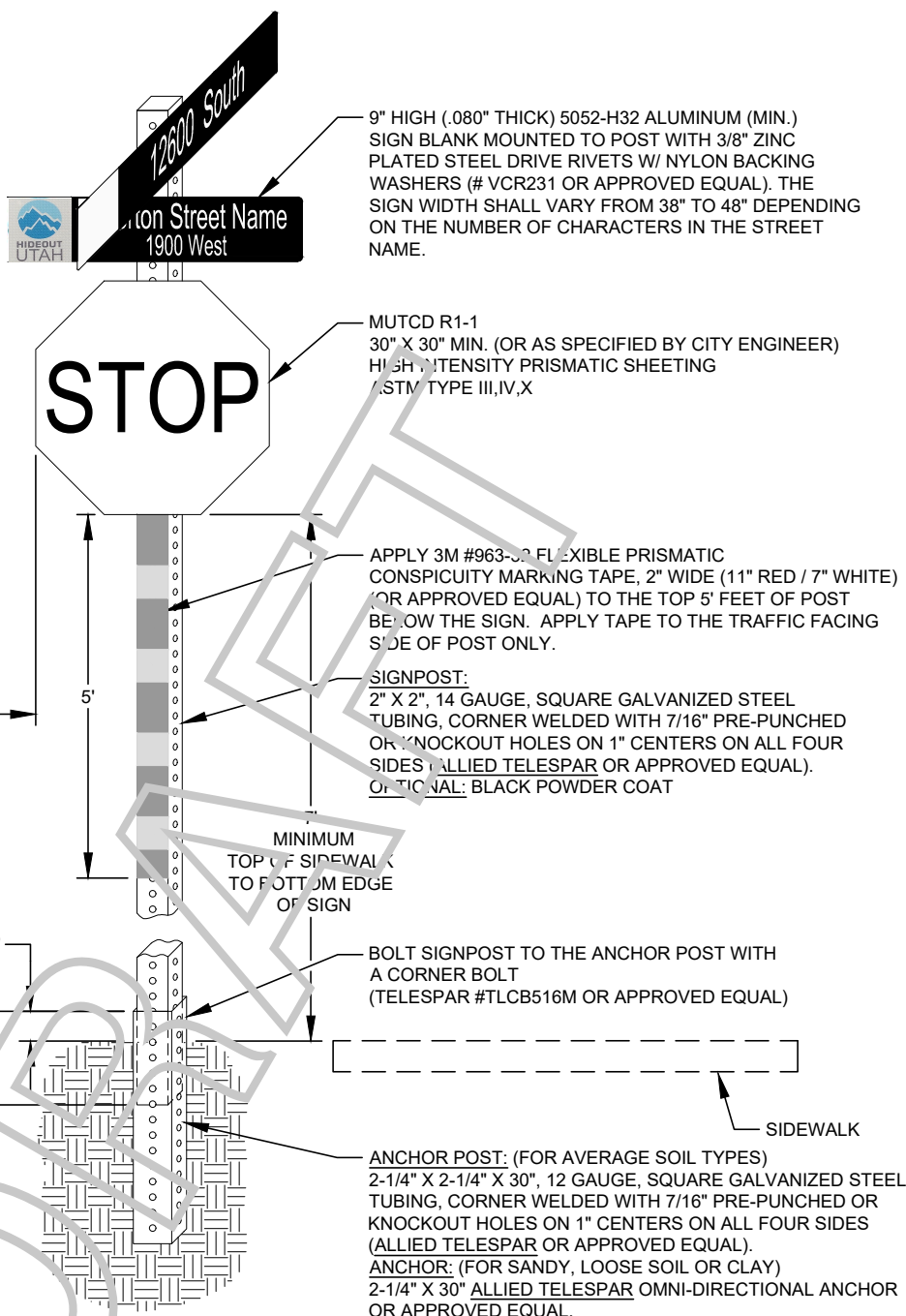
Appendix D

Town Standard Plans

Minimum Letter and Number Heights

Speed Limit	Upper Case	Lower Case	Supplemental Letters and Numbers*	
			Upper Case	Lower Case
25 mph or less	4"	3"	3"	2.25"
30 to 40 mph	6"	4.5"	3"	2.25"

* Type of street (i.e. Road, Drive, Circle or abbreviation) or street coordinates when not part of the street name.



NOTES:

1. SECURE CITY'S APPROVAL OF SIGN FORMAT AND INSTALLATION.
2. ALL MOUNTING HARDWARE, POST, AND ANCHOR MAY BE POWDER COATED BLACK (OPTIONAL).
3. INSTALL THE EDGE OF THE SIGN TWO FEET FROM THE VERTICAL EXTENSION OF THE FACE OF THE CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB POINT OF CURVATURE. SIGNS SHOULD NOT OVERHANG SIDEWALK OR CURB & GUTTER.
4. ALL SIGNS SHALL BE 7' MINIMUM FROM GROUND TO BOTTOM OF SIGN.
5. LETTERING AND NUMBERING SHALL BE WHITE ON GREEN BACKGROUND AND MADE OF HIGH INTENSITY PRISMATIC (HIP) SHEETING, ASTM TYPE III, IV, X. FONT SHALL BE ARIAL. UPPER AND LOWER CASE LETTERS SHALL BE USED. NAMED STREETS ALSO REQUIRE COORDINATES ON THE SIGN. SEE TABLE ABOVE FOR REQUIRED MINIMUM LETTER AND NUMBER HEIGHTS. SIGN SHALL HAVE A 9"X9" HIDEOUT TOWN LOGO ON THE LEFT SIDE MADE OF HIGH INTENSITY PRISMATIC (HIP) SHEETING ASTM TYPE III, IV, X.
6. PRIVATE STREET SIGN LETTERING SHALL BE BLUE ON A WHITE BACKGROUND, MADE OF HIGH INTENSITY PRISMATIC (HIP) SHEETING, ASTM TYPE III, IV, X, AND SHALL **NOT** INCLUDE THE HIDEOUT TOWN LOGO. THE LEFT SIDE OF THE SIGN SHALL HAVE THE WORD "PRIVATE" IN WHITE LETTERING (1" MINIMUM, UPPER CASE ARIAL FONT) ON A 9"X9" BLUE BACKGROUND MADE OF HIGH INTENSITY PRISMATIC (HIP) SHEETING ASTM TYPE III, IV, X.



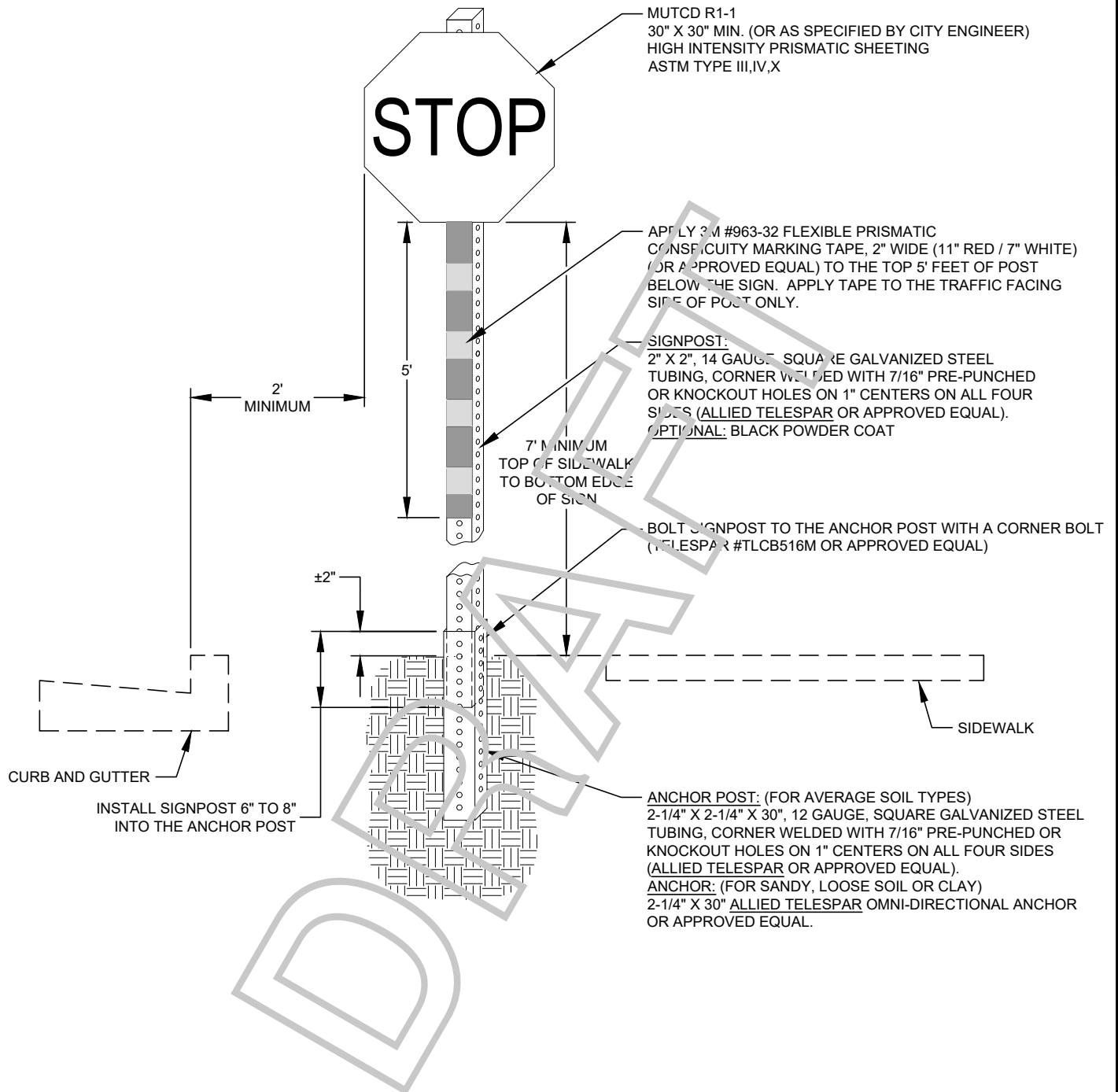
**HIDEOUT TOWN
ENGINEERING DEPT.**
10860 N HIDEOUT TRAIL
HIDEOUT, UTAH 84036
(435) 659-4739

COMBINATION STREET AND REGULATORY SIGN

SEPTEMBER 2024		
REVISIONS		
#	BY	DATE

PLAN

ST-2



NOTES:

1. SECURE CITY'S APPROVAL OF SIGN FORMAT AND INSTALLATION.
2. ALL MOUNTING HARDWARE, POST, AND ANCHOR MAY BE POWDER COATED BLACK (OPTIONAL).
3. INSTALL THE EDGE OF THE SIGN TWO FEET FROM THE VERTICAL EXTENSION OF THE FACE OF THE CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB POINT OF CURVATURE. SIGNS SHOULD NOT OVERHANG SIDEWALK OR CURB & GUTTER.
4. ALL SIGNS SHALL BE 7' MINIMUM FROM GROUND TO BOTTOM OF SIGN.



**HIDEOUT TOWN
ENGINEERING DEPT.**
10860 N HIDEOUT TRAIL
HIDEOUT, UTAH 84036
(435) 659-4739

REGULATORY SIGN

SEPTEMBER 2024

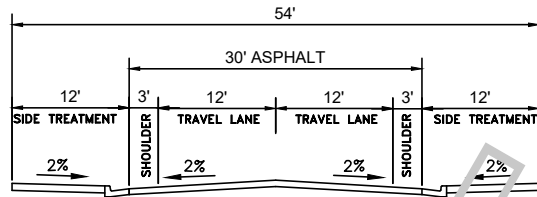
REVISIONS

#	BY	DATE

PLAN

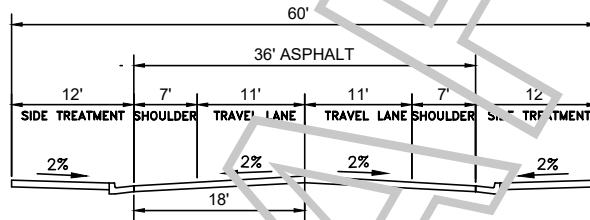
ST-3

LOCAL ACCESS ROAD



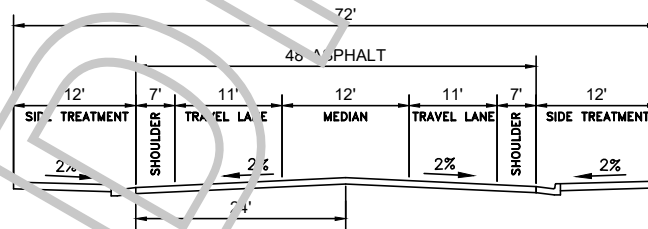
54-FOOT RIGHT-OF-WAY (TYPICAL)

MINOR COLLECTOR



60-FOOT RIGHT-OF-WAY (TYPICAL)

MAJOR COLLECTOR



72-FOOT RIGHT-OF-WAY (TYPICAL)



HIDEOUT TOWN
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10860 N HIDEOUT TRAIL
HIDEOUT, UTAH 84036
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FUNCTIONAL
CLASSIFICATION
DIMENSIONS

SEPTEMBER 2024

REVISIONS

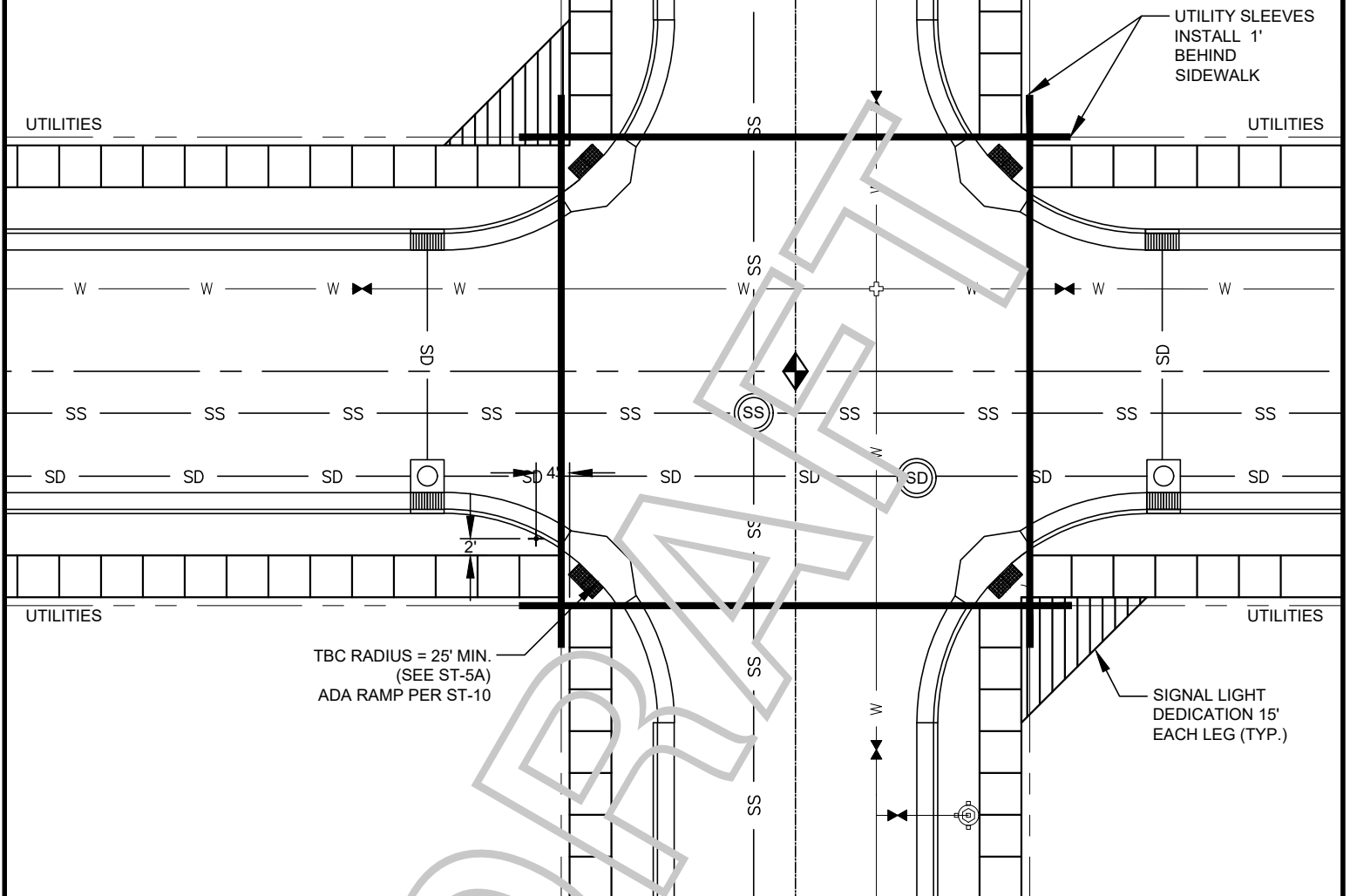
#	BY	DATE

PLAN

ST-4

INTERSECTION TBC RADII CHART

CROSS STREET	MAIN STREET				
	MAJOR ARTERIAL	MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL
MAJOR COLLECTOR	35'	30'	30'	30'	25'
MINOR COLLECTOR	30'	30'	30'	25'	25'
LOCAL	25'	25'	25'	25'	25'



LEGEND



SURVEY MONUMENT PER
WASATCH CO. REQUIREMENTS

— W —

DRINKING WATER LINE TO BE
INSTALLED ON NORTH AND EAST
SIDES OF STREET

— SS —

SANITARY SEWER



SEWER MANHOLE



STORM DRAIN MANHOLE PER
APWA #331B, 341



COMBO BOX PER APWA #316



CURB INLET PER PWA #315



STREET/STOP SIGN LOCATION TYPICAL
PLACEMENT (ST-1, ST-2, ST-3)



FIRE HYDRANT



DRINKING WATER VALVE. ALL VALVES
TO BE PLACED ON CURB AND GUTTER
PC (POINT OF CURVATURE)



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UTILITY LOCATIONS AND INTERSECTION CURB RADII

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PLAN

ST-5



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TYPICAL SECTION

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REVISIONS		
#	BY	DATE

PLAN
ST-6

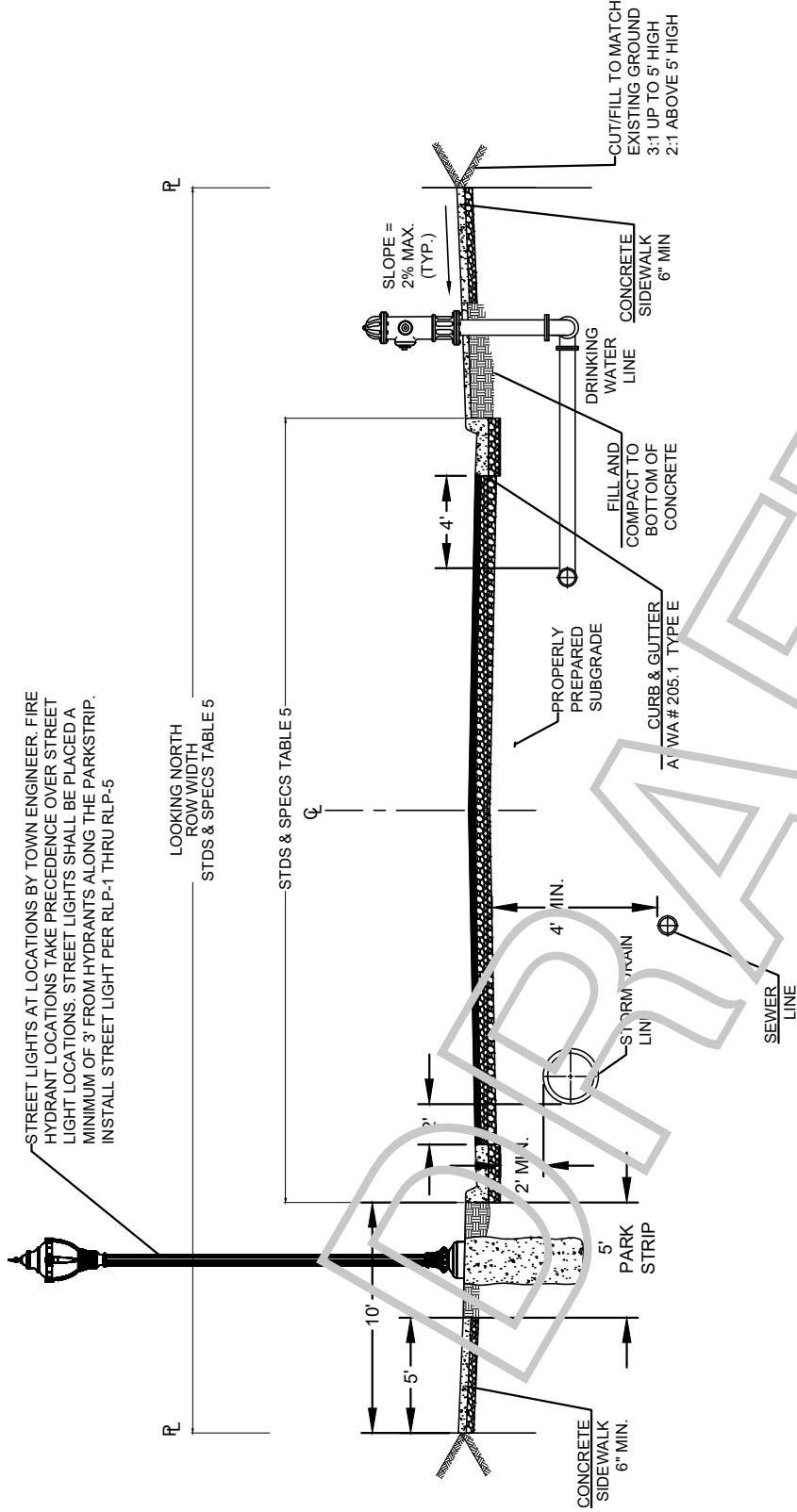
STREET LIGHTS AT LOCATIONS BY TOWN ENGINEER. FIRE
HYDRANT LOCATIONS TAKE PRECEDENCE OVER STREET
LIGHT LOCATIONS. STREET LIGHTS SHALL BE PLACED A
MINIMUM OF 3' FROM HYDRANTS ALONG THE PARKSTRIP.
INSTALL STREET LIGHT PER RLP-1 THRU RLP-5

LOOKING NORTH
ROW WIDTH
STDs & SPECS TABLE 5

STDs & SPECS TABLE 5

10' PUBLIC UTILITIES EASEMENT (TYP.)

10' PUBLIC UTILITIES EASEMENT (TYP.)



STANDARD URBAN	STANDARD URBAN ROADWAY SECTION	STANDARD URBAN ROADWAY SECTION
LOCAL	PG 58-28 DM-1/2"	3' / 8" (SEE NOTE 2)
MINOR COLLECTOR	PG 58-28 DM-1/2"	4' / 9" CONCRETE (SEE NOTE 2)
MAJOR COLLECTOR	PG 64-34 DM-3/4"	5' / 10" (SEE NOTE 2)
MOUNTAIN	PG 58-28 DM-3/4"	3' / 8" (SEE NOTE 2)
ARTERIAL	PG 64-34 DM-3/4"	6' / 10" (SEE NOTE 2)

NOTES:

1. PAVEMENT DESIGN SHALL BE BASED ON THE MAXIMUM DAILY TRAFFIC CAPACITY AND AS RECOMMENDED BY A SOILS REPORT. LOCATION OF SIDEWALK AND CURB AND GUTTER MAY VARY ON INDIVIDUAL STREETS PER DIRECTION OF TOWN ENGINEER. SEE APWA SECTION 32 12 05 (ASPHALT CONCRETE) FOR SPECIFICATIONS.
2. A TYPE II SLURRY SEAL (OR APPROVED EQUAL) SHALL BE PLACED PER APWA 32 01 13.61 AT THE CONCLUSION OF THE WARRANTY PERIOD AND PRIOR TO WARRANTY RELEASE.
3. SEE APWA 32 12 05 2.3.D FOR RAP

REQUIREMENTS FOR DEAD-END ACCESSWAYS

WASATCH FIRE DISTRICT

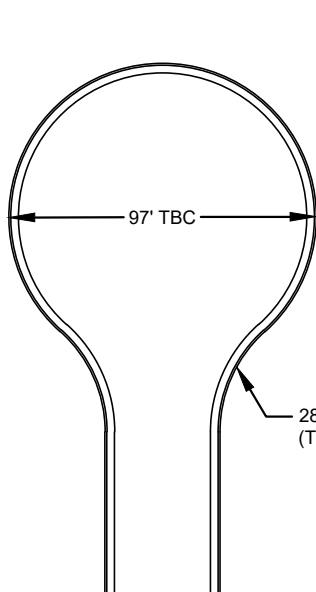
LENGTH	MINIMUM CLEAR WIDTH**	GRADE***	TURNAROUND REQUIREMENTS
0' - 150' *	20'	10% MAX.	NONE REQUIRED
151' - 500' *	20'	10% MAX.	120' HAMMERHEAD 80' DIA. CUL-DE-SAC
501' - 750'	26'	10% MAX.	120' HAMMERHEAD 97' DIA. CUL-DE-SAC
751' & LARGER	SPECIAL APPROVAL REQUIRED		

* CURVES AND TOPOGRAPHICAL CONDITIONS COULD ALTER THE REQUIREMENTS FOR TURNAROUNDS AND THE WIDTH OF ACCESSWAYS.

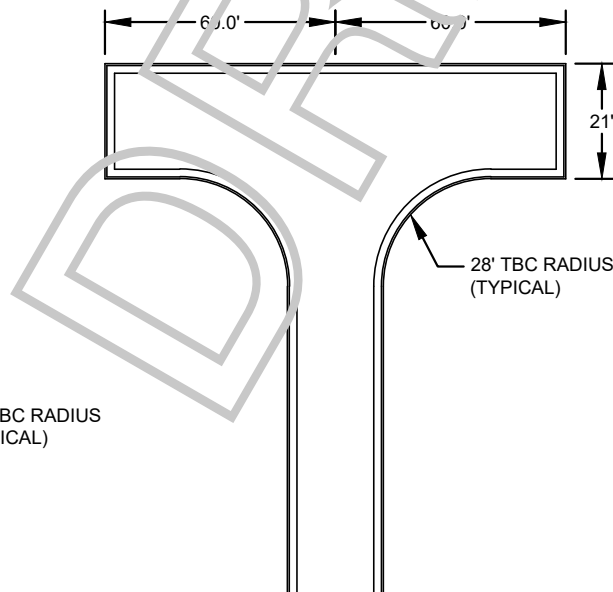
** PARKING RESTRICTIONS MAY APPLY.

*** 5% MAXIMUM IN TURNAROUND

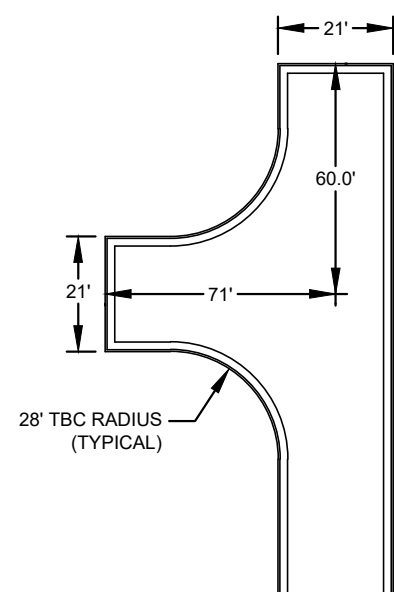
TBC=TOP BACK OF CURB



97' DIA. CUL-DE-SAC



120' HAMMERHEAD



**120' HAMMERHEAD
ALTERNATIVE**



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CUL-DE-SACS

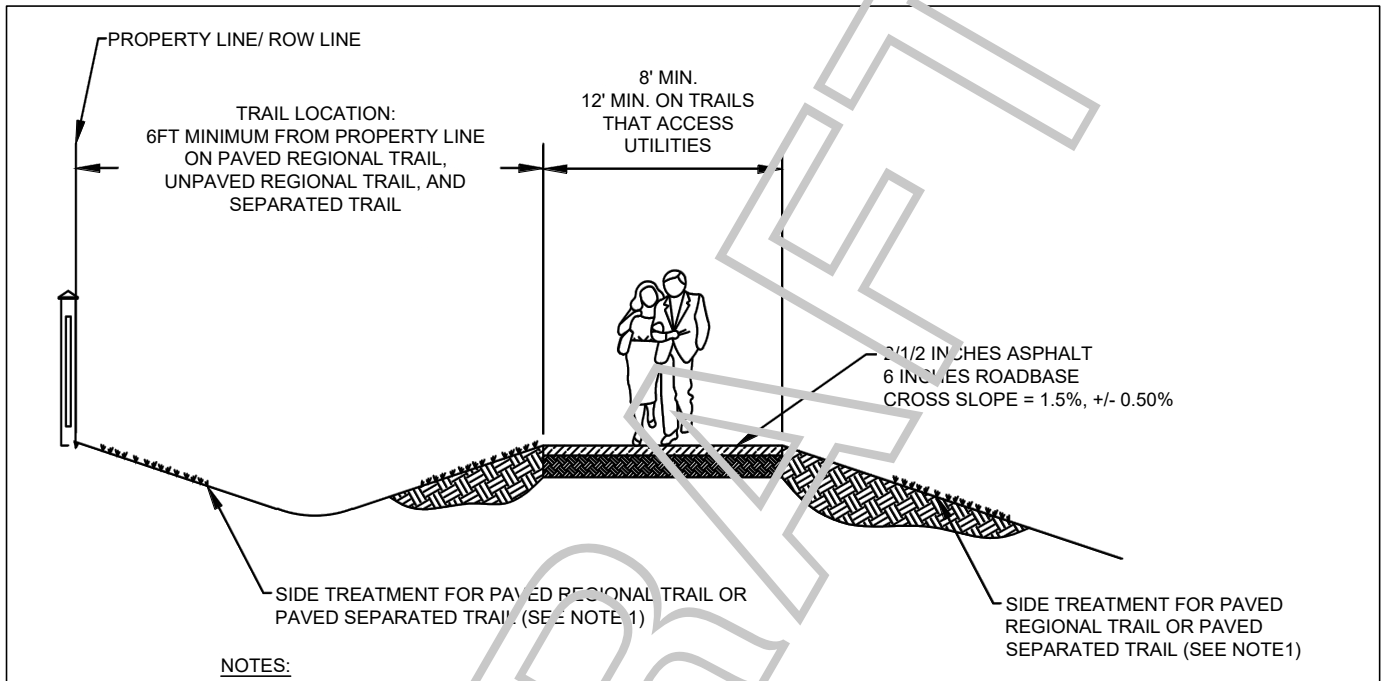
SEPTEMBER 2024

REVISIONS

#	BY	DATE

PLAN

ST-7



1. SIDE TREATMENTS OF PAVED REGIONAL TRAILS AND PAVED SEPARATED TRAILS SHALL BE 4:1 LANDSCAPED V-DITCH ON THE UPHILL SIDE OF TRAIL WITH 6FT MINIMUM WIDTH OF V-DITCH AND ON THE DOWNHILL SIDE OF TRAIL A 4:1 LANDSCAPED SLOPE FOR 4 FT MINIMUM. PROVIDE DRAINS UNDER THE TRAIL AT APPROPRIATE LOCATIONS.
2. RUNNING SLOPE - PREFERRED = 5 PERCENT. MAXIMUM = 12 PERCENT. NO MORE THAN 30 PERCENT OF THE TOTAL LENGTH OF A TRAIL SHALL EXCEED 8.33 PERCENT.



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TRAILS

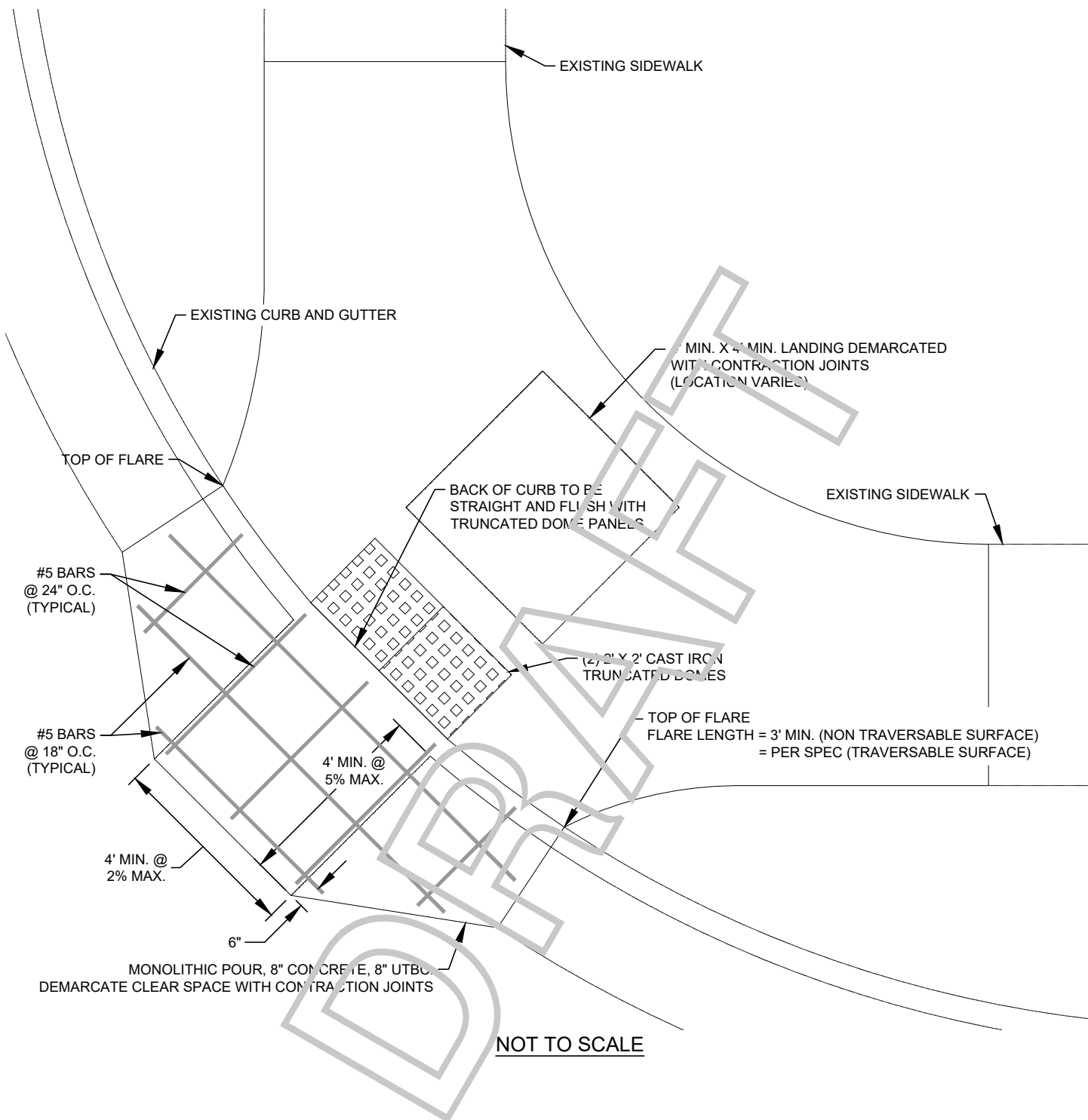
SEPTEMBER 2024

REVISIONS

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PLAN

ST-8



NOTES:

1. THIS STANDARD PLAN SUPPLEMENTS APWA PLAN NUMBERS 235 AND 236. APWA MATERIAL SPECIFICATIONS APPLY EXCEPT FOR THE DETECTABLE WARNING SURFACE.
2. RAMP CONSTRUCTION MUST COMPLY WITH CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN.

3. MATERIALS -

TRUNCATED DOMES: ADA COMPLIANT, CAST IRON PLATES, W/ NON-SLIP SURFACE AND NATURAL FINISH. SET TWO (2) 24"X24" PLATES TOGETHER IN WET CONCRETE WITH SMOOTH, EVEN SEAM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

REBAR: GALVANIZED OR EPOXY COATED, DEFORMED, 60 KSI YIELD GRADE STEEL, ASTM A 615, WITH 2" MIN. COVER.



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ADA RAMP CLEAR SPACE

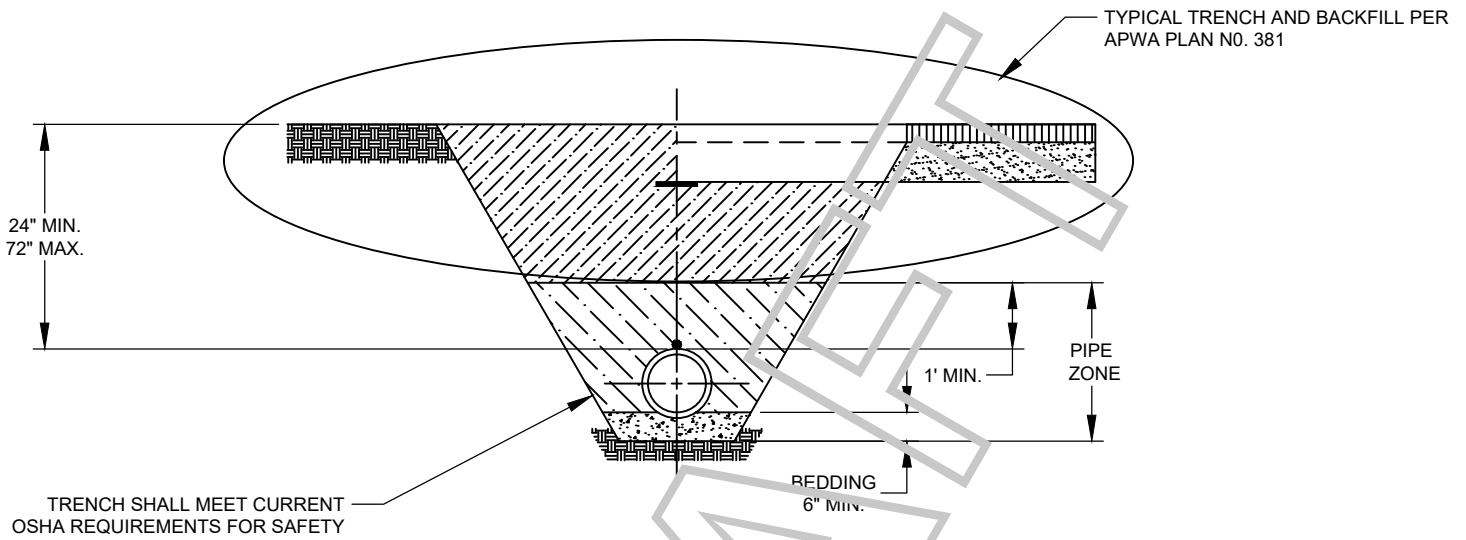
SEPTEMBER 2024

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PLAN

ST-9



CROSS-SECTION: TYPICAL TRENCH NOT TO SCALE

NOTES:

- COVER DEPTHS ARE FOR STORM DRAIN ONLY. FOLLOW THE JSSD STANDARDS FOR DEPTHS OF OTHER UTILITIES



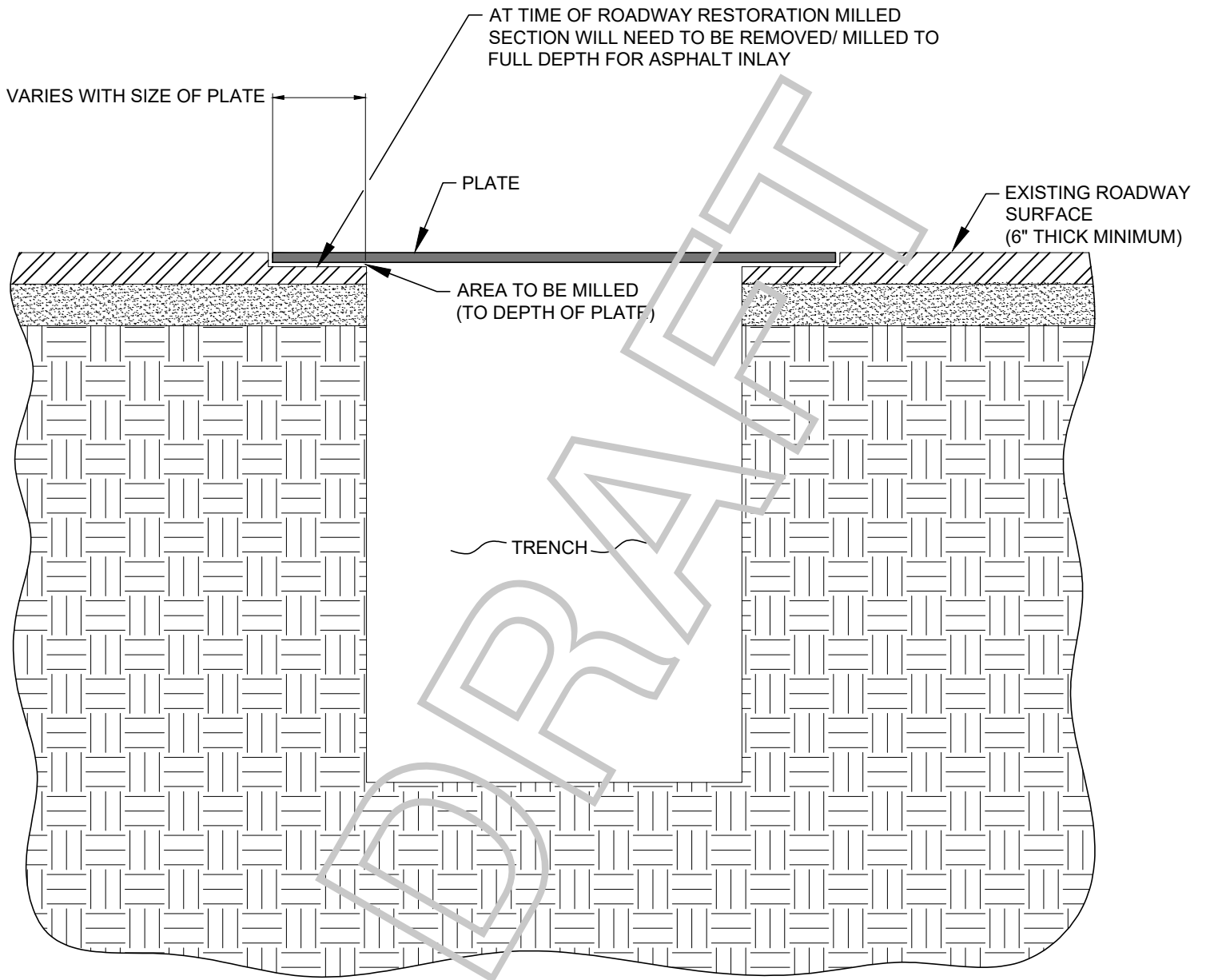
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TRENCH

SEPTEMBER 2024		
REVISIONS		
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PLAN

ST-10



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TRENCH PLATING

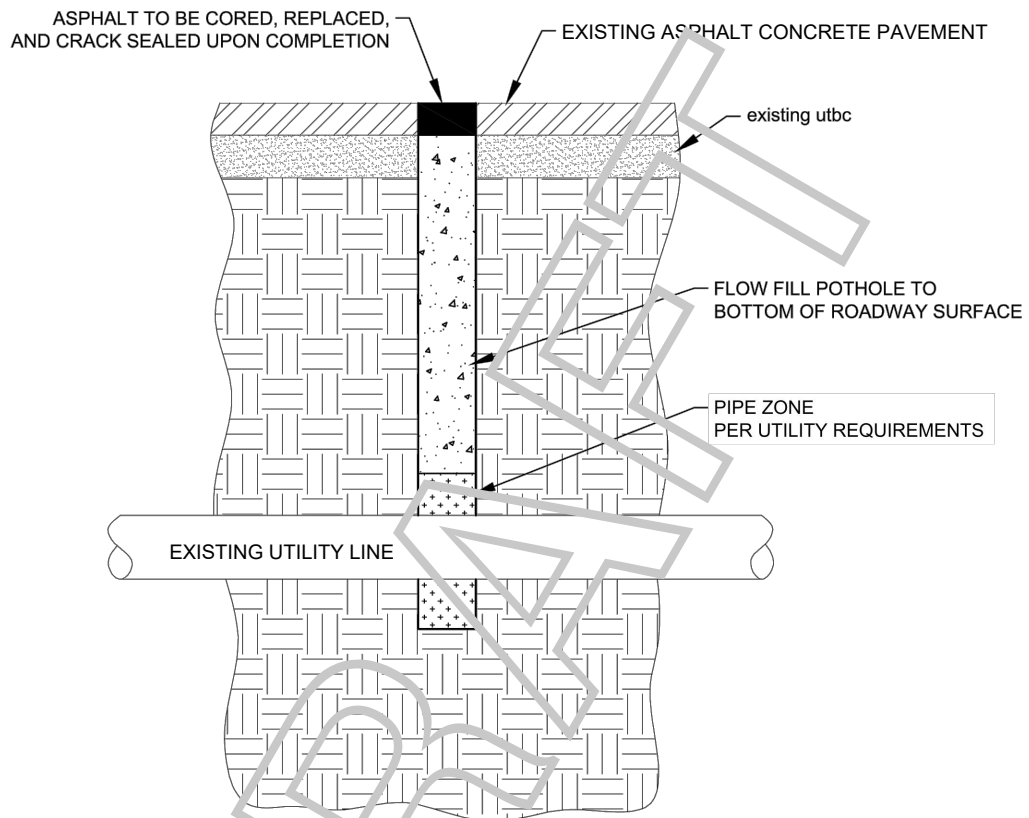
SEPTEMBER 2024

REVISIONS

#	BY	DATE

PLAN

ST-11



DRAFT



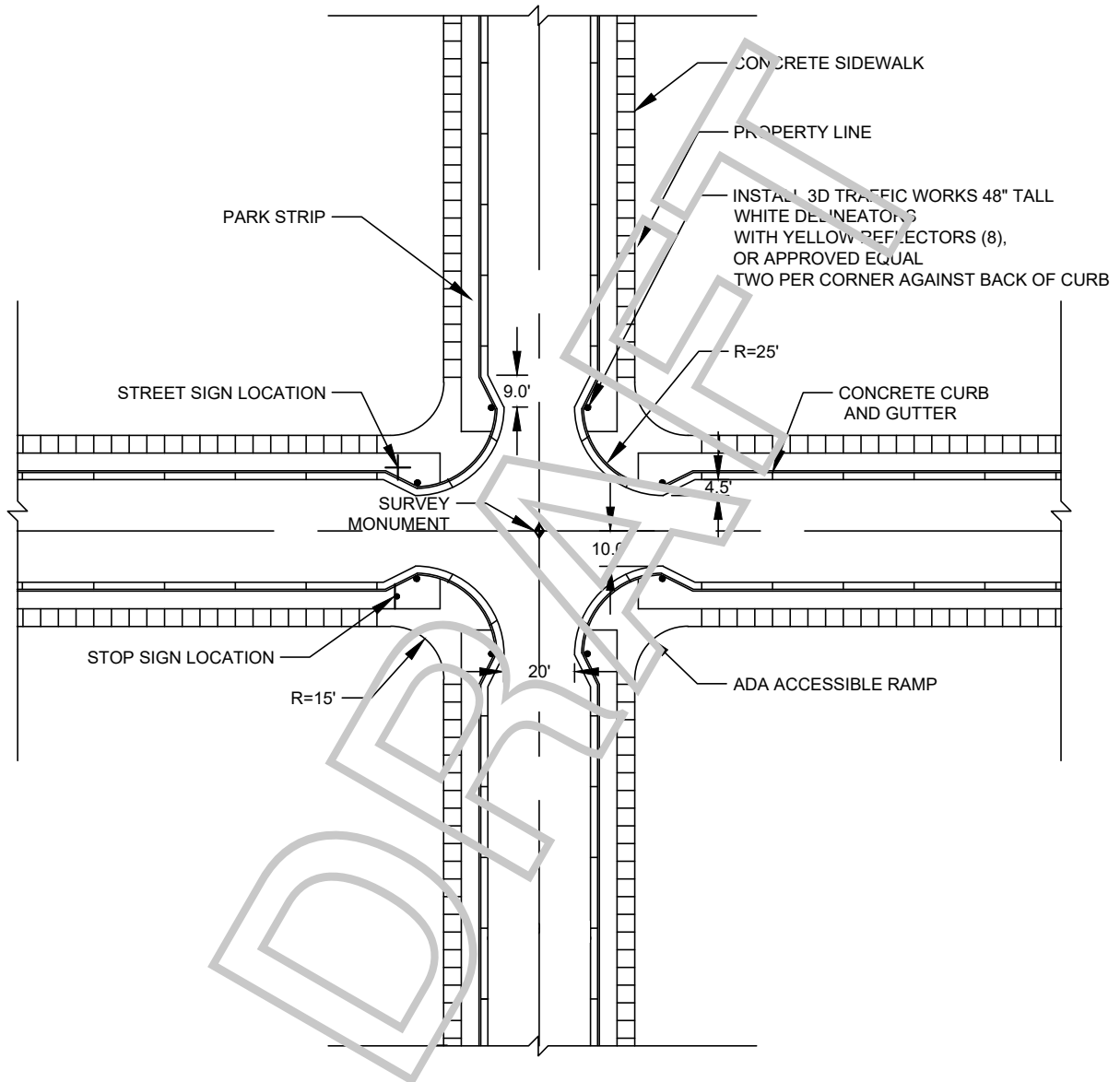
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POT HOLE

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PLAN

ST-12



NOT TO SCALE



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LOCAL STREET TRAFFIC CALMING INTERSECTION

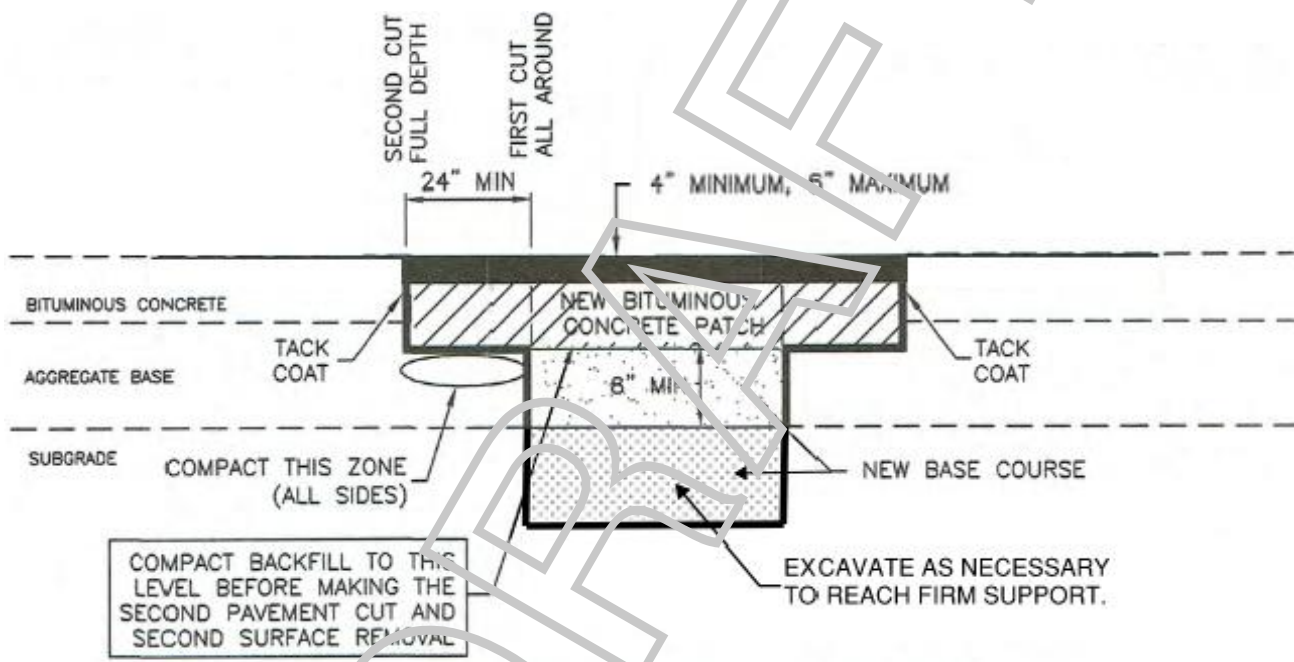
SEPTEMBER 2024

REVISIONS

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PLAN

ST-13



* INSTALLATION SHALL BE PURSUANT TO APWA SPECIFICATION 33 05 25 PAVEMENT RESTORATION.

NOT TO SCALE



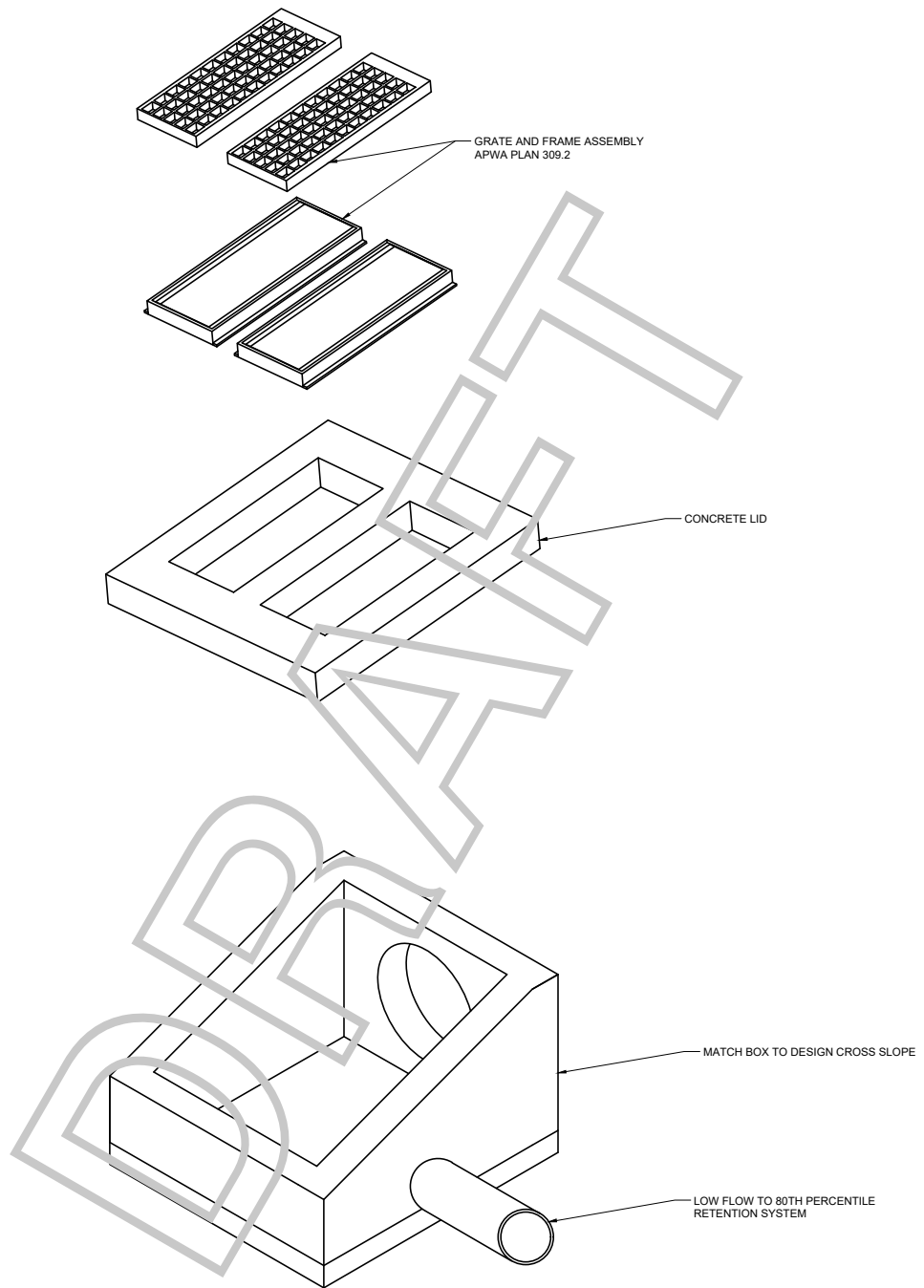
**HIDEOUT TOWN
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BITUMINOUS CONCRETE PATCH

SEPTEMBER 2024		
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PLAN

ST-14



NOTES:

1. DESIGN SLOPE STRUCTURE
REINFORCEMENT PER APWA PLAN 331.3
TYPE C.
2. SUBMIT SHOP DRAWINGS



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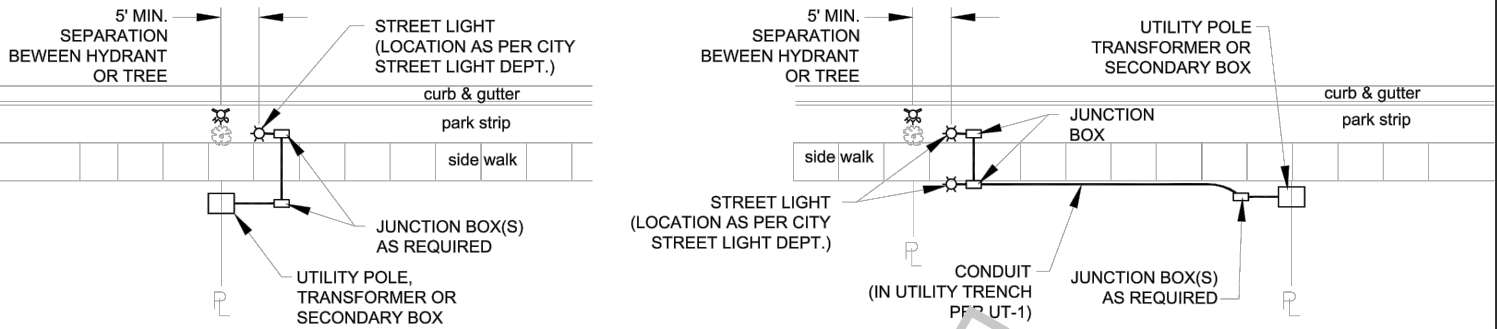
**DETENTION POND
INLET/OUTLET**

SEPTEMBER 2024		
REVISIONS		
#	BY	DATE

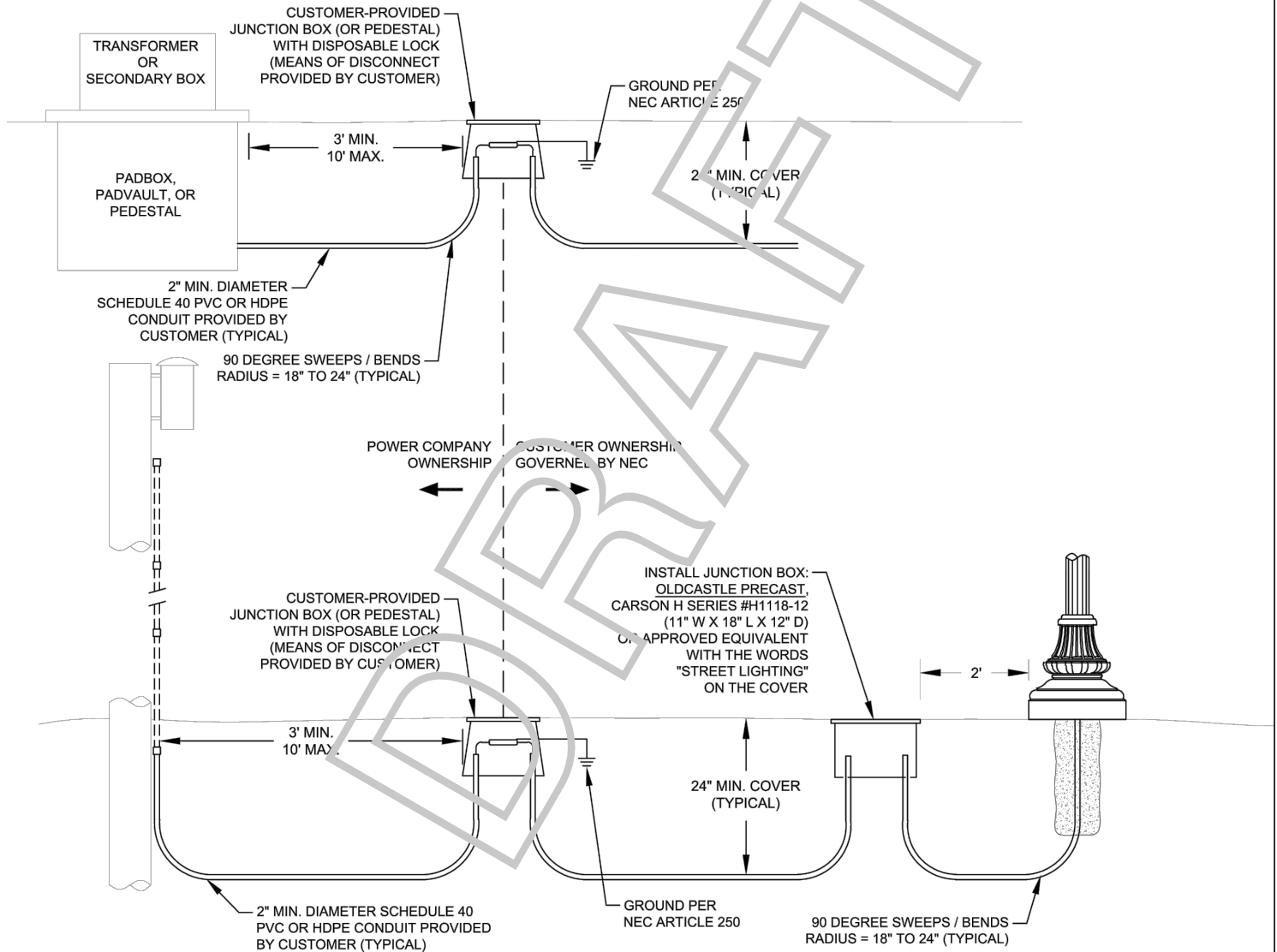
PLAN

SD-1

TYPICAL 2



TYPICAL CONNECTION FROM POWER SOURCE



NOTES:

1. The customer shall consult the Power Company on the junction box location, pedestal location, conduit location and digging prior to installation.
2. The customer shall provide and install a junction box or pedestal, conduit, disconnect (fusing), a disposable lock, and customer-owned wire.
3. Any customer-owned metallic equipment within 72 inches (72") of the Power Company's metallic equipment shall be bonded.
4. The minimum dimensions of the junction box are 11-3/4" wide (at the top), 17" long, and 12" high and must be strong enough for incidental traffic areas.
5. Streetlight facilities with associated electrical outlets shall be metered.
6. The customer shall provide all conduit from the Power Company source to the customer-provided junction box or pedestal.
7. The customer's junction box or pedestal shall be located as shown.



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STREET LIGHT WIRING & INSTALLATION

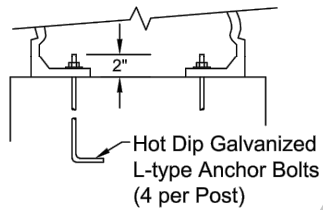
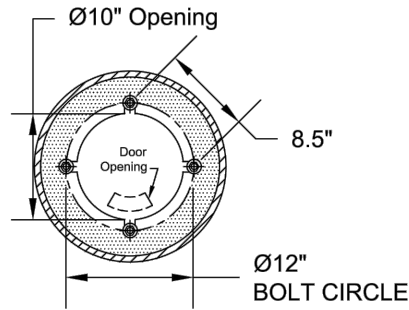
SEPTEMBER 2024

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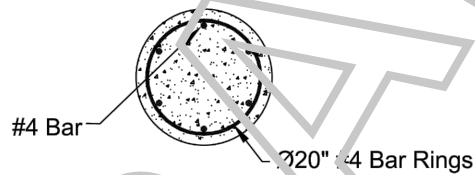
#	BY	DATE

PLAN

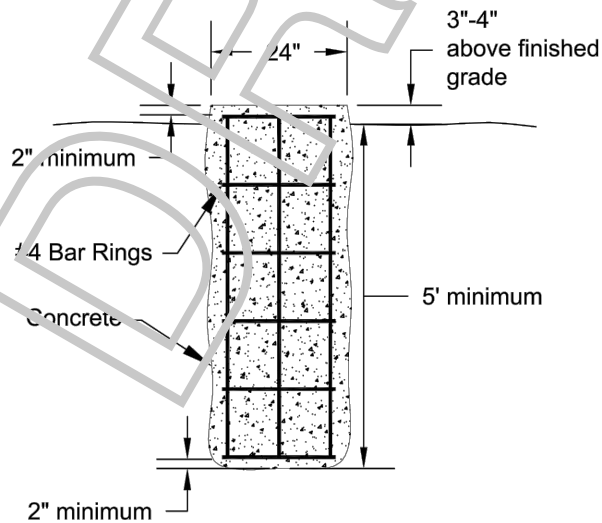
LP-A



ANCHOR DETAIL



TOP VIEW



SIDE VIEW

BASE DETAIL



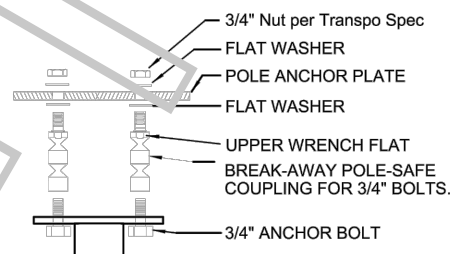
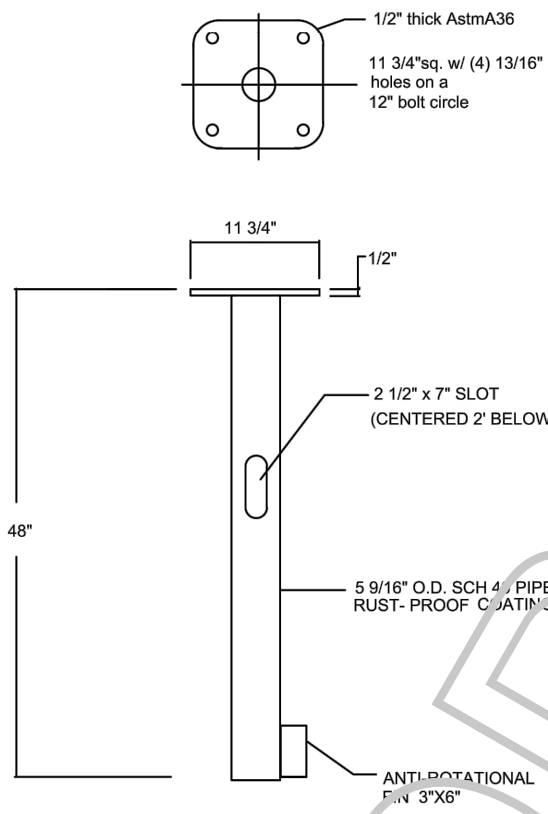
HIDEOUT TOWN
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HIDEOUT, UTAH 84036
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STREET LIGHT CONCRETE POLE BASE

SEPTEMBER 2024		
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#	BY	DATE

PLAN

LP-B



BREAK-AWAY POLE-SAFE COUPLING DETAIL 1



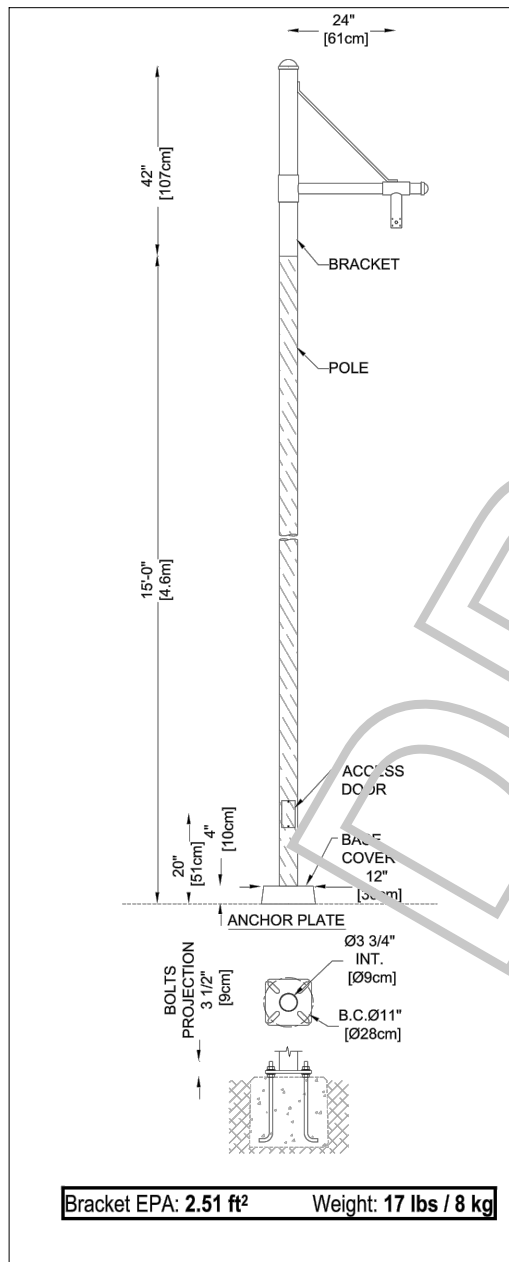
**HIDEOUT TOWN
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**STINGER BASE WITH
OPTIONAL BREAK-AWAY**

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PLAN

LP-C



BLACK RAL9005 (BK) TEXTURED FINISH FOR THE BRACKET AND BASE COVER. THE POLE SHALL HAVE A SMOOTH FINISH WITH A DURABLE POLYESTER POWDER COATING TO BE APPLIED AND MEETS THE AAMA 2604 REQUIREMENTS. THE FINISH SHALL MEET THE ASTM G7, B117, D1654 AND D2247 REQUIREMENTS RELATIVE TO SALT SPRAY AND HUMIDITY RESISTANCE.

8.02.100 PATCHING REQUIREMENTS

Patching requirements shall meet the following standards:

- A. Cuts Parallel to Street: For cuts parallel to the street, the patch required is the lane width by thirty feet (30') minimum or ten feet (10') beyond the cut at each end, whichever is larger.
- B. Cuts Perpendicular to Street: For cuts perpendicular to the street or diagonal, the patch required is the lane width by twelve feet (12') minimum or five feet (5') beyond the cut on each side, whichever is larger.

REPLACED BY SECTION 1.2

9.01.010 ADOPTING AMERICAN PUBLIC WORKS ASSOCIATION (APWA) STANDARD PLANS AND SPECIFICATIONS

The most recent addition of the American Public Works Association ("APWA") Utah Chapter Manual of Standard Plans and Specifications for all public works construction (with the exception of water and sewer standards and specifications) including Utah Chapter APWA supplements and updates are hereby adopted.

HISTORY

Adopted by Ord. [20-02](#) on 1/23/2020

REPLACED BY SECTION 1.2

9.01.020 ADOPTING JORDANELLE SPECIAL SERVICE DISTRICT (JSSD) STANDARD PLANS AND SPECIFICATIONS

The most recent adopted Jordanelle Special Service District ("JSSD") standard plans and specifications for all water and sewer public works construction are hereby adopted.

HISTORY

Adopted by Ord. [20-02](#) on 1/23/2020

REPLACED BY TABLE 5

10.08.14.1 ROAD GRADE AND MINIMUM WIDTH

- A. The minimum allowed grade for all roadways is one-half percent (0.5%).
- B. The maximum allowed grade for all local roadways is 10% (and 8% for all collectors). Council may allow local roadway slopes of up to 12% for lengths not exceeding 500 feet. For roadways greater than 10%, the applicant shall demonstrate a technical infeasibility to construct the roadway at or below 10% standard.
- C. Unless otherwise specifically provided for in this Code, the minimum width for all new roadways within the Town is 26 feet of pavement (exclusive of curb and gutter).

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.14.2 UTILITY LOCATIONS

Utilities in the road will be located as shown in typical sections in this chapter.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.14.3 GENERAL ROAD DESIGN STANDARDS

Roads shall be designed at a minimum in accordance with AASHTO design criteria and per street cross sections shown in Section 10.08.14.5 of this Title. The roadway design standards shall be the same for publicly owned and all privately owned roadways. The standards shall be applicable to new developments in The Town of Hideout.

A. Major Collector (75 Foot ROW)

To be used where the potential of traffic at build out is greater than 8000 AADT requiring two 12' travel lanes, and 5' asphalt shoulders for bike/emergency lanes. Drainage is to be controlled with a drainage swale or curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private residential access allowed except for very specific exceptions for existing buildable lots bordering a 75' town right of way in circumstances where the applicant has proven safety concerns can be adequately mitigated. These exceptions can only be approved by the Mayor and Town Engineer. There will be no on-street parking. A right-of-way of 18' is established behind the back of the curb. This allows for the potential of two meandering five-foot (5') walkways on each side of the road. The Town Council may approve a deviation from the standard section for this type of roadway for specific alignments.

B. Minor Collector (66 Foot ROW)

To be used where the potential of traffic at build out is between 2000 and 8000 AADT. Roadway to have two 11' driving lanes with 5' asphalt shoulders for bike/emergency lanes. Drainage to be controlled with a drainage swale or curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private resident access allowed except for very specific exceptions for existing properties bordering a 61' town right-of-way. A right-of-way of 18' is established behind the back of the curb. Right-of-way allows for two five-foot (5') walkways on each side of the road. Exceptions to be approved by the Mayor or Town Engineer. There will be no on street parking.

C. Neighborhood Road (51-Foot ROW)

This is the minimum allowed right-of-way and road standard designed for all non-collecting neighborhood roads throughout the Town of Hideout without specific Town Council exception. Potential traffic is less than 1000 AADT. Drainage to be controlled by either a drainage swale or curb and gutter. There are to be 10' travel lanes and 3' asphalt shoulders for bike/emergency lanes. A 10' right-of-way shall be dedicated behind the back of the curb and gutter. Exceptions to be approved by the Mayor or Town Engineer. There will be no on-street parking except where asphalt exceeds 32'.

D. Arterial Roadways (106 Foot ROW)

One Hundred and Six Foot (106') width Roads shall be designed at a minimum in accordance with AASHTO design criteria and per street cross section between the property line and the drainage swale.: To be used where the potential of traffic at build out is greater than 8000 ADT requiring a minimum of 3 driving lanes (including the turn lane) and 5' asphalt shoulders for bike/emergency lane. Drainage to be controlled with a drainage swale, no curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private resident access allowed. There will be no on street parking allowed. Larger rights-of-way allow for two meandering ten-foot (10') asphalt paths on each side of the road. 1. The town council may approve an alternate section for construction depending on location and site-specific needs.

E. Mountain Road

This road standard is designed for connective road traffic through mountainous terrain. It is not to allow frontage for any residential use. Potential traffic is less than 1000 AADT. Drainage to be controlled with a drainage swale, no curb and gutter. In areas where the profile grade is steeper

than 5% the drainage swale must be lined with an approved fabric or rip rap. No driveway access is allowed. The Town may not plow an unpaved mountain road may not be plowed in the winter. Emergency services may not be available in areas accessed on Mountain Roads when there is snow on the road.

F. **Emergency access / fire road**

Only to be used in legally non-conforming subdivisions or lots of record and must be expressly approved by the Town Engineer and the town council on a case by case basis where the applicant has proven and the Town Council finds health, safety, and welfare of the road and the public will not be negatively impacted. The Fire/ Emergency Road may not be used as a secondary access. A fire/emergency road must have controlled access on each end point to prevent ordinary daily traffic.

G. **Alley Way**

In some circumstances, alleys can be used to enhance the pedestrian experience by removing driveways, garage openings, loading docks, garbage containers, utility services and other drive activities from the front of buildings. Alleys shall be used on a limited basis and will be private with public access and public utility easements. By utilizing alleys, some utilities, loading docks, dumpsters and other service needs are kept to the back of the buildings and away from the pedestrian amenities. Alleys are not intended as a tool to avoid having a public street or private pedestrian plaza that meets the standards of a public street at the front of the buildings. The use of alleys must be approved by the Town of Hideout Council, the Town Engineer, and also the Wasatch County Fire District.

1. **Definition:** "Alley" means a public access privately maintained within a block primarily intended for service and access to abutting property by vehicles and not designed for general travel and only allowed when units have frontage on a road or pedestrian plaza built to the applicable Town standard.
2. **General Conditions:** Alley or access may be permitted under the following conditions. If all conditions are not met, then the use of alleys is prohibited.
 - a. Building access must be available from a public street or private street/plaza built to the public standard as well as the alley.
 - b. Alleys or Lanes are built to specific standards.
3. **Water and Sewer:** Water and sewer utilities shall be in the street unless approved by the Town Engineer. If underground wet utilities, sanitary sewer, waterlines, storm drains, etc. are installed in alleys, they shall be constructed prior to the surfacing of the alley and per Town of Hideout Standards.

If utilities are constructed within the alley then connections for all underground utilities and sanitary sewers shall be laid prior to the asphalt or concrete to avert the necessity for disturbing the alley improvements, when service connections thereto are made.

4. **Alleys:** Alleys constructed of concrete will be 20' wide with an inverted crown and a centerline drainage collection system. Alleys constructed of concrete shall have a minimum pavement section of 8 inches of PCC over 6 inches of base rock, placed over geotextile fabric, or approved per geotechnical recommendations and approved by the Mayor or the Town Engineer for H²O loading. Asphalt construction may only be used with a concrete water way for drainage at the center of the alley. A minimum of 3" of asphalt over 9" of road base will be required. In conditions where asphalt construction is used, concrete ribbon curbing will be required outside the 20' width of the asphalt section to protect the edge of the asphalt. Said curbing shall be 2' wide for a total drivable surface of 24'. If the natural soils have a CBR under 20, then a thicker section will be required as determined by the developer's geotechnical engineer, with approval of the

Town Engineer. The applicant must show all private improvements and how they will impact the alley, including garages or other structures, stairs, vaults, fences, walls, driveways, parking lots, walkways, or other improvements. The applicant must indicate existing drainage patterns and show private drainage inlets, outlets, and pipes beyond the alley right-of-way that will be impacted by the alley construction.

- a. **Joint Pattern:** The PCC pavement shall be placed full width in one pour, with no longitudinal joints. The alley design shall include a transverse joint pattern, shown on the plans, so that the joints are spaced to create panel lengths that are 0.75 to 1.25 times the alley width. The joint pattern will be coordinated to intersect with utility features such as poles, manholes, and catch basins.
 - b. **Alley Approaches:** The alley approaches shall be constructed as commercial driveways in all respects, except that the structural section will be increased to 10 inches, or shall match the alley pavement structure for which it provides access, or as approved per geotechnical recommendations by the Mayor or the Town Engineer for H-2O loading, whichever is greater. Alley approaches with a standard curb return shall not be used without approval of the Town Engineer.
5. **Alley Length:** Alleys shall be continuous from street to street wherever possible. If an alley is not through and longer than 150 feet, then a turnaround must be provided to accommodate a fire truck, or such additional standards as may be required by the fire code.
6. **Alley Parking:** No person shall park a vehicle within an "alley" except during the necessary and expeditious loading and unloading of merchandise. No parking signs are required at 100-foot intervals. The alley must remain open at all times.
7. **Alley Setbacks:** Alley garage setbacks in residential uses shall be 20 feet or greater as measured from the edge of the alley paving. Alley's leading to parking structures or to commercial/hospitality uses such as hotels or retail shall have a minimum setback of 4 feet as measured from the edge of the alley paving. The four-foot setback shall remain open and unobstructed. If an alley exceeds 150 feet and is adjacent to buildings exceeding 30 feet, then the alley must have 26 feet of hard surface for fire truck downriggers. Parking garage structures shall have a side yard setback of no less than 15 ft.
8. **Alley Snow Storage:** An additional area of 15% of the alley paved area must be set aside for snow storage. A snow storage plan exhibit must be submitted as part of the alley plan to show that the required amount of snow storage has been provided.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.14.4 ROADWAY SECTION

- A. **Road Section:** Prior to preliminary approval of a development, the developer must provide a geotechnical, and geological review performed by a licensed geotechnical engineer and professional geologist. The review must address onsite soil conditions and make recommendations for a typical road section for the project. The reviewer must take into consideration the amount of full build out traffic ADT's based on an approved traffic control plan. The town has minimum section requirements as shown below.
- B. **Roadway Excavation:** For new road construction, the entire road platform, including cut and fill areas, must be cleared of all vegetation, topsoil, organic material, and soft clays. If the geotechnical engineer classifies the sub grade soils to be collapsible, further actions may be necessary to prepare the sub grade based on the geotechnical engineer's recommendation. The Town of Hideout engineer has the option to require additional sub grade preparation and section materials above and beyond the geotechnical review engineer's recommendation.
- C. **Sub Grade:** Minimum Sub Grade preparation will meet the requirements of the table below:

AASHTO Soil Classification	Requirement
All A-1, A-2, A-3 and A-4 classifications	Native sub-grade shall be scarified to a minimum depth of 12 inches. Loosened material shall be moistened and compacted to at least 95% of maximum dry density based on ASTM D1557.
All A-5 to A-7 classifications	Over-excavate and replace 12 inches of depth with a soil classifying as AASHTO A-1 through A-4. New material shall be moistened and compacted to at least 95% of maximum dry density based on ASTM D1557.

- D. **Road Base and Asphalt:** The values in the following table are minimum thicknesses based on the roadway classifications. A geotechnical analysis and pavement design report is necessary to qualify these minimums, or these values may be increased due to further investigation based on local conditions. The Town Engineer may also require additional thickness or cross section improvements in addition to these minimums:

Roadway Classification	Requirement
Major Collector	5" Hot Mix Asphalt, 10" State-spec Base Course.
Minor Collector	4" Hot Mix Asphalt, 9" State-spec Base Course.
Neighborhood Roads	3" Hot Mix Asphalt, 8" State-spec Base Course.

- E. **Excavation Through an Existing Street:** This section covers any trench excavation through an existing road and is anticipated to be used mainly to install utilities across existing roads. If possible, the preferred method for installing utilities under existing paved roads is to have them bored.

- Any excavation work in a town road (including the right of way) requires a permit.

REPLACED
BY ST-6REPLACED
BY ST-10,
ST-14, and
ROW
Encroachment
Permit

2. A traffic control plan meeting the MUTCD guidelines is required and must be approved by the Town Engineer. Minimal traffic impact including full road width or lane closures is required on existing roads.
3. Material removed by the excavation is not to be used as backfill for any portion of the trench under the road paved section unless it meets an A-1 granular requirement.
4. Pipe bedding to conform to the specific utility companies' requirement, including the dry utility companies (communication, electric, and gas), and Town standards for water sewer and storm drain piping.
5. The remaining trench to be filled with select A-1-A granular product up to the existing road section.
6. The top of the trench will have a minimum of 4" of asphalt placed in 2 lifts over road base to match the existing section or 8" minimum. Trench work shall be scheduled so that the trench can be completed including asphalt within a minimum of 2 days. Trenches left unpaved for longer than 2 days require specific approval in writing from the Town Engineer.
7. Any work within an existing road requires inspection from the town to be scheduled by the contractor completing the work.

F. Roadway Design Tables:

REPLACED BY TABLE 5

Roadway Functional Classification								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
ROW Width	106'	75'	66'	60'	60'	60'	60'	60'
Average Daily Trips	> 8000	> 8000	8,000-2,001	2,000-0	< 500	Emergency Only	< 200	< 200
Single Family Units	< 800	< 800	< 500	< 200	150-0	0	Minimal	1-3
Pavement Width	46'	44'	37'	30'	24'	16'	24	20
Side cut/fill slopes	3:1 up to 5 feet high and 2:1 above 5 feet					2:1	2:1	2:1
Horizontal Design Elements								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum mid block centerline curve	Varies with V and superelevation				100'	60'	75'	60'
Minimum tangent distance between reverse centerline curves	Varies with V and superelevation				50'	40'	50'	40'
Maximum cul-de-sac length ³	Not Allowed				The lesser of 1,300' or 30 dwelling units			
Cul-de-sac travelway turnaround diameter	Not Allowed				80'	80'	80'	80'
Maximum superelevation	6%	6%	6%	6%	N/A			
Vertical Design Elements								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum crest vertical curve K value ⁵	Varies with speed limit				19	19	19	19
Minimum sag vertical curve K value ⁵	Varies with speed limit				37	37	37	37
Minimum length of vertical curve	Per traffic engineer	3*V	120'	80'	60'	50'	60'	60'
Minimum centerline grade ⁶	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Maximum grade in cul-de-	Not Allowed				5%	5%	5%	5%
Maximum centerline grade across designated	4%	4%	4%	5%	5%	5%	5%	5%
Maximum grade break without vertical curve	0.50%	0.50%	0.50%	1%	2%	2%	2%	2%

Intersections								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum angle of intersection	80°	80°	70°	60°	60°	50°	50°	50°
Minimum offset between intersection	Study required	Study required	150'	125'	125'	125'	125'	125'
Maximum centerline offset	0'	5'	5'	5'	5'	5'	5'	5'
Maximum centerline grade across intersections ⁶	4%	4%	4%	5%	5%	5%	5%	5%
Minimum corner radius (edge of travelway)	30'	30'	30'	25'	25'	25'	25'	25'
Pavement Component Minimum Thickness								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Asphaltic Concrete	Per geotechnical report, 4" minimum			3"	3"	3"	3"	3"
Road Base	8" minimum			8"	8"	8"	8"	8"
Subbase	Per geotechnical report							

Notes:

- A. Roads shall be designed at a minimum in accordance with AASHTO design criteria. **REPLACED BY ST-6**
- B. See Section 10.08.16 of this chapter for sidewalk requirements.
- C. The length of a cul-de-sac is measured along the centerline from the intersection to the center of the turnaround. **REPLACED BY ST-7**
- D. Physical terrain may require exceptions to the maximum grade. See section 10.08.10 for further discussion.
- E. Design speed for vertical curves shall be 5 miles per hour greater than the anticipated speed limit. **REPLACED BY TABLE 5**
- F. Grade must extend at least 100 feet beyond the edge of the traveled way of the outside lane of the intersecting street. **REPLACED BY TABLE 5**
- G. A geotechnical report including pavement design shall be submitted. The thickness of 1 or more of the pavement components shall be increased as needed to achieve the required strength as specified in the geotechnical report approved by the Town Engineer. **REPLACED BY ST-6**
- H. The primary street of an intersection shall not exceed the maximum centerline grades as allowed for each of the roadway functional classifications. Stop-controlled secondary intersecting grades must not exceed the reduced approach values as given in this table. The intersection centerline approach grades of the secondary or intersecting street must exceed at least 100 feet beyond the edge of the paved traveled way of the outside lane of the primary through street before exceeding these values. **REPLACED BY TABLE 5**

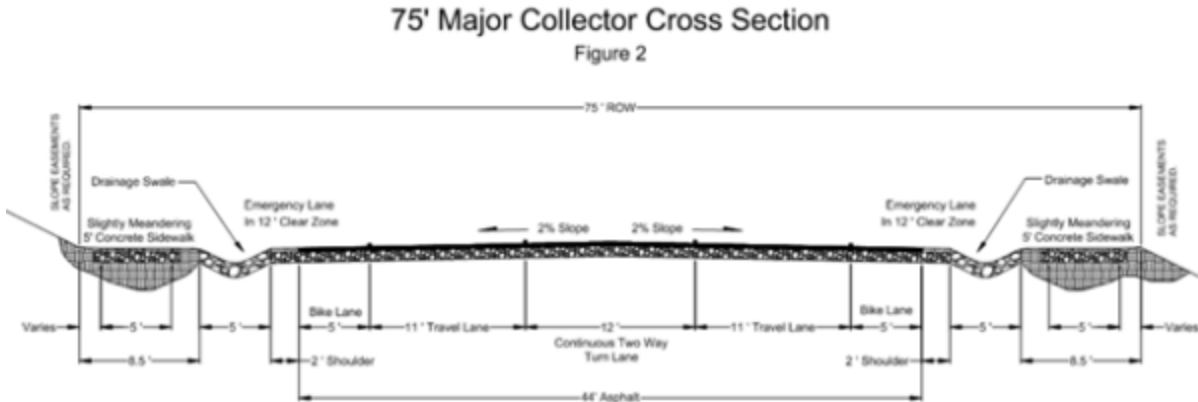
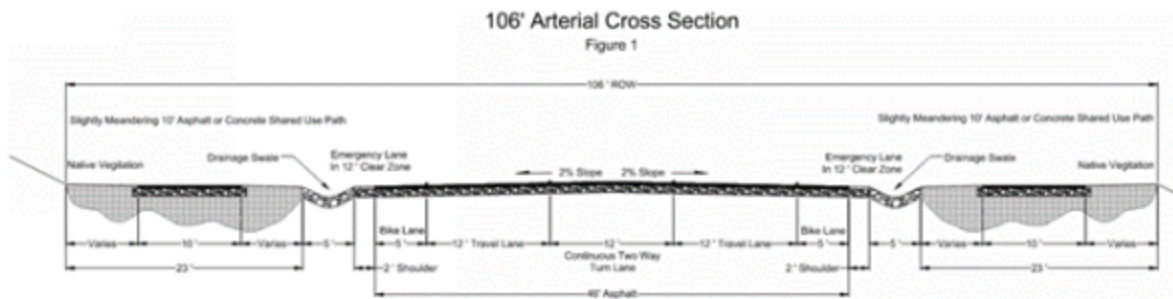
HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

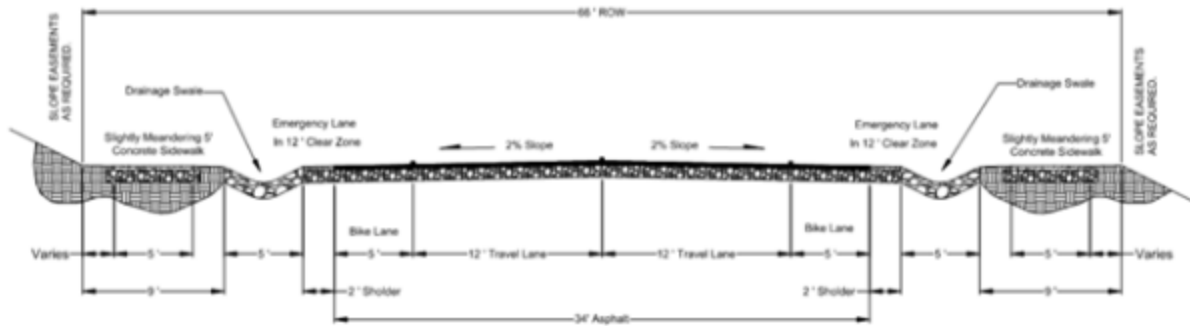
10.08.14.5 STANDARD CROSS SECTIONS REPLACED BY ST-4 AND ST-6

- A. All disturbed surfaces shall be covered with 6 inches of topsoil and seeded.
- B. Lane striping as per cross section including the required bike lane painting.
- C. Shoulder will be constructed with compacted road base.
- D. The subtle meandering shared use path will have 3 inches of asphalt over 9 inches of road base. Road will have a minimum of four inches (4") of asphalt.
- E. Permanent erosion control mat* or minimum 6" thick rip rap required in drainage swale for road slopes greater than 5%. Permanent mats shall have ground cover of 74% or greater and a ultraviolet stabilization of 1,000 hours.



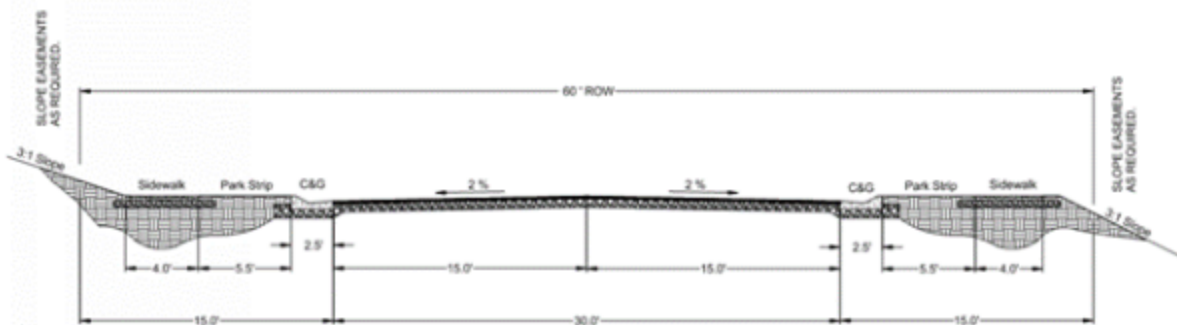
66' Minor Collector Cross Section

Figure 3



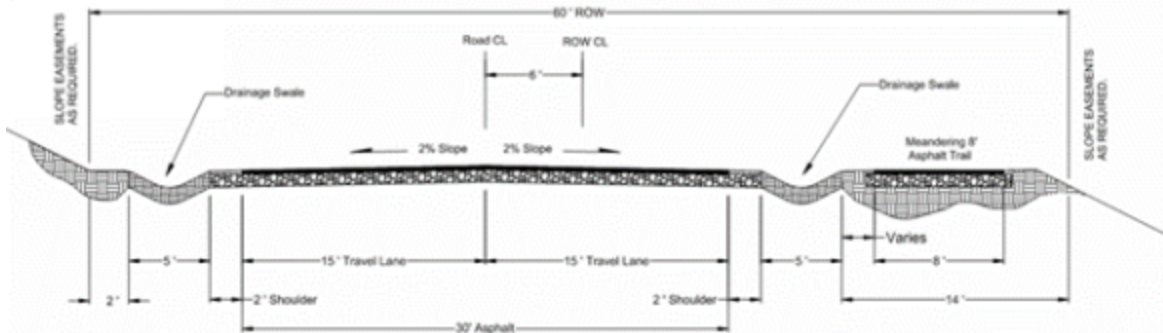
60' Major Local Cross Section

Figure 4



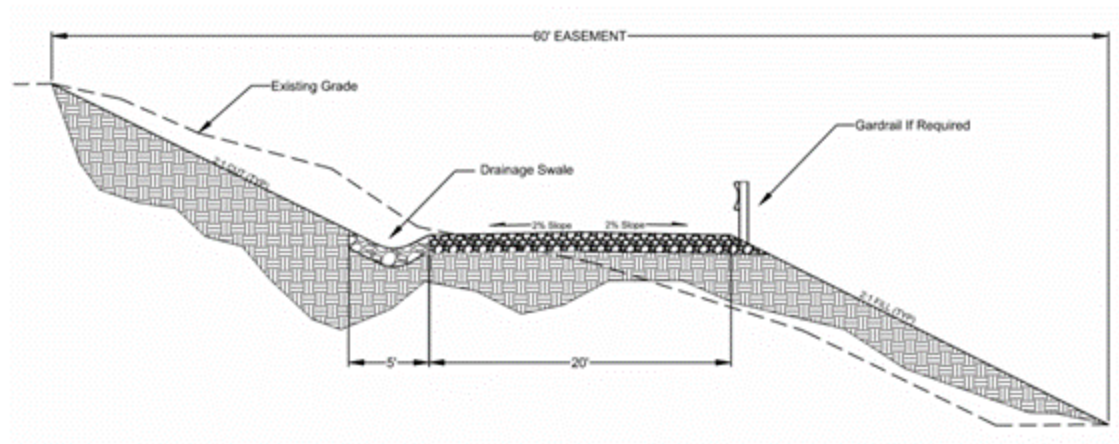
60' Major Local with Swales Cross Section

Figure 5



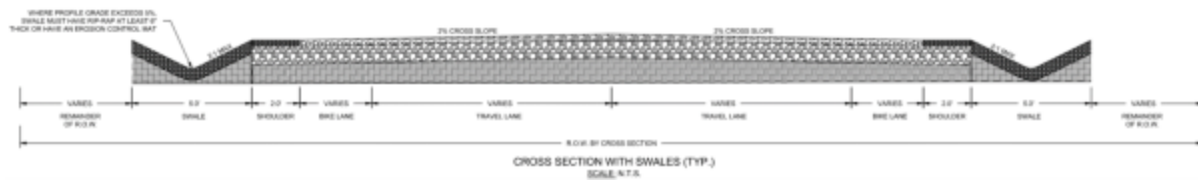
Fire / Emergency Road

Figure 7



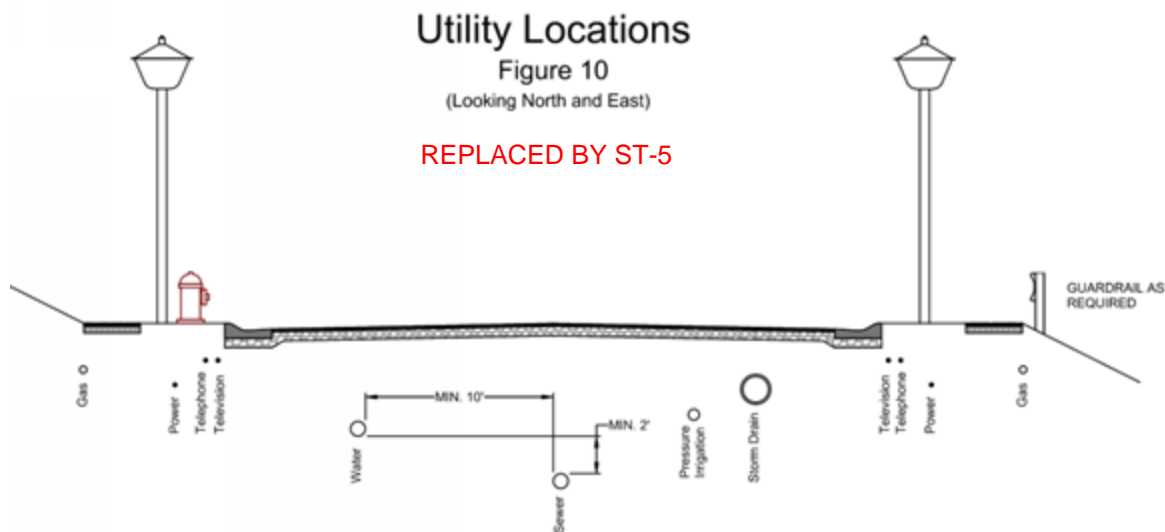
Typical Cross Section with Swales

Figure 6



Permanent Erosion Control Mat Specifications:

Thickness	0.4 inches
Ground Cover Factor	74 percent
Tensile Strength	170 X 125 pound/foot
Tensile Elongation	50 percent maximum
Ultraviolet Stabilization 1,000 hrs	80 percent



The Town Council may adopt Town construction standards and specifications for roadways and cross sections. Where the provisions of this section impose different restrictions than those required in the Town construction standards and specifications, the provisions of the Town construction standards and specifications shall prevail.

- A. **Roads.** Planned roads within a development shall always be kept open to the public, unless special approval is granted by the Town Council to allow a gated community. OMITTED -- VAGUE AND OBVIOUS
- B. **Cul-De-Sacs.** A publicly dedicated Cul-de-sac shall have a right-of way width of at least sixty (60) feet; shall have a length of not in excess of eight hundred (800) feet; shall be terminated by a right-of-way turnaround of not less than ninety-six (96) feet in diameter; and shall be identified as such by appropriate signage within twenty (20) feet of the entrance thereof, measured from the frontage road Property line. REPLACED BY ST-7
- C. **Easements.** Public Utility Easements of not less than ten (10) feet on rear lot lines, side lines, and front lines will be required to serve utility companies for poles, wire, conduits, storm or sanitary sewers, gas and water mains, and other public utilities. Easements of greater width may be required along Property lines where necessary for surface overflow or for the extension of sewer mains or similar utilities. REPLACED BY STD PLAT
- D. **Intersections.** Roads shall intersect each other as near as possible at right angles. Minor roads shall approach the arterial or collector roads at an angle of not less than eighty degrees for a distance of at least one hundred feet. Offsets across roads in road alignment between ten (10) feet and one hundred fifty (150) feet shall be prohibited. REPLACED BY TABLE 5
- E. **Curbs.** Curbs at all intersections shall be rounded with curves having a minimum radius of twenty-five (25) feet. Property lines at road intersections shall be rounded with a curve where necessary. REPLACED BY ST-5
- F. **Street Names.** New street names shall not duplicate those names already existing. A street obviously a continuation of another already in existence shall bear the same name. All road designations shall be approved by the Planning Commission and Wasatch County Information Systems Department. Street names shall be signed and said signing shall be discernable from the road. REPLACED BY 5.1.G
- G. **Dedications.** All roads shall be dedicated for public use. Private roads shall be permitted only as recommended by the Planning Commission and approved by the Town Council. REPLACED BY 5.0

- H. **Bridges and Culverts.** All bridges and culverts shall be constructed to support HS-20 / HL-93 loading requirements in accordance with DOT and ASHTO standards. **REPLACED BY 1.2**
- I. **Relation to Adjoining Road System.** The arrangement of roads in new Subdivisions shall make provision for the continuation of the existing roads in adjoining areas for their proper protection (where adjoining land is not subdivided) at the same or greater width (but in no case less than the required minimum width). Where the Planning Commission determines that it is necessary for the orderly development of the community and health and safety concerns to provide for road access to adjoining Property in order to provide an orderly development of a road system, proposed roads shall be extended by dedication to the boundary of such adjoining property. **REPLACED BY 5.1.H**
- J. **Cuts in Pavement.** No cuts shall be made in road pavement for at least five years after hard surfacing without approval by the Mayor with the advice of the Town Engineer, except in cases when public safety is at risk. **REPLACED BY 5.1.I**

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.16 SIDEWALKS, CURBS, PLANTER STRIPS, AND GUTTERS

- A. Curbs, and gutters shall be required on both sides of all new roads to be dedicated to the public.
- B. Sidewalks, paved trails and planter strips may be required by the Planning Commission or Town Council; to be dedicated to the public.
- C. Sidewalks, curbs, planter strips and gutters may be required by the Planning Commission and Town Council on existing roads bordering the new Subdivision lots.
- D. Sidewalks shall be included within the dedicated non-pavement Right-of-Way of all roads unless an alternate location has been specifically approved by the Planning Commission.
- E. Sidewalks shall be a minimum of sixty (60) inches wide and Americans with Disabilities Act (ADA) compliant for safe and easy passage for pedestrians.
- F. Concrete curbs are required where sidewalks are required.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.20 DRAINAGE AND STORM WATER FACILITIES

Storm drainage and erosion control planning submittal requirements are outlined in this chapter. Criteria can also be found in the "Wasatch County - A Guide For Erosion And Sediment Control" (1996).

A. Planning Submittal Requirements: Unless provided otherwise, the criteria and methods presented in the following references should be used in planning and design of the drainage system:

1. "Urban Drainage Design Manual", hydraulic engineering circular no. 22, November 1996, federal highway administration, FHWA-SA-96-078, <http://www.fhwa.dot.gov/bridge/hydpub.htm>.
2. "Urban Storm Drainage Criteria Manual", June 2001, urban drainage and flood control district, <http://www.udfcd.org/>.
3. "Design And Construction Of Urban Stormwater Management Systems", ASCE manuals and reports of engineering practice no. 77, 1992, <https://www.asce.org/bookstore/book.cfm?book=2800>.

The drainage plan should provide for control of erosion at the source, noneroding conveyance facilities, and water quality/detention basins.

B. Control Of Erosion And Contaminants At The Source: The ability to control erosion and other pollutants at the source is the most important single mitigation factor. Every practical effort should be made to prevent erosion from occurring at the source. The objective should be to prevent erosion during construction and to reestablish vegetation as soon as possible after construction on all areas with exposed topsoil.

Slope soil erosion, after revegetation, should be less than or equal to predevelopment rates and should be less than the topsoil development rate (generally assumed as 0.01 inch per year or 2 tons per acre per year).

C. Conveyance Facilities: The initial drainage system (i.e., curb and gutter, storm drains, culverts, ditches, realigned natural channels, etc.) should be designed to convey runoff from a minor storm event (10-year event, the storm event having a 10 percent chance of being equaled or exceeded in any given year) without nuisance flooding and without erosion. If tributary runoff flows (either peak or volume) are increased to a natural drainage, the drainage should be shown to be noneroding in a ten (10) year event.

The drainage system should be capable of passing the storm runoff from a major storm (100-year event, the storm event having a 1 percent chance of being equaled or exceeded in any given year) without flooding buildings.

D. Water Quality/Detention Basin: The criteria for design of the water quality/detention basin should include both water quality mitigation and mitigation for downstream erosion and flooding effects. The effects of development (i.e., increased impervious area and decreased time of concentration) should be mitigated such as to prevent increased flooding of downstream properties (100-year design event) and to prevent increased erosion of downstream conveyance channels (10-year design event). The level of mitigation required is dependent upon the capacity of the downstream drainage system. A common practice is to provide for on site detention, reducing storm runoff peaks from the development to at or below historic (predevelopment) levels. If downstream conveyance capacities are severely limited, it may be

necessary to reduce storm runoff peak flow rates from the developed property to much less than historic runoff flow rates to offset the impacts of the increased runoff volume.

1. The basins should be designed to adequately capture and treat runoff from the water quality design storm. Wasatch County criteria ("A Guide For Erosion And Sediment Control", pages 11 and 18) require capturing and containing the runoff volume from a two (2) year, twenty-four (24) hour storm (minimum). The water quality capture volume should be discharged at a rate such as to allow a minimum residence time of twelve (12) hours (defined as the time from the centroid of the inflowing hydrograph to the centroid of the outflowing hydrograph). The maximum allowable discharge rate for the water quality capture volume discharge orifice may be computed using the simplified equation:

$$Q_{wq} = (WQCV/30) * C$$

Q _{wq}	=	Maximum allowable water quality capture volume release rate (cfs)
WQCV	=	Water quality capture volume (acre-feet)
	=	2-year 24-hour runoff volume
C	=	Conversion from acre-feet/hour to cubic feet per second = 12.1

2. The water quality pond should have sufficient additional storage below the lowest outlet to accommodate sediment accumulation. The minimum volume of provided sediment storage should be either computed from a slope erosion analysis for the three (3) year slope soil loss (revised universal soil loss equation reference: "Design Hydrology And Sedimentology For Small Catchments", C.T. Haan, B.J. Farfield, and J.C. Hayes, 1994, Academic Press, Inc., San Diego, California) or may be taken as equal to twenty percent (20%) of the water quality capture volume. If subsoils are such that water captured in the sediment storage area cannot infiltrate within a reasonable period of time (to avoid mosquitoes, etc.), then a subdrain system should be considered.
3. The analysis for designing the required detention volume to mitigate downstream flooding and erosion effects should be performed assuming that the pond is full to the water quality capture volume level prior to the start of the design storms (10-year and 100-year).
4. An emergency spillway (preferably open channel type) is required with a one hundred (100) year flood event minimum design capacity assuming that the primary outlets are plugged. The elevation of the top of the embankment should be a minimum of one foot (1') above the water surface elevation when the emergency spillway is conveying the maximum design or emergency flow. The design height of the embankment should be increased by roughly five percent (5%) to account for settlement.

E. Water Quality/Detention Basins Maintenance Requirements: Key components include nonplugging outlets design, maintenance access design, and pond side slope erosion protection design.

1. Detention basin outlets should be designed to be nonplugging as much as possible. A possible option for the water quality capture volume discharge orifice is to provide an orifice (set with the orifice invert at the bottom of the water quality capture volume level) with a connected pipe inlet placed a minimum of six inches (6") below the water level at

which water begins to discharge. Outlet pipes should be protected by inlet grates which are sized, spaced, and oriented such as to minimize plugging of the outlets.

2. Maintenance access to the ponds should be provided. Required access includes access with heavy equipment to the pond floor (generally 15 inches minimum width with 15 percent maximum slope) and all weather access should be provided to the pond outlet facilities.
 3. Interior pond side slopes should preferably be four horizontal to one vertical (4:1) or flatter and should not be steeper than three horizontal to one vertical (3:1). Pond side slopes (both interior and exterior) should meet the same criteria for slope erosion control stated above (2 tons per acre per year maximum mean annual slope soil erosion rate). Riprap is not permitted unless approved by the Town Planner and only under special circumstances. Steep slopes that might otherwise necessitate riprap should be designed at a reduced slope, one that allows the basin to be landscaped appropriately and in coordination with the Town Planner.
 4. Provisions for low maintenance landscaping and irrigation must be provided. Landscaping will be maintained by the homeowners' association.
- F. Open Channels: Wherever possible open channels shall be preserved for all major drainages shown on the Final Drainage Control Plan. No building shall be located within 50 feet of a natural drainage. Culverting of these channels is not permitted.
- G. Landscaping: A landscape plan must be included with all stormwater plans. This plan shall include flood tolerant species within the basin as well as the appropriate screening of the basin. Slopes should be gradual enough so that fencing is not needed around a basin and native landscape plant materials can be reintroduced after construction in coordination with the Town Planner.
- H. Health and Safety: Upon recommendation of the Town Engineer or Town Planner, and when necessary to conserve or promote the health, safety, or welfare of the present and future population of the Town and necessary to the conserve or promote water drainage, the Town prohibit the Subdivision of any portion of the property which lies within a floodplain or any stream or drainage course, as identified in the most current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. Except as approved by the Town Engineer, such areas should be preserved from any and all destruction or damage resulting from clearing, grading, or dumping of earth, waste material, etc.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.22 WATER SYSTEM

- A. The water distribution system shall deliver water at pressures meeting state requirements, as measured at the main line adjacent to each system connection. Pressure reducing valves shall be placed on the mains to regulate pressures in excess of 120 PSI. Pressure reducing valves shall be installed on service laterals for residential neighborhoods as a back-up to main lines. At no time shall water pressure exceed 120 psi to each system connection. At no time shall services be connected to transmission lines.
- B. The water system pumps, storage tanks, transmission and distribution mains, etc. must meet JSSD design standards.
- C. The system shall be designed to provide the following fire flows and to meet adopted codes and Fire District standards:
 - 1. Residential Connections: 2,000 gpm for 2 hours
 - 2. Commercial Connections: 3,500 gpm for 3 hours
- D. Fire hydrants are required along public ways or walks or drives which are to be snow-plowed. Fire hydrant spacing shall be in accordance with applicable codes, or a maximum of 500 feet.
- E. All water design and construction shall comply with the latest JSSD design requirements.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

10.08.24 SEWER SYSTEM

- A. Sanitary Sewers shall be designed in accordance with all applicable State of Utah standards and adopted codes.
- B. All sanitary sewer systems shall be designed to exclude all storm water runoff, or water from field drainage systems, foundation drains, underground parking structures, roofs, roads, and other paved areas.
- C. Downspout connections, foundation and basement drains, sumps and storm drain connections shall be prohibited from discharging into the sanitary sewer system.
- D. Grease traps or oil separators shall be sized for peak flows and average loading of grease/oil by an engineer and approved by the Town Engineer prior to placement. The grease traps or oil separators shall be placed to allow access for inspection and cleaning. This applies to commercial and institutional facilities, and any building or lot with the potential of introducing substances that would be detrimental to treatment facilities.
- E. Sewer systems shall be designed to eliminate possible cross connections with culinary water system.
- F. Design Period: The sewer system shall be designed to serve the estimated ultimate tributary area and shall be based on the best information available, including Master Plan Study, current zoning regulations and approved planning and zoning reports when available.
- G. Wastewater Pumping Stations: Use of wastewater pumping stations will be avoided whenever possible. Pumping stations are subject to approval and review by the Town Engineer.

HISTORY

Adopted by Ord. [2020-06](#) Zoning Amendments on 7/23/2020

Amended by Ord. [2020-11](#) Technical Corrections to Ordinance 2020-06 on 11/12/2020

TOWN OF HIDEOUT
ORDINANCE #2024 – O-_____

AN ORDINANCE AMENDING SECTIONS TO UPDATE ITEMS WITHIN THE LAND USE
CODE IN TITLES 8, 9, AND 10

WHEREAS, Staff recognizes that many of the engineering standards currently codified are better incorporated in a separate engineering manual;

WHEREAS, many communities have moved their engineering and technical standards to an separate manual for ease of use for developers and the public;

WHEREAS, certain updates to application and submittal requirements will help with the application and review process;

WHEREAS, a public hearing was duly held before the Planning Commission on December 16, 2024 and before the Town Council on January __, 2024;

WHEREAS, the Standard Specifications and Drawing Manual is concurrently being considered by resolution and being reviewed by both the Planning Commission and the Town Council as a Land Use Regulation pursuant to UCA 10-9a-502.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF HIDEOUT, UTAH, THAT:

SECTION I: Titles 8, 9 and 10 will be removed or amended from the Hideout Municipal Code and incorporated into a Standard Specifications and Drawing Manual as shown in Exhibit A attached to this Ordinance.

SECTION II: Effective Date. This Ordinance shall take effect upon publication.

PASSED AND ADOPTED by the Town Council of Hideout, Utah, this ____ day of _____ in the year 2024.

TOWN OF HIDEOUT

Phil Rubin, Mayor

ATTEST:

Alicia Fairbourne, Recorder for the Town of Hideout

Exhibit A

8.02.100 PATCHING REQUIREMENTS

Patching requirements shall meet the following standards:

1. Cuts Parallel to Street: For cuts parallel to the street, the patch required is the lane width by thirty feet (30') minimum or ten feet (10') beyond the cut at each end, whichever is larger.
2. Cuts Perpendicular to Street: For cuts perpendicular to the street or diagonal, the patch required is the lane width by twelve feet (12') minimum or five feet (5') beyond the cut on each side, whichever is larger.

9.01.010 ADOPTING AMERICAN PUBLIC WORKS ASSOCIATION (APWA) STANDARD PLANS AND SPECIFICATIONS

The most recent addition of the American Public Works Association ("APWA") Utah Chapter Manual of Standard Plans and Specifications for all public works construction (with the exception of water and sewer standards and specifications) including Utah Chapter APWA supplements and updates are hereby adopted.

9.01.020 ADOPTING JORDANELLE SPECIAL SERVICE DISTRICT (JSSD) STANDARD PLANS AND SPECIFICATIONS

The most recent adopted Jordanelle Special Service District ("JSSD") standard plans and specifications for all water and sewer public works construction are hereby adopted.

10.08.14.1 ROAD GRADE AND MINIMUM WIDTH

1. The minimum allowed grade for all roadways is one-half percent (0.5%).
2. The maximum allowed grade for all local roadways is 10% (and 8% for all collectors). Council may allow local roadway slopes of up to 12% for lengths not exceeding 500 feet. For roadways greater than 10%, the applicant shall demonstrate a technical infeasibility to construct the roadway at or below 10% standard.
3. Unless otherwise specifically provided for in this Code, the minimum width for all new roadways within the Town is 26 feet of pavement (exclusive of curb and gutter).

10.08.14.2 UTILITY LOCATIONS

Utilities in the road will be located as shown in typical sections in this chapter.

10.08.14.3 GENERAL ROAD DESIGN STANDARDS

Roads shall be designed at a minimum in accordance with AASHTO design criteria and per street cross sections shown in Section 10.08.14.5 of this Title. The roadway design standards shall be the same for publicly owned and all privately owned roadways. The standards shall be applicable to new developments in The Town of Hideout.

1. **Major Collector (75 Foot ROW)**

To be used where the potential of traffic at build out is greater than 8000 AADT requiring two 12' travel lanes, and 5' asphalt shoulders for bike/emergency lanes. Drainage is to be controlled with a drainage swale or curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private residential access allowed except for very specific exceptions for existing buildable lots bordering a 75' town right of way in circumstances where the applicant has proven safety concerns can be adequately mitigated. These exceptions can only be approved by the Mayor and Town Engineer. There will be no on-street parking. A right-of-way of 18' is established behind the back of the curb. This allows for the potential of two meandering five-foot (5') walkways on each side of the road. The Town Council may approve a deviation from the standard section for this type of roadway for specific alignments.

2. **Minor Collector (66 Foot ROW)**

To be used where the potential of traffic at build out is between 2000 and 8000 AADT. Roadway to have two 11' driving lanes with 5' asphalt shoulders for bike/emergency lanes. Drainage to be controlled with a drainage swale or curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private resident access allowed except for very specific exceptions for existing properties bordering a 61' town right-of-way. A right-of-way of 18' is established behind the back of the curb. Right-of-way allows for two five-foot (5') walkways on each side of the road. Exceptions to be approved by the Mayor or Town Engineer. There will be no on street parking.

3. **Neighborhood Road (51-Foot ROW)**

This is the minimum allowed right-of-way and road standard designed for all non-collecting neighborhood roads throughout the Town of Hideout without specific Town Council exception. Potential traffic is less than 1000 AADT. Drainage to be controlled by either a drainage swale or curb and gutter. There are to be 10' travel lanes and 3' asphalt shoulders for bike/emergency lanes. A 10' right-of-way shall be dedicated behind the back of the curb and gutter. Exceptions to be approved by the Mayor or Town Engineer. There will be no on-street parking except where asphalt exceeds 32'.

4. **Arterial Roadways (106 Foot ROW)**

One Hundred and Six Foot (106') width Roads shall be designed at a minimum in accordance with AASHTO design criteria and per street cross section between the property line and the drainage swale.: To be used where the potential of traffic at build out is greater than 8000 ADT requiring a minimum of 3 driving lanes (including the turn lane) and 5' asphalt shoulders for bike/emergency lane. Drainage to be controlled with a drainage swale, no curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. There will be no private resident access allowed. There will be no on street parking allowed. Larger rights-of-way allow for two meandering ten-foot (10') asphalt paths on each side of the road. 1. The town council may approve an alternate section for construction depending on location and site-specific needs.

5. **Mountain Road**

This road standard is designed for connective road traffic through mountainous terrain. It is not to allow frontage for any residential use. Potential traffic is less than 1000 AADT. Drainage to be controlled with a drainage swale, no curb and gutter. In areas where the profile grade is steeper than 5% the drainage swale must be lined with an approved fabric or rip rap. No driveway access is allowed. The Town may not plow an unpaved mountain road may not be plowed in the winter.

Emergency services may not be available in areas accessed on Mountain Roads when there is snow on the road.

6. **Emergency access / fire road**

Only to be used in legally non-conforming subdivisions or lots of record and must be expressly approved by the Town Engineer and the town council on a case by case basis where the applicant has proven and the Town Council finds health, safety, and welfare of the road and the public will not be negatively impacted. The Fire/ Emergency Road may not be used as a secondary access. A fire/emergency road must have controlled access on each end point to prevent ordinary daily traffic.

7. **Alley Way**

In some circumstances, alleys can be used to enhance the pedestrian experience by removing driveways, garage openings, loading docks, garbage containers, utility services and other drive activities from the front of buildings. Alleys shall be used on a limited basis and will be private with public access and public utility easements. By utilizing alleys, some utilities, loading docks, dumpsters and other service needs are kept to the back of the buildings and away from the pedestrian amenities. Alleys are not intended as a tool to avoid having a public street or private pedestrian plaza that meets the standards of a public street at the front of the buildings. The use of alleys must be approved by the Town of Hideout Council, the Town Engineer, and also the Wasatch County Fire District.

1. **Definition:** "Alley" means a public access privately maintained within a block primarily intended for service and access to abutting property by vehicles and not designed for general travel and only allowed when units have frontage on a road or pedestrian plaza built to the applicable Town standard.
2. **General Conditions:** Alley or access may be permitted under the following conditions. If all conditions are not met, then the use of alleys is prohibited.
 1. Building access must be available from a public street or private street/plaza built to the public standard as well as the alley.
 2. Alleys or Lanes are built to specific standards.
3. **Water and Sewer:** Water and sewer utilities shall be in the street unless approved by the Town Engineer. If underground wet utilities, sanitary sewer, waterlines, storm drains, etc. are installed in alleys, they shall be constructed prior to the surfacing of the alley and per Town of Hideout Standards.

If utilities are constructed within the alley then connections for all underground utilities and sanitary sewers shall be laid prior to the asphalt or concrete to avert the necessity for disturbing the alley improvements, when service connections thereto are made.

4. **Alleys:** Alleys constructed of concrete will be 20' wide with an inverted crown and a centerline drainage collection system. Alleys constructed of concrete shall have a minimum pavement section of 8 inches of PCC over 6 inches of base rock, placed over geotextile fabric, or approved per geotechnical recommendations and approved by the Mayor or the Town Engineer for H²O loading. Asphalt construction may only be used with a concrete water way for drainage at the center of the alley. A minimum of 3" of asphalt over 9" of road base will be required. In conditions where asphalt construction is used, concrete ribbon curbing will be required outside the 20' width of the asphalt section to protect the edge of the asphalt. Said curbing shall be 2' wide for a total drivable surface of 24'. If the natural soils have a CBR under 20, then a thicker section will be required as determined by the developer's geotechnical engineer, with approval of the Town Engineer. The applicant must show all private improvements and how they will impact the alley, including garages or other structures, stairs, vaults, fences, walls, driveways, parking lots, walkways, or other improvements. The applicant must indicate existing drainage patterns and show private

drainage inlets, outlets, and pipes beyond the alley right-of-way that will be impacted by the alley construction.

1. **Joint Pattern:** The PCC pavement shall be placed full width in one pour, with no longitudinal joints. The alley design shall include a transverse joint pattern, shown on the plans, so that the joints are spaced to create panel lengths that are 0.75 to 1.25 times the alley width. The joint pattern will be coordinated to intersect with utility features such as poles, manholes, and catch basins.
2. **Alley Approaches:** The alley approaches shall be constructed as commercial driveways in all respects, except that the structural section will be increased to 10 inches, or shall match the alley pavement structure for which it provides access, or as approved per geotechnical recommendations by the Mayor or the Town Engineer for H-20 loading, whichever is greater. Alley approaches with a standard curb return shall not be used without approval of the Town Engineer.
5. **Alley Length:** Alleys shall be continuous from street to street wherever possible. If an alley is not through and longer than 150 feet, then a turnaround must be provided to accommodate a fire truck, or such additional standards as may be required by the fire code.
6. **Alley Parking:** No person shall park a vehicle within an "alley" except during the necessary and expeditious loading and unloading of merchandise. No parking signs are required at 100-foot intervals. The alley must remain open at all times.
7. **Alley Setbacks:** Alley garage setbacks in residential uses shall be 20 feet or greater as measured from the edge of the alley paving. Alley's leading to parking structures or to commercial/hospitality uses such as hotels or retail shall have a minimum setback of 4 feet as measured from the edge of the alley paving. The four-foot setback shall remain open and unobstructed. If an alley exceeds 150 feet and is adjacent to buildings exceeding 30 feet, then the alley must have 26 feet of hard surface for fire truck downriggers. Parking garage structures shall have a side yard setback of no less than 15 ft.
8. **Alley Snow Storage:** An additional area of 15% of the alley paved area must be set aside for snow storage. A snow storage plan exhibit must be submitted as part of the alley plan to show that the required amount of snow storage has been provided.

10.08.14.4 ROADWAY SECTION

1. **Road Section:** Prior to preliminary approval of a development, the developer must provide a geotechnical, and geological review performed by a licensed geotechnical engineer and professional geologist. The review must address onsite soil conditions and make recommendations for a typical road section for the project. The reviewer must take into consideration the amount of full build out traffic ADT's based on an approved traffic control plan. The town has minimum section requirements as shown below.
2. **Roadway Excavation:** For new road construction, the entire road platform, including cut and fill areas, must be cleared of all vegetation, topsoil, organic material, and soft clays. If the geotechnical engineer classifies the sub grade soils to be collapsible, further actions may be necessary to prepare the sub grade based on the geotechnical engineer's recommendation. The Town of Hideout engineer has the option to require additional sub grade preparation and section materials above and beyond the geotechnical review engineer's recommendation.

3. **Sub Grade:** Minimum Sub Grade preparation will meet the requirements of the table below:

AASHTO Soil Classification	Requirement
All A-1, A-2, A-3 and A-4 classifications	Native sub-grade shall be scarified to a minimum depth of 12 inches. Loosened material shall be moistened and compacted to at least 95% of maximum dry density based on ASTM D1557.
All A-5 to A-7 classifications	Over-excavate and replace 12 inches of depth with a soil classifying as AASHTO A-1 through A-4. New material shall be moistened and compacted to at least 95% of maximum dry density based on ASTM D1557.

4. **Road Base and Asphalt:** The values in the following table are minimum thicknesses based on the roadway classifications. A geotechnical analysis and pavement design report is necessary to qualify these minimums, or these values may be increased due to further investigation based on local conditions. The Town Engineer may also require additional thickness or cross section improvements in addition to these minimums:

Roadway Classification	Requirement
Major Collector	5" Hot Mix Asphalt, 10" State-spec Base Course.
Minor Collector	4" Hot Mix Asphalt, 9" State-spec Base Course.
Neighborhood Roads	3" Hot Mix Asphalt, 8" State-spec Base Course.

5. **Excavation Through an Existing Street:** This section covers any trench excavation through an existing road and is anticipated to be used mainly to install utilities across existing roads. If possible, the preferred method for installing utilities under existing paved roads is to have them bored.
1. Any excavation work in a town road (including the right of way) requires a permit.

2. A traffic control plan meeting the MUTCD guidelines is required and must be approved by the Town Engineer. Minimal traffic impact including full road width or lane closures is required on existing roads.
3. Material removed by the excavation is not to be used as backfill for any portion of the trench under the road paved section unless it meets an A-1 granular requirement.
4. Pipe bedding to conform to the specific utility companies' requirement, including the dry utility companies (communication, electric, and gas), and Town standards for water sewer and storm drain piping.
5. The remaining trench to be filled with select A-1-A granular product up to the existing road section.
6. The top of the trench will have a minimum of 4" of asphalt placed in 2 lifts over road base to match the existing section or 8" minimum. Trench work shall be scheduled so that the trench can be completed including asphalt within a minimum of 2 days. Trenches left unpaved for longer than 2 days require specific approval in writing from the Town Engineer.
7. Any work within an existing road requires inspection from the town to be scheduled by the contractor completing the work.

6. Roadway

Design

Tables:

Roadway Functional Classification								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
ROW Width	106'	75'	66'	60'	60'	60'	60'	60'
Average Daily Trips	> 8000	> 8000	8,000-2,001	2,000-0	< 500	Emergency Only	< 200	< 200
Single Family Units	< 800	< 800	< 500	< 200	150-0	0	Minimal	1-3
Pavement Width	46'	44'	37'	30'	24'	16'	24	20
Side cut/fill slopes	3:1 up to 5 feet high and 2:1 above 5 feet					2:1	2:1	2:1
Horizontal Design Elements								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum mid block centerline curve	Varies with V and superelevation				100'	60'	75'	60'
Minimum tangent distance between reverse centerline curves	Varies with V and superelevation				50'	40'	50'	40'
Maximum cul-de-sac length ³	Not Allowed				The lesser of 1,300' or 30 dwelling units			
Cul-de-sac travelway turnaround diameter	Not Allowed				80'	80'	80'	80'
Maximum superelevation	6%	6%	6%	6%	N/A			
Vertical Design Elements								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum crest vertical curve K value ⁵	Varies with speed limit				19	19	19	19
Minimum sag vertical curve K value ⁵	Varies with speed limit				37	37	37	37
Minimum length of vertical curve	Per traffic engineer	3*V	120'	80'	60'	50'	60'	60'
Minimum centerline grade ⁴	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Maximum grade in cul-de-	Not Allowed				5%	5%	5%	5%
Maximum centerline grade across designated	4%	4%	4%	5%	5%	5%	5%	5%
Maximum grade break without vertical curve	0.50%	0.50%	0.50%	1%	2%	2%	2%	2%

Intersections								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Minimum angle of intersection	80°	80°	70°	60°	60°	50°	50°	50°
Minimum offset between intersection	Study required	Study required	150'	125'	125'	125'	125'	125'
Maximum centerline offset	0'	5'	5'	5'	5'	5'	5'	5'
Maximum centerline grade across intersections ⁶	4%	4%	4%	5%	5%	5%	5%	5%
Minimum corner radius (edge of travelway)	30'	30'	30'	25'	25'	25'	25'	25'
Pavement Component Minimum Thickness								
	Arterial	Major Collector	Major Local	Major Local with Swale	Agricultural Seasonal Road	Fire Emergency	Mountain Road	Shared Driveway
Asphaltic Concrete	Per geotechnical report, 4" minimum			3"	3"	3"	3"	3"
Road Base	8" minimum			8"	8"	8"	8"	8"
Subbase	Per geotechnical report							

Notes:

1. Roads shall be designed at a minimum in accordance with AASHTO design criteria.
2. See Section 10.08.16 of this chapter for sidewalk requirements.
3. The length of a cul-de-sac is measured along the centerline from the intersection to the center of the turnaround.
4. Physical terrain may require exceptions to the maximum grade. See section 10.08.10 for further discussion.
5. Design speed for vertical curves shall be 5 miles per hour greater than the anticipated speed limit.
6. Grade must extend at least 100 feet beyond the edge of the traveled way of the outside lane of the intersecting street.
7. A geotechnical report including pavement design shall be submitted. The thickness of 1 or more of the pavement components shall be increased as needed to achieve the required strength as specified in the geotechnical report approved by the Town Engineer.
8. The primary street of an intersection shall not exceed the maximum centerline grades as allowed for each of the roadway functional classifications. Stop-controlled secondary intersecting grades must not exceed the reduced approach values as given in this table. The intersection centerline approach grades of the secondary or intersecting street must exceed at least 100 feet beyond the edge of the paved traveled way of the outside lane of the primary through street before exceeding these values.

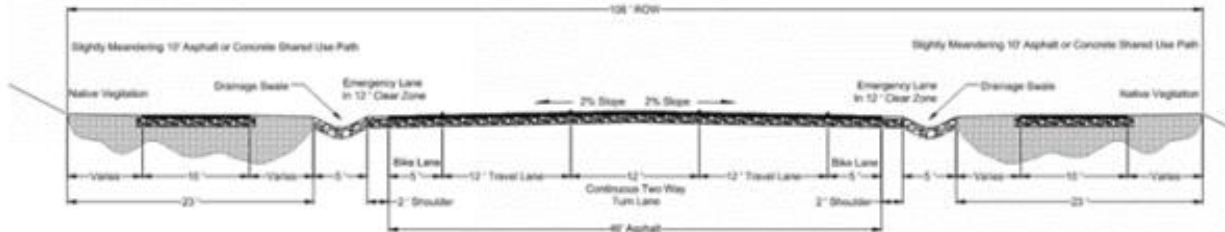
10.08.14.5 STANDARD CROSS SECTIONS

1. All disturbed surfaces shall be covered with 6 inches of topsoil and seeded.
2. Lane striping as per cross section including the required bike lane painting.
3. Shoulder will be constructed with compacted road base.

4. The subtle meandering shared use path will have 3 inches of asphalt over 9 inches of road base. Road will have a minimum of four inches (4") of asphalt.
5. Permanent erosion control mat* or minimum 6" thick rip rap required in drainage swale for road slopes greater than 5%. Permanent mats shall have ground cover of 74% or greater and a ultraviolet stabilization of 1,000 hours.

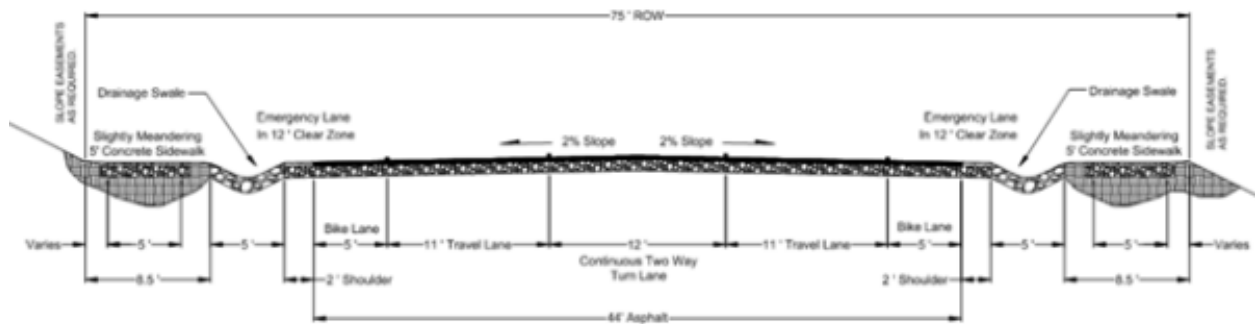
106' Arterial Cross Section

Figure 1



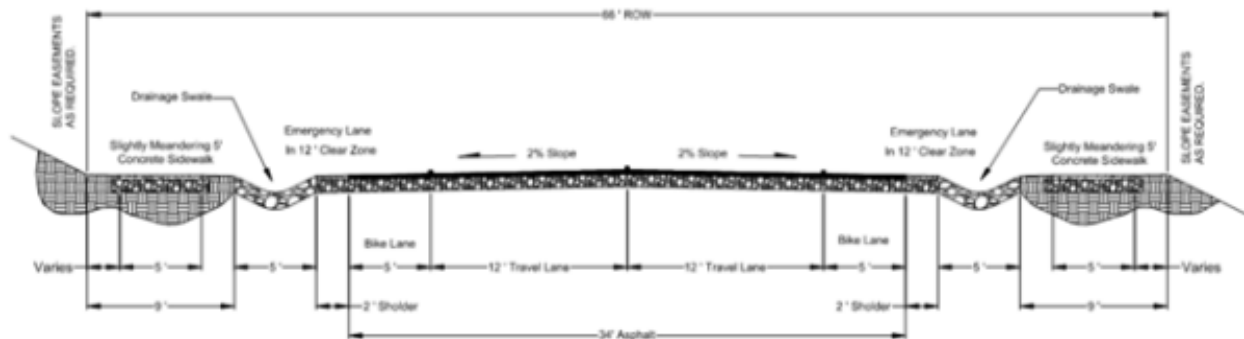
75' Major Collector Cross Section

Figure 2



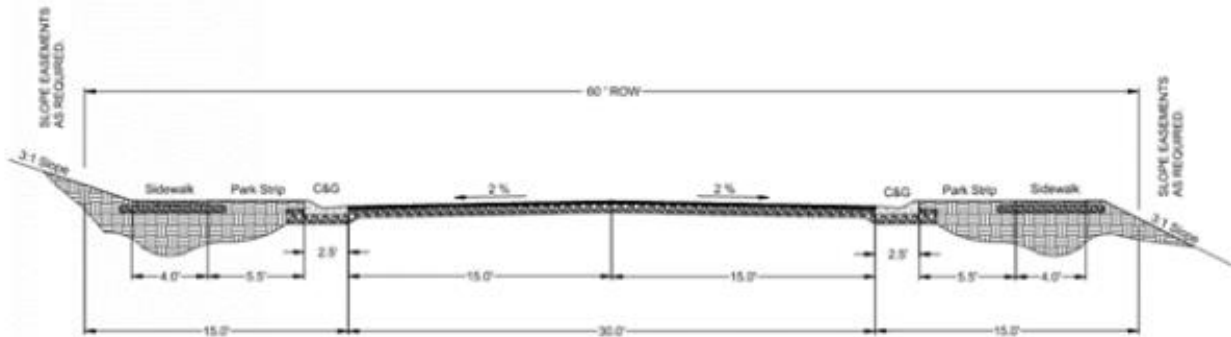
66' Minor Collector Cross Section

Figure 3



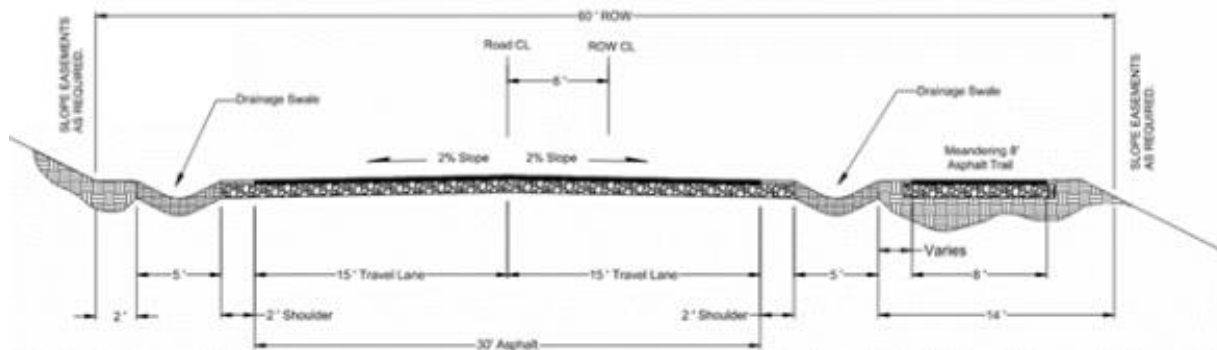
60' Major Local Cross Section

Figure 4



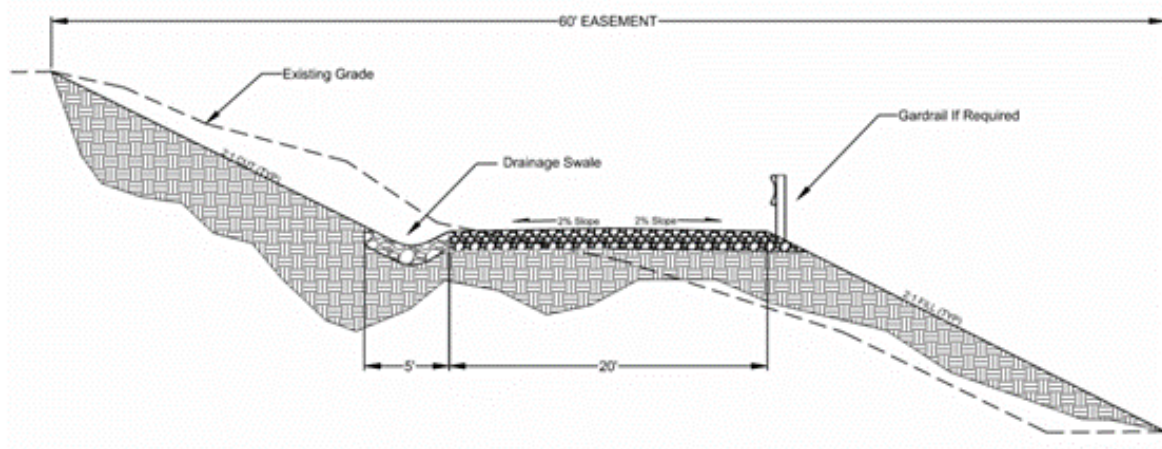
60' Major Local with Swales Cross Section

Figure 5

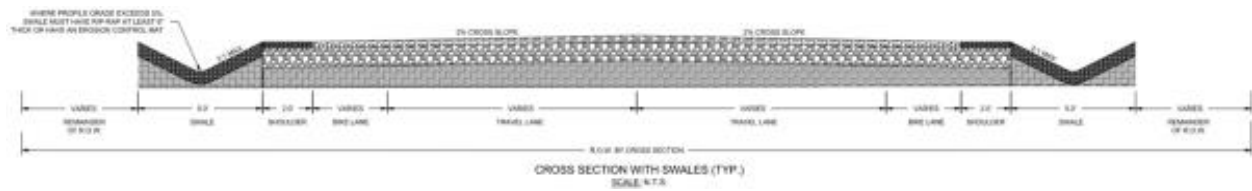


Fire / Emergency Road

Figure 7

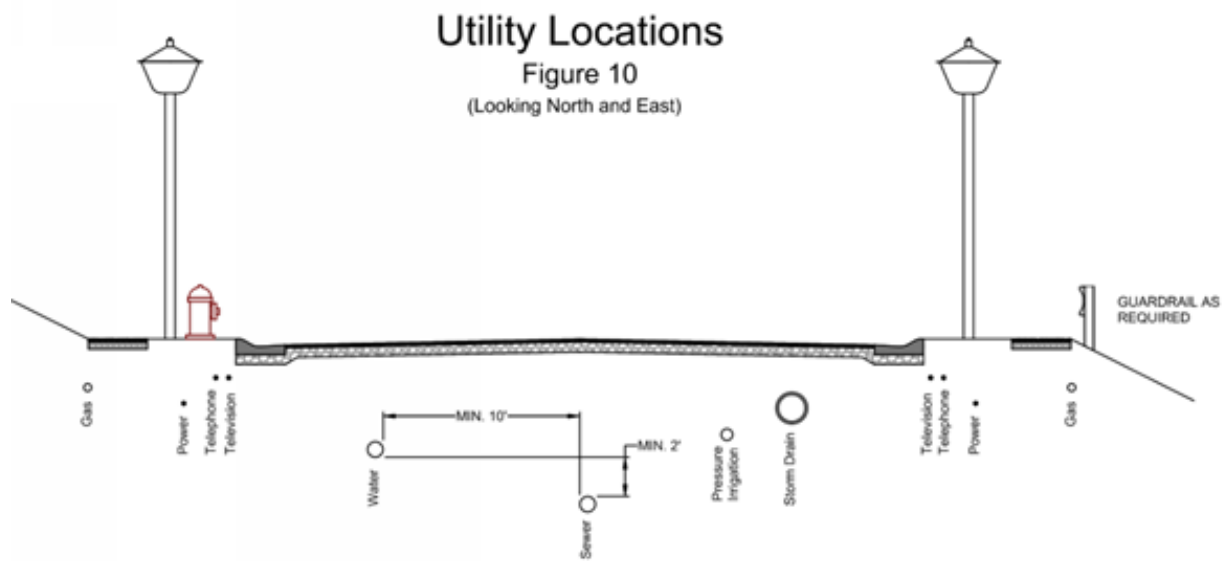


Typical Cross Section with Swales
Figure 6



Permanent Erosion Control Mat Specifications:

Thickness	0.4 inches
Ground Cover Factor	74 percent
Tensile Strength	170 X 125 pound/foot
Tensile Elongation	50 percent maximum
Ultraviolet Stabilization 1,000 hrs	80 percent



The Town Council may adopt Town construction standards and specifications for roadways and cross sections. Where the provisions of this section impose different restrictions than those required in the Town construction standards and specifications, the provisions of the Town construction standards and specifications shall prevail.

1. **Roads.** Planned roads within a development shall always be kept open to the public, unless special approval is granted by the Town Council to allow a gated community.
2. **Cul-De-Sacs.** A publicly dedicated Cul-de-sac shall have a right-of way width of at least sixty (60) feet; shall have a length of not in excess of eight hundred (800) feet; shall be terminated by a right-of-way turnaround of not less than ninety-six (96) feet in diameter; and shall be identified as such by appropriate signage within twenty (20) feet of the entrance thereof, measured from the frontage road Property line.
3. **Easements.** Public Utility Easements of not less than ten (10) feet on rear lot lines, side lines, and front lines will be required to serve utility companies for poles, wire, conduits, storm or sanitary sewers, gas and water mains, and other public utilities. Easements of greater width may be required along Property lines where necessary for surface overflow or for the extension of sewer mains or similar utilities.
4. **Intersections.** Roads shall intersect each other as near as possible at right angles. Minor roads shall approach the arterial or collector roads at an angle of not less than eighty degrees for a distance of at least one hundred feet. Offsets across roads in road alignment between ten (10) feet and one hundred fifty (150) feet shall be prohibited.
5. **Curbs.** Curbs at all intersections shall be rounded with curves having a minimum radius of twenty-five (25) feet. Property lines at road intersections shall be rounded with a curve where necessary.
6. **Street Names.** New street names shall not duplicate those names already existing. A street obviously a continuation of another already in existence shall bear the same name. All road designations shall be approved by the Planning Commission and Wasatch County Information Systems Department. Street names shall be signed and said signing shall be discernable from the road.
7. **Dedications.** All roads shall be dedicated for public use. Private roads shall be permitted only as recommended by the Planning Commission and approved by the Town Council.
8. **Bridges and Culverts.** All bridges and culverts shall be constructed to support HS-20 / HL-93 loading requirements in accordance with DOT and ASHTO standards.
9. **Relation to Adjoining Road System.** The arrangement of roads in new Subdivisions shall make provision for the continuation of the existing roads in adjoining areas for their proper protection (where adjoining land is not subdivided) at the same or greater width (but in no case less than the required minimum width). Where the Planning Commission determines that it is necessary for the orderly development of the community and health and safety concerns to provide for road access to adjoining Property in order to provide an orderly development of a road system, proposed roads shall be extended by dedication to the boundary of such adjoining property.
10. **Cuts in Pavement.** No cuts shall be made in road pavement for at least five years after hard surfacing without approval by the Mayor with the advice of the Town Engineer, except in cases when public safety is at risk.

10.08.16 SIDEWALKS, CURBS, PLANTER STRIPS, AND GUTTERS

1. Curbs, and gutters shall be required on both sides of all new roads to be dedicated to the public.
2. Sidewalks, paved trails and planter strips may be required by the Planning Commission or Town Council; to be dedicated to the public.
3. Sidewalks, curbs, planter strips and gutters may be required by the Planning Commission and Town Council on existing roads bordering the new Subdivision lots.
4. Sidewalks shall be included within the dedicated non-pavement Right-of-Way of all roads unless an alternate location has been specifically approved by the Planning Commission.
5. Sidewalks shall be a minimum of sixty (60) inches wide and Americans with Disabilities Act (ADA) compliant for safe and easy passage for pedestrians.

6. Concrete curbs are required where sidewalks are required.

10.08.20 DRAINAGE AND STORM WATER FACILITIES

Storm drainage and erosion control planning submittal requirements are outlined in this chapter. Criteria can also be found in the "Wasatch County - A Guide For Erosion And Sediment Control" (1996).

1. Planning Submittal Requirements: Unless provided otherwise, the criteria and methods presented in the following references should be used in planning and design of the drainage system:
 1. "Urban Drainage Design Manual", hydraulic engineering circular no. 22, November 1996, federal highway administration, FHWA-SA-96-078, <http://www.fhwa.dot.gov/bridge/hydrpub.htm>.
 2. "Urban Storm Drainage Criteria Manual", June 2001, urban drainage and flood control district, <http://www.udfed.org/>.
 3. "Design And Construction Of Urban Stormwater Management Systems", ASCE manuals and reports of engineering practice no. 77, 1992, <https://www.asce.org/bookstore/book.cfm?book=2800>.

The drainage plan should provide for control of erosion at the source, noneroding conveyance facilities, and water quality/detention basins.

2. Control Of Erosion And Contaminants At The Source: The ability to control erosion and other pollutants at the source is the most important single mitigation factor. Every practical effort should be made to prevent erosion from occurring at the source. The objective should be to prevent erosion during construction and to reestablish vegetation as soon as possible after construction on all areas with exposed topsoil.

Slope soil erosion, after revegetation, should be less than or equal to predevelopment rates and should be less than the topsoil development rate (generally assumed as 0.01 inch per year or 2 tons per acre per year).

3. Conveyance Facilities: The initial drainage system (i.e., curb and gutter, storm drains, culverts, ditches, realigned natural channels, etc.) should be designed to convey runoff from a minor storm event (10-year event, the storm event having a 10 percent chance of being equaled or exceeded in any given year) without nuisance flooding and without erosion. If tributary runoff flows (either peak or volume) are increased to a natural drainage, the drainage should be shown to be noneroding in a ten (10) year event.

The drainage system should be capable of passing the storm runoff from a major storm (100-year event, the storm event having a 1 percent chance of being equaled or exceeded in any given year) without flooding buildings.

4. Water Quality/Detention Basin: The criteria for design of the water quality/detention basin should include both water quality mitigation and mitigation for downstream erosion and flooding effects. The effects of development (i.e., increased impervious area and decreased time of concentration) should be mitigated such as to prevent increased flooding of downstream properties (100-year design event) and to prevent increased erosion of downstream conveyance channels (10-year design event). The level of mitigation required is dependent upon the capacity of the downstream drainage system. A common practice is to provide for on site detention, reducing storm runoff peaks from the development to at or below historic (predevelopment) levels. If downstream conveyance capacities are severely limited, it may be necessary to reduce storm runoff peak flow rates from the

developed property to much less than historic runoff flow rates to offset the impacts of the increased runoff volume.

1. The basins should be designed to adequately capture and treat runoff from the water quality design storm. Wasatch County criteria ("A Guide For Erosion And Sediment Control", pages 11 and 18) require capturing and containing the runoff volume from a two (2) year, twenty-four (24) hour storm (minimum). The water quality capture volume should be discharged at a rate such as to allow a minimum residence time of twelve (12) hours (defined as the time from the centroid of the inflowing hydrograph to the centroid of the outflowing hydrograph). The maximum allowable discharge rate for the water quality capture volume discharge orifice may be computed using the simplified equation:

$$Q_{wq} = (WQCV/30) * C$$

Q _{wq}	=	Maximum allowable water quality capture volume release rate (cfs)
WQCV	=	Water quality capture volume (acre-feet)
	=	2-year 24-hour runoff volume
C	=	Conversion from acre-feet/hour to cubic feet per second = 12.1

- 2.
3. The water quality pond should have sufficient additional storage below the lowest outlet to accommodate sediment accumulation. The minimum volume of provided sediment storage should be either computed from a slope erosion analysis for the three (3) year slope soil loss (revised universal soil loss equation reference: "Design Hydrology And Sedimentology For Small Catchments", C.T. Haan, B.J. Farfield, and J.C. Hayes, 1994, Academic Press, Inc., San Diego, California) or may be taken as equal to twenty percent (20%) of the water quality capture volume. If subsoils are such that water captured in the sediment storage area cannot infiltrate within a reasonable period of time (to avoid mosquitoes, etc.), then a subdrain system should be considered.
4. The analysis for designing the required detention volume to mitigate downstream flooding and erosion effects should be performed assuming that the pond is full to the water quality capture volume level prior to the start of the design storms (10-year and 100-year).
5. An emergency spillway (preferably open channel type) is required with a one hundred (100) year flood event minimum design capacity assuming that the primary outlets are plugged. The elevation of the top of the embankment should be a minimum of one foot (1') above the water surface elevation when the emergency spillway is conveying the maximum design or emergency flow. The design height of the embankment should be increased by roughly five percent (5%) to account for settlement.
5. Water Quality/Detention Basins Maintenance Requirements: Key components include nonplugging outlets design, maintenance access design, and pond side slope erosion protection design.
 1. Detention basin outlets should be designed to be nonplugging as much as possible. A possible option for the water quality capture volume discharge orifice is to provide an

orifice (set with the orifice invert at the bottom of the water quality capture volume level) with a connected pipe inlet placed a minimum of six inches (6") below the water level at which water begins to discharge. Outlet pipes should be protected by inlet grates which are sized, spaced, and oriented such as to minimize plugging of the outlets.

2. Maintenance access to the ponds should be provided. Required access includes access with heavy equipment to the pond floor (generally 15 inches minimum width with 15 percent maximum slope) and all weather access should be provided to the pond outlet facilities.
3. Interior pond side slopes should preferably be four horizontal to one vertical (4:1) or flatter and should not be steeper than three horizontal to one vertical (3:1). Pond side slopes (both interior and exterior) should meet the same criteria for slope erosion control stated above (2 tons per acre per year maximum mean annual slope soil erosion rate). Riprap is not permitted unless approved by the Town Planner and only under special circumstances. Steep slopes that might otherwise necessitate riprap should be designed at a reduced slope, one that allows the basin to be landscaped appropriately and in coordination with the Town Planner.
4. Provisions for low maintenance landscaping and irrigation must be provided. Landscaping will be maintained by the homeowners' association.
6. Open Channels: Wherever possible open channels shall be preserved for all major drainages shown on the Final Drainage Control Plan. No building shall be located within 50 feet of a natural drainage. Culverting of these channels is not permitted.
7. Landscaping: A landscape plan must be included with all stormwater plans. This plan shall include flood tolerant species within the basin as well as the appropriate screening of the basin. Slopes should be gradual enough so that fencing is not needed around a basin and native landscape plant materials can be reintroduced after construction in coordination with the Town Planner.
8. Health and Safety: Upon recommendation of the Town Engineer or Town Planner, and when necessary to conserve or promote the health, safety, or welfare of the present and future population of the Town and necessary to the conserve or promote water drainage, the Town prohibit the Subdivision of any portion of the property which lies within a floodplain or any stream or drainage course, as identified in the most current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. Except as approved by the Town Engineer, such areas should be preserved from any and all destruction or damage resulting from clearing, grading, or dumping of earth, waste material, etc.

10.08.22 WATER SYSTEM

1. The water distribution system shall deliver water at pressures meeting state requirements, as measured at the main line adjacent to each system connection. Pressure reducing valves shall be placed on the mains to regulate pressures in excess of 120 PSI. Pressure reducing valves shall be installed on service laterals for residential neighborhoods as a back-up to main lines. At no time shall water pressure exceed 120 psi to each system connection. At no time shall services be connected to transmission lines.
2. The water system pumps, storage tanks, transmission and distribution mains, etc. must meet JSSD design standards.
3. The system shall be designed to provide the following fire flows and to meet adopted codes and Fire District standards:
 1. Residential Connections: 2,000 gpm for 2 hours
 2. Commercial Connections: 3,500 gpm for 3 hours
4. Fire hydrants are required along public ways or walks or drives which are to be snow-plowed. Fire hydrant spacing shall be in accordance with applicable codes, or a maximum of 500 feet.

5. All water design and construction shall comply with the latest JSSD design requirements.

10.08.24 SEWER SYSTEM

1. Sanitary Sewers shall be designed in accordance with all applicable State of Utah standards and adopted codes.
2. All sanitary sewer systems shall be designed to exclude all storm water runoff, or water from field drainage systems, foundation drains, underground parking structures, roofs, roads, and other paved areas.
3. Downspout connections, foundation and basement drains, sumps and storm drain connections shall be prohibited from discharging into the sanitary sewer system.
4. Grease traps or oil separators shall be sized for peak flows and average loading of grease/oil by an engineer and approved by the Town Engineer prior to placement. The grease traps or oil separators shall be placed to allow access for inspection and cleaning. This applies to commercial and institutional facilities, and any building or lot with the potential of introducing substances that would be detrimental to treatment facilities.
5. Sewer systems shall be designed to eliminate possible cross connections with culinary water system.
6. Design Period: The sewer system shall be designed to serve the estimated ultimate tributary area and shall be based on the best information available, including Master Plan Study, current zoning regulations and approved planning and zoning reports when available.
7. Wastewater Pumping Stations: Use of wastewater pumping stations will be avoided whenever possible. Pumping stations are subject to approval and review by the Town Engineer.