

**UTAH COUNTY  
STORM WATER DESIGN  
AND BMP MANUAL  
MARCH 2026**

**A Guide for Owners, Developers, and Engineers  
to prepare a site-specific  
Stormwater Management Plan**

# UTAH COUNTY

## STORM WATER DRAINAGE AND BMP MANUAL

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# 1. INTRODUCTION

This Storm Water Design and BMP Manual is intended to be a set of standards and criteria for property owners, developers, and engineers (“the Applicant”) as they consider solutions to their storm water management problems and opportunities to incorporate in a Land Disturbance Permit Application and all other necessary construction permit applications.

Utah County will refer to and hold the Applicant to this set of standards and criteria stated in this manual as they review the Application. Specific criteria, methods for calculations, design standards, and some standard construction drawings are contained herein, but actual design techniques and methodologies are to be chosen and implemented by the Applicant. Links and references are given to sources where these design options may be found.

Clarifying questions regarding this manual are welcomed and encouraged and should be directed to the Utah County Public Works Department.

## 2. SUBMITTALS

The following items must be submitted with a land disturbance permit application:

1. Project Drainage Report; stamped, signed, and dated by a UT-licensed Professional Engineer.
2. Project Long-Term Stormwater Management Plan; stamped, signed, and dated by an UT-licensed Professional Engineer.
3. Low Impact Development (LID) Plan for 80<sup>th</sup> percentile storm (if project area is greater than 1 acre).
4. Final Construction Drawings; stamped, signed, and dated by a UT-licensed Professional Engineer.
5. Geotechnical Report, including infiltration testing; stamped, signed, and dated by UT-licensed Professional Engineer.
6. SWPPP using the State-accepted template prepared by a Utah-registered SWPPP writer. The project SWPPP must be a standalone document and shall not be considered part of the Construction Drawings. Construction may not begin until an NOI is submitted and an UPDES permit coverage letter is submitted to the County.
7. Stream Alteration Permit (if discharging directly into Waters of the State)
8. Floodplain Development Permit (if project boundary is within 100-yr FEMA-delineated floodplain limits)
9. General Permit for working in USACE-delineated wetland (if project impacts USACE-delineated wetland)
10. Drainage/Discharge Easements, signed by the Grantor and notarized (if draining or discharging onto private property or into a non-County storm system).

All items must be submitted together to be considered a complete application. Any items not submitted will render the application incomplete and it will not be accepted for review.

# DESIGN STANDARDS

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## HYDROLOGY

### Rainfall Data

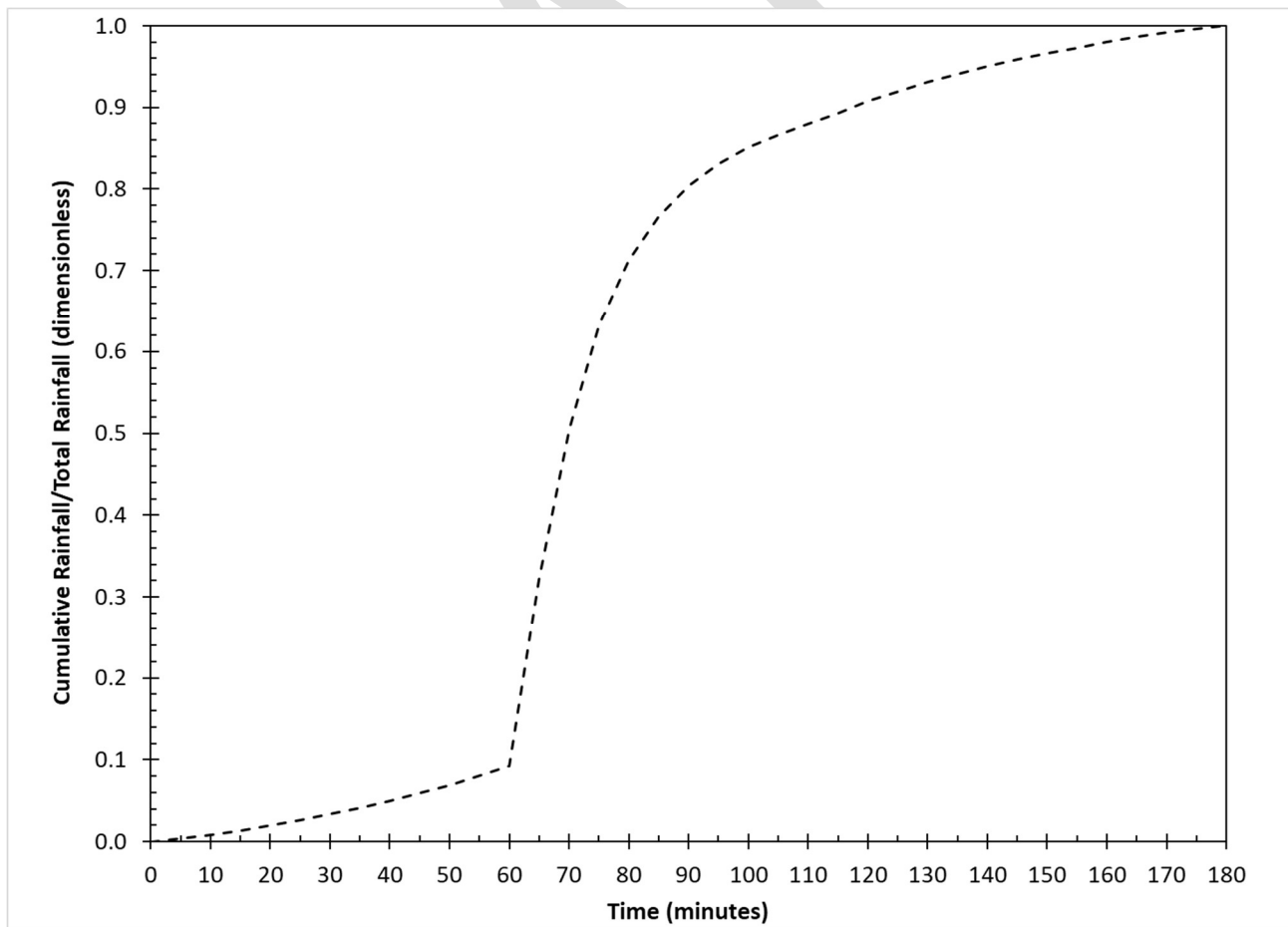
1. All rainfall data shall be obtained from NOAA Atlas 14 Point Precipitation Frequency Estimates. ([https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html))

### Soil Data

1. All soil data used for surface runoff data shall be obtained from the County, a project soil survey, or from the USDA Web Soil Survey. The USDA Web Soil Survey cannot be applied to disturbed or replaced soils. (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>)

### Precipitation Event Time Series

1. The dimensionless modified Farmer-Fletcher distribution shall be used in conjunction with the NOAA Atlas 14 rainfall depth data to determine the precipitation time series for the project.



## UNITIZED MODIFIED FARMER FLETCHER DISTRIBUTION

| Time [min] | Unit [in/in] |
|------------|--------------|
| 0          | 0.000        |
| 5          | 0.004        |
| 10         | 0.008        |
| 15         | 0.014        |
| 20         | 0.020        |
| 25         | 0.027        |
| 30         | 0.034        |
| 35         | 0.042        |
| 40         | 0.050        |
| 45         | 0.059        |
| 50         | 0.069        |
| 55         | 0.080        |
| 60         | 0.093        |
| 65         | 0.321        |
| 70         | 0.506        |
| 75         | 0.632        |
| 80         | 0.712        |
| 85         | 0.766        |
| 90         | 0.804        |
| 95         | 0.830        |
| 100        | 0.851        |
| 105        | 0.866        |
| 110        | 0.879        |
| 115        | 0.893        |
| 120        | 0.907        |
| 125        | 0.920        |
| 130        | 0.931        |
| 135        | 0.941        |
| 140        | 0.950        |
| 145        | 0.958        |
| 150        | 0.966        |
| 155        | 0.973        |
| 160        | 0.980        |
| 165        | 0.986        |
| 170        | 0.992        |
| 175        | 0.996        |
| 180        | 1.000        |

## Design Storms

1. The minor storm is defined as the 10-yr event within a 3-hr duration, unless stated otherwise.
2. The major storm is defined as the 100-yr event within a 3-hr duration, unless stated otherwise (e.g. 24-hr duration for site retention systems).

## Acceptable Runoff Computation Methods

Rational Method – Acceptable for tributary areas less than 90 acres. Only to be used for peak flow calculations. Not for volumetric calculations.

SCS Curve Number Method (TR-55) – Pervious and directly-connected impervious areas must be modeled using separate basins.

Regression Equations – for situations involving large existing offsite drainage areas (e.g. sizing a country road culvert). This method must be approved by the County Engineer prior to use.

Hydrograph Simulation Model – Acceptable programs include HEC-HMS or SWMM. This method would be considered suitable for sizing detention ponds and downstream pipes.

## HYDRAULICS

### Right-of-Way (ROW) Infringement

1. Public storm drainage shall not flow onto private property unless the private property owner chooses to accept public storm drainage onto their property, grant an easement to the County accepting the drainage as theirs, and release and indemnify the County from potential liabilities associated with it.

### Channels

1. Freeboard shall be 1' to the top of berm or pavement edge, whichever is higher.
2. Minimum slope shall be 0.5%.
3. Side slopes shall not exceed 2H:1V.
4. Channels shall be sized to convey the minor storm event.
5. Roadside channels shall be lined with stabilization material pursuant to HEC-15 and North American Green methodologies to minimize erosion and maintenance.

### Bridges

1. Bridge crossings shall be designed to convey the major storm event.
2. Freeboard shall be 2' from the design water surface elevation and the lowest structural member of the bridge.
3. Backwater surface computations upstream of the proposed bridge shall be performed within HEC-RAS software(or approved equivalent) to show no damage, ROW infringement, and/or property damage.

### Culverts

1. Culverts shall be designed to convey the major storm event.
2. Culverts shall be sized such that the headwater elevation:
  - a. Is no higher than 2 feet above the inside top of pipe/box.

- b. Is at least 1 foot below the edge of roadway pavement surface.
  - c. Does not overflow to unintended areas.
  - d. Does not damage adjacent or upstream properties, or the roadway.
  - e. Does not increase the natural stream channel water surface elevation for the 100-year event more than 1 foot above existing conditions.
  - f. Does not increase the water surface elevation for the 100-yr event within a FEMA designated floodway.
  - g. Piping shall be coordinated with the irrigation company or ditch owner by following provisions of §Utah Code Ann. 73-1-15.5.
3. Freeboard shall be 1' above the headwater elevation for the major storm event.
4. Minimum pipe size shall be 24" diameter.
5. Minimum cover shall be 2' from top of pipe to top of pavement.
6. Backwater surface computations upstream of the proposed culvert shall be performed within HEC-RAS software(or approved equivalent) to show no damage, ROW infringement, and/or property damage.
7. Grates are required on all culvert inlets and outlets (see current APWA).
8. For culverts greater than a diameter of 42", a headwall and wingwalls are required.
9. Multiple side-by-side culverts must be approved by the County Engineer.

## Conduits

1. Pipe sizing:
  - a. Minimum diameter shall be 15 inches.
  - b. Shall be sized to the minor storm event such that the pipes shall not be pressurized.
2. Pipe material:
  - a. Shall be RCP or dual-wall high-performance corrugated polypropylene pipe per ASTM F 2881.
  - b. RCP class shall conform to the latest ACPA's LRFD Fill Height Tables for Concrete Pipe.
  - c. Manning's value for pipes shall be 0.013 (RCP) or 0.012 (polypropylene).
3. Minimum pipe slope shall be such that the minimum full flow velocity is 3 ft/s, unless otherwise approved by the County Engineer.
4. Hydraulic grade line for the minor storm shall be below the soffit of the pipe.
5. Pipe outlets shall be equipped with properly designed energy dissipation measures from HEC-14 or MHFD Criteria Manual Volume 2. Any riprap dissipator shall include a gradation with D30, D50, and D90 sizes.
6. Pipe inlets/outlets to open channels shall be equipped with like-material end sections.
7. Pipes shall not decrease in size in the direction of flow, unless approved by the County Engineer.
8. Changes in pipe size shall occur at a manhole or catch basin or cleanout structure.

## Inlets/Catch Basins

1. All roadway sags shall be equipped with a sag inlet.
2. Inlets shall be designed to capture the minor storm event based off a 30% clogging factor for on-grade inlets and 50% clogging factor for sag inlets.
3. Incoming pipe crowns shall match or be above outgoing pipe crowns.
4. Siphons are typically not allowed. If site constraints require a siphon (confirmed by County Engineer) a 2-foot cleanout will be required at the upstream and downstream end of the siphon.
5. Access spacing shall be the same as for manholes.
6. Inlets shall be placed at curb inlets, preferably on the upstream side.
7. Junctions shall be self-cleaning (no dead volume).

## Manholes

1. Manhole diameter sizes shall be per current APWA standards.
2. Access Spacing shall be per the following table:

| Pipe Diameter [in] | Maximum Spacing [ft] |
|--------------------|----------------------|
| 18-24              | 300                  |
| 27-36              | 400                  |
| ≥ 42               | 500                  |

3. Incoming pipe crowns shall match or be above outgoing pipe crowns.
4. Manhole plates within a roadway shall not be placed in the wheel path.
5. Manhole plates' RIM shall be installed flush with the surrounding pavement.
6. Junctions shall be self-cleaning (no dead volume).
7. No rebar shall be placed in manhole concrete collars/decks. Use reinforced fiber mesh per APWA 03 20 33 (concrete reinforcing).

## Street Drainage

1. All roadways shall be graded such that the major storm runoff tributary to a system's storage facility, will physically make it the storage facility.
2. All sag locations shall include an overland runoff route, whose path is away from all buildings.
3. Gutter spread for roadway drainage design shall be computed in accordance with the *Mile High Flood District (MHFD) Urban Storm Drainage Criteria Manual (USDCM)*, Volume 1.7.2.3.1 Alternative methods are not permitted unless approved in writing by the County Engineer.
4. Spread within the street shall be limited as follows:

| Roadway Characteristic | Allowable Stormwater Spread Width |
|------------------------|-----------------------------------|
| Posted Speed < 45 mph  | Shoulder + 3 ft                   |
| Posted Speed ≥ 45 mph  | Shoulder only                     |
| Major Sag              | Shoulder + 3 ft                   |
| Bridge Deck            | Shoulder only                     |
| No Shoulder            | 3 ft                              |

## Storage Facilities

1. Ponds shall be provided with adequate vehicular access, particularly to the inlet and outlet, if present.
2. Access roads shall be 15 feet wide minimum and shall not exceed 15% longitudinal slope.
3. Access roads shall 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.

4. The breakover angles of access roads shall comply with APWA Plan 225 for service truck access.
5. A Maintenance and Operations Manual must be included in the Long-Term Storm Water Management Plan (LTSWMP) and shall be provided to the Utah County Public Works Dept. after construction.
6. Volume requirements shall not be reduced based on evaporation or infiltration due to percolation.
7. The maximum pond depth shall be 3 feet. If a deeper pond is necessary, it must be fenced and secured.
8. All open ponds shall be equipped with an emergency spillway that leads to County ROW.
9. All open ponds shall have 1 foot of freeboard.
10. Maximum side slope shall be 3H:1V.

### **Retention Facilities**

1. Acceptable retention facilities may include:
  - a. Open retention ponds (Site Retention)
  - b. Sumps (Site Retention)
  - c. Roadside retention swales (sized for 10-year 3-hour event)
2. Water in a retention facility must drain completely within 72 hours of the end of the storm event.
3. Infiltration rates of the native soils shall be determined from geotechnical investigation per ASTM D3385 or a percolation test performed accordance with State Rule 317-4-14, Appendix D and documented in the geotechnical report. If percolation test has been performed, geotechnical report must include the submittal of a signed "Percolation Test Certificate" which shall report the median measured percolation rate.
4. Site retention facilities shall be designed with a factor of safety of 2.5 for the infiltration rates.
5. Site retention facilities shall be sized for a major storm event defined as the 100-yr 24-hr event.

### **Detention Ponds**

1. Typically, all drainage must be retained. Detention ponds will only be allowed when there is an approved storm drain system to receive the water and when authorized before construction by the County Engineer.
2. Detention ponds shall be sized for the major storm.
3. The release rate shall be such that it does not overwhelm the downstream system or exceed any permitted discharge rate (i.e. discharging to Waters of the State).
4. For detention ponds in private parking lots, the maximum ponded depth shall be 8 inches.
5. If the minimum discharge orifice area is less than 6 square inches, provide measures to ensure there will be no clogging from debris.
6. The outlet must be installed with a trash rack.
7. For detention in parking lots, freeboard shall be 1 foot to the finished floor of habitable structures.
8. If historical groundwater levels are within 2 feet of the bottom of a subsurface detention/retention facility, underground systems shall be lined with a durable impermeable barrier. Geomembrane systems shall include a PVC or HDPE line at least 140 mils thick with a needle-punched non-woven geotextile protective layer.
9. An emergency overflow shall be provided and shall discharge to County ROW or to a location that has a proper discharge easements.

## STORMWATER TREATMENT

1. LID techniques and practices shall be implemented when appropriate and as part of the Utah County Stormwater Management Plan in accordance with the [Utah LID Design Manual](#).
  2. All acceptable treatment devices/BMPs shall be selected and designed from the [Utah LID Design Manual](#) and accompanying Flow Charts 1 – 3. Treatment devices not included in this manual must be approved by the County Engineer or his/her designee.
  3. Treatment devices/BMPs shall be designed/sized such that:
    - a. At least 80% of the total suspended solids (TSS) 110 microns or larger are removed from the stormwater.
    - b. All debris and floatables are removed from the stormwater.
    - c. Oil and grease shall be removed that cause a film or sheen or discoloration on the surface water.
  4. Privately maintained treatment devices/BMPs shall be located outside of the public right-of-way.
  5. For detention systems, treatment devices/BMPs shall be designed such that 100 percent of the 2-year storm event shall be treated and the 100-year storm event shall be able to bypass with no washout of stored pollutants.
  6. Plans shall evaluate each proposed flood management structural control to determine:
    - a. Potential impacts to water quality and receiving waters.
    - b. Changes to runoff volume, peak flow rate, and duration.
    - c. Potential increases in pollutant loading, including sediment and nutrients.
    - d. Consistency with post-construction stormwater requirements.
    - e. Whether appropriate structural and/or non-structural BMPs have been incorporated.
- Control selection is based on established design standards within the Utah County Stormwater BMP Manual and is evaluated using the following rationale:
- a. Expected pollutant removal effectiveness.
  - b. Ability to minimize alterations to site hydrology to the maximum extent practicable.
  - c. Site-specific conditions such as soil type, slope, and groundwater depth.
  - d. Long-term operation and maintenance feasibility.
  - e. Compatibility with overall flood management objectives.

Where proposed controls are determined to be insufficient to adequately address water quality or hydrologic impacts, the County may require design revisions, additional pre-treatment measures, or alternative BMPs prior to approval. Approval of flood management structural controls is documented through the County's development review process, confirming that water quality considerations have been evaluated and appropriate controls incorporated.

For proprietary or manufactured treatment devices, technical literature and documented pollutant removal performance must also be submitted.

Pollutants to evaluate include:

| Pollutant                                                                         | Source                                                                                                                                                                 | Impacts                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sediment</b>                                                                   | Construction sites, vehicle/boat washing, agricultural sites, erosion                                                                                                  | Destruction of aquatic habitat for fish and plants, transportation of attached oils, nutrients and other chemical contamination, increased flooding. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter. |
| <b>Nutrients (Phosphorus, Nitrogen Potassium, Ammonia)</b>                        | Fertilizers from agricultural operations, lawns and gardens; livestock and pet waste, decaying vegetation, sewer overflows and leaks.                                  | Harmful algal blooms, reduced oxygen in the water, changes in water chemistry and pH. Nutrients can result in excessive or accelerated growth of vegetation, resulting in impaired use of water in lakes and other receiving waters.                                                                                                                                                      |
| <b>Hydrocarbons (Petroleum Products, Benzene, Toluene, Ethyl benzene, Xylene)</b> | Vehicle and equipment fluid leaks, engine emissions, pesticides, equipment cleaning, leaking fuel storage containers, fuel spills, parking lot runoff                  | These pollutants are toxic to humans and wildlife at very low levels. Carcinogenic. Teratogenic.                                                                                                                                                                                                                                                                                          |
| <b>Heavy Metals</b>                                                               | Vehicle brake and equipment wear, engine emissions, parking lot runoff, batteries, paint and wood preservatives, fuels and fuel additives, pesticides, cleaning agents | Metals including lead, zinc, cadmium, copper, chromium and nickel are commonly found in storm water. Metals are of concern because they are toxic to all life at very low levels. Carcinogenic. Teratogenic                                                                                                                                                                               |
| <b>Toxic Chemicals (Chlorides)</b>                                                | Pesticides, herbicides, dioxins, PCBs, industrial chemical spills and leaks, deicers, solvents                                                                         | Chemicals are of concern because they are toxic to all life at very low levels. Carcinogenic. Teratogenic.                                                                                                                                                                                                                                                                                |
| <b>Debris/Litter/Trash</b>                                                        | Improper solid waste storage and disposal, abandoned equipment, litter                                                                                                 | Aesthetically unpleasant. Risk of decay product toxicity. Risk of aquatic animal entrapment or ingestion and death.                                                                                                                                                                                                                                                                       |
| <b>Pathogens (Bacteria)</b>                                                       | Livestock, human, and pet waste, sewer overflows and leaks, septic systems                                                                                             | Human health risks due to disease and toxic contamination of aquatic life.                                                                                                                                                                                                                                                                                                                |

Common Methods to treat these pollutants include:

- Sediment – primarily controlled through detention, filtration, and vegetative practices.
- Nutrients – best reduced through infiltration, bioretention, constructed wetlands, and source control (fertilizer management).
- Hydrocarbons and Metals – effectively reduced through filtration media, bioretention, hydrodynamic separators, and oil/water separators.
- Chlorides (Toxic Chemicals) – most effectively addressed through source control and de-icing management practices, as structural BMP removal is limited.

- e. Trash and Debris – controlled through hydrodynamic separators, good housekeeping, and public education.
- f. Pathogens (bacteria) - reduced through infiltration, vegetated systems, constructed wetlands, and pet waste management programs.

## **STANDARD DRAWINGS AND SPECIFICATIONS**

Unless otherwise specified, use the latest version of the APWA Utah Manual of Standard Plans and Specifications for all storm drainage infrastructure including but not limited to manholes, cleanout boxes, inlets, concrete collars/decks, and pipe trench. The applicant shall use all the information above and all applicable APWA and/or Utah County Standard Drawings in completing the drainage design shown within their construction plans.

## **BMPs**

1. All BMPs for construction activities shall be selected from the Preferred List of Stormwater Best Management Practices (BMP) for Construction Activities in Utah from the current [USWAC manual](#).
  - a. Private property installations may use any of the BMPs listed in the manual.
  - b. County facilities and ROW may use any of the BMPs listed in the manual except for the following: filter fabric inlet barrier, weighted filter inlet berms for curb inlet protection, sediment pond, wheel washing (graded and rumble rack), sediment filter bag, and below grade concrete washout area.
2. All permanent BMPs shall be selected from the [Utah LID Design Manual](#).
  - a. Drawing SD-1 Roadside LID Retention Swale is the only LID BMP allowed in County ROW.

## **REPORTS**

Present all hydrologic and hydraulic methods, models, documents, plans, and calculations in a site-specific Drainage Report. Present all stormwater quality measures, calculations, plans and documents in a LTSWMP for the specific development. Be sure to include all appropriate LID techniques and practices, BMPs, and the project SWPPP from the UPDES Permit.

## 4. STORM WATER POLLUTION PREVENTION PLANS

As part of the approval process for subdivisions or any new construction in Utah County, a Storm Water Pollution Prevention Plan (SWPPP) is required. In fact, a UPDES (Utah Pollution Discharge Elimination System) permit is required by the State for any construction site which disturbs one acre or more, or disturbs less than one acre of land if such activity is part of a larger common plan. As a condition of these permits, a SWPPP is required, as stated in Section 2 it shall be prepared by a Utah registered SWPPP writer. The SWPPP is required to accurately describe the potential for soil erosion and controls, sedimentation, toxic wastes, nutrient control, oil, grease, & fuel, miscellaneous waste, toxic chemicals, increased runoff, waterway protection, or any other potential water pollution occurrence.

Commercial and Industrial developments are required to provide a Long-Term Storm Water Management Plan (LTSWMP).

A Notice of Intent (NOI) is required to be filed with the State of Utah and issued under the general NPDES permit for each SWPPP. Go to the State of Utah Department of Water Quality website (<https://secure.utah.gov/swp/client>). A SWPPP example can be found by going to the State of Utah Department of Water Quality website <http://waterquality.utah.gov/UPDES/stormwatercon.htm>.

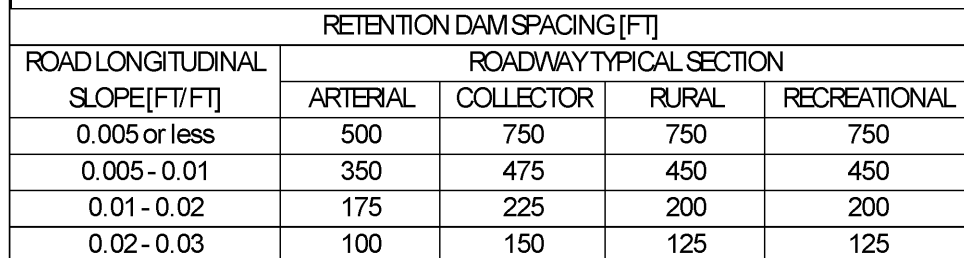
As a minimum, the SWPPP in Utah County is required to contain the following information and must be prepared and approved before construction commences (this may be used as an outline or checklist for preparing the SWPPP):

1. Location of the site and name of development.
2. Owner, developer, & Engineer – contact information - phone, address, email.
3. Dates of anticipated construction or disturbance.
4. Map of existing conditions – including a topographic map, drainage channels, hazardous conditions, potential mud flows or debris flows, stream channels, wetlands, etc.
5. Soils information from NRCS for the site.
6. Name of nearest downstream receiving water.
7. Identification of nature, types, and volumes of storm water pollutants expected.
8. Methods for waterway protection and a statement about the necessity (or not) of obtaining a Stream Channel Alteration Permit (SCAP) from the State Division of Water Rights.
9. The County requires a wetland delineation for areas within 300' of forested shrub and freshwater emergent wetlands as mapped by USFWS. Areas outside this zone will need to provide a statement about the necessity (or not) of obtaining a USACOE wetlands permit.
10. Site plan for finished site – cuts, fills, roadways, channels, pipes, stabilization, buildings, stormwater control features.
11. List and examples of all BMP's (Best Management Practices) to be implemented (see Stormwater Treatment #2 in Section 3) . Description of how and why certain BMPs were selected.
12. Monitoring, inspection, record-keeping, materials control, and maintenance plan.
13. Description of a long-term (10+years) plan to maintain storm water quality and legal instrument to accomplish this.
14. Method of revising the SWPPP to include unanticipated changes.

15. Statement of understanding that a permit is required from the DWQ before construction starts and that a Notice of Termination (NOT) is required to be filed.

DRAFT

1. RETENTION VOLUME IS FOR THE 10-YEAR EVENT.
2. ROADWAY LONGITUDINAL SLOPES GREATER THAN 3% MUST USE UDOT'S STANDARD DETAIL: EN 1 - TEMPORARY ENVIRONMENTAL CONTROLS (CHECK DAMS).
3. CREST TRAVERSE SLOPE SHALL BE EQUAL TO ROADWAY LONGITUDINAL SLOPE.
4. SWALE SURFACE SHALL BE SEEDED WITH NATIVE GRASS.



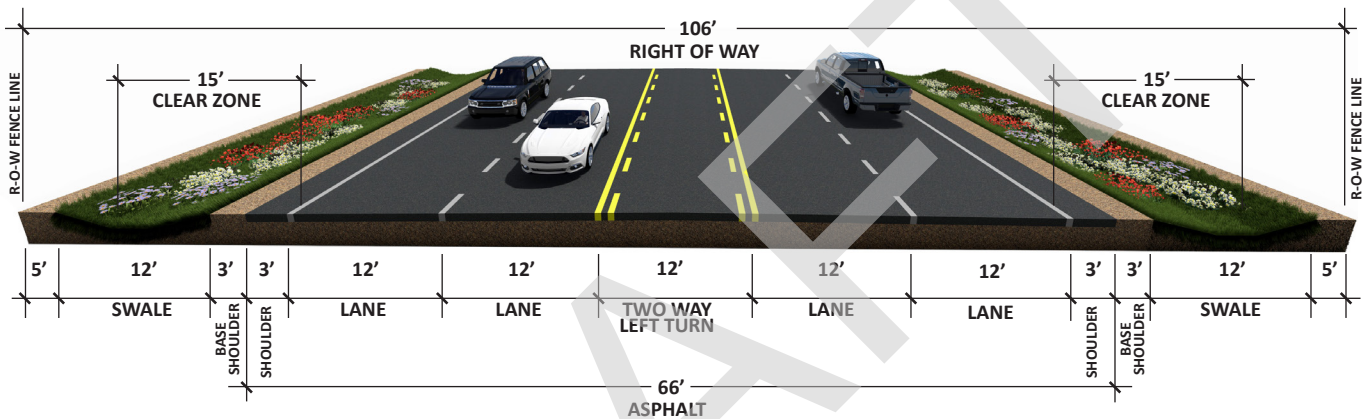
PROGRESS PRINT

3.3.2026  
DATE

Not to be used for construction.  
Hansen, Allen, & Luce, Inc.  
Consultants/Engineers

# Utah County Road Cross Section Detail Standards

## ARTERIAL ROADS



### STANDARDS:

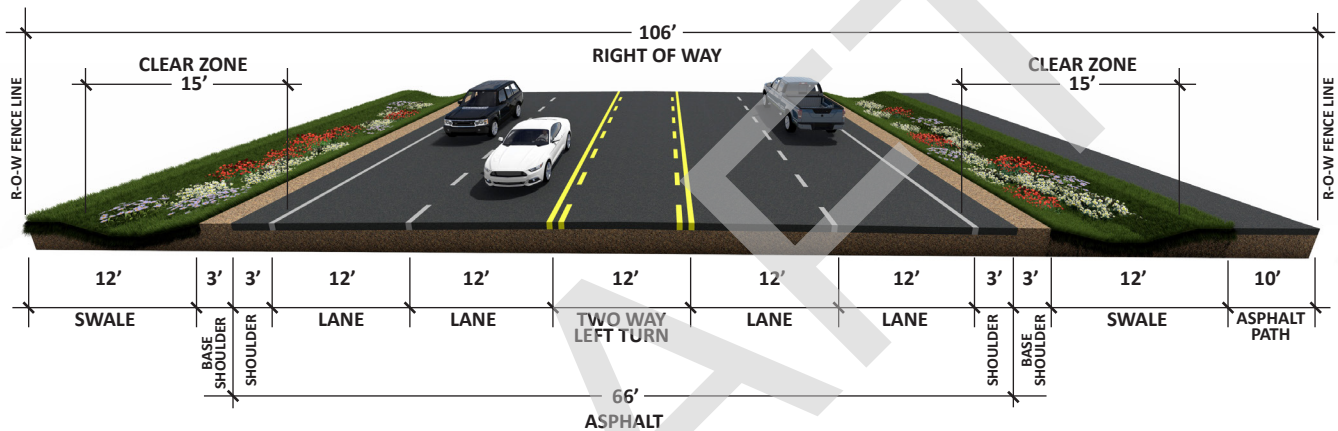
- 1) Right-of-Way width of 106 feet.
- 2) 4 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 66 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 8 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 12 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6% along centerline, Typical Cross Slope grade 2%
- 9) Minimum clear zone of 15 feet
- 10) Limited driveway access.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## ARTERIAL ROADS WITH TRAIL



### STANDARDS:

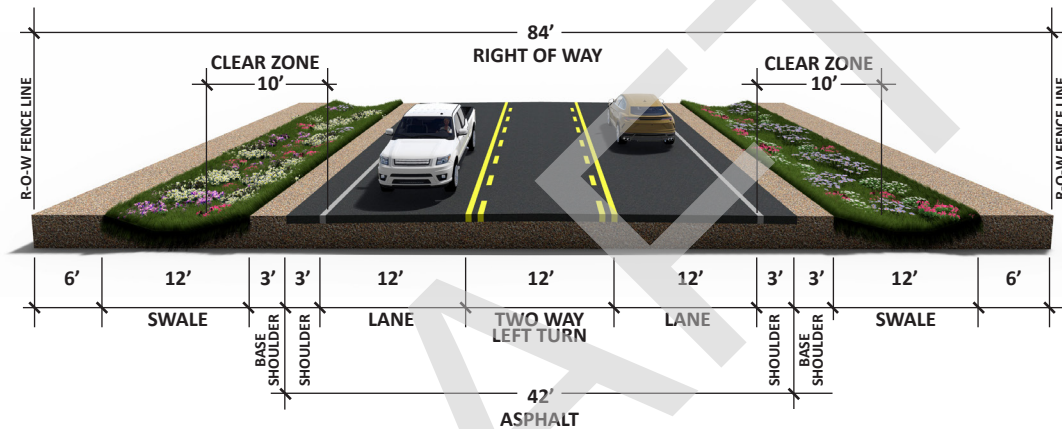
- 1) Right-of-Way width of 106 feet.
- 2) 4 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 66 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 8 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report
- 7) Minimum swale width of 12 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6% along centerline, Typical Cross Slope grade 2%
- 9) Minimum clear zone of 15 feet.
- 10) Limited driveway access.
- 11) Asphalt Path location varies by approval of Utah County Engineer.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## COLLECTOR ROADS



### STANDARDS:

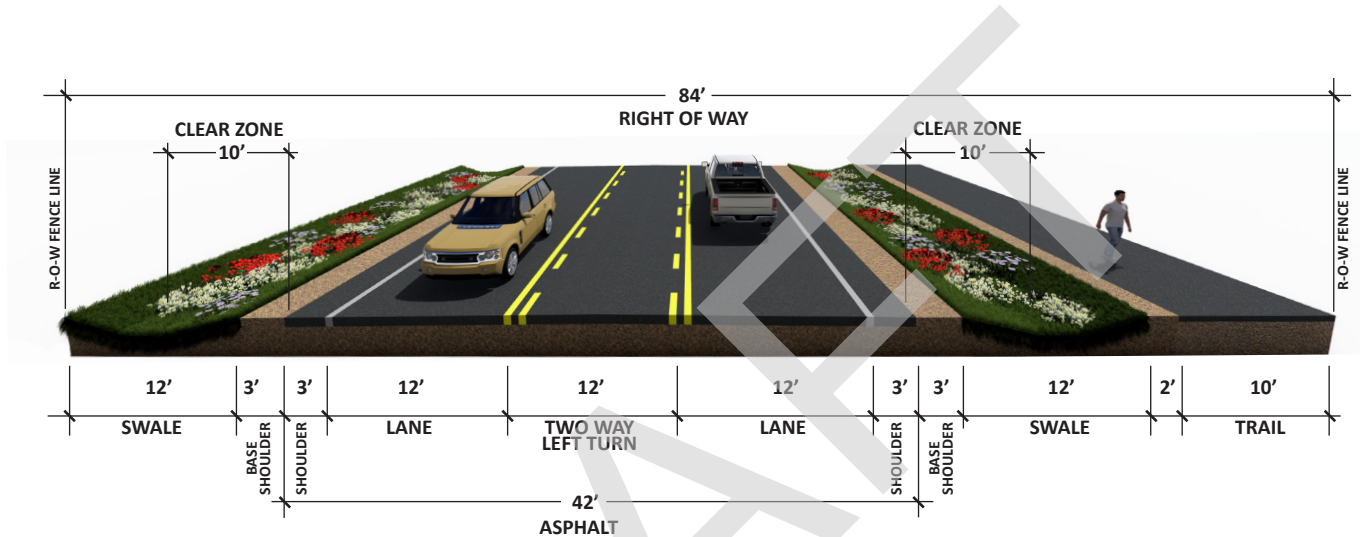
- 1) Right-of-Way width of 84 feet.
- 2) 4 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 42 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 6 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 12 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6% along centerline, Typical Cross Slope grade 2%
- 9) Minimum clear zone of 10 feet.
- 10) Limited driveway access.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## COLLECTOR ROAD WITH TRAIL



### STANDARDS:

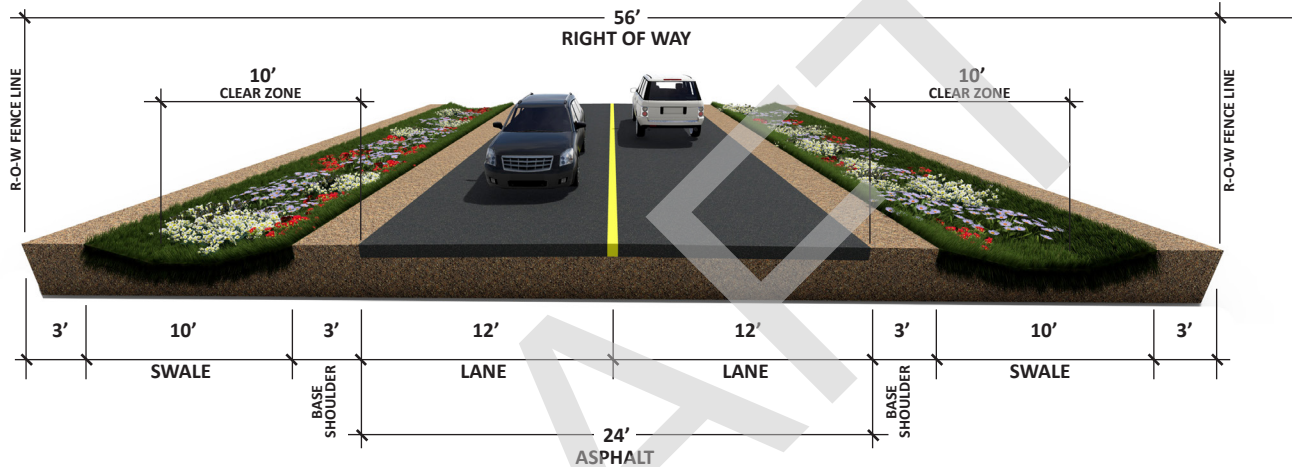
- 1) Right-of-Way width of 84 feet.
- 2) 4 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 42 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 6 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 12 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6% along centerline, Typical Cross Slope grade 2%.
- 9) Minimum clear zone of 10 feet.
- 10) Limited driveway access.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## RURAL DEVELOPMENT ROADS



### STANDARDS:

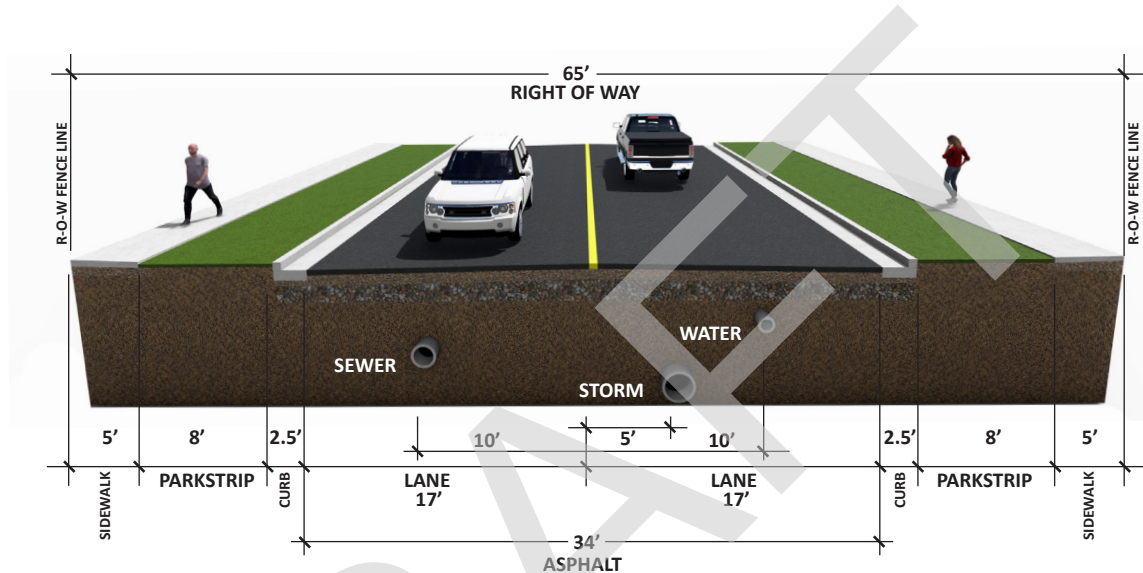
- 1) Right-of-Way width of 56 feet.
- 2) 4 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 24 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 6 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 10 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 8% along centerline, Typical Cross Slope grade 2%
- 9) Minimum clear zone of 10 feet.
- 10) Limited driveway access.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## URBAN DEVELOPMENT ROADS



### STANDARDS:

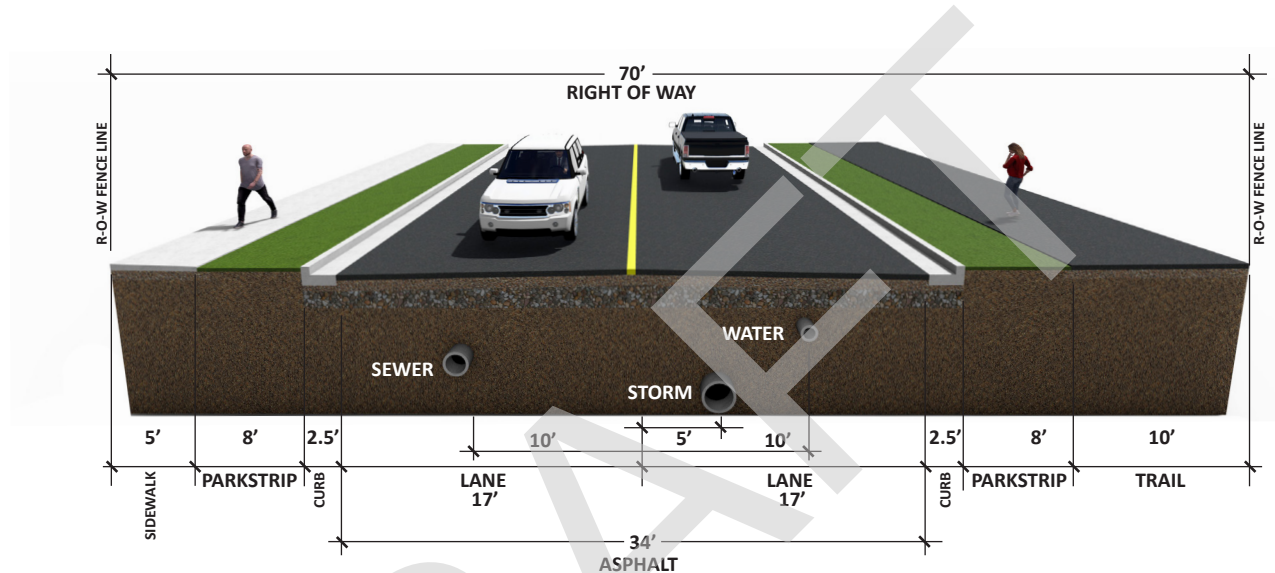
- 1) Right-of-Way width of 65 feet.
- 2) 3 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 34 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 8 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum sidewalk width of 5 feet with 4 inches of compacted untreated base course.
- 8) Maximum vertical grade of roadway is 8%.

### NOTES:

- 1) This typical cross section detail is to be used with lots one acre or less or in urban zoned areas of Utah County.

# Utah County Road Cross Section Detail Standards

## URBAN DEVELOPMENT ROADS WITH TRAIL



### STANDARDS:

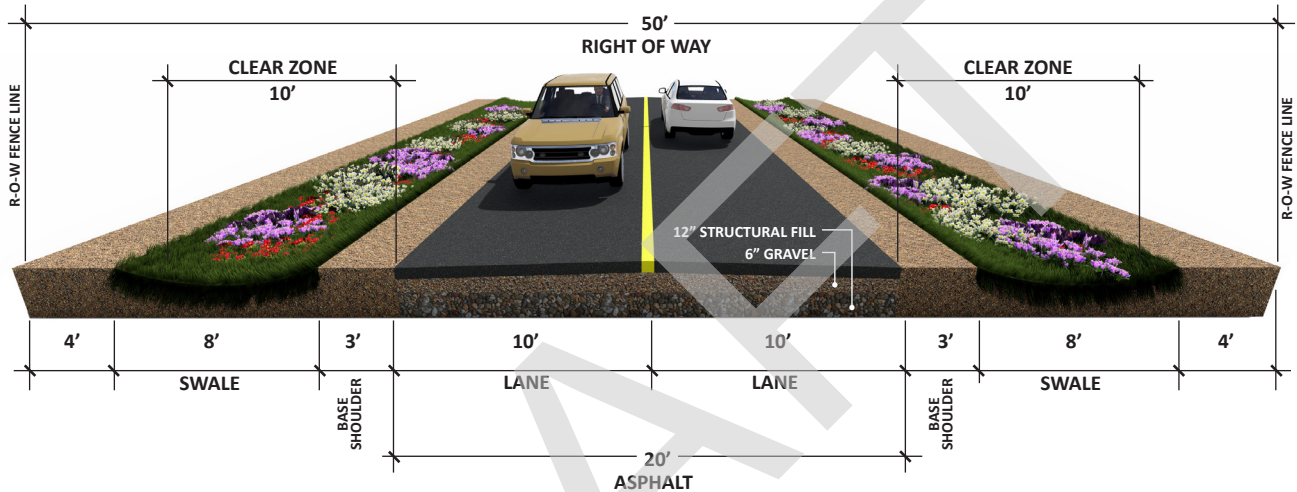
- 1) Right-of-Way width of 70 feet.
- 2) 3 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 34 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 8 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum sidewalk width of 5 feet with 4 inches of compacted untreated base course.
- 8) Maximum vertical grade of roadway is 8%.

### NOTES:

- 1) This typical cross section detail is to be used with lots one acre or less or in urban zoned areas of Utah County.

# Utah County Road Cross Section Detail Standards

## FARMS ACCESS ROADS



### STANDARDS:

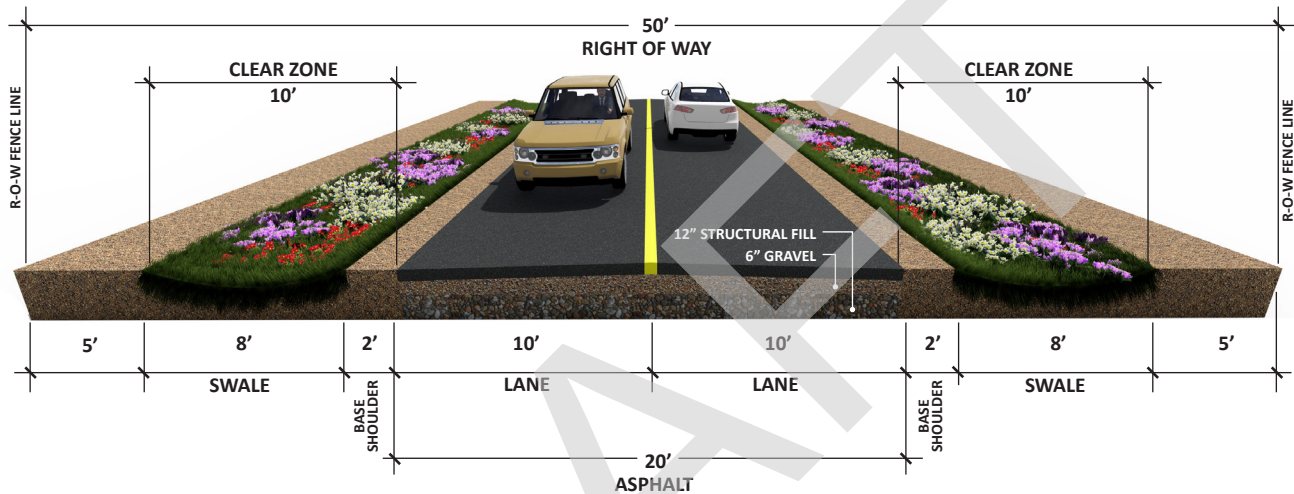
- 1) Right-of-Way width of 50 feet.
- 2) Minimum gravel width of 20 feet for linear length of zero to five hundred feet.
- 3) Minimum gravel width of 26 feet for linear lengths greater than five hundred feet.
- 4) Minimum travel lane width of 10 feet.
- 5) Minimum of 6 inches of approved untreated base course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 4 feet.
- 8) Maximum vertical grade of 8%.
- 9) Minimum clear zone of 10 feet.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## MOUNTAIN ROADS



### STANDARDS:

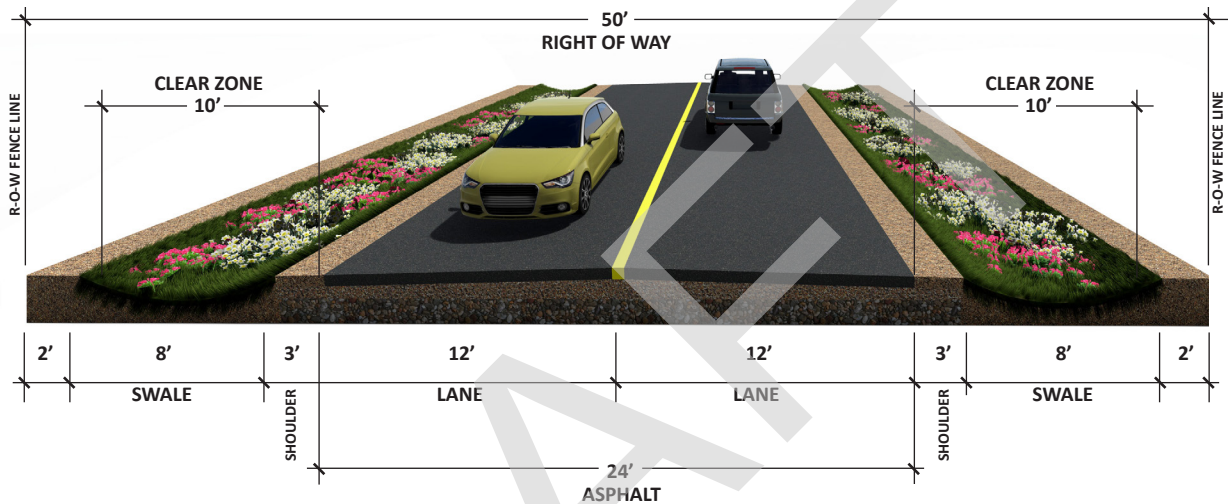
- 1) Right-of-Way width of 50 feet.
- 2) Minimum gravel width of 20 feet for linear length of zero to five hundred feet.
- 3) Minimum gravel width of 26 feet for linear lengths greater than five hundred feet.
- 4) Minimum travel lane width of 10 feet.
- 5) Minimum of 6 inches of approved untreated base course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report
- 7) Minimum swale width of 4 feet.
- 8) Maximum vertical grade of 8%.
- 9) Minimum clear zone of 10 feet.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## RECREATIONAL ROADS



### STANDARDS:

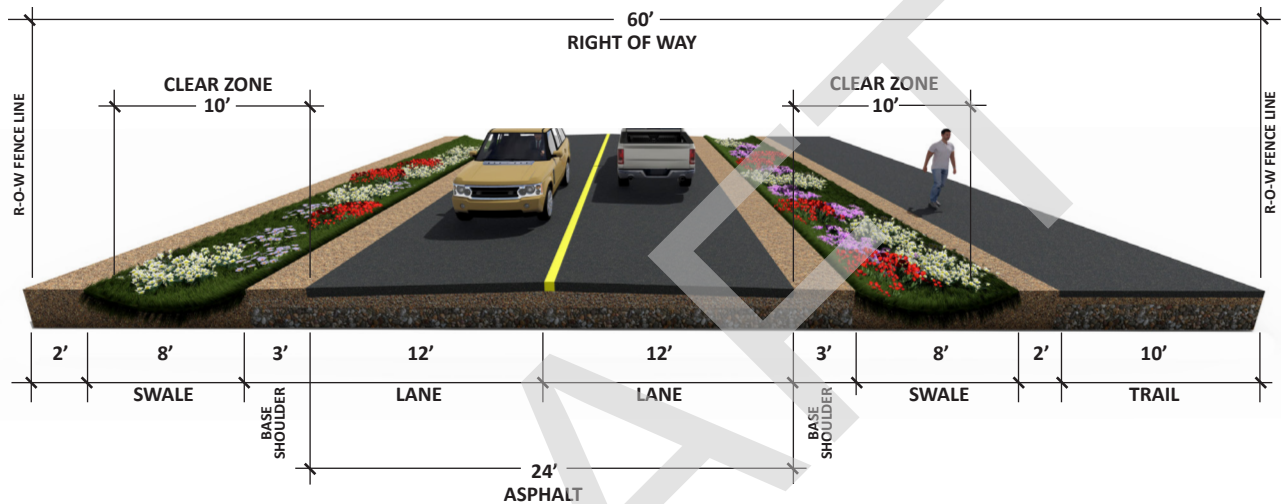
- 1) Right-of-Way width of 50 feet
- 2) 3 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 24 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 6 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 6 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6%.
- 9) Minimum clear zone of 10 feet.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.

# Utah County Road Cross Section Detail Standards

## RECREATIONAL ROADS WITH TRAIL



### STANDARDS:

- 1) Right-of-Way width of 60 feet
- 2) 3 inches of asphalt "bituminous surface course" with an approved preservation coat after one year.
- 3) Minimum pavement width of 24 feet.
- 4) Minimum travel lane width of 12 feet.
- 5) Minimum of 6 inches of approved Untreated Base Course material or depth as specified by soils report.
- 6) Minimum of 12 inches of approved structural fill material or depth as specified by soils report.
- 7) Minimum swale width of 6 feet Seeded of Gravel with Check Dams according to Standard Drawing SD-1.
- 8) Maximum vertical grade of 6%.
- 9) Minimum clear zone of 10 feet.

### NOTES:

- 1) New Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., shall be located at the Right-of-Way line.
- 2) New Ditches and Ditch structures shall be located outside of the Right-of-Way line.
- 3) Existing Utility Poles, Telephone Boxes, Electrical Junction Boxes, etc., may remain if they are located between the clear zone and the Right-of-Way line, on existing roads.