



# CIVIL IMPROVEMENTS

## Submittal Checklist

06/04/2019 V11

**City of Henderson**  
**Development Services Center**  
www.cityofhenderson.com

240 Water Street  
PO Box 95050  
Henderson, Nevada 89009-5050  
(702) 267-3600 phone  
(702) 267-3601 fax

This checklist is provided for the convenience of our customers. Complete and accurate plan submittals help speed the plan review process. Attention to the completeness and accuracy of information at the beginning of the process generally leads to fewer delays and requests for revisions by City staff. Please use the checklist to ensure that your application includes all of the information necessary for a timely review of your plans. This checklist is provided as a general guideline and is not intended to be all-inclusive. Additional information may be required during the plan review process.

### Part. 1 Applicant's Responsibility

**Applicants are responsible for submitting complete applications.** Incomplete applications will result in plans being rejected for acceptance, or returned to the applicant during the review process. City service commitments will not apply to incomplete submittals.

### Part. 2 Prerequisites

The following items must be completed before civil improvement plans can be accepted for processing:

- Appropriate zoning is currently in place for this proposed use**  
*Contact Community Development at (702) 267-1500 for more information.*
- A Design Review or Tentative Map** [If applicable]  
*Approved for this site.*
- A Traffic [Impact Analysis] Study**  
*Approved for this site, or have received an exemption letter or email from the City Traffic Engineer or designee.*
- A Technical Drainage [Hydrology] Study**  
*Approved for this site, or have received an exemption letter or email from the Floodplain Manager or designee.*
- A Water Hydraulic Analysis**  
*Approved for this site; or have received an exemption letter or email from the Department of Utility Services.*
- Compliance with Planning Commission and/or City Council actions**  
*Related to this parcel and the associated conditions of approval.*
- Park development plan / park agreement [if applicable]**  
Must be finalized prior to approval of civil plans.  
*If conditioned to provide neighborhood park amenities, the following park related approvals are required before permit can be issued: Parks & Recreation Department, Parks and Recreation Board Committee, Property Management, Nevada Division of Transportation {NDOT}, and Easement Holders {if required}.*

### Part. 3 Applicable Codes

Project must meet the requirements of the City's adopted codes, ordinances, and regulations:

- American Association of State Highway and Transportation Officials**
- "Accessibility" requirements:** Chapter 11 and related Appendix of the currently adopted 2018 International Building Code (IBC). Standards shall be in accordance with ANSI 117.1, 2009.
- Clark County Area Uniform Standard Drawings & Specifications**  
*The State of Nevada 2014 Blue Book.*
- Clark County Uniform Regulations for the Control of Drainage**
- Clark County Regional Flood Control District Hydrologic Criteria & Drainage Design Manual**  
*Requirements must be met for flow depths and velocities in all streets.*
- City of Henderson Parks & Recreation Requirements** [if applicable]
  - **City of Henderson Landscape & Irrigation Standards**
  - **Lake Mead Landscape Improvement Project Design Guidelines**
  - **Boulder Highway Beautification Design Guidelines**
  - **St Rose Trail Design Guidelines**
- Master Transportation Plan**
- Nevada Department of Transportation Standard Drawings & Specifications**

**Part. 3**  
**Applicable Codes**  
**(continued)**

**North American Vertical Datum of 1998 (NAVD88)**

*For benchmarks, 2004 City of Henderson Benchmark Book.*

**Uniform Design and Construction Standards for Potable Water Systems including the City of Henderson Addendum.**

**Design and Construction Standards for Wastewater Collection Systems including the City of Henderson Addendum.**

**Part. 4**  
**Submittal Package**

Provide the following information at the time you submit your civil improvement plans. Please submit the required number of copies of plans and related documents for routing to reviewing departments:

- Completed Civil Improvement Plan Submittal Form**  
*The engineer of record shall seal and sign the application across the authorized signature line.*
- Completed Bond & Inspection Fee Form**  
*Plan Check fee of 2.25% paid at time of submittal.*
- 10 complete sets of civil improvement plans [24" x 36" sheets]**  
*All cover sheets must be signed, dated and sealed by a civil engineer who is registered in the State of Nevada, in accordance with Nevada Revised Statutes. All remaining plan set sheets may have copies of the wet seal, signature, and date.*
- Traffic Study Approval Letter & Permit Number**  
*Approved for this site, or have received an exemption letter or email from the City Traffic Engineer or designee.*
- Technical Hydrology Study Approval Letter & Permit Number**  
*Approved for this site, or have received an exemption letter or email from the Floodplain Manager or designee.*
- 4 copies of Geotechnical (soils) reports**  
*The reports must be signed, dated and sealed by a civil engineer, registered in the State of Nevada, in accordance with Nevada Revised Statutes, who is responsible for the report. The date must be within one year of the civil plan application unless an updated letter is provided by the engineer who prepared the report.*
- Water Hydraulic Analysis Acceptance Letter**  
*Approved for this site; or have received an exemption letter or email from the Department of Utility Services, for this site.*
- Conditions of Approval (NOFA)**  
*Submit all Planning Commission and/or City Council action related to this parcel and the associated conditions of development, including all applicable waivers.*
- Phased Construction Submittals must include:**
  - a. **Fire Review:** A phasing plan describing fire apparatus, access roads, and fire hydrant locations relevant to each phase.
  - b. **Traffic Review:** A Master Street Light and Traffic Control (signage) Plan, as well as pedestrian access route, encompassing all of the phases and/or units.
- Notarized letter of Authorization from adjacent property owners [if applicable]**  
*Applicable if any construction activity is proposed on adjacent property. Letter to include all adjacent parcel information, including Assessors Parcel Number, ownership, and existing City of Henderson plan numbers and permit numbers. For existing structures, provide elevations.*
- Utility Services required through adjacent developments**  
*Plans shall not be reviewed unless all necessary off-site infrastructure to provide water and sewer service has been provided. Plans shall not be approved unless said infrastructure is in place or bonded for this project.*
- Parks & Trails Construction Bond [if applicable]**  
*A construction bond will be required for all parks and trails being constructed and turned over to the City of Henderson.*
- Utility Services 60% Design Review Completion Notification [if applicable]**  
*Provide written confirmation from the Department of Utility Services authorizing submission of plans and specifications associated with the design of backbone water and/or sewer infrastructure.*
- Grading Permit Submittal Package**  
*Provide a grading permit submittal package for submittal to the Building Division immediately following the civil improvement plan submittal to Public Works.*

**Part. 5**  
**Review Guidelines**

This list is not intended to be all-inclusive of every detail required on a set of civil improvement plans. Rather, it is provided to give an overview of the basic plan contents needed for the review of plan sets. See applicable code documents for more information.

**PUBLIC WORKS**  
**LAND DEVELOPMENT**

**Cover Sheet**

- Cover Sheet Index**  
Identify sheet titles and sheet numbers on cover sheet.
- Vicinity Map**  
Clearly locate the project, and key map detailing relative improvement locations on all relevant sheets.
- Legal description of the subject property**  
Include all assessor's parcel number(s) and acreage [gross and net]
- Contact Information**  
Provide the company name, contact person, address and telephone number of the engineer, owner, and developer.
- Buildings/Site Information**  
Include the number of units/buildings, identify the square footage for each, and list the density of number of units to the acre.
- Cover Sheet Signatories**  
Provide an approval box with the following signatories on the coversheet:
  - a. CenturyLink
  - b. NV Energy
  - c. Southwest Gas Company
  - d. Cox Communications
  - e. Fire Department - City of Henderson
  - f. Building Official – City of Henderson
  - g. Director of Utility Services – City of Henderson
  - h. City Engineer – City of Henderson
  - i. City Traffic Engineer – City of Henderson
  - j. Park Planning – City of Henderson [required when a public park or trail component is included]
- Cover Sheet Notes**  
Provide the following notes on the cover sheet of each plan set:

"Approval of these plans by the City of Henderson is limited to those improvements constructed in the dedicated rights-of-way and/or dedicated easements. This approval does not authorize the construction of any improvements that deviate from adopted standards and/or specifications except those specifically identified as "Deviations from Standards". The Engineer shall resolve any deviation other than those listed in "Deviations from Standards" in favor of the Uniform Standards Drawings and Specifications Clark County Area Nevada.", (current editions).

"The engineer should contact the Nevada Division of Environmental Protection (NDEP) to obtain a National Pollutant Discharge Elimination System (NPDES) permit prior to construction. All construction projects one acre or larger must apply for the permit through NDEP. All questions regarding the NPDES permit requirements should be directed to the NDEP at (775) 687-9429.
- Final Approval Signatory**  
*On all sheets, except Horizontal Control Plans, Structural sheets provide the following note with the signature block,*

**Formatting**

City approval of the improvement plans is granted for two (2) years. A one (1) year extension may be granted by submitting an Improvement Agreement Extension Amendment to the City of Henderson Department of Public Works if work is not completed within two (2) years of the original approval date.

\_\_\_\_\_  
City Engineer – City of Henderson

- Sheet Formatting**  
Each sheet shall be numbered, contain the sheet title, project name, and the name of the engineering firm preparing the same, vertically along the right edge of the sheet. The title block shall also contain space for the sheet totals (sheet "x" of "x"), the City of Henderson permit number and a revision schedule. Sheets shall also contain "Call Before You Dig", "Call Before You Overhead" and "Call Before You Underground" advisory blocks and provide all adjacent parcel information.

- Binding**  
All plan submittals must be stapled or bound.
- Abbreviation, Legend, and Symbols**  
Per Clark County Area Standard Drawings [blue book], use a north arrow and a graphic drawing scale. Scale shall not exceed 1:50 and minimum text size and/or lettering shall be 0.08".
- Key Map** [if applicable]  
Provide a key map on all improvement plans clearly identifying sheet improvements relative to overall project development. Provide the City of Henderson Benchmark number and the elevation in meters and feet, and description refer to most current City of Henderson Benchmark book. Provide the basis of bearings for the subject property.
- Traffic Conformance Block**  
Provide and complete the following note on the cover sheet.

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE TRAFFIC IMPACT STUDY APPROVAL LETTER ON FILE WITH THE CITY OF HENDERSON	
_____ TRAFFIC IMPACT STUDY ENERGOV NUMBER	
_____ PRINTED NAME	_____ SIGNATURE
_____ DATE	_____ P.E. NUMBER

**General Notes Sheet**

A comprehensive notes page shall follow the Cover Sheet and include the following [if applicable]:

- City of Henderson Standard General Notes**
- City of Henderson Water and Sanitary Sewer Notes**
- Fire Department General Notes**
- Flood Zone Notes**  
Provide the FIRM map number, flood zone, and effective date for the site.
- General Notes, Legends, and Abbreviations, and Comprehensive Quantity List \*\***  
Per Clark County Area Uniform Standard Drawings  
\*\* If project includes NDOT right-of-way or a LID, these quantities must be listed separately.
- Special notes – as necessary to complete the review**
- Storm Water Pollution Standard Notes**
- Traffic & Street Light Notes**  
Include Traffic Impact Analysis (TIA) Permit#

**Grading Plans**

- General Information**
  - \_\_\_ General vicinity map of the proposed site.
  - \_\_\_ Property limits and accurate contours of existing ground and details of terrain and area drainage.
  - \_\_\_ Address the possible impacts on adjoining properties and mitigating measures to be undertaken.
  - \_\_\_ Limiting dimensions, elevations, or finish contours to be achieved by the grading, proposed drainage facilities, and related construction
  - \_\_\_ Flood Zone Boundary [if applicable]: Provide sections for concrete slab-on-grade pavements and associated design calculations. Provide collar, turndown and/or thickened edge sections at extents.
  - \_\_\_ Identify and dimension all easements [existing or proposed] and who will maintain them.
  - \_\_\_ Show sawcut lines. Shade proposed asphalt areas located in the right-of-way.
- Soils & Engineering Report Information**
  - General Information: Include the dates of reports together with the names, addresses, and phone numbers of the firms or individuals who prepared the report. Update letters are required on all reports prepared more than 1 year ago.
  - Recommendations: Report recommendations shall be included into grading plans or specifications.
- Details & Cross Sections**
  - \_\_\_ Details and cross sections at property lines, fence walls, retaining walls, berms, etc.
  - \_\_\_ Provide details and cross sections of typical fill slopes and cut slopes.

## Grading Plans Continued

### Elevations & Contours

- \_\_\_ Elevation datum and benchmark as established by the NAVD88 [in meters and feet].
- \_\_\_ Elevation of curbs or centerline of roads or streets, at maximum 100 foot intervals.
- \_\_\_ Existing and proposed finish grad elevations at all grade breaks and grad transitions with a maximum 100 feet between spot elevations.
- \_\_\_ Finished grade elevations on both sides of all screen and retaining walls.
- \_\_\_ Labeled 2 foot contours minimum [extend contours a minimum of 100 feet beyond limits of construction]
- \_\_\_ Show tope of manhole elevations and offset distances from centerline for sewer, water and storm drain lines. Label diameter, material, manholes, rims, and invert elevations. Show cleanouts, blow offs and other at or above grade improvements
- \_\_\_ Pad and finish floor elevations. Base Flood Elevations for FEMA Zone A and AO.

### Positive Drainage & Physical Obstructions

- \_\_\_ Show proposed slopes and identify flowlines and swales.
- \_\_\_ Show positive drainage of minimum 5% away from building foundations for 10 feet.
- \_\_\_ If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5% slope shall be provided to an approved alternate method of diverting water away from the foundation.
- \_\_\_ A 2% slope is permitted if the structure abuts hard surface (concrete, pavers, pavement, etc.)

### Details & Cross Sections

- \_\_\_ Details and cross sections at property lines, fence walls, retaining walls, berms, etc.
- \_\_\_ Provide details and cross sections of typical fill slopes and cut slopes.

### Earthwork, Cut & Fill

- \_\_\_ List quantities of cut and fill, in cubic yards, and scope of work.
- \_\_\_ Designate a disposal area for any excess excavation.
- \_\_\_ Provide the cut to fill transition line.
- \_\_\_ Setback dimensions of cut and fill slopes from site boundaries.

### Slopes

- \_\_\_ Rear and side yards [if applicable]: Maximum slope in 15' rear yard setback area of 12:1. Maximum slope in setback area 8:1.
- \_\_\_ Typical details of fill over natural slopes and fill over cut slopes where fill is to be placed on natural or cut slopes steeper than 5H:1V.
- \_\_\_ Check areas of existing terrain with a slope greater than 5:1. Ensure the grading plan incorporates the recommendations of the soils report and for placement of fill on slopes steeper than 5:1.
- \_\_\_ Check for proposed slopes steeper than 2:1.
- \_\_\_ Check slopes steeper than 3H:1V for terracing requirements.
- \_\_\_ Provide the location and dimensions of all terrace drains for all slopes steeper than 3H:1V.

### Buildings, Structures, Features

#### Proposed locations

Site any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners that are within 50 feet of the property or that may be affected by the proposed grading operation.

#### Adjacency to slopes

The placement of buildings and structures on and or adjacent to slopes steeper than 3H:1V in accordance with IBC 1805.3.

#### Topographical features

Locate other existing topographical features either natural or man-made such as streets, drainage structures, pavements, fence walls, etc.

### Required Signature Note

Provide and complete the following note on each grading plan:

"I certify that this grading plan conforms to the approved drainage study for this site on file at the City of Henderson. PHYD # (provide hydrology study number).

(signature) \_\_\_\_\_ (date) \_\_\_\_\_  
(Engineer's Name and P.E. Number)

## General Information

- Plan and Profile**  
Identify all streetscape improvements located within the public right-of-way place in land development area.
- Survey Monumentation**  
Show all survey monumentation related to the project on the improvement plans. Also, provide the following note on the horizontal control and/or grading plans of each plan set:  
"OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION."
- Horizontal Control Plan**  
Horizontal Control Plans are required for ALL Civil Improvement Plan submittals and must be stamped by a Nevada Licensed Professional Land Surveyor (PLS) per NAC 625. The Horizontal Control Plan shall show the project boundary relative to adjacent property lines, right-of-way lines, section lines, and all found survey monuments used in the analysis of the project boundary. In addition to the Horizontal Control Plan a Geometric Control Plan may also be utilized showing proposed project geometry and could be stamped by a Nevada Licensed Professional Engineer (PE) per NAC 625.
- Vertical Curves**  
Shall be provided for changes in grade of 1.0% or greater. Vertical curves shall be designed for the posted speed limit plus 10-mph. The minimum length for a vertical curve shall be 100.00 feet.
- Offset Crowns**  
Shall be 8' minimum from curb face.
- Public and Private Quantities[on-site/off-site]**  
Provide comprehensive quantity estimates of all public and private construction items on the note sheet.  
\*\* if project includes improvements to NDOT right-of-way or an LID, those quantities must also be provided. Use separate columns for Public, Private, NDOT & LID.
- Street Sections & Details**  
Provide representative street sections and details along with corresponding Clark County Area Standard drawing number. Each plan/profile sheet shall contain a description of the street section.
- Identify Existing Improvements**  
Identify City of Henderson civil plan numbers for all existing improvements adjacent to project, including existing improvements located within the right-of-way.
- Pavement tie in**  
Permanent pavement sections: provide verification of existing section information.  
Temporary pavement sections: remove and replace according to approved street section.
- Stationing and elevations**  
Provide stationing, finished grade elevations, and invert elevations at match lines and sheet breaks.
- Street Names**  
Identify all street names and indicate which, if any, are private streets. All stationing to be from center of roadway with offsets.
- Basis of Bearings**  
Provide the basis of bearings for the subject property.
- Existing and Proposed Rights-of-Way and Easements (including traffic signal, street light, or sight distance related)**  
Shall be identified, located, and dimensioned. Identify easement documents and appurtenant record documents.
- 5-Year No Cut Policy**  
Cuts made to permanent pavement less than 5 years old requires prior City Council approval.
- Walls**  
Walls must be shown on civil improvement plans and require a separate permit application.
- Street Lighting**  
Plans shall clearly indicate existing and proposed street lighting using Clark County Area standard symbols. Include the following information:
  - a. Street light poles, traffic signal poles, conduit runs, pull boxes, and service point locations(s). Traffic signal designs(s) shall be provided on a separate sheet(s).
  - b. When streetlights are to be connected to an existing circuit, the design engineer must certify that the existing circuit is capable of handling the additional circuit load. Existing pedestal location must be shown on the plan. Existing circuit load information may be obtained by calling the City of Henderson Public Works Traffic Services Division at (702) 267-3200.
  - c. Street light notes.
  - d. Those projects being developed in phases must submit a master street light and traffic control (signage) plan, encompassing all of the phases and/or units.

## General Information Continued

### **Signage & Striping Plans**

- a. Provide current City of Henderson Traffic and Street Lighting notes on plans.
- b. All intersections with 80-foot or greater right-of-way width, both street name signs shall be 12 inches in height with City of Henderson logo. All other intersection street name signs shall be 9 inches.
- c. Location and description of all new and existing signs must be shown on the plan.
- d. All sign faces shall be fabricated with ASTM Type X1 retroreflective sheeting. All signs, except street name signs, will have anti-graffiti protective film. The protective film and the retroreflective sheeting must be from the same manufacturer.

### **Bicycle Plan**

For those roads appearing on the City of Henderson bicycle plan, bicycle lane markings shall be shown on the plans to be installed by the developer. Bicycle lanes shall be marked using Polyurea. In areas where construction of the bicycle facilities is not feasible, a proportionate cost participation may be accepted in lieu of construction.

### **Pavement Markings**

- a. Existing pavement markings to be removed must be so noted.
- b. Show all pavement marking to be installed in their ultimate location, if right-of-way, roadway or patent easements exist. Additional pavement may be required to provide for the ultimate design. If necessary right-of-way, roadway easement or government patent easement to install the additional pavement is not available, the engineer must indicate this condition.
- c. Raised pavement markers shall be used for all center lines and lane lines installed at their ultimate location. Polyurea will be used for bike lane lines, edge lines, and all transverse markings including but not limited to crosswalks, stop bars, and word/symbol markings.
- d. The minimum width of through lanes shall be 11 feet, unless directed otherwise by the City of Henderson Public Works Traffic Services Division.

### **Pavement Transitions:**

- a. All transition lengths shall conform to the Manual on Uniform Traffic Control Devices and designed using a minimum of the posted speed limit plus 10 mile per hour, or as determined by City of Henderson Public Works Traffic Services Division.
- b. Temporary transition pavement markings in the transition area can be either raised pavement markers or detour grade tape, dependent upon the type of transition and the anticipated service life required.
- c. Edge lines in the existing transitions shall be eight (8) inches wide and marked using reflective traffic paint or cold polymer film acceptable to the City of Henderson Public Works Traffic Services Division.
- d. Object marker signs (OM-3R's or OM-3L's) or directional signs (WI-8's) shall be installed in the existing transitions and spaced in accordance with the posted speed limit (25 MPH = 25' spacing) the Manual on Uniform Traffic Control Devices – latest edition.

### **Sight Distance**

In areas with possible sight distance concerns, it is recommended that sight distance triangles/calculations be provided to expedite review. The sight distance calculations shall utilize the design speed of the road and AASHTO Case III intersection sight distance calculations. The design speed shall be posted speed plus ten (10) miles per hour.

### **Traffic Signals**

- a. On right-of-way combinations of 80 feet and 80 feet or greater, traffic signal pole shafts, conduits, pull boxes, service pedestals, and underground improvements are required. Type XX-A or XX-B poles shall be installed to support future mast arms that will serve the ultimate lane configurations for the intersections.
- b. Streetlight luminaries on traffic signal poles shall be intersection street lights per City of Henderson Street Lighting Standards and Approved Streetlight Supplier List.
- c. All traffic signal pole assemblies shall be hot-dipped galvanized in accordance with ASTM A123 and shall not be painted.
- d. Show all existing traffic signal poles, pull boxes, conduit runs, service points, loop detectors, and facilities/hardware at intersections with an existing traffic signal or facilities if future traffic improvements are planned.
- e. Pull boxes shall not be located within wheelchair ramps, driveways, or private street roadways.
- f. When a controller cabinet, service pedestal; Type XX, XX-A, XX-B or 1-A or 1-B pole is installed, the foundation shall be installed behind the sidewalk. A minimum clear area of six (6) feet long by three (3) feet wide shall be provided behind the sidewalk for each foundation. The foundation shall be located directly behind the sidewalk and centered within

the length of the clear area. (Refer to City of Henderson Standard Drawing.)

## General Information Continued

- Sidewalks**  
Show all existing and proposed sidewalks. Show all driveway cut locations (existing and proposed) on both sides of the roadway and identify zero (0) inch lip driveways. Show existing and proposed wheelchair ramps, either provide detail or indicate Clark County Area Uniform Standard Drawings 235 Case II or Case I and specify A and B lengths.
- Trails**  
Show all existing and proposed trails. Show connection to access ramps. Provide centerline geometry of all proposed trails on Horizontal Control Sheet.
- Driveways**  
Proposed driveways near an intersection shall be constructed per Clark County Area Uniform Standard Drawing 222.1
- Additional right-of-way dedication**  
Shall be required at the intersection of 80 feet or larger rights-of-ways in accordance with Clark County Area Uniform Standard Drawing, No. 201.1 and/or per City of Henderson Standard Drawing.
- Roll Curb**  
When roll curbing (per Clark County Area Uniform Standard Drawing #217.1 or #217.2) is allowed in public or private right-of-way, the following conditions will apply:
  - a. The sidewalk shall be a minimum 5" thick (standard thickness is 4-inches)
  - b. All utility boxes and lids must be traffic bearing.
  - c. Minimum street slope shall be 0.008 to facilitate drainage.
  - d. Transition from roll to "L" curb min-10' prior to drop inlets.

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## PUBLIC WORKS – FLOOD CONTROL

- Storm drain and utilities contained in same street section or easement**  
Show the storm drain and utilities together in plan and profile.
- Flood Zone Identification** - If the subject property is located within a flood zone, identify the flood zone(s), FIRM community panel number and date.
- Nuisance Water Drains** - Nuisance Water Drains shall be required after 1,000 feet of surface street flow within proposed street improvements.
- Type B Drainage**  
Shall be allowed only where lots drain directly to public drainage facilities, public parks, common elements or golf courses. Engineer to specifically identify those lots in which Type B drainage is proposed.
- Storm Drains and Drop Inlets**  
Shall be shown in both plan and profile within public rights-of-way. The design of the storm drain shall comply with the approved drainage study for the site and the Hydrologic Criteria and Drainage Design Manual. Applicant shall calculate anticipated loading conditions and design drop inlets intake/discharge structures and storm drains accordingly. The only allowed material type for public storm drains is reinforced concrete. The minimum size public storm drain shall be 18 inches. Provide size, material type, slope, distance, cover, trench backfill sections, invert elevation, and manhole rim elevation. Additionally, provide plan and profile sections and details as necessary to fully describe proposed channel improvements. All utility crossings shall be shown in profile section with all clearances dimensioned.

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## UTILITY SERVICES

The plans shall reflect the minimum requirements found in the Uniform Design and Construction Standards for Potable Water Systems, latest edition, referred to as UDACS, including the City of Henderson Addendum, and the Design and Construction Standards for Wastewater Collection Systems latest edition, referred to as DCSWCS, including the City of Henderson Addendum. In addition, the following items shall be included, but are not limited to:

- General Information**
  - a. All utility sheets, except for the Master Utility Plan sheet, shall be drawn at a maximum of 1" = 40' scale.
  - b. Shade back all non-utility line work.
  - c. Provide line and curve data for mains.
  - d. Dimension new, future, and existing utilities, street centerline, back-of-curb, etc.
  - e. Indicate rights-of-way, property lines, and easements on all utility sheets.
  - f. Indicate driveway locations for residential subdivisions.

- g. Master Utility Plan (required when there are two or more utility plan sheets) – Provide water and sewer lines, valves, meters, backflow prevention assemblies and fire hydrants for the overall project.
- h. Provide construction notes on all utility sheets.
- i. Provide City of Henderson standard sewer and water notes.
- j. Label all mains as “public” or “private”.
- k. Label the City of Henderson plan number for existing mains or permit number for all proposed mains.
- l. Label all water and sewer main segments with length, size, and type of pipe.
- m. All text should read from bottom or right of page.

**Water System**

- a. Label pressure zones on proposed and existing mains (i.e. {2240 PZ}), including applicable zone boundaries.
- b. Label all meter sizes and uses (i.e. domestic, irrigation, etc.). Label sizes and types of all backflow prevention devices. For commercial or multi-family developments with combined fore & domestic service, meter-sizing calculations shall be provided showing the domestic demand with submitted plans.
- c. Crossing elevations – Provide top-of-pipe elevations for water mains and invert elevations for non-potable water, sewer, and storm drains at all crossings.
- d. Restrained Joints – Provide details, calculations (sealed by a Nevada registered professional engineer), and restrained lengths in plan and profile for all restrained joint sections of pipe, including dip sections.
- e. Call out appropriate UDACS standard plate number for all water appurtenances.
- f. Profile all water mains.

**Sewer System**

- a. Label all rim elevations and manhole numbers for all manholes and invert elevations for all clean-outs on utility plan sheets.
- b. Profile all “public” sewer mains.
- c. Sewer backwater valves shall be provided on all individual lots having finished floor elevations below the upstream manhole rim elevation.
- d. Provide flow arrows on all existing and proposed sewer mains.
- e. Show manhole numbers, rim elevations, and invert elevations for all manholes on all utility plan and profile sheets.
- f. Call out appropriate DCSWCS standard plate number for all sewer appurtenances.

## **BUILDING & FIRE SAFETY - Fire Engineering Review**

**Fire Apparatus**

- a. Sectional Control Valves [PIV or approved equal] shall be installed so that no more than two hydrants and/or fire sprinkler lead-ins will be out of service due to a break in a water main.
- b. Identify the sprinkler system PIV location required for each fire sprinkler system (5-foot minimum from the building footing).
- c. All valves on backflow prevention devices (DCDA or RPDA) shall be provided with indicating valves (see Uniform Design and Construction Standards, Plate 20B).

**Fire Lanes**

- a. Provide a complete fire lane plan including, but not limited to: painted curbs, stenciling, signage, signage details, and complete dimensioning of land widths and curve date.
- b. All fire access roads shall be not less than 24 feet wide provided no parking is allowed, not less than 28 feet wide if parallel parking is allowed on one side and not less than 40 feet wide if parallel parking is allowed on both sides. The fire lane is measured from face of curb to face of the curb. In single family or duplex residential areas, the minimum width is a flow line of 36 feet.
- c. All dead-end Fire Department access roads (fire lanes) in excess of 150 feet in length shall be provided with an approved turn around (bulbs or approved equal).
- d. Turning radii for access roads shall be not less than 52 foot outside radius and 28 foot inside radius. All turns shall have a minimum roadway width of 24 feet.
- e. Shall be provided for every facility when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet from fire department access as measured by an approved route.

**Slope Gradient**

No access road shall have a slope gradient of more than 12%. Angles of approach and departure shall not exceed 6% for 25 feet prior to or after grade change.

**Dual Access**

Provide dual access for any project with 20 or more units, with dead ends more than 600 feet, and for all commercial developments.

**Hydrants**

- a. Locate hydrants at intersections and at maximum intervals thereafter (500 feet residential, 300 feet industrial/commercial). An additional 100 feet may be allowed for commercial/industrial if structures are completely protected by an approved automatic sprinkler system. Locate no hydrant within five feet of a driveway or 25 feet of a structure. Fire hydrant installations are to be per Clark County Area Uniform Standard Drawing Number 516 and Uniform Design and Construction Standards for Water Distribution Systems Plate Number 7.
- b. Transportation protection only, place hydrants at 1,000-foot intervals. Stagger at 500-ft intervals on opposing sides on divided roads.
- c. The maximum distance from a residence to a fire hydrant shall not be more than 300 ft.
- d. The maximum distance from a dead-end street to a fire hydrant shall not be more than 200ft.
- e. A fire hydrant shall be located within 100 feet of all Fire Department connections for sprinkler systems. The fire hydrant should be located facing the fire lane.
- f. Indicate public fire hydrant identification numbers.
- g. Fire flow must meet City's water design standards with 20-psi minimum residual. All fire flows are based IFC Appendix B Table B105.1(2). NOTE: a fire hydrant is required for every 1,000 gallons or fraction thereof of the required fire flow. Provide necessary information for the largest or tallest building per the following chart: FIRE FLOW DATA TABLE B105.1(2).

Building Height (in feet)	_____ FT
Number of Stories	_____
Occupancy Classification	_____
Construction Classification	_____
Total floor area of ALL levels	_____ SF
Floor area of three largest successive floors	_____ SF
Automatic Fire Sprinkler System 50% Reduction (minimum 1,500 GPM)	___ YES ___ NO
Fire flow requirement is _____ GPM at 20-psi residual pressure	

**Gates**

- a. Emergency access gates, when installed, must have a minimum clear opening of 20 feet.
- b. Main access gates shall be identified as automatic operating. Manual gates are allowed for secondary access only.

**Identify building setback lines**

**Identify screen and retaining walls**

Provide City of Henderson standard detail number or provide detailed structural wall section and associated calculations.

**Geotechnical Report Information**

Include the date of report together with the name of the firm who prepared the report and project number. Update letters are required on all reports prepared more than 1 year ago.

**Accessibility**

Show and detail accessible routes on site, accessible parking, passenger loading zones, curbs, ramps, stairs, landings at doors, etc. Identify the location of accessible units.

**On Site Lighting**

Identify all proposed on-site lighting. The lights and associated improvements shall confirm to the City of Henderson standards.

**PARKS & RECREATION**

**Landscape Plan**

Provide Landscape Plan with amenities for open space, trails and parks to Parks planning for review and approval concurrent with the civil improvement review.

**Open Space Parkland:** when open space parkland is made a condition of approval, show a contribution of 5.25 acres per 1,000 (Du x 2.77/1000 x 5.25 = acres of land required).

**Turnkey Public Parks or Trails (if applicable)**

Projects which contain public parks or trails which will be turned over to the City of Henderson for maintenance shall include landscape and irrigation plans in the civil submittal and a Park Planning approval line on the cover sheet.

**☐ Turn Key Trail Corridors [if applicable]**

All developer turn key trail corridors, landscape plans with amenities for open space and parks must provide a separate Landscape Design Plan submittal to Parks Planning Division which will comply with City Landscape and Irrigation Standards (plan to included lighting, landscaping, irrigation, plant and tree counts, and trail details)

- a. Trails must meet City of Henderson and AASHTO standards.
- b. Provide trail cross-sections and details, provide fencing or railing as required.
- c. Provide 12' AC or 10' concrete trail with landscaping, lighting, irrigation, and 3' shoulders clear on both sides of the trail.
- d. Provide lighting plan to show 0.5 foot candle light level along trail and 1.0 foot candle at all pedestrian crossings and major grade changes.
- e. Finish grades must be shown every 100' of the trail
- f. Provide pedestrian access to trails and open space from development
- g. Identify pedestrian crossings for trail connection.
- h. Provide curb cuts and removable bollards at trail – vehicular crossings for Parks Maintenance.
- i. Provide signage and striping for all trails.
- j. Identify Utilities for irrigation (Meter' & RPPA)

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**Part. 6  
Other  
Information**

**Redevelopment**

If your project is located in a Redevelopment Area, a Signed Redevelopment Authorization Form is required.

**Contact  
Information**

**Plan Review Question Contacts**

Building Safety Review (702) 267-3650  
Fire Safety Review (702) 267-3630  
Land Development (702) 267-3680  
Utility Services Review (702) 267-3670  
Flood Control (702) 267-3680  
Traffic Engineering (702) 267-3200