NYE COUNTY RESOLUTION NO. 2017-73

A RESOLUTION ADOPTING CHANGES TO THE GUIDELINES FOR DESIGN AND REVIEW OF DEVELOPMENT ENGINEERING SUBMISSIONS IN THE PAHRUMP REGIONAL PLANNING DISTRICT

WHEREAS, the Board of Commissioners has adopted an Ordinance entitled "Division of Land and Planned Unit Development within the Pahrump Regional Planning District"; and

WHEREAS, the Board of Commissioners approved and adopted a document entitled "Standard Details and Specifications for Public Improvements within the Pahrump regional Planning District" setting out certain details and specifications for the construction of said Public Improvements; and

WHEREAS, the Board of Commissioners has determined that there is a further need to complement said documents with additional guidelines to facilitate and guide developers and consultants in preparing and submitting supporting engineering study reports, engineering design and relating documents for the construction of public improvements to serve new and future development; and

WHEREAS, Nye County has, through the Department of Public Works developed a document entitled "Guidelines for Design and Review of Development Engineering Submissions in the Pahrump Regional Planning District" (GEDS) setting out more specific engineering requirements, standards and criteria; and

WHEREAS, the Nye County Board of Commissioners (Board) has determined that for the purposes of consistency, quality assurance, and effectiveness in engineering review and streamlining of development approval for the construction of public improvements, the establishment of FEDS is appropriate and necessary.

NOW THEREFORE, BE IT RESOLVED by the Board of Commissioners of the County of Nye, Nevada as follows:

1. The document entitled "Guidelines for Design and Review of Development Engineering Submissions in the Pahrump Regional Planning District" is hereby amended as shown on Exhibit "A" attached hereto.

2. The requirements delineated in said document shall become effective and shall apply to all Division of Land and Planned Unit Development Proposals submitted within the Pahrump Regional Planning District, from the effective date of this Resolution.

APPROVED this 1st day of August, 2017.

NYE COUNTY
BOARD OF COUNTY COMMISSIONERS:

Daniel Schinhofen, Chairman

ATTEST:

Sandra L. Merlino, Nye County Clerk
and Ex-Officio Clerk of the Board

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NYE COUNTY DEPARTMENT OF

PUBLIC WORKS

GUIDELINES

FOR

DESIGN AND REVIEW

OF

DEVELOPMENT ENGINEERING SUBMISSIONS

NYE COUNTY

PAHRUMP REGIONAL PLANNING DISTRICT

AUGUST 2017

TIM CARLO, DIRECTOR

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CHAPTER 1 - GENERAL REQUIREMENT

1. INTRODUCTION

The purpose of this manual is to set standards for the construction of public improvements to serve new and future developments and for the reconstruction of existing facilities to upgrade existing infrastructure. These standards apply to all improvements within the public right-of-way, to all improvements required within the proposed public right-of-way of new subdivisions, for all improvements intended for maintenance by the County, and for all other improvements for which the County Ordinance requires review and approval of the Director of Public Works or designee. These include street, bikeway, drainage, water, and sewer improvements as required by the development review process, County Ordinance, and other County policies adopted by the County Commission. Standards for site grading, erosion control, parking lot and driveway construction on private property are also contained in this manual.

The standards contained in this manual are intended as guidelines for designers and developers in preparing their engineering plans and reports, and for County staff and its consultants in reviewing them. Where minimum values are stated, greater values should be used whenever practical; where maximum values are stated, lesser values should be used where practical. In some locations, due to existing development or unusual topography, conformance to these standards may impose an unusual hardship. In such locations, the County may approve modifications to the standards, or a variance from the standard, as allowed by law.

The County has adopted Standard Detail and Specifications for Public Improvements within the Pahrump Regional Planning District, June 1, 1999. These standard specifications and standard drawings, unless otherwise stated, amended or supplemented in this manual, should be used in the design and construction of improvements intended for public use and maintenance in the County. Where Nye County's design standards, standard specifications, or standard drawings aforementioned do not cover improvements, the latest edition of Standard Details and Standard Specifications for Public Works Construction sponsored and distributed by Regional Transportation Commission of Washoe County shall apply. Where none of the above covers improvements, the Director of Public Works or designee shall establish appropriate standards.

No work regulated by the County's Codes shall commence prior to the completion of the required Engineering Design Review (EDR), approval of the construction plans, and issuance of the appropriate permit(s) and notice to proceed. A pre-construction conference (with the Director of Public Works, Owner, Owner's Consulting Engineer, and General Contractor) shall be required and shall take place only if the following steps have been completed satisfactorily:

A. Completion of Engineering Design Review (and/or other appropriate land use approval, including appeal periods).

B. Performance of all Conditions of land use approval that must be met prior to issuance of the permit.

C. Approval of the construction plans by the County (completion of the Director of Public Works EDR approval process).

D. Submittal of acceptable calculations and other supporting documents to the Director of Public Works, when such documents are requested.

E. Approval of the detail cost estimate by the County.

F. Approval of the performance security by the County.

G. Submittal and approval by the County of the complete and signed Developer/Engineer Agreement.

H. Submittal of the subdivision plat, if the project is a subdivision.

I. Submittal of the subdivision agreement, if the project is a subdivision.

J. Approval of all legal documents, easements, and other documents as required by EDR comments.

K. Submittal of an acceptable site development deposit, erosion control fees, and floodplain modification fee, if the project involves a floodplain modification.

L. Submittal of copies of permits from all other affected governmental jurisdictions.

M. Completion of all appeal periods (land use approval and floodplain modification notices).

Property owners, developers and others proposing to develop any land that will change it to a significant degree will be required to obtain an EDR approval, complete all of the aforementioned steps, and obtain an appropriate construction permit before commencing work.

All public improvements and private streets, parking lots, sidewalks, and driveways shall be designed and constructed in such a manner as to be readily accessible to and usable by individuals with disabilities as per the requirements of the latest version of Americans With Disabilities Act. This includes providing curb ramps at intersections with pedestrian crosswalks to allow a smooth transition between street and sidewalk elevations.

Designs submitted shall be stamped by a registered Professional Engineer licensed to practice in the State of Nevada.

2. PRECEDENCE OF DOCUMENTS

If there is a conflict between approval documents, the document highest in precedence shall control. The precedence shall be:

First:	Permits from other government agencies or jurisdictions, as may be required by law.
Second:	Engineering Design Review, County permits, and Nye County Commission's and Pahrump Regional Planning Commission's Conditions of Approval.
Third:	This Document
Fourth:	Nye County Standard Detail and Specifications for Public Improvements within the Pahrump Regional Planning District, June 1, 1999.
Fifth:	Latest Edition of Standard Details and Standard Specifications for Public Works Construction sponsored and distributed by Regional Transportation Commission of Washoe County.
Sixth:	Other County Ordinances
Seventh:	Utility Agency Standards.
Eighth:	Plans and details prepared by the design engineer.
Ninth:	Latest version of APWA Standard Specifications
Tenth:	Reference specifications.

Supplemental written agreements and approved revisions to plans and specifications by the appropriate jurisdictions will take precedence over documents listed above. Detailed plans shall have precedence over general plans. In any event, the determination of the Director of Public Works shall be final.

The public water systems shall be designed to meet the minimum design life as defined in AWWA standards. The public sanitary sewers shall be designed to meet the minimum design life as defined by the respective utility agency/company and where such utility is to be placed on public right-of-way, the minimum design life shall be at least 20 years. All other public improvements as defined by Nye County standards shall have a minimum design life of 20 years. It shall be the design engineer's responsibility to ensure that all improvements when built shall meet or exceed the requirements to achieve the above minimum design life.

3. ENGINEERING SUBMITTAL REQUIREMENTS

3.01 GENERAL

1. All engineering submissions to the Department of Public Works for review and approval must be accompanied by a letter of transmittal by the proponent, its agency or consulting engineer stating clearly the submission stage, type of approval sought and any other approval agencies from which approval is also sought and a complete list and pages of documents submitted.

2. Attach with the submission a copy of the conditions of respective land division approval stipulated by Nye County and clearly indicate on the letter the specific conditions requested to be cleared in connection with the engineering submission.

3. Submit engineering and supporting documents for review and approval in the form and substance in accordance with the following requirements.

4. All engineering drawings for construction purposes shall have a clearly identified space bearing County logo and Department of Public Works on the title block with sufficient space reserved for the approval (signature) of the Director of Public Works and for approval and initials of same for any revisions. County-delegated engineering review agency/contractor does not have authority to approve, sign or initial any original drawings and engineering reports and revisions.

5. All written communications during the review period shall be addressed to the Director of Public Works with a copy of the covering and transmittal letter to the Director of Planning and county-delegated engineering review agency where applicable.

6. Unless otherwise specifically instructed by the Director of Public Works, all submissions and resubmissions shall be forwarded to the Department of Public Works with a copy of the submission covering letter/transmittal to the Planning Department and county-delegated engineering review agency where applicable.

7. Submittal requirements consist of but not necessary limited to traffic and drainage reports, soils report, engineering design plans, lot and/or site grading plans (where required), erosion control plans (where required), drainage calculations, and other information as required. Letters of transmittal, request and clarification shall accompany all submittals.

8. Engineering Reports are to be submitted in triplicates – for distribution to County's Consultant and Public Works.

9. Latest Edition of Standard Details and Specifications for Public Works Construction sponsored and distributed by Regional Transportation Commission of Washoe County is hereby adopted and incorporated as part of this document by reference except as modified herein.

10. Approved preliminary plat - (if it is a subdivision)

3.02 SUBMISSION COPIES, etc.

1. Initial Submission – 7 copies

01. Drawings – 7 complete sets of hardcopy, each sheet to be individually folded to 8.5" x 11" letter size, PDF drawing files to be included if number of drawings exceeds 10.

02. Engineering hydraulic and structural calculations.

03. Construction cost estimates with schedule of prices (with sufficient detail for tendering purposes).

2. Intermediate Submission(s) – one (1) set of plans with original "Red Line" comments folded to letter size plus three (3) hardcopies of the following:

01. Revised plans, folded to standard letter size (8.5" x 11").

02. Revised engineering hydraulic and structural calculations.

3. Final Submission

01. All approved drawings must be printed in reproducible Chronoflex sheets and initialized by the Director of Public Works for approval prior to producing hardcopies for construction and distribution purposes.

02. Five (5) hardcopies of all approved drawings, folded to letter size.

03. Five (5) copies of all approved engineering reports.

04. Revised construction cost estimates to reflect final changes and a certified check for the corresponding inspection fees.

4. As Constructed Drawings

01. Three (3) hardcopies of "As constructed" drawings showing any changes with "clouds" and produced from the original Chronoflex, shall be submitted to Public Works no later than 3 months after final completion and certification of the works.

02. If original drawings are prepared in AutoCAD, final, approved "As constructed" drawings shall also be submitted to Public Works in CDs. Refer to the section 3.09 under "As-Built Drawings" of this Manual

3.03 Engineering and Construction Cost Estimates

Construction Estimate for Establishing Engineering Review Fees and Amount of Financial Securities

1. Cost estimates for the purposes of determining engineering review and inspection fees, and amount of financial securities such as cash in lieu, bond and letter of credit etc., unless otherwise stated, shall be based on RsMeans, 2004 issue, indexed to Las Vegas and upwards to the expected year of construction using ENR construction cost index.

2. Construction cost estimate documents accompanied with engineering review and inspection fees must include cost breakdowns of construction items such as, and not necessary limited to, clearing and grubbing, rough grading (earth work/lot grading), ditches, drainage works, sidewalk, curb and gutter, road base and sub-base, paving, pavement markings, street signs, street lighting, electrical conduits, retaining walls, streetscape, irrigation systems, and water works, sewage works and other utilities to be constructed within rights-of-way, easements and development lands. In no circumstances shall the cost of water mains, sewers and appurtenances be excluded from the estimate for fees and securities purposes.

3. Construction cost estimates may be shown on the schedule of unit prices and lump sum items prepared by the consultant as part of the form of tender (bid tab) of owner's construction contract procurement document (bid document). The schedule of prices must include a description of work, quantity, unit, unit price and total price for each component of work or item and the total estimated contract price, including no less than 15% contingencies.

3.04 Traffic Study

1. Trip Generation shall be based on the latest edition (9th edition or later) of Trip Generation published by Institute of Transportation Engineers.

2. All developments will provide Average Daily Trip (ADT) estimates to the Public Works Director or designee.

3. Traffic Impact Analysis (TIA) is required for any development generating 500 ADT or higher. The analysis shall comply with the requirements found in the document entitled Nye County Pahrump Regional Planning Area Traffic Impact Analysis Report Guidelines. Applicant shall comply with Article VII of this Title entitled "Off-Tract Improvements," for traffic improvements required as a result of the traffic impact analysis.

4. Any development generating between 100 ADT and 499 ADT the developer may (upon approval of the Director) choose to pay a non-refundable Mitigation Fee as determined by submitting a Traffic Mitigation Fee Worksheet. Mitigation fees approved in the Worksheet will be applied towards County's future traffic signal and intersection improvements. If the developer disagrees with the determination of the Director, the developer may choose to submit a Traffic Impact Analysis and abide by the mitigation measures within the approved TIA.

5. Study Report guidelines are outlined in the Nye County Pahrump Regional Planning Area Traffic Impact Analysis Report Guidelines.

6. Except otherwise specially approved by Nye County Commission, all requirement improvements to County perimeter rights-of-ways are to be paved and constructed to County urban design standards (asphalt concrete pavement with curb and gutter) unless the proposed development has been approved by the County to have internal roads constructed to County rural design standard (asphalt concrete pavement with road side ditches). In the latter case, the perimeter rights-of-way may be constructed to County rural standard if the County Commission deems it appropriate upon review of current and future traffic condition and traffic impact analysis by the Director of Public Works and his recommendation.

3.05 Geotechnical Study

1. Geotechnical Study shall be undertaken by a Professional Engineer licensed in the state of Nevada, and in compliance with Section 1802 of the 2003 International Building Code.

2. Geotechnical Investigation

01. Evaluate the site to determine whether it is suitable for its intended use;

02. Determine whether there exists any hazard at the site, such as but not necessarily limited to: flooding, erosion, deposit of sediment, faults and fissuring, and any other unstable conditions which would affect the intended use of the site.

03. Conduct background data review including but not necessarily limited to: project design plans, aerial photographs, published geologic and soils data, maps and/or reports that are available for the site area, geotechnical reports pertaining to existing structures previously constructed on or near the site, discussions with the owner, previous owner(s), architect, civil engineer, contractor, and other professionals regarding the history and previous use of the site.

04. Conduct geotechnical site reconnaissance and document:

1. Existing site conditions, including site topography, slopes, washes, bedrock, and other local landforms;

2. Location(s) of engineered and uncontrolled fill material, existing on-site utilities and structures, and vegetation;

3. The presence of potentially hazardous materials on the site; and

4. Evaluate on-site faults, ground fissures, or other discontinuities in

accordance with the referenced "Guidelines for Evaluating Potential Surface Rupture/Land Subsidence Hazards in Nevada" (Nevada Bureau of Mines and Geology, 2003).

05. Conduct field evaluation, including but not necessarily limited to:

1. An appropriate number of subsurface explorations (boring, test pit, trenches, etc.) to adequate depths in order to properly characterize the subsurface soil conditions. Generally, explorations should be performed to depths of approximately 10 feet or more below existing grade in structural areas. The total number and depth of explorations will depend on the type, number, and distribution of structures on a site and the depths of planned cuts and fills. General guidelines regarding the number of explorations needed based on site acreage are provided in the following:

    001. A minimum of two explorations should be performed for sites less than 1 acre in size;

    002. For sites greater than 1 acre, but less than 5 acres, a minimum of one exploration for the first acre and one for each additional 2 acres should be performed;

    003. For sites greater than 5 acres, but less than 20 acres, a minimum of three explorations for the first 5 acres and one for each additional 3 acres should be performed;

    004. For sites greater than 20 acres, a minimum of eight explorations for the first 20 acres and one for each additional 5 acres should be performed;

    005. A minimum of one boring should be performed for additions less than 2,000 square feet in size; and

    006. For areas of problem soils, investigation of the top 100 feet including the consideration of a 100 foot drilled hole; and

2. Logs of subsurface explorations with descriptions of encountered geologic units and soil types based on the Unified Soil Classification System (U.S.C.S. method, ASTM D 2488). Soil classifications should include soil color, consistency, degree of saturation, degree of cementation, observed porosity, and presence of gypsum or other deleterious minerals. Subsurface exploration logs should include a description of soil sampling method used, depths of soil samples collected, blow counts per foot (Standard Penetration or other method of correlation to material density), equipment used, adjacent ground surface elevations, backfilling information, and depths of encountered groundwater.

06. The geotechnical investigation shall include but not limited to:

1. The bearing capacity of the native soils;

2. Recommended specifications for the construction of the foundation, including any recommended setbacks from existing site hazards;

3. The identification of any areas in the boundaries of the project including

any accessory structure(s) and individual sewage disposal systems where native soils may not meet the minimum bearing capacities required, and measures to upgrade the soils to meet minimum capacities;

4. The identification of any areas in the boundaries of the project where native soils are not suitable for construction of the project including any accessory structure(s) and individual sewage disposal systems, and that cannot be upgraded to meet the standards;

5. The specifications and methods to be used to upgrade the areas identified as not meeting the minimum standards but that can be upgraded;

6. The identification of any other condition that may have a negative effect on the intended use of the property;

7. Should the project include construction of an individual sewage disposal system the engineer shall certify the results of all soils percolation tests conducted for the installation of that system; and

8. During preparation of the site, if unforeseen hazards or impediments to construction are discovered such as faults, fissures, rock formations, slide areas, high level of water, springs or biologically generated gases, the engineer shall prepare corrective recommendations, and the site development plan must be modified where required and approved before continuing work.

07. Laboratory Testing

1. Perform laboratory tests in accordance with ASTM methods to evaluate subsurface soil competency and strength, including in-place densities (and relative compaction or relative density where applicable), moisture content, maximum dry density and optimum moisture content, gradation, plasticity, shear strength, consolidation characteristics, collapse potential, expansion potential, solubility potential, R-value, resistivity, organic content, and sulfate content.

3. Geotechnical Report

01. A Geotechnical Report must be prepared to include:

1. Project name and address, including street address, lot and block numbers, and/or Assessors' Parcel Number (APN);

2. Type of report (preliminary, design, feasibility, etc.);

3. Date of report;

4. Name, address, and phone number of consulting engineer or geotechnical firm preparing the report.

5. Name and title of each geotechnical professional signing report;

6. Wet stamp and signature of registered geotechnical professional signing report;

7. A brief description of the overall scope of work performed as part of the evaluation, including literature and data reviewed, sampling methods and equipment used, type and number of subsurface explorations, range of depths of subsurface explorations, geophysical methods used, and laboratory testing performed;

8. Dimensioned vicinity map and site development plan with boring and structure locations;

9. Description of the explorations and sampling methodology;

10. Minimum exploration requirements, i.e. number and depth;

11. Soils profile and continuous logs of all explorations (with elevations if possible);

12. Classification by Unified Soil Classification System;

13. Backup data on all tests performed;

14. Depth to groundwater table (if encountered);

15. Potential impacts on adjoining properties and mitigating measures to be undertaken (if applicable);

16. Expected loads and types of structures;

17. Expected total and differential settlements;

18. A section for Individual Sewage Disposal Systems to include:

19. Percolation Tests;

20. Bedding material specification aggregate below septic tank; and

21. Leach field dimensions;

22. Diagram for location of all components;

23. Site should be evaluated for subsidence potential and other geologic hazards **. Report must identify location of expansible soil and collapsible soil, faults and fissures within the property and perimeter right-of-ways, and recommendation on the design and construction of utilities, structures and roads;

24. Trenching or other special procedures may be required for fault location; should be evaluated by researching available geologic maps and land survey lines;

25. Compaction requirements, proctor types, moisture requirements, etc.;

26. Suitability of on-site soils for use as fill material and placement

procedures for fill soils;

27. Specific minimum grading requirements for on site and import soils, including but not limited to, swell, solubility, and sulfates. This shall include the frequency of testing for such requirements during grading;

28. Geotechnical considerations for drainage structures (if part of the project and if applicable);

29. Erosion control requirements (as applicable);

30. Special conditions (if applicable);

31. Foundation design recommendations;

32. Bearing capacity;

33. Effect of adjacent loads;

34. Recommendation for expansive and collapsible soils, uncontrolled fill, chemical heave, solubility, corrosion, and high ground water table;

35. Opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including slope stability and geologic factors; and

36. The Geotechnical Report is current within the last year. Reports more than one year old must have an attached letter wet sealed, dated, and signed by the engineer of record attesting that the report is still valid for current projects.

** Sites located within a special geotechnical consideration area – Nye County Soil Guidelines Map

3.06 Storm Drainage Study

1. General Requirements

01. As per NCO Chapter 16.28.310, a drainage study, prepared by an Engineer licensed in the state of Nevada, shall be required of all developments generating 100 ADT or greater, or having ground coverage such as building and paving in excess of 45,000 square feet. Parcel maps and residential house permits are excluded from drainage study requirements. A mitigation plan indicating the proposed method(s) for control, reduction of storm water flows to predevelopment flow condition, or cash equivalent/in lieu as per NCO Chapter 16.28.360 B3 shall also be required.

02. Drainage calculations shall be presented in a clear, concise and complete manner. These calculations shall address all runoff into the drainage system; areas contributing flow to each inlet must be computed separately and each inlet with contributing area shall be designated and shown on an accompanying contour map work sheet.

03. Initial time of concentration calculation with assumptions listed and charts or nomographs used shall be included with drainage calculations.

04. Inflow and outflow hydrographs shall be included in the main body of study report showing peak rate of flow both under predevelopment and post development conditions including the 10-years, 25-years and 100-years storm events

05. Proposed peak rate and total volume of flow exiting the proposed development at approved point(s) of discharge shall not exceed the predevelopment conditions using appropriate storm water best management practices.

06. With respect to cost allocation in NCO Chapter 16.28.360B.3 & 4., the following shall apply:

    1. If peak and/or volume of flow exiting the site is more than its predevelopment condition, submit a cash in lieu proposal based on construction cost as detailed in the "Preliminary Data Summary of Urban Storm Water Best Management Practices – EPA-821-R-99-012" including adjustments for location and inflation based on RsMeans and Engineering News Record (ENR) construction index.

07. The main body of the study report shall include plans and plates showing proposed internal minor drainage system – overland flow routes, detention facilities areas, storm sewers, inlet control catch basins, and ditches etc. The proposed conceptual drainage plan shall include:

    1. Proposed volume of flow exiting the proposed development at approved point(s) of discharge not to exceed the predevelopment volume of flow;

    2. Proposed overland flow route for 10 to 25-years storm events; and

    3. Proposed overland flow route for a 100-years storm.

2. Drainage Study

01. The Drainage Study shall discuss at a detailed level the existing site hydrologic conditions and the proposed drainage plan to accommodate or modify these site drainage conditions in the final development plan for the site.

02. The Drainage Study shall address both on-site and off-site drainage analysis and improvements necessary to mitigate the impact of the proposed development on adjacent properties in accordance with current State of Nevada Drainage Law. Drainage system shall accommodate any increase in the peak rate and volume of flow due to the proposed development, for minor storm events up to a 10-year recurrence and for major storm event up to a 100-year recurrence.

3. Drainage Study Report

01. The Drainage Study Report shall be in accordance with the following outline and contain the applicable information listed. When the requested information is not applicable, signify with "N/A."

02. TITLE PAGE

1. Project Name, Type of Study, Study Date

2. Preparer's Name, Seal and Signature

03. GENERAL LOCATION AND DEVELOPMENT DESCRIPTION

1. Location of Property

001. State Highway, County, Town and local streets within and adjacent to the development

002. Township, range, section, l/4 section

003. Drainage basin(s) encompassing the development

004. Location of development in relationship to the drainage basin's flood control facilities

005. Names of surrounding developments

006. General location map (8 '/2" x 11" is suggested)

2. Description of Property

001. Area in acres

002. Existing site conditions (vegetation, buildings, drainage structures, etc.)

003. General site topography

004. Existing irrigation facilities such as ditches and canals

005. General project description and proposed land use

04. DRAINAGE BASIN DESCRIPTION

1. Off-Site Drainage Description

001. Discuss off-site flows, which enter property at the following discrete points:

002. Upstream Local Facilities runoff

003. Upstream Regional Facilities runoff

004. Discuss off-site flows, which enter property at non-discrete points.

005. Discuss existing and proposed land use types and level of development in upstream basin, as defined by Nye County.

006. Hydrologic soil groups, vegetation, slope.

007. Natural and manmade conveyances in the watershed.

2. On-Site Drainage Description

001. Discuss historic on-site drainage patterns of the property (flow directions through site and at property line).

002. Discuss historic drainage patterns of upstream runoff.

003. Discuss historic discharge points at downstream property lines.

3. Master Planning information

001. Identify currently adopted master plan(s) that include the subject site.

002. Discuss proposed Master Plan Flood Control Facilities on subject site (if applicable).

003. Discuss upstream Master Plan Flood Control Facilities that would affect runoff on subject site (if applicable).

4. Floodplain Information

001. Identify all FEMA regulated floodplains, which overlay on the subject site.

002. Identify all calculated floodplains, including a proposed conditions or "with-project" floodplain.

5. Previous Drainage Studies

001. Identify any previous drainage studies for the site.

002. Identify any previous drainage studies that affect the site.

05. PROPOSED DRAINAGE FACILITIES

1. General Description

   001. Discuss proposed Local (On-Site) Drainage System plan and layout.

   002. Discuss proposed Local (Off-Site) Drainage System plan from the Local (On-Site) Drainage System to the Regional Flood Control System.

   003. Discuss proposed Regional Flood Control System design (only where the Regional Flood Control System passes through the subject site).

2. Compliance with Regulations and Adopted Plans

   001. Discuss compliance with all Master Planned Flood Control Facilities (as applicable) and discuss all proposed deviations from the adopted Master Plans.

   002. Discuss compliance with FEMA floodplain regulations and all proposed modifications to or verifications of the FEMA regulated floodplain through the subject site.

   003. Discuss compliance with rules and regulations for developments on alluvial fans (if applicable).

   004. Discuss compliance with previously approved drainage studies for the subject site.

   005. Identify individually all requests for variances from the requirements of the drainage criteria and variances from Nye County development code.

   006. Discuss compliance with Uniform Regulations.

3. Hydrologic Analyses

   001. Hydrologic analyses shall be completed for the following conditions, Calculations for all conditions shall be bound in the report:

   - Existing off-site and on-site, 10-year, 25-year and 100-year storm, predevelopment peak rate and volume of flow
   - Existing off-site on-site, post development 10-year, 25-year and 100-year storm, peak rate and volume of flow
   - Design rainfall computation discussion.
   - Design runoff computation discussion.
   - Discuss peak flow rates and volume from off-site areas and facilities
   - Discuss flow split areas and analysis.
   - Hydrologic parameters.
   - Routing schematic.

4. Facility Design Calculations

001. Discuss design calculations for the Proposed Drainage System

- Street flow calculations
- Storm sewer, inlets, and ditch flow calculations
- Channel and culvert flow calculations
- Other hydraulic structure flow calculations
- Detention storage and outlet design calculations
- Discuss design calculations for the Local (Off-site)

002. Drainage System

- Alluvial fan analysis and calculations (when required)

003. Discuss Floodplain/Floodway calculations as related to FEMA requirements

004. Discuss maintenance access and potential maintenance requirements. Provide maintenance procedures for privately maintained facilities, with projected annual maintenance costs for incorporation into homeowners association.

005. Discuss easement requirements for the proposed drainage facilities

006. Discuss phasing of all drainage facilities

06. CONCLUSIONS

1. Compliance with Drainage Laws and regulations
2. Compliance with Master Plans
3. Compliance with FEMA requirements
4. Effectiveness of proposed drainage facilities to control storm\runoff
5. Impact of proposed development on off-site property and facilities
6. The calculation of the developers portion of off-site improvements per 16.28.360 of ORDINANCE 215

07. REFERENCES

1. Provide references for all drainage reports, plans, and technical information used in preparing the drainage report.

08. APPENDICES

1. Hydrologic Computations

001. Watershed boundaries

002. Soils information

003. Land use information

004. Design rainfall calculations

005. Basin parameter calculations

006. Routing schematic

007. Runoff calculations at design points

- Minor and major storm flows

008. Flows for historic and fully developed basin conditions

- Hydrographs at property line discharge points, when appropriate
- Input data listing for all computerized hydrologic calculations, maps with all parameters

2. Hydraulic Calculations

001. Street and ditch capacities

002. Inlet and storm sewer capacities (including Energy Grade Line (EGL) and Hydraulic Grade Line (HGL) calculations), with inlet and outlet condition assumptions

- Channel and culvert capacities
- Floodplain/Floodway calculations
- Detention area/storage/discharge rating curves and calculations
- Input data listing for all computerized hydraulic calculations
- Plots of all cross sections
- Map with cross section locations

3.07 ENGINEERING DESIGN PLAN DETAILS

1. General

01. The plans shall be submitted on 24 x 36-inch sheets.

02. Vicinity Maps shall be located on the first sheet of all plans and shall show the location of the project in respect to the nearest major street intersection.

03. A north arrow shall be shown on each plan view sheet of the plans and adjacent to any other drawing which is not oriented the same as other drawings on the sheet.

04. Unless otherwise specified, the scale shall be 1 inch = 2 feet, 3 feet, 4 feet, 5 feet, or 10 feet vertically and shall be 1 inch = 10 feet, 20 feet, 30 feet, 40 feet, or 50 feet horizontally for all drawings except structural details. Scale shall be shown with north arrow and within a title block.

05. Letter size shall not be smaller than 0.10 of an inch high.

06. The location and elevation of a National Geodetic Survey, United States Geological Survey, Nevada State Division of Transportation, or Nye County benchmark shall be shown. No other datum shall be used without permission of the Director of Public Works. Temporary control benchmarks and elevations shall also be shown on the plans.

07. A title block shall appear on each sheet of the plan set and shall be placed in the lower right-hand corner of the sheet, across the bottom edge of the sheet, or across the right-hand edge of the sheet. The title block shall include the names of the project, the engineering firm, the owner, the sheet title, and the sheet number.

08. The seal of the registered Nevada Professional Engineer responsible for preparation of the plans shall appear on each sheet.

09. The description and date of all revisions to the plans shall be shown on each sheet affected, and shall be approved and dated by the registered Professional Engineer as evidenced by an original signature or initial.

10. Through use of standard drafting symbols, indicate the location and direction of view for all sections.

11. Other Requirements

    Other information to be shown on the construction drawings or the other submittals include:

1. The design assumptions for each street (ex: traffic coefficient, R-value).

2. The design elements such as:

   001. Street classification;

   002. Design speed;

   003. Superelevation;

   004. Average Daily Traffic (ADT).

3. Structural construction plans and the necessary calculations shall be submitted for proposed structures (ex: walls, box culverts, bridges).

4. Any additional information that the Director of Public Works deems it necessary to assure compliance with design standards.

2. Type of Plans:

01. Title Sheet

Required for all plans of subdivision to include project name, vicinity map, name and mailing address of developer/owner and engineering firm, general notes, notice to excavators, index, and space for County approval stamp (5 x 5-inch) in the lower right quadrant.

02. Typical Sections

1. All cross sections shall be drawn to scale

03. Key Map & Legend

1. Required for subdivisions with more than four lots

04. General Notes Sheet

1. Required for any subdivision

05. General Plans

1. Horizontal scale 1" = 100'

2. Show in single line for, sewers, water mains, ditches and double lines for curb and gutter, sidewalks, concrete channels, retaining walls and monuments.

3. Show in symbols catch basins, ditch inlets, valve boxes, manholes, street signs, light posts

06. Plan and Profile

1. Plan Views

001. Plan views shall show the following:

002. Right-of-Way, property, tract, and easement lines (existing and proposed).

003. Subdivision name, lot numbers, street names, and other identifying labels. Subdivision and street names are subject to the approval of the County Planning Department and the County Surveyor.

004. Location and stationing of existing and proposed street center lines and curb faces.

005. Horizontal alignment and curve data of street centerlines and curb returns.

006. Existing underground utilities and vegetation within the construction limits.

007. Location of existing buildings, wells, septic tanks, drain fields, fuel tanks, and any other buried structures. An ALTA (American Land Title Association) survey shall be required for at least 100 feet surrounding any of the above items to remain.

008. Location, stationing, and size of all mains and service lines for storm drainage, sanitary sewer and water. Stationing shall be located in relationship to the street stationing at all manholes or other key locations.

009. Match lines with sheet number references.

010. Provisions for cross-connection control must be clearly shown on the plans, including any retro-fitting of existing water service connections and existing auxiliary water supplies, conversions to utility water service that are required as a condition of development approval, upgrading of existing service connections by replacement of same, and any other cross connection control required by state and local rules and codes.

011. Street stationing to be noted at a minimum of 100-foot intervals.

012. Top of curb elevations along curb returns at quarter-deltas, and at 100-foot stations.

013. Location of the low points of street grades and curb returns.

014. Sidewalk locations. This shall include ramps, transitions in location or width, and relationship with driveways.

015. Crown lines along portions of streets transitional from one typical section to another.

016. Centerline stationing of all intersecting streets.

017. Location and description of existing survey monuments, including but not limited to: section corners, quarter corners, donation land claim corners, and County benchmarks.

018. Location of proposed street intersection monument boxes.

019. FEMA designated 100-year flood plains and flood ways, or areas of flooding during a 100-year storm event.

020. Wetland areas and storm water quality undisturbed corridors (buffer strips).

021. Legend

022. Developer's name, address and phone number.

023. Any additional information that the Director of Public Works deems necessary.

2. PROFILE VIEW

001. Profile Views shall show the following:

002. Stationing, elevations, vertical curve data (including curve k factors), and slopes for center of streets or top of curbs. For offset or superelevation cross-sections, both curbs shall be profiled. Where curbs are not to be constructed, center line of street and ditch inverts shall be shown.

003. Original ground along the centerline and if necessary at the edges of the right-of-way if grade differences are significant.

004. Centerline, top of curb, and gutter flow lines of existing streets for a distance of at least three hundred (300) feet each way at intersections with proposed streets. For stub streets that may be extended in the future, the vertical alignment shall be designed for at least 300 feet beyond the scope of the proposed construction. At the discretion of the Director of Public Works, additional design information concerning the vertical and horizontal alignment of future street extensions may be required.

005. Vertical alignment of streets, including existing centerline monumentation.

006. The top of curb for all cul-de-sacs, eyebrows and curb returns.

007. All proposed drainage facilities; all invert and top elevations, slopes, materials, bedding, and backfill.

008. Existing drainage facilities, including off-site facilities, upstream and downstream that affect the design (i.e., downstream restrictions that back water on to project site). In addition, base flood elevations shall be shown on the profile.

009. Profiles for ditch and creek flow lines shall extend a minimum of two hundred (200) feet beyond the project, both upstream and downstream. Typical cross sections at fifty (50) foot intervals shall also be submitted.

010. Designate structures using alpha or numeric labels on profiles to correspond to plan view notation.

011. Profile for existing and proposed storm, sanitary, and water mains.

012. All existing and proposed sanitary, water, storm lines and other utilities crossing the profile.

07. Composite Utility Plans

1. All utility trenches within the right-of-way to be backfilled with approved compacted granular or non-shrinkable materials.

2. Include existing public and private utilities, and proposed public improvements.

3. Street and storm sewer, showing existing and finished contours at 2-foot intervals.

08. Grading and Site Erosion Control Plans

A site grading plan must be prepared as part of the application for any development that involves the excavation of fill of greater than fifty (50) cubic yards of material. Grading and erosion control plan must have maximum contour intervals of 2 feet. Contours shall extend off site a minimum of 50 feet. This sheet shall also note the source of information, date of fieldwork, and location of original document. Where possible, the grading plan shall be on one sheet. Refer to Detail Requirements for Site Grading and Drainage Plans below.

09. Detail sheets

1. A detail sheet shall be provided as part of the Engineering Design Submissions.

2. The detail sheet shall show all County or county adopted standard or drawings (County Standard Drawing and Details) as stated in this Manual and special details necessary for the project.

3. All details shall be drawn to scale.

4. All County Standard Drawings and details shall be full size, 75 percent or 66 percent of original size.

5. Any modifications to a County Standard Drawing or detail must be clearly marked and initialed by the design engineer, along with the date of approval for modifications.

6. Pre-approval is required for modifications to County Standard Drawings and details; see relevant section of this manual.

10. Site Erosion Control Plans

11. Landscape Plan

1. Include sidewalks, bikeways, retaining walls, irrigation, all underground utilities in the project and along all existing street frontages and lighting.

12. Sign & Pavement Marking (traffic) Plans

13. Traffic Signal and Street Lighting Plans

3.08 Detail Requirements for Site Grading and Drainage Plans

1. A lot/site grading plan is required as part of the application for any development that involves the excavation or fill of greater than fifty (50) cubic yards of material. Grading contours (existing & proposed) shall be at no more than 2-foot intervals, and shall extend off-site a minimum of 50 feet.

2. If the site topography warrants, the County may require 1-foot contours.

3. The grading plan shall be prepared from recent ground surveys and include all existing and proposed surface drainage conveyances, storm drainage collection structures, and all storm drainage outfalls.

4. The extent and limits of all proposed grading must be shown as a clearly delineated boundary (including but not limited to all catch points, grading limits for all excavations and fills, along with the limits of the proposed vegetation stripping).

5. All slopes steeper than 20% shall be shown as a ratio of horizontal run to vertical rise. This sheet shall also note source of information, date of fieldwork, and location of original document.

6. All soil disturbing construction activity must be kept to a minimum by inclusion of a detailed erosion control plan shown in conjunction with the grading plan.

7. The beginning of an excavation or the toe of a filled slope shall be located one-half its vertical height but not less than 10 feet from an adjoining property line. Request for waiver of this requirement may be made to the Director of Public Works by presentation of detailed plans along with appropriate substantiating evidence in the form of a written opinion of a soils engineer or engineering geologist to support justification for the waiver.

8. All site grading, lot grading and drainage plans must be drawn to scale and meet the following requirements:

01. A copy of the Drainage and Grading Plan on a CD disk in DXF or AutoCAD format if the plan was computer generated.

02. Grading and Drainage plan must show the grading of land surfaces that slope downward from:

1. Foundations;
2. Stem walls;
3. Patios and other concrete flat work;
4. Engineered pads;
5. Skirting;
6. Block walls; and
7. Water wells

to adequate outfalls or drainage swales discharging to adequate outfalls.

03. All areas of the site must slope to proper drainage structures or to streets bordering the site.

04. Drainage Plan submittals

1. Minimum horizontal scale: 1" = 50'
2. Project name
3. Vicinity map
4. Revision box
5. North arrow and scale
6. Professional engineer's signature, seal, and date
7. Engineer's consultant's address and phone number
8. Standard Nye County Notes
9. Elevation datum and benchmark (NAVD 88)
10. Legend for symbols and abbreviations
11. Cut/fill scarps (where applicable)
12. Street names, grades and widths
13. Spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns
14. Existing contours encompassing the site at 2' or less intervals and 100' beyond with spot elevation for important in excess of 100' were appropriate

15. Minimum finish floor elevations and top of pad grade

16. Typical street sections

17. Proposed contours at 2' or less intervals and spot elevations in sufficient detail to exhibit intended drainage patterns and slopes

18. Property lines

19. Right-of-way lines and widths (existing and proposed)

20. Existing improvements and their elevations

21. Delineation of and proposed on-site drainage basins and any existing external and internal drainage areas entering and exiting the property and 10, 25 and 100-year storm post and predevelopment peak flows at basin concentration points

22. Overland flow routes with 25 and 100 year storm peak rate and post and predevelopment volume of flow at entry and exit points of the property

23. Cumulative post and pre development flows, velocity and direction of flow at upstream and downstream end of site for the 10-year and 100-year flows

24. Cross-section details (and flow sheet/calculation in separate submission) for open channels and pipes, including cutoff wall locations (and hydraulic calculations in separate sheet)

25. Existing and proposed drainage facilities, appurtenances and connections (i.e., sidewalk, ditches, swales, storm sewer system, unimproved and improved channels and culverts, etc), stating size, material, shape and slope (and hydraulic calculations in separate sheets)

26. Existing and proposed drainage easements and widths shown with sufficient detail

27. Location and detail of existing, proposed grouting height, etc.

28. Detail of floodwalls illustrating depth of flow, proposed grouting height, etc.

29. Retaining wall locations

30. Building and/or lot numbers

31. Alignment of all existing, proposed or future facilities adjacent to site

32. Limits of existing floodplain based on current FIRM

33. For areas in Zone A, AE, AH, and AO, base flood elevations (BFE's) must be shown for each lot, in addition to the aforementioned items. BFE's may be listed on each lot, or in a table.

05. Lot/Site Grading Plans Submittals

1. Cover page; project name, location of work, name and address of owner and the

plans prepared

2. Standard Nye County Notes

3. Property limits and accurate contours of existing ground and details of terrain and area drainage

4. Limiting dimensions, elevations or finish contour to be achieved by the grading, proposed drainage channels and relation construction

5. Detailed plans of all surface and subsurface drainage devices, walls and curbing, dams and other protective devices to be constructed with, or as a part of, the proposed work together with a map showing the drainage area and the estimate runoff of the area served by any drains

6. Location of all existing and proposed building or structures on the property and location of existing building or structures within 50' of the property boundary including their finished floor elevations

7. Recommendations included in the soils engineering report and the engineering geology report shall be incorporated in the grading plans or specifications. When approved by the Building Official, specific recommendations contained in the soils engineering report, including engineering geology recommendations, which are applicable to grading, may be included by reference.

8. Dates of the soils engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepared the report.

9. Location of other existing topographic features either natural or man-made such as streets, drainage structures, pavements, fence, walls, etc.

10. Details and cross sections at property lines, fences, retaining walls, berms, wall opening, etc.

11. Elevation datum and benchmarks (NAVD 88)

12. Existing contours at least 50' beyond property lines and limit of full width rights-of-way

13. Proposed finish contours or spot elevations at property corners and at swale flow lines

14. Elevation of curbs or centerline of roads or streets

15. Earthwork quantities in cubic yards and scope of work

16. Pad certification if the lot was previously graded

17. Minimum 2% positive drainage away from foundations

18. Minimum finish floor elevations

19. Engineer's original seal (wet seal), signature and date.

20. Revision box
21. Legal description of project location
22. Legend identifying grades, symbols, and abbreviations
23. North arrow and bar scale on each sheet
24. Right-of-ways (fully dimensioned)
25. Existing pavement; show saw cut and replacement areas
26. Pavement transitions
27. Elevations at back lot and lot lines
28. Top of curb and crown elevations at lot lines and extensions of lot lines.
29. Spot elevations on adjacent properties sufficient conditions affecting drainage of property to be developed
30. Existing driveway locations and elevations must be shown (proposed driveway locations not required unless there are special considerations)
31. Existing utilities, P.U.E's and notes indicating if they are to be moved
32. Lots and blocks
33. All private and/or dedicated easements
34. All lots fully dimensioned
35. Width of all required landscaping
36. Building separations (if a P.U.D.)
37. Parking showing width and depth of stalls
38. Location of any private sidewalks
39. Dimensions of drive aisles
40. All corner lot size zones

3.09 AS-BUILT DRAWINGS

It is within the authority of the Director of Public Works or designee to refuse to approve or sign any land partition, partition plat, or subdivision plat for a development that has not installed or completed tie construction of the necessary public infrastructure to serve the proposed and affected existing lots.

Following completion of construction, the developer/owner's private engineer shall submit one (1) complete set of Mylar as-built drawings. Submission of as-built drawings shall be made prior to final inspection of a completed project.

1. As-built drawings shall contain any and all revisions to the previously approved construction plans, and shall be accompanied by a completion certification letter from the Engineer. The completion certification letter shall accompany the as-built plans and shall include a statement that the site and adjacent properties (as affected by work performed) are stable with respect to settlement and subsidence, shallow and deep sloughing of cut and fill slopes, and the as-built improvements (public improvements, site grading and paving) meet or exceed the minimum design life as defined in this Manual.

2. If specialists were required in the design of the project (soils engineer, surveyor, arborist, wetland scientist, engineering hydrologist, etc.) then a completion certification from those individuals shall be required relating to their specialty. In addition, upon acceptance by the County, the site must either have all vegetation/landscaping established or all erosion control measures as needed are installed and in good working order.

3. Each sheet of the as-constructed drawings shall be stamped "As-Built", and signed and dated by the Owner's Consulting Engineer. This signature constitutes a certification that the public improvements, grading, and other elements of the engineered drawings have been completed in accordance with the County approved plans and to the standards of the County.

4. As-Builts shall be black India ink on originals or reverse reading, fixed-line, photographically reproduced 4-mil mylar, 24 x 36-inches in size and to engineering scale.

5. Each sheet included in the construction plan shall be as-built. Sepia mylars or vellums will not be accepted.

6. All public utility easements will be shown on the as-built.

7. Distance between main lines in shared easements will be shown.

8. Type of main line, size, and material will be shown.

9. All laterals shall include length, plan stationing, size, material, and depths.

10. Public sidewalk detail will be included.

11. If project was designed on a CAD system, the County also shall receive a copy of all related drawings and documents (such as point files) in AutoCAD format dxf or dwg, on disk.

3.10 REVIEW PROCEDURE

Plan review priority will be given to plans submitted for final review. This plan review and approval is valid for one (1) year from the date of plan review fee payment. If a site development permit is obtained, approval is valid for two years from the date of the issuance of the final map approval. Extensions to the expiry date may be made as part of the County established development approval extension process.

Plan approval means that the plans have been reviewed for reasonableness and compliance with minimum County specifications and standards. This approval does not supersede those standards and specifications, unless specifically varied by the County. Plan approval does not relieve the developer/owner's private engineer from responsibility for errors, omissions, or deficiencies in the plans.

CHAPTER 2 - SURVEYING

1. GENERAL

This document and NRS 329 are related to the requirements for protection of existing survey monuments during any construction and setting new survey monuments following construction of new streets, sewers, water and related works.

The Director of Public Works may not approve or sign any land partition, partition plat, or subdivision plat until the necessary public infrastructure to serve the proposed and affected existing lots has been installed or has been guaranteed by a security acceptable to the District Attorney. It is within the authority of the Director of Public Works to refuse to approve or sign any land partition, partition plat, or subdivision plat for a development that has not installed or completed the construction of the necessary public infrastructure to serve the proposed and affected existing lots. Such approval may be withheld until it can be verified that the location and width of proposed rights of way and easements are adequate for the completed infrastructure.

2. EXISTING SURVEY MONUMENTS

Whenever an existing section corner, one quarter section corner, or donation land claim corner monument or accessory, appears to be in danger of damage or destruction by any construction, the Director of Public Works shall be notified in writing, not less than ten (10) working days prior to construction. The party or owner shall engage a certified land surveyor to reference the monument prior to construction and replace it following construction at his sole expenses.

No person shall willfully or negligently remove, destroy, or deface any existing survey monument. If damage cannot be avoided, the monument shall be referenced and replaced, under the direction of a registered Professional Land Surveyor, according to state law. A copy of the field notes referencing such monuments shall be provided to the Director of Public Works. Failure to comply with this provision is subject to penalty according to NRS 329. 210.

3. NEW SURVEY MONUMENTS

All monuments within and adjacent to the public right of way shall not be offset unless prior approval from the Director of Public Works is received in writing. Centerline monuments shall be installed as required by Nevada Revised Statutes. The monuments shall be set by a Nevada registered Professional Land Surveyor. When monuments are set by a registered Professional Land Surveyor, a record of survey shall be filed complying with NRS 329 and any additional requirements set forth by the County. If a monument box is used, or required to be used by the County, it shall not be less than eight (8) inches inside diameter and shall be approved by the Director of Public Works before its installation.

Other centerline monumentation shall be installed in accordance with current survey practices, and if within a hard surfaced area shall have metallic caps stamped with the registered business name or the letters "P. .S." followed by the registration number of the surveyor in charge. Public street intersections or private street/public street intersections shall be monumented in a County standard monument box.

4. GLOBAL POSITIONING SYSTEM (GPS) SPECIFICATIONS

The following are the County's minimum requirements for work done utilizing Global Positioning System (GPS) surveying techniques.

All work shall be performed under the direct supervision of a surveyor registered to practice in the State of Nevada.

All work shall conform to the guidelines set forth in the latest version of the GEOMETRIC GEODETIC ACCURACY STANDARDS AND SPECIFICATIONS FOR USING GPS RELATIVE POSITIONING TECHNIQUES, Federal Geodetic Control Committee.

All values shall be based on the North American Datum of 1983 (1991 Adjustment) (NAD 83(91)) and expressed both as Geodetic Coordinates and State Plane Coordinates and both in Meters and International Feet.

The minimum relative positional accuracy between all monuments established after the constrained adjustment, shall be what is generally referred to as Second Order, Class I; more specifically, a maximum of twenty parts per million (20 ppm). (First Order accuracy requires a maximum of 10 ppm).

All horizontal values shall be based on National Geodetic Survey (NGS) First Order (or better) control monuments, equivalent monuments accepted by and/or recorded with the Public Works Department. All vertical values shall be based on control points established by NDOT. A minimum of two horizontal and two vertical control monuments shall be used.

All monuments shall be clearly identified as "GPS Monument". If the proposed location of a monument is in the same position as a monument that is to be set as a part of another aspect of the project, the work shall be coordinated so that the "GPS Monument" is the physical monument used at that location. All monuments are to be set by the contracting surveyor.

Prior to commencement of fieldwork, the GPS surveyor shall visit each proposed monument location and perform those field and office checks required to insure the acceptability of the monument locations. If any adverse conditions exist that might compromise the quality of the fieldwork, they shall be reported to the Director of Public Works and corrective action discussed.

The GPS surveyor shall file with the Director of Pubic Works a survey, separate from any others required on the project, showing the following minimum information:

- Description of the monuments set or utilized on the project.
- Location descriptions of the monuments set or utilized on the project.
- A network diagram.
- Values of all monuments established or utilized on the project.
- A statement of relative positional accuracy for each monument established, expressed in parts per million (ppm).
- All information that might be required by future work to conform to this specification.
- Any additional information that might affirm the integrity of the survey.

The Director of Public Works shall be provided with a digital and paper copy of the document filed and its assigned Nye County GPS Survey number.

CHAPTER 3 - STRUCTURAL DESIGN

1. GENERAL

Structures not included in any standard drawings referred by this document shall be designed and constructed in accordance with the requirements of the NDOT latest edition of Standard Specifications and Plans for Road and Bridge Construction.

The project special provisions shall specify the NDOT requirements for bridges and other structures that apply to the specific project. The Uniform Building Code (UBC) and/or the American Concrete Institute Codes, Specifications, and Guidelines (ACI) shall govern those structures not addressed by the above.

CHAPTER 4 - DESIGN MODIFICATIONS

1. MODIFICATION PROCESS

1.01 SUBMITTAL

Requests to modify street design cross sections may be allowed. Requests to modify County or county adopted standards shall be submitted in writing by the Consulting Engineer to the Director of Public Works or designee. This written request call state the desired modification(s), the reason(s) for the request(s), and a comparison between the specification(s), standard(s), and the modification(s).

Any request for modification or variance of County or county adopted standards should be documented with reference to nationally accepted specifications/standards.

1.02 REVIEW

The request to modify shall be reviewed by the Director of Public Works or designee, who shall consult the appropriate review authorities and make one of the following decisions:

- Approve as is,
- Approve with changes,
- Or deny with an explanation.

The modification, if approved, is for project specific use. Approval of a request shall not constitute a precedent.

1.03 APPEAL

The applicant may appeal the Director of Public Work's decision to the County Commission.

1.04 CRITERIA FOR MODIFICATION OF SPECIFICATION STANDARDS

The Director of Public Works or designee may grant a modification to the adopted specifications or standards when any one of the following conditions is met:

1. The specification or standard does not apply in the particular application.

2. Topography, right-of-way, or other geographic conditions impose an economic hardship on the applicant and an equivalent alternative which can accomplish the same design is available that does not compromise public safety or accessibility for the disabled.

3. A change to a specification or standard is required to address a specific design or construction problem which if not enacted will result in an undue hardship.

2. METRIC STANDARDS

County standards are presented in English units. The Director of Public Works or designee may approve equivalent standards in metric units. In calculating the metric equivalents, the Director of Public Works or designee may round the figures to a level of accuracy equivalent to that of the original standard; provided, rounding of the metric units shall not cause a deviation greater than 3% between the English and metric values.

CHAPTER 5 - CONSTRUCTION SPECIFICATIONS

1. GENERAL

All public improvements shall be inspected by a Nevada registered Professional Engineer or a qualified individual under the supervision of a Nevada registered Professional Engineer. The County will not authorize work to begin on public improvements, site grading, or parking lot construction without receiving confirmation by the owner or developer that an engineer or inspector has been designated at the County's pre-construction conference and will carry out the inspection work on behalf of the owner or the developer. The owner or developer shall pay all inspection costs, including required testing.

Engineering firms, and all employees of such firms, must be financially independent of the owner or developer and have no actual or perceived financial interest that is contingent on the outcome of its work. The engineer's relationship to the project must be solely that of an independent, professional service nature.

The work hours for all items on public improvements by the site development shall be from 7:00 A.M. to 6:00 P.M. Monday through Friday. The Director of Public Works may allow longer or require shorter work hours depending on site-specific conditions. (The County shall observe the following holidays; New Years Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, and Christmas Day. These holidays shall be considered as Sundays or other legal holidays. Should County Hall be closed by order of the Commissioner due to inclement weather, natural disaster, or national security, those days shall also be considered as Sundays or other legal holidays.)

In order to perform public improvement work outside the above days and hours, or on holidays, the Developer or Owner's Consulting Engineer (or contractor if accompanied by a written authorization by Developer) shall request in writing (on forms supplied by the Director of Public Works) at least two full working days prior to the requested day. This request shall indicate what special circumstances require the work to be performed outside the standard workweek as described above. To be valid, the Director of Public Work's approval must be in writing and this approval shall be posted at the site on the approved work day, and a copy of it shall be submitted with the Owner's Engineer's daily report to the County Inspector. Requests made with less than two days notice may not be approved if the Director of Public Works or his designee is not available.

2. SUBSTITUTION OF MATERIALS

It is not the intent of this Manual to exclude other equipment or materials of equal value, quality, or merit. Whenever a product is designated, or manufacturer's name, brand, or item designation is given or described, it shall be understood that the words "or approved equal" follows such name, designation, or description, whether in fact they do so or not. The Director of Public Works will make determination of quality in reference to the project design requirement. A contractor shall not use an "equal" product without prior written approval of the Director of Public Works. A similar process as outlined in Chapter 5 will need to be followed.

3. COUNTY INSPECTOR'S ACTIVITIES

County Inspector will be present on the site to provide "spot check only" inspection services for privately funded public improvements.

Inspection services provided by the County shall include:

1. Acting as a liaison between the owner or developer's inspecting engineer and the County.

2. Monitoring both work progress and performance testing results.

3. The performance of administrative and coordination activities as required to support the processing and completion of the project.

4. The issuance of a stop work order by notice to the owner/developer's engineer/ inspector to stop the work. If the engineer/inspector is not available, the County's Inspector, at the discretion of the Director of Public Works, may post a stop work order.

5. Maintaining a completion file containing the following:

   01. The original of the project completion certification;

   02. A complete copy of the log book initialed by the engineer's inspector;

   03. The results of material tests, compaction tests, and soil analysis as detailed in the logbook.

6. Inform the Director of Public Works of all proposed plan changes, material changes, stop work orders, or errors or omissions in the approved plans or specifications as soon as practical. Any revision to approved plans must be under the direction of the developer's Engineer. It shall be at the discretion of the County's Inspector as to whether the revision is significant enough to warrant review by the Director. If so, the Owner or Developer's private engineer shall submit five (5) copies of the proposed revision; no work affected by the revision shall be done until approval by the Director.

4. OWNER OR DEVELOPER DESIGNATED INSPECTING ENGINEER'S ACTIVITIES

The following minimum activities are required of the developer/owner designated inspecting engineer:

4.01 Maintain a project log book of daily inspection reports which contain the following information:

1. Job number and name of Consulting Engineer and designees.
2. Development approval reference number and date of final map approval
3. Date and time (arrival and departure) of site visits.
4. Weather conditions, including temperature.
5. A description of construction activities.
6. Statements of directions to change plans, specifications, stop work, reject materials, or other work quality actions.
7. Public agency contacts which result in plan changes or other significant actions.
8. Perceived problems and action taken.
9. Final and staged inspections.
10. Record all material and soil types and conditions.
11. Test results.

12. Record all pavement grade and depth measurements by street stationing.

13. General remarks including citizen contact or complaints.

4.02 All active site development projects will be required to turn in daily inspection reports to the County on a weekly basis containing information as outlined above. If the compiled reports become more than two weeks in arrears, or are significantly deficient as determined by the Director of Public Works, a stop work order may be posted on the project site.

4.03 Obtain and use a copy of County-approved construction plans, specifications, and a copy of this manual.

4.04 Review and approve all pipe, aggregate, Portland cement concrete, asphaltic concrete and other materials to ensure their compliance with County standards.

4.05 Approve all plan or specification changes in writing and obtain County approval (see County Inspector's Activities above). All changes to the approved plans or specifications must be with the approval of the County prior to the commencement of work affected by the revision.

4.06 Monitor construction activities to ensure end products meet County specifications.

4.07 Perform (or have performed) material, composition, and other tests required to ensure County specifications are met.

4.08 For pavement construction, perform the following stage inspections and record date of each:

1. Curbs are built to line and grade.

2. Subgrade meets grade and compaction specifications.

3. Base material meets depth/thickness, grade, and compaction specifications.

4. Leveling course meets depth/thickness, grade, and compaction specifications.

5. Wearing course meets depth/thickness, grade, and compaction specifications.

6. Provide the County with 24-hour notice of impending stage inspections.

4.09 Prior to requesting any building occupancy on commercial, multi-family, and/or other projects with concurrent site development and building permits, the Consulting Engineer shall certify that all necessary public improvements have been installed and accepted in compliance with the County approved site development plan. This certification shall also indicate that all items required (at or before occupancy of the first building) through the land use process have been completed (including the recording of all public utility easements).

5. SAFETY REQUIREMENTS

The contractor is responsible for observing the safety of the work and of all persons and property coming into contact with the work. The contractor shall conduct his work in such a manner as to comply with all the requirements prescribed by OSHA. Traffic control in work zones shall conform to the MUTCD. At the County's discretion, a traffic control plan shall be submitted and approved prior to construction.

The County Inspector's role is not one of supervision or safety management, but is one of observation only. Nothing contained in this section or elsewhere in this manual shall be interpreted to obligate the County to act in any situation, nor shift the owner's responsibility for safety compliance to the County. No responsibility for the safety of the work or for construction means, methods, techniques, sequences, or procedures shall attach to the County by virtue of its action or inaction under this section.

6. SCHEDULING

6.01 Sequence of Operations.

The Contractor shall plan construction work and execute his operations with a minimum of interference with the operation of the existing public facilities. It may be necessary to do certain parts of the construction work outside normal working hours in order to avoid undesirable conditions, and it shall be the obligation of the Contractor to do this work at such times. This scheduling, however, is subject to the County's approval

and does not relieve the contractor from making work available for inspection.

The Contractor shall notify the County at least 48 hours (two full working days) prior to any County Inspection. Connections between existing work and new work shall not be made until necessary inspection and tests have been completed on the new work and it is found to conform in all respects to the requirements of the plans and specifications.

6.02 Progress of Construction.

Construction shall proceed in a systematic manner that will result in a minimum of inconvenience to the public.

In the case of a pipe-laying job on existing County right-of-way for utilities, sanitary sewer, storm drainage, and water improvements the trenching equipment at no time shall be greater than 300 feet ahead of the pipe-laying crew, unless given permission by the Director of Public Works. The trench shall be backfilled so that no section of the trench or pipe is left open longer than 24 hours. Steel traffic plates shall be on-site before work begins for street cuts on all arterial and collector streets. Steel plates may be required on some local streets, to allow the street to be reopened in the event that unforeseen circumstances prevent the work from being completed in a reasonable time. Under no circumstances shall any street be left in an 'open' situation when the contractor leaves the site.

7. PRESERVATION, RESTORATION, AND CLEANUP

7.01 Site Restoration and Cleanup

The Contractor shall keep the premises clean and orderly at all times during the work and leave the project free of rubbish or excess materials of any kind upon completion of the work. During construction, the Contractor shall stockpile excavated materials so as to do the least damage to adjacent lawns, grassed areas, gardens, shrubbery, trees, or fences, regardless of the ownership of these areas. All excavated materials shall be removed from these areas, and these surfaces shall be left in a condition equivalent to their original condition and free from all rocks, gravel, boulders, or other foreign material. Stockpiling of construction materials shall not be allowed on existing sidewalks or the driving surface of existing streets.

All existing storm systems shall be cleaned and flushed, and original drainage restored. Sediment, rock, and other debris shall be collected and disposed of in a proper manner. In no case shall debris be flushed down a storm or sanitary sewer for disposal. All damaged irrigation and house drainage pipe, drain tiles, sewer lateral, and culverts shall be repaired expeditiously.

All areas disturbed by the Contractor's operations inside dedicated rights-of-way or easements shall be restored to original condition. Areas outside of the easements or rights-of-way that are disturbed by the Contractor's operations shall be graded and reseeded in a method acceptable to the property owner. The Contractor shall obtain a written release from such property owners for any claims of injury or property damage prior to final acceptance of the work by the County.

7.02 Street Cleanup

The Contractor shall clean all spilled dirt, gravel, or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day's operation. Cleaning shall be by grader and front-end loader, supplemented by power brushing, and hand labor, unless otherwise approved by the County.

As soon as practical after completion of all paving and gravel shoulder resurfacing, the Contractor shall remove all dirt, mud, rock, gravel, and other foreign material from the paved surface and storm drainage system.

7.03 Dust Prevention

In additional to requirement as stipulated in County's dust control ordinances, during all phases of the work, the Contractor shall take precautions to abate any dust nuisance by cleaning up, sweeping, sprinkling with water, or other means as necessary to accomplish results satisfactory to the County. Dust prevention measures shall be continuous until final acceptance by the County. Obtaining water from a hydrant will require specific authorization from the applicable water jurisdiction.

8. INTERFERENCES AND OBSTRUCTIONS

8.01 General.

Various obstructions may be encountered during the course of the work. Although maps and information regarding underground utilities should be obtained from the utility owning and operating such utilities, the location of such utilities is not guaranteed. A minimum of forty-eight (48) hours notice shall be given to all utility operators that may be affected by the construction operation. Should services of any utility be interrupted due to the construction operation, the proper authority shall be notified immediately.

8.02 Protection.

The Contractor shall exercise all due care in protecting property along the route of the improvement. This protection shall include, but not be limited to, trees, yards, fences, drainage lines, mail boxes, driveways, shrubs, and lawns. If any of the above has been disturbed, they shall be restored to as near their original condition as possible.

CHAPTER 6 - ENVIRONMENTAL PROTECTIONS DURING CONSTRUCTION

1. GENERAL POLICY AND REQUIREMENTS

1.01 The developer and contractor are required to exercise temporary and permanent measures for all construction projects to lessen the adverse effects of construction on the environment.

The Contractor shall properly install, operate, and maintain both temporary and permanent works as provided in this section or in an approved plan, to protect the environment during the term of the project.

The County may, in addition, require that a construction project be scheduled so as to minimize erosion or other environmental harm.

Nothing in this section shall relieve any person from the obligation to comply with the regulations or permits of any federal, state, or other local authority.

1.02 Where deemed necessary by the Director of Public Works, a plan shall be submitted together with construction plans, and when reviewed and approved by the County, shall constitute a part of the approval of final map approval.

1.03 The plan shall describe all areas of the subject property affected by the project, and shall include all measures to be taken by the contractor to prevent or minimize erosion, loss of vegetation, water pollution, loss of wildlife habitat, or other damage to the environment. The plan shall include all schedules, construction methods, structures, revegetation, and other actions affecting environmental quality, and shall address the criteria of this Chapter.

1.04 For all projects, whether or not an environmental protection plan is required, the prohibitions and regulations of this section shall apply. Notwithstanding the terms of any approved environmental project plan, the County may temporarily suspend the work or require additional protection measures if it appears, based upon observed conditions of the project, that the approved plan is insufficient to prevent environmental harm, and that such suspension or additional measures will prevent or minimize such harm.

2. AIR POLLUTION CONTROL

2.01 Dust

Dust shall be minimized to the extent in accordance with current County dust control ordinance, utilizing all measures necessary, including, but not limited to:

1. Sprinkling haul and access roads and other exposed dust-producing areas with water. Obtaining water from a hydrant will require specific authorization from the applicable water jurisdiction.
2. Applying approved dust palliatives on access and haul roads.
3. Establishing temporary vegetative cover.
4. Placing wood chips or other effective mulches on vehicle and pedestrian use areas.
5. Maintaining the proper moisture condition on all fill surfaces.
6. Pre-wetting cut and borrow area surfaces.
7. Use of covered haul equipment.

2.02 Fumes, Smoke, and Odors

1. Tires, oils, paints, asphalt's, coated metals, or other such materials will not be permitted in combustible waste piles, and will not be burned at the construction site.
2. Open burning shall not be permitted unless approved by the Nevada Department of Environmental Protection or is in compliance with the County Code.
3. Open burning shall not be permitted within 1,000 feet of a structure or within 250 feet of the drip line of any standing timber or flammable growth.
4. Open burning shall not be permitted during a local air inversion or other climatic conditions that may result in a smoke pall hanging over a built-up area or community.

5. Open burning shall not be permitted when climatic and moisture conditions are contributing to high danger of fires as determined by County, state, or federal authorities.

6. A crew with a supply of fire-fighting tools and equipment shall constantly attend all open burning. The number and size of fires shall be limited such that the burning crew can adequately control them.

3. EROSION CONTROL

1. Measures to prevent erosion at construction sites shall be incorporated into the construction drawings and specifications.

2. All earth and soft or broken rock areas that have been disturbed by construction operations such as during stripping, excavation, and by traffic shall be protected from erosion by the action of concentrated runoff, by the impact of falling rain, by wind action, by vehicular tracking, or a combination of actions.

3. The concentration of runoff on or across slopes shall be prevented.

4. Sections of bare earth and the length of time of their exposure to potential erosion shall be minimized by proper scheduling, limiting the work areas, and placement of appropriate cover.

5. Precautions shall be taken in the use of construction equipment to prevent operations that increase the potential for erosion. Wheel tracks or ruts, particularly down slopes, that permit concentration of surface flows, shall be avoided.

6. Areas for borrow pits and waste disposal shall be selected with full consideration of erosion control needs during and after borrow operations.

4. MAINTAINING SURFACE WATER QUALITY

4.01 Pollutants such as fuels, lubricants, bitumens, raw sewage, and other harmful materials shall not be discharged into impoundments.

4.02 Sterilizing water from water line construction activities shall not be directly discharged into the public storm drainage system. Activities and construction practices must comply with all Nevada State Division of Environmental Protection (NDEP) rules and regulations regarding discharge of chlorinated water onto the ground, to any public or private storm drainage system. Contact NDEP for the current State statute and administrative rules.

5. WILDLIFE HABITAT PRESERVATION

5.01 The construction shall be done in a manner to minimize the adverse effects on wildlife resources.

5.02 The requirements of local, state, and federal agencies charged with wildlife protection shall be adhered to by the entire construction work force.

6. CONTROL OF NOISE LEVELS

Construction noise shall be minimized by the use of proper engine mufflers, protective sound reducing enclosures, and other sound barriers. Construction activities producing excessive noise that cannot be reduced by mechanical means shall be restricted to locations where their sound impact is reduced to a minimum at the edge of the work area.

7. NATURAL VEGETATION

7.01 As far as is practicable, the natural vegetation shall be protected and left in place. Work areas shall be carefully located and marked to reduce potential damage. Trees shall not be used as anchors for stabilizing working equipment.

7.02 During clearing operations, trees shall not be permitted to fall outside the work area. In areas designated for selective cutting or clearing, care in falling and removing trees and brush shall be taken to avoid injuring trees and shrubs to be left in place.

8. HISTORICAL AND ARCHAEOLOGICAL AREAS

When burial sites, buried camp areas, village sites, and other distinctive archaeological or historical items are uncovered, or other items suspected of being of historical or archaeological significance are encountered, the Contractor shall report the matter to the County and the state liaison officer. Construction operations shall be stopped until the appropriate authorities can examine the area and give clearance to proceed with the work.

Under the provisions of NRS 383 Historical Preservation and Archeology, state liaison officers shall be notified when historical or archaeological items are unearthed.

9. USE OF PESTICIDES

9.01 The use of pesticides including insecticides, herbicides, defoliants, soil sterilants, and so forth, must strictly adhere to federal, state, county, and local restrictions. Time, area, method, and rate of application must be approved by all relevant authorities and their requirements followed.

9.02 All materials delivered to the job site shall be covered and protected from the weather. None of the materials shall be exposed during storage. Waste material, rinsing fluids, and other such material shall be disposed of in such a manner that pollution of groundwater, surface water, or the air does not occur. In no case shall toxic materials be dumped into drainage ways.

9.03 All personnel shall stay out of sprayed areas for the prescribed time. All such areas should be fenced, appropriately signed, or otherwise protected to restrict entry.

CHAPTER 7 - REVISIONS OF COUNTY APPROVED PLANS

Any revisions to the County approved plans shall come from the Owner's Consulting Engineer. The submittal shall include 5 copies of the 24 by 36 inch revised pages (with the revisions clearly identified), along with a copy of any revised calculations. Applicants are cautioned that revisions must be reviewed for coordination with the entire plan set and that such reviews will be conducted in the order that the revisions are received, on a first come, first served basis.

CHAPTER 8 - STREETS DESIGN

1. GENERAL

1.01 FUNCTIONAL CLASSIFICATION

The functional classification of existing and proposed roads is established by the Nye County Streets and Highways Plan and Pahrump Regional Planning District Master Plan Update and is based on connectivity. Where the functional classification of a street is not identified in the Nye County plans, the connectivity characteristics shall be used by the County to determine the functional classification of the street in question.

Streets shall be designed at least to the minimum standards of this manual.

1.02 ACCESS

Access to public streets shall conform to the requirements of the Pahrump Regional Planning District Master Plan Update and Nye County standards. The Director of Public Works or designee shall have the authority to limit access and designate access locations on public streets under the jurisdiction of the County. Access to streets and highways under Federal or State of Nevada jurisdiction must be formally approved by those entities at the applicant's initiative and expense.

1.03 WIDTH AND NUMBER OF LANES

The street cross sections in Nye County Standards or county adopted standards provide the minimum road width and number of lanes standards by functional classification of the road. It should be noted that public utility easements or joint beyond the right-of-way are typically required.

At intersections in excess of the street sections, the Director of Public Works may require additional lanes.

Right-of-way may be needed in addition to that shown in the street cross sections in standard drawings to accommodate the increased number of lanes at intersections.

1.04 DESIGN SPEED

Design speed shall be as follows:

Arterials	45 miles per hour
Collectors	35 miles per hour
Neighborhood Routes	25 miles per hour
Locals	25 miles per hour

Design speed is the maximum safe speed that can be maintained over a specified section of roadway when traffic, weather, and other conditions are so favorable that the design features of the roadway govern. The Director of Public Works or designee may approve a lower alternative design speed where it can be shown that the 85th percentile speed of traffic will be lower than the design speed standard during all hours. The design speed is the minimum speed that shall be used in design of safe road geometry. The design speed shall not prohibit the use of traffic calming features or signing, where appropriate, to encourage lower traffic speeds. The design speed may be higher than the posted speed.

1.05 COMBINED PUBLIC AND UTILITY EASEMENTS

The public (drainage) and utility (utility which also serves other external units) easements for residential subdivisions shall be as shown on the local street section standards. A 10-foot (10) utility and drainage easement may be shown along all side and rear lot lines.

Storm drainage lines, public utility water mains and sanitary sewer on private property shall be centered within a permanent easement granted to the County and the respective utility agencies, with a minimum width of fifteen feet (15) along all front lot lines and twenty feet (20) along all rear lot lines.

The actual required width of an easement may be greater than the minimum required as the required easement width shall be measured from the outside edge of the pipe zone to the catch point where a theoretical line at a 1:1 slope would daylight.

No encroachment within a public and utility easement of any private utility or structure shall be allowed without prior itemized approval of the Director of Public Works.

Under no circumstances, shall these items be placed within the pipe zone. Private utilities that cross public and utility easements shall do so as close as practical to right angles with the public utility.

County cannot approve any encroachment location that would adversely affect the ability of the County to maintain County drainage facilities. Such easements, when directed by the County or public utilities, shall be accompanied by temporary easements granted to the County or utility of adequate width to allow construction of drainage or utilities.

The Owner's Consulting Engineer or developer's surveyor shall provide the County with documents necessary to record the easements.

The width of combination easements is evaluated at the site development permit stage on a case-by-case basis.

Such approval may be withheld until it can be verified that the location and width of proposed rights of way and easements are adequate for the completed infrastructure.

Easements are subject to the approval of the Directors of Public Works and Planning prior to recording. Variation from the County standard form of conveyance shall be allowed only when extraordinary circumstances warrant, as determined by the Directors of Public Works and Planning.

All recording costs for easements created by private development shall be borne by the developer unless specifically agreed to by the County.

1.06 COUNTY MAPS / PLANS NOT GUARANTEED

From time to time the County may provide property owners, engineers, contractors, and other members of the public with information from the County's archives. County cannot guarantee and makes no representation that it has verified the accuracy of the measurements, locations, or other information on such maps and plans.

2. RELATED DOCUMENTS

The following shall be read in conjunction with Chapter 16.28.260 NCO Title 16 Subdivisions Article VI respecting Design and Improvement Standards. In the event of any differences in design criteria and typical standards, the highest standards shall apply.

3. SUBGRADE EVALUATION

Soil testing to obtain the strength of the soil is required for all roads and streets in order to analyze and design the structural section. Soil tests are needed on undisturbed samples of the subgrade materials that are expected to be within three (3) feet of the planned subgrade elevation. Samples are needed for each five hundred (500) feet of roadway and for each visually observed soil type. Soil tests are required from a minimum of three (3) locations.

The selected design structural strength of the soil needs to be consistent with the subgrade compaction requirements. The strength and compaction moisture content, at optimum to slightly over optimum, needs to be specified. The soils report shall address subgrade drainage and ground water considerations for year round conditions. Recommendations for both summer and winter construction shall be included. The required density of treated and untreated subgrade materials shall not be less than 95 percent maximum density as determined by AASHTO T-99.

4. STRUCTURAL SECTION

Asphaltic concrete with crushed rock or Type II aggregate base materials shall be used for street structural section construction. The structural section type shall not change between major intersections; only one type of section shall be used. Special pavement types and/or conditions must be approved by the Director of Public Works.

5. AGGREGATE BASE

All aggregates shall meet County adopted specifications for road base material.

The minimum aggregate section, unless otherwise approved by the Director of Public Works, shall be a 10-inch base course of Type II aggregate.

During compaction, materials shall be maintained within 2 percent of the optimum moisture content. The contractor shall begin compaction of each layer immediately after the material is spread, and continue until a density of not less than 95 percent of the maximum density has been achieved. Maximum density will be determined by AASHTO T-180.

6. ASPHALT PAVEMENT DESIGN

In no case the thickness of asphalt concrete (AC) shall be less than three and one half (3.5") inches.

The compaction shall be at least 91 percent based on a Rice theoretical maximum density, as determined in conformance with AASHTO T 209. In addition, for each mix used, a 50 blow Marshall (AASHTO T 245) shall be performed and all related test data shall be provided to the Director of Public Works. The minimum stability shall be 1800 pounds, the flow shall be between 8.0 and 16.0 hundredths of an inch, and the voids shall be between 3.0 and 5.0 percent. The Marshall requirement may be waived by the Director of Public Works on a case-by-case evaluation.

Warranty

In addition to NCO Article VIII Chapter 16.28.370 respecting Improvement, Maintenance and Warranty Guarantees, all improvement works constructed for County assumption and/or maintenance shall require a minimum 2-years warranty commencing from the issuance of a certificate of completion of work by the Director of Public Works. In addition, the following shall apply:

1. Asphaltic pavement lift (if no single lift averages less than 89%, then all lifts need to be averaged together) with an average in-place relative density between 90% to 91% shall require a three year Maintenance Warranty (100% of the cost of removing and replacing the asphalt); and

2. if the average in-place relative density falls between 89% and 90% inclusive, a five-year Maintenance Warranty (100% of the cost of removing and replacing the asphalt) shall be required.

3. If the average density is less than 89% then the asphalt shall be deemed unsuitable, and will be rejected. The Owner's Consulting Engineer shall than submit a plan to remove and replace the asphalt which was rejected to the Director of Public Works for approval.

Asphalt shall be placed on a dry prepared surface when the surface temperature is not less than 50 degrees F for the top lift and 45 degrees F for the base lift.

Asphalt pavement shall be designed using any nationally recognized procedure such as AASHTO T-193 (CBR Method), or AASHTO T-190 (R-Value Method).

Test the soil to determine the R-value by AASHTO 190.

Design of asphalt concrete pavement structures by this method shall conform to the guidelines of The Asphalt Institute Publication, Thickness Design - Asphalt Pavements for Highways and Streets, Manual Series No. I.

If the CBR value of the subgrade exceeds twenty (20) or the R-value of the subgrade exceeds sixty (60) then CBR and R-value methods shall not be used.

7. HORIZONTAL ALIGNMENT

The Street Grade and Intersection Standards `provided in the Standard Detail and Specifications for Public Improvements are for general guidance only. Detail design criteria for alignments shall meet the following requirements:

- Centerline alignment of improvements should be parallel to the centerline of the right-of-way.
- Centerline of a proposed street extension shall be aligned with the existing street centerline.
- Horizontal curves in alignments shall meet the minimum radius requirements as shown in Table 5a.

Reversing horizontal curves shall be separated by no less than 50 feet of tangent. On arterials, the separation shall be no less than 100 feet.

TABLE 5a - DESIGN SPEED / CENTER LINE RADIUS – MINIMUMS

DESIGN SPEED (MPH)	FRICTION FACTOR (F)	SLOPE / R MINIMUM					
		(e) - 4%	(e) - 2.5%	(e) 0%	(e) 2.5%	(e) 4%	(e) 6%
Arterial and Collector Streets							
25	0.165	335'	300'	255'	220'	205'	185'
30	0.160	500'	445'	375'	325'	300'	275'
35	0.155	710'	630'	530'	455'	420'	380'
40	0.150	970'	855'	710'	610'	560'	510'
45	0.145	1285'	1125'	930'	795'	730'	660'

50	0.140	1665'	1450'	1190'	1010'	925'	835'
55	0.130	2240'	1920'	1550'	1300'	1190'	1060'
60	0.120	3000'	2525'	2000'	1655'	1500'	1335'
Neighborhood Routes and Local Streets							
25	0.252	195'	185'	165'	150'	145'	135'
30	0.221	330'	305'	270'	245'	230'	215'
35	0.197	520'	475'	415'	370'	345'	320'

NOTES:

For Table 5a - off right-of-way runoff shall be controlled to prevent concentrated cross flow in super-elevated sections. The above tables are to be used unless otherwise directed by the Director of Public Works or designee.

Super elevations will be required as directed by the Director of Public Works or designee. Where super elevation is used, street curves should be designed for a maximum super elevation rate of 0.04. If terrain dictates sharp curvature, a maximum super elevation of 0.06 is justified if the curve is long enough to provide an adequate super elevation transition.

On local streets, requests for design speeds less than 25 miles per hour shall be based on topography, right of way, or geographic conditions that impose an economic hardship on the applicant. Requests must show that a reduction in centerline radius will not compromise safety. There will be posting requirements associated with designs below 25 miles per hour.

8. VERTICAL ALIGNMENT

Alignments shall meet the following requirements:

- Minimum tangent street gradients shall be one-half (0.5) percent along the crown and curb.
- Maximum street gradients shall be fifteen (15) percent for local streets and neighborhood routes, and ten (10) percent for all other streets. Grades in excess of fifteen (15) percent must be approved by the Director of Public Works or designee on an individual basis.

- Local streets intersecting with a neighborhood route or greater functional classification street or streets intended to be posted with a stop sign shall provide a landing averaging five (5) percent or less. Landings are that portion of the street within twenty (20) feet of the projected curb line of the intersecting street at full improvement.
- Grade changes of more than one (1) percent shall be accomplished with vertical curves.
- At street intersections, the crown of the major (higher classification) street shall continue through the intersection. The roadway section of the minor street will flatten to match the longitudinal grade of the major street at the projected curb line.
- Street grades, intersections, and super elevation transitions shall be designed to not allow concentrations of storm water to flow across the travel lanes.
- Offset crowns shall be allowed only with the specific prior approval of the Director of Public Works or designee.
- Slope easements shall be dedicated or obtained for the purposes of grading outside of the right-of-way.
- Streets intersected by streets not constructed to full urban standards shall be designed to match both present and future (as far as practicable) vertical alignments of the intersecting street. The requirements of this manual shall be met for both present and future conditions.

When new streets are built adjacent to or crossing drainage ways, the following standards shall govern the vertical alignment:

FUNCTIONAL CLASSIFICATION	VERTICAL STANDARD
Freeways and Arterials	Travel lanes shall be at or above the 100-year flood elevation.
Collectors	Travel lanes shall be at or above the 50-year flood elevation but not lower than 6 inches below the 100-year flood elevation.

Neighborhood Routes and Local streets(residential)	Travel lanes shall be at or above the 25-year flood elevation but not lower than 6 inches below the 100-year flood elevation.
Local streets(non-residential)	Travel lanes shall be at or above the 25-year flood elevation but not lower than 6 inches below the 50-year flood elevation.

If alternate access is available for properties served by a particular local street, a design could be considered for approval by the Director of Public Works or designee that would set the travel lanes at or above the 10 year flood elevation but not lower than 6 inches below the 25 year flood event.

Vertical curves shall conform to the values found in Tables 5b and 5c.

TABLE 5b – DESIGN CONTROLS FOR CREST VERTICAL CURVES BASED ON STOPPING SIGHT DISTANCE

DESIGN SPEED	MINIMUM k
25	20 - 20
30	30 - 30
35	40 - 50
40	60 - 80
45	80 -120
50	110-160
55	150 - 220

k= L / A = feet / percent

A = Algebraic Difference in grades, percent

L = Length of vertical curve, feet.

TABLE 5c – DESIGN CONTROLS FOR SAG VERTICAL CURVES BASED ON STOPPING SIGHT DISTANCE

DESIGN SPEED	MINIMUM k
25	30 - 30
30	40 - 40
35	50 - 50
40	60-70
45	70 - 90
50	90-110
55	100 - 130

AASHTO provides the designer of sag vertical curves the option of using shorter curves with the installation of street lighting. These "comfort" designs can also be slightly modified by providing a one (1) percent grade break at each end of the curve.

The following table compares sag curve lengths using these criteria:

TABLE 5d - DESIGN CONTROLS FOR LIGHTED SAG VERTICAL CURVES 25 Miles Per Hour

Algebraic Difference in Grades	Standard (k)	Comfort (k)	Comfort with Grade Breaks
5.0%	30	13.4	8.0
7.5%	30	13.4	9.9
12.5%	30	13.4	11.3
17.5%	30	13.5	11.9

At the intersection of a local street with another local street or a neighborhood route, a minimum design speed of 15 MPH is allowed on the intersecting street. Minimum k factors for sag curves are as follows:

TABLE 5e - DESIGN CONTROLS FOR LIGHTED SAG VERTICAL CURVES 15 Miles Per Hour

Algebraic Difference in Grades	Comfort (k)	Comfort with Grade Breaks (k)
5.0%	4.8	3.0
7.5%	4.8	3.6
12.5%	4.8	4.1
17.5%	4.9	4.3

9. INTERSECTION SIGHT DISTANCE POLICY

Applicant's Consulting Engineer shall evaluate safe intersection sight distance using the principles and methods recommended by AASHTO. This requirement shall apply to the design of new streets and driveways, and to the placement of any object in the public right of way, including landscaping features. The following minimum standards shall apply:

9.01 INTERSECTION (and Driveway) SIGHT DISTANCE:

The following table is for intersection and driveway sight distances:
TABLE 7a. - CORNER SIGHT DISTANCE*

Traffic Speed (MPH)	Minimum Corner Sight Distance*
20	210
25	260
30	310
35	360
40	415

45	465
50	515
55	565

*Distances in Table 7a. are based on AASHTO Case 111A.

Sight distance shall be determined for each street approach to an intersection. A driver on the approach street should be able to see each vehicle on the intersecting street from the time that the vehicle is the sight distance from the intersection until the time that the vehicle reaches the intersection. Poles, trees and similar obstructions will be allowed within the sight distance area only if it can be shown that such obstructions do not prevent the continuous view of the vehicle approaching on the intersecting street.

For purposes of this calculation, the driver's eye is assumed to be 15 feet from the near edge of the nearest lane of the intersecting street, and at a height range of 3.5 feet to 8 feet above the approach street pavement. The sight distance criteria should be met throughout the range of driver's eye heights. The top of the vehicle on the intersecting street is assumed to be 4.25 feet above the cross-street pavement.

The traffic speed used in the calculation shall be the highest of the following:

1. the design speed of the intersecting street;
2. the posted speed of the intersecting street; or
3. the measured 85th percentile speed of the intersecting street.

Where the intersecting street is controlled by a stop sign or yield sign, a design speed of zero may be assumed. Where traffic signal control exists at an intersection or where a traffic signal is likely to be installed in the future, adequate sight distance shall be provided for potential right turns on red.

In some locations, maintenance of the required sight distance may require restrictions to potential development outside the public right of way. If so, the Consulting Engineer shall demonstrate that adequate restrictions are in place (and enforceable by the County) to assure that the required sight distance can be maintained in the future.

No modifications or exceptions to these standards shall be allowed unless approved by the Director of Public Works or designee.

10. ANGLES BETWEEN INTERSECTING STREETS

The following specifies the minimum requirements for intersections:

The interior angle at intersecting streets shall be kept as near to 90 degrees as possible and in no case shall it be less than 75 degrees. A tangent section shall be carried a minimum of 25 feet each side of intersecting right-of-way lines.

Curb radii at intersections shall be shown in Table 8a. for the various functional classifications. The right-of-way radii at intersections shall be sufficient to maintain at least the same right-of-way to curb spacing as the lower classified street.

Sidewalk access ramps shall be provided at all corners of all intersections, regardless of curb type.

TABLE 8a. - TURNING RADII (FEET) EDGE OF PAVEMENT1CURB - MINIMUMS

Street Classification	Arterial Street	Collector Street	Neighbor-hood Route	Transit Street	Commercial Industrial Street	Local Street
Arterial	55	40	30	40	40	25
Collector	40	40	30	40	40	25
Neighborhood Route	30	30	30	30	30	25
Transit Street	40	40	30	40	40	25
Commercial Industrial	40	40	30	40	40	25
Local	25	25	25	25	25	25

If bike lane or on-street parking exists, above radii may be reduced by five (5) feet.

The radii of the major street will be used for all intersection curb returns.

11. CUL-DE-SACS, EYEBROWS, TURNAROUNDS

The following specifies the minimum requirements for cul-de-sacs, eyebrows, and turnaround areas. Other turnaround geometrics may be used when conditions warrant and Director of Public Works or designee approves the design and application of its use.

- Cul-de-sacs, eyebrows, and turnaround areas shall be allowed only on local streets and commercial/industrial streets.

- Unless otherwise approved by County Commission, cul-de-sacs shall not be more than 300 feet in length, except for the modified infill design cul-de-sac which shall not be more than 200 feet in length. The length of a cul-de-sac shall be measured along the centerline of the cul-de-sac from the near side right-of-way of the nearest through traffic intersecting street to the farthest point of the cul-de-sac right-of-way.

- The minimum curb radius for transitions into cul-de-sac bulbs shall be 25 feet, and the right-of-way radius shall be sufficient to maintain the same right-of-way to curb spacing as in the adjacent portion of the road.

- An eyebrow corner may be used on a local street where expected ADT will not exceed 500 vehicles per day or as otherwise approved by the Director of Public Works or designee. Minimum curb radius on the outside of an eyebrow corner is 36 feet; minimum right-of-way radius is 45 feet. Eyebrow geometry shall be evaluated on the basis of turning requirements for Fire Department vehicles. The minimum curb radius is the straight-line distance measured from the point of intersection of the tangents (of the projected centerline) to the face of the curb (36 feet required), or to the edge of right-of-way (45 feet required).

12. DRIVEWAY APPROACHES

The Director of Public Works has the authority to limit access and access locations. Access to streets and highways under Nye County Code Chapter 12.08 or State of Nevada Division of Transportation jurisdiction must be formally approved by those entities at the applicant's initiative and expense.

The following specifies the minimum requirements for driveways:

- Driveways shall not be permitted on streets with existing or proposed non-access reserve strips.

- The spacing requirements shall conform to the requirements of the Nye County standards.

- Concentrated surface runoff shall not be allowed to flow over commercial driveways or sidewalks into the street.

- Driveways shall meet the minimum intersection sight distance requirements.

13. CURBS AND GRADING

When new curbing is being placed, a stamp or tag shall be placed to mark where each water and sanitary sewer service crosses the curb line. The method of marking the curb shall be approved by the Director of Public Works or designee and noted on the approved construction plans. If an imprinting stamp is used, the impression left for a water service shall be the letter "W'; for a sanitary service, it shall be the letter "S". These impressions shall be 2 inches high, placed on the top of the curb.

The following specifies the requirements for curbs and cross-slope grading for streets:

- All streets shall include curbs on both sides except in the situations of interim width improvements. Interim designs shall have shoulders and ditches.

- Interim width streets shall have 6-foot wide shoulders adjacent to the street at a 2-1/2 percent cross-slope and roadside ditches each side of the shoulders with a maximum side-slope of 2 horizontal to 1 vertical. The 6-foot shoulder area may consist of a section of pavement and/or a section of crushed rock of Type II aggregate. The pavement section shall be a minimum of 2 feet wide and a maximum of 6 feet wide.

- Cross-slope of the street section shall be no less than 2.5 percent and no greater than 5 percent. Whenever possible, the crown of the street shall be the same elevation as the top of the curbs.

Grading outside the improved areas shall be as follows:

- Collectors or higher functional classifications shall have a maximum 2 percent upward grading to the right-of-way line, and no steeper than 1-1/2 to I up, or 2 to 1 down, outside the right-of-way.

- Local Street and Commercial/Industrial functional classifications shall have a maximum 2 percent upward grading to the right-of-way line, a 5 to 1 upward or downward grading within the public utility easement, and no steeper than 1-112 to 1 up, or 2 to 1 down outside the public utility easement.

- Retaining walls shall be used if slopes are greater than the 1-1/2 to 1 requirement in the paragraphs above or where slope stability is a problem. If slopes are to be maintained (mowed) by the County, a maximum of 3 to 1 slope will be required. Retaining walls shall be constructed to a height where the slope is no more than 1-1 /2 to 1.

14. SIDEWALKS

The following specifies the requirements for sidewalks.

- Sidewalks shall be separated from the curb except where physical or topographic conditions make it impracticable to separate the sidewalk from the curb, the Director of Public Works or designee may approve a design modification to allow the sidewalk to be adjacent to the curb subject to the requirements regarding street design modifications.
- Where clustered mailboxes or other objects larger than single mailboxes are within a sidewalk, the walk shall be widened to provide clearance equal to the required sidewalk width.
- In no case shall the sidewalk clear space be smaller than 42 inches.
- In instances where it is required to install sidewalks and a permanent sidewalk cannot be constructed, a temporary sidewalk may be constructed. The temporary sidewalk may consist of an asphaltic concrete or Portland cement concrete to a width, location, and structure approved by the Director of Public Works or designee.

The following are the minimum requirements for location and construction of sidewalk ramps:

1. Sidewalk ramps shall be located and constructed in accordance with the rules and regulations of the latest version of Title III of the Americans with Disabilities Act.
2. Crosswalks shall be marked (striped) only at crossings that are protected by a traffic signal, or stop sign, or at other locations recommended and approved by the County.
3. Ramps located within marked (striped) crossings shall be wholly within the crossing, excluding the flared wings.
4. At unmarked crossings, ramps may be single (one ramp per street corner) diagonal ramps.
5. At Tee intersections, the "cross-bar" of the tee must have at least one crossing equipped with ramps, regardless of whether the crossings are marked or not. Thus, all Tee intersections shall have at least two single ramps and a third ramp that may be double or single, depending on whether the crossings are marked (striped).

6. Location of ramps and the minimum number of ramps per intersection shall be shown on the construction plans in accordance with these specifications.

15. RAISED MEDIANS

Where raised medians are allowed, the following criteria must be met:

- The raised median shall be set back at least 2 feet from the median lane on both sides.
- Street lighting shall be sufficient to provide illumination of the raised median.
- Objects, such as trees, shrubs, signs, and light poles shall not physically or visually interfere with vehicle or pedestrian traffic in the travel way.
- The style and design of the raised median shall be site specific. The raised median shall be safe for the design speed, and shall be subject to County approval.

16. SUBSURFACE DRAINAGE

Subsurface street drainage must be considered in the design of each street. Subsurface drains shall be designed and constructed per the recommendations of the soils report. In the event that no subsurface drainage is required on the soils report, a transverse perforated drainpipe shall be installed below the subbase material at the low point of each sag vertical curve. The subsurface drains are for the purpose of collecting and conveying subsurface water only, not surface runoff. They are not to be considered part of the storm drainage system for storm drainpipe sizing purposes.

Subsurface drains shall connect and drain into the storm drainage system at catch basins, curb inlets, gutter inlets, manholes, or roadside ditches. Alternative subsurface drainage measures may be used if approved by the Director of Public Works.

17. GUARDRAILS

The following specifies the minimum requirements for the location and type of guardrails:

- The decision of whether to install a guardrail or not shall be based on information found in AASHTO publication, GUIDE FOR SELECTING, LOCATING, AND DESIGNING TRAFFIC BARRIERS.
- Guardrails shall be designed and constructed per NDOT's Standard Drawings for Design and Construction.

18. TRANSITIONS

18.01 Street width transitions from a narrower width to a wider width shall be designed with a 3 to 1 taper. Delineators, as approved by the County, shall be installed to define the configuration.

18.02 For street width transitions from a wider width to a narrower width, the length of transition taper shall be determined as follows:

$L = S \times W$ (for S = 45 MPH or more)

$L = \frac{W \times (S)^2}{60}$ (for S = less than 45)

Where L = minimum length of taper (feet)
S = Design speed (MPH)
W = EP to EP offset width

Delineators, as approved by the Director of Public Works, may be installed to define the configuration. Maximum spacing of delineators shall be the numerical value of the design speed, in feet (i.e. 25- foot spacing for 25 MPH).

In situations where a tapered transition cannot be provided, a barricade shall be installed at the end of the wider section of the street and a taper shall be appointed and delineated as approved by the Director of Public Works. The barricade shall conform to County's standard. If the wider section does not provide an additional travel lane, only a barricade is required without the transition.

19. SUPER ELEVATION CROSS-SECTIONS

19.01 Offset crown cross-sections are not acceptable as super elevation sections.

19.02 Super elevation sections shall be designed using AASHTO guidelines.

19.03 Super elevation transitions shall be designed to not allow concentrations of storm water to flow over the travel lanes.

20. STUB STREETS

Stub streets that are to allow for future extensions shall be barricaded and signed as per the standard drawings.

21. PRIVATE STREETS, PARKING LOTS, AND COMMON DRIVEWAYS

For Streets, parking lots, and driveways on private property the Consulting Engineer shall provide a pavement section design that provides a minimum loading capacity of 12,500 pounds per tire (considered to be one half (0.5) square feet). This design must meet or exceed the following minimum standards:

1. Areas used for required parking or maneuvering of vehicles shall have a durable, hard surface.
2. In all residential areas, a minimum of 2-1/2 inches asphalt over 6 inches of aggregate base will be provided.
3. In commercial and industrial areas, 3 inches of asphalt over 6 inches of aggregate base is required.
4. The parking surface shall be placed on a well-compacted subgrade.
5. All required parking spaces shall be striped.

Refer to Section Two of the Pahrump Regional Planning District Standard Details and Specifications for Public Improvements for off-street parking.

The elevation for short-term parking will be no lower than one (1) foot below the 10-year flood plain. The elevation for long-term parking will be no lower than the 100-year flood plain. Long-term parking is defined as an unoccupied vehicle being left in one location for a period of greater than 12 hours.

Private streets serving residential areas shall be designed with travel lanes at or above the 25 year flood elevation but not lower than 6 inches below the 100-year flood elevation.

For driveways serving two or three single family homes, a minimum twenty (20) foot wide improvement in a twenty-five (25) foot aisle will be required if fire vehicle access is within 150 feet of all portions of building exteriors (as determined by the Fire Marshal). The twenty foot wide improvement is only necessary up to the point where access is shared by more than one home.

For driveways (or private streets) serving more than three single-family homes, or where a fire vehicle turnaround is mandated due to the length of the driveway, a minimum twenty-four (24) feet wide improvement in a thirty (30) foot aisle will be required.

The maximum slope for private streets and driveways serving two or more single-family homes shall be 13.0 percent, with intersection areas no steeper than 5.0 percent.

22. UTILITIES

Utilities shall be located outside of the paved area of street if at all possible to avoid future street cuts. On all phased (interim) street improvements, the necessary utilities shall be stubbed across the interim improvement to insure that cuts are not necessary when the road is expanded to its full width.

Except for sanitary sewer, storm sewer, and water, underground utilities intended to provide direct service to adjacent properties with future connections shall not be located in the full-width paved section of a street to be constructed. If all service connections are existing and extend beyond the full-width section of a partially improved (or interim) street, underground utilities can be located in the future paved section of the street, if approved by the Director of Public Works.

Underground utilities being constructed along existing paved streets shall not be located under the existing pavement unless approved by the Director of Public Works. Underground utilities that must cross an existing paved street shall not be installed by any method that cuts the pavement or undermines the aggregate base of the street unless approved by the Director of Public Works(refer to NCO 12.08.090).

Underground utilities shall be buried a minimum depth of thirty (30) inches as measured from finished grade to top of utility.

When new curbing is being placed, a stamp or tag shall be placed to mark where each water and sanitary sewer service crosses the curb line. The method of marking the curb shall be approved by the Director of Public Works and noted on the approved construction plans. If an imprinting stamp is used, the impression left for a

water service shall be the letter "W"; for a sanitary sewer service, it shall be the letter "S". These impressions shall be two (2) inches high, placed on the top of the curb.

If utilities are to be placed underground (including existing overhead) within the project and along all existing street frontages they shall be reflected on the landscaping and street light plan sheet of the site development submittal. The following items shall be the minimum requirements for submittal (the Director of Public Works may request additional information): Conduit location or wire location for direct bury, buried structures, poles, and above ground structures (shown to scale and at exact locations as proposed by the utility companies). Placing high voltage lines (57 kV or greater) underground is not practical and is therefore not permitted.

23. TRENCHING AND STREET CUTS

In addition to the provisions in Title 12 Streets, Sidewalk, Signs and Obstruction Chapter 12.08 Excavation and Encroachment respecting cutting paved streets and backfilling, trenches, etc., the following shall apply:

The County will not allow, without prior approval from the Director of Public Works, any street cuts on newly paved or resurfaced streets (paved within the previous 12 months). The following is a list of exceptions. These exceptions do not require the Director of Public Works' approval. (However the appropriate documents must be submitted with the application for any street cut permit.):

1. A letter from an arborist indicating that boring would pose greater risk to a significant or protected tree than a conventional open street cut, or

2. A letter from the Owner's Consulting Engineer and accompanying design indicating that the only possible vertical location of the line would be within the structural section (required aggregate base) of the street, or

3. The street cut will also include a minimum of a 2 inch deep grind and new asphaltic concrete for a distance equal to the street width from both sides of the trench or as determined necessary by an engineer specializing in pavement design to ensure no settling or loss in pavement life would be expected (whichever distance is greater).

4. Additional exceptions may be applied for by making a formal request along with appropriate documentation to the Director of Public Works.

All approved street cuts in streets of a higher functional classification than local residential, or of road surface classification Class B or higher as defined in NCO12.08.05 shall be backfilled with unshrinkable or flowable fill with controlled low strength material (CLSM) meeting the material requirements of the supplier. However, the Director of Public Works may require CLSM on residential local streets if conditions warrant.

The use of CLSM as trench backfill is an approved method of backfill that the engineer may require or allow in lieu of aggregate or native materials as specified elsewhere in this document. When CLSM is used, at a minimum, the pipe bedding shall be 3/4 inch minus aggregate; in addition, the top 12 inches of the trench backfill (below the pavement) shall also be 3/4 inch minus aggregate to allow subgrade drainage. In no circumstances shall CLSM exceed 100 psi in 28 days (with a design strength not exceeding 150 psi in 90 days) for the pipe zone (public water, sewer, and storm) and for the remaining trench depth shall not exceed 200 psi in 28 days (with a design strength not exceeding 250 psi in 90 days).

The Owner's Consulting Engineer (or designee) shall be on site while the CLSM is being placed in order to ensure that the proper mix is supplied and to ensure that the above minimum drainage requirements are met and, if subsurface drainage is excessive, to instruct the contractor to increase the depth of the 3/4 inch minus aggregate to ensure adequate subgrade drainage, especially in conditions where cross drainage occurs (sag vertical curves for example).

CLSM shall be field tested by an independent laboratory per ASTM PS 28, 29, 30, and D 4832 standards (the field technician shall be ACI Certified or equivalent). The Owner's Consulting Engineer and the independent laboratory shall record: the name of the supplier (the Owner's Consulting Engineer shall include with their daily report a copy of all batch tickets), the temperature of the air, ground, and mix (at time of placement), the weather conditions, ground water conditions, other utilities encountered, and any other information which may affect the material. At a minimum 4 cylinders shall be taken each day, and different mix used. These cylinders shall be broken 1 at 7 days, 1 at 28 days, and 1 at 90 days with 1 reserve cylinder. All test reports shall be sent to the County Inspector, the Owner's Consulting Engineer, and the supplier.

Prior to paving, the CLSM shall be tested per ASTM PS 31 by the independent laboratory.

Street cuts must have the final pavement repair (matching existing material type) completed within 30 days from the date the pavement is cut unless an extension is approved by the Director of Public Works. The use of "cold patch" and steel plates will be allowed for up to the first 30 days after the pavement is cut, provided a daily inspection by the applicant is made and any necessary repairs are made on a timely

basis. If the temporary patch is not monitored and maintained, the Director of Public Works may shorten the 30-day time limit.

CHAPTER 9 - STORM DRAINAGE

1. GENERAL

The followings are the additional requirements for the design of facilities intended to protect the public health, safety, and welfare from damage due to flooding and measures to minimize any potential flooding damage and allow for efficient operation, repair, and maintenance of the storm drainage system.

Provisions must be made for gravity drainage of roofs for all new buildings and structures. For multi-family residential, commercial, or industrial developments, these drains shall be directed to the storm drain system. In single-family residential developments, flows shall be directed to the street gutter, roadside ditch or the public storm drain system.

These requirements shall apply to all storm drainage facilities in existing and proposed public right-of-way, public drainage easements, and tracts of common ownership in the Pahrump Regional Planning District. Storm drainage systems include, but are not limited to: inlets, pipes, ditches, wetlands, and storm water quality and quantity facilities.

Standards:

1. Storm water quantity management requirements state in 3.06 of this manual.

2. All steps within structures must comply with OSHA standards. There shall be no more than 24 inches between the top of the casting and the rung of the top step.

3. No more than eight (8) inches of riser rings shall be used.

4. All inside drops and pollution control structures must be constructed with pipe; no partitions will be allowed.

5. All inside drops and pollution control manholes must be 60 inch or larger diameter structures.

6. All pipe shall be installed with watertight joints.

7. All backfill material shall be referenced per APWA standards.

8. No private storm sewer shall be located within any lot other than the lot that is the site of the building or structure served by such sewer. The exception to this will be common areas in planned unit developments, and/or County right-of-ways, or as otherwise approved by the Director of Public Works.

9. For signs identifying permanent surface water quality and quantity facilities, the County of Nye logo shall be placed on the sign.

10. All intersections of public lines shall have an approved structure.

2. TELEVISION SCAN

County will scan all new public storm pipe along with existing sections of pipe that are disturbed or affected by new construction. Prior to requesting a television scan, the contractor shall flush, clean, and remove all debris from the system and shall string all lines with nylon cord (or equivalent) having a minimum test strength of 250 pounds. The string ends shall be tied to the top rung of the steps in each structure.

3. WATER QUANTITY STANDARDS

When industrial, commercial, institutional and multiple units residential development are not required to provide on-site detention, or where storm detention would have an adverse affect upon the receiving storm drainage system, as determined by the Director of Public Works, a public system improvement contribution will be assessed in lieu of a constructed facility.

Storm detention facilities shall be designed to provide storage using a 10-year event, with the safe overflow conveyance of the 100-year storm. Calculations of site discharge for both the existing and proposed conditions shall be required. Storms to be evaluated shall include the 10, 25, and 100-year events. Allowable post-development discharge rate for the 5, 10 and 25-year events shall be that of the pre-development discharge rate, with a maximum allowable release rate of one half (0.5) cubic feet per second per acre in the 25 year event.

If a site is proposed to be constructed in phases, the first phase shall have a storm water quantity facility designed and built to accommodate the ultimate development of the site.

When the above storm detention requirement is to be met by creating a ponded area in a parking lot, the following shall apply:

3.01 Maximum depth of standing water in all parking lot ponds shall be one (1) foot. No more than 25 percent of the entire number of parking stalls in a parking lot shall be inundated by a parking lot pond during the design storm.

3.02 No parking lot ponds shall be located within the primary ingress/egress portions of a site. Parking lot ponding shall be so designed that, at maximum water level for the design storm, a minimum twenty (20) foot wide emergency vehicle lane to the buildings will remain unflooded, including during system overflow condition.

3.03 Slopes on all parking lot surface ponds should not be less than one (I) percent nor exceed five (5) percent in areas designed for vehicular traffic.

3.04 All parking lot ponds shall be designed and constructed in such a manner so as to provide a maximum water surface elevation 0.25 feet lower than any and all structures designed to contain the ponding.

3.05 Where curbing is used to contain a parking lot pond, extruded curbing shall not be used. A public standard "vertical" type curb will be required.

3.06 No parking lot ponding shall occur at an elevation more than one (I) foot below the lowest habitable floor elevation of buildings within the proximity of the pond. Under no circumstances shall ponds or other detention facilities be designed in such a manner that system failure would cause flooding in any habitable building area.

3.07 No parking lot ponding shall be designed for parking lots under buildings. Whenever the possibility of flooding an underground parking facility or other uninhabited building area exists, care shall be taken to flood proof electrical equipment areas and other building appurtenances with overflow and/or private pump systems being provided to drain such a flooded facility.

3.08 Parking lot pond construction plans shall include a note stating that "Grading is critical to functioning of detention system and plan must be strictly followed." Parking lot design volumes shall be shown on the plans and the pond volume inspected prior to paving. The Engineer or Architect shall certify that the design pond volume has been constructed.

CHAPTER 10 - TRAFFIC DEVICES AND STREET ILLUMINATION

1. TRAFFIC SIGNS

Traffic signs shall be furnished and erected in conformance with MUTCD, and/or modified as follows: Modifications to these standards must be approved by the Director of Public Works or designee.

1.01 MATERIALS

Aluminum

Minimum thickness of 0.080 inches shall be used.

Plywood

No plywood will be permitted on any sign without prior approval from the Director of Public Works or designee.

Polyplate

The use of polyplate may be used only on 18 x 18-inch or smaller signs with the prior approval of the Director of Public Works or designee.

Sheeting

3M Scotchlite brand high intensity reflective sheeting shall be used as a background, except for 'NO PARKING" and overhead street name signs where Type II reflective sheeting is allowed.

Posts

A minimum of 2 x 2-inch x 10-foot, 14-gauge galvanized "quick-punch" or 12-gauge perforated posts, or approved equivalent, shall be used.

A 2 x 2-inch x 12-foot, 14-gauge galvanized "quick-punch" or 12-gauge perforated posts, or approved equivalent, shall be used when a combination of signs is more than 36 inches in height. Signpost is 2-inch square tubing and must be embedded 12 inches into base.

Round metal posts will not be permitted. Wood posts may be used only with prior approval of the Director of Public Works or designee and must be configured and drilled for breakaway as per NDOT specifications.

Base

The breakaway post base shall consist of a 2.25 x 2.25 inch (I.D.) x 36-inch Galvanized base with a 2.5 x 2.5 inch (I.D.) x 18-inch sleeve placed flush with base. All sleeves and bases shall be 14-gauge "quick-punch" or 12-gauge perforated material, or approved equivalent.

Fastening

Drive rivets shall be used to fasten signs onto metal signposts. To prevent vandalism, no nuts and bolts will be permitted to fasten any sign to metal signposts. Galvanized washers shall be used behind all drive rivets used to affix signs to posts. Two drive rivets at right angles or angle bolts shall be used to fasten post to base.

Medium-Density Overlay

The medium-density overlay shall be a smooth, post saturated resin-fiber surface of Crezon II with a phenolic resin content of not less than 22 percent by weight. Each Crezon II sheet shall weigh not less than 58 pounds per 1,000 square feet of single-face. After application, the thickness of the material shall be not less than 0.012 inch. Panels shall have plugged "C" inner plies and shall be primed on the sign-bearing surface with medium oil alkyd primer (buff).

Letter Spacing

Spacing between letters, words, numbers, and/or symbols shall be in conformance with the

Reflective or Non-reflective Sheeting Application

Manufacturer's splices of sheeting will be permitted. Only one manufacturer's splice will be permitted per sign. No splices by the Contractor will be permitted.

On all other signs, if the reflective sheeting needs to be spliced, the splice(s) shall be horizontal with the upper section(s) of sheeting overlapping the lower by a minimum of 3/8 inch. Only one splice by either the manufacturer or contractor will be permitted per sign.

2. STREET NAME SIGNS

In business districts and on major arterials, street name signs should be placed in diagonally opposite corners so that they will be on the right hand side of the intersection for traffic on the minor street. I n residential districts, at least two sets of street name signs will be mounted at each intersection.

On T -intersections, the street name signs will be designated at two locations. One set of street name signs shall be placed at end of a "T" intersection, and the second set placed at the right hand corner of the intersecting street.

2.01 MATERIALS Aluminum

A street name sign shall be 9-inch high, flat, 0.100-inch thick aluminum. The minimum length is 24-inch and the maximum length is 36-inch. The corners shall have the standard 1/2-inch radius corners.

Sheeting

Both sides of street name signs shall be green 3M Scotchlite brand high intensity reflective sheeting. A 3/16-inch border shall be placed on each sign face.

Lettering

Street name signs consist of two sizes of 3M Scotchlite brand high intensity white letters on green background: 2-inch series "C" and 4-inch series "B". All block numbers shall be provided in 2-inch series "C". All letters shall be uppercase.

3. TRAFFIC SIGNAL

3.01 DESIGN AND INSTALLATION REQUIREMENTS

Traffic signal installation shall conform to MUTCD and the Nevada State Division of Transportation standards.

Manuals to consider as text are:

1. MUTCD
2. State and National Electrical Code "Current Addition". Engineer to obtain copy of final electrical inspection from the contractor and submit it to County along with his daily inspection reports.

3.02 DESIGN DRAWING REQUIREMENTS

Traffic Signal installation plans shall consist of the following separate sheets:

1.	Construction Plan (Street)	1-inch = 20 feet
2.	Signal Wiring Including Electrical Service	1-inch = 20 feet
3.	Underground Detection Plan	1-inch = 20 feet
4.	Sign and Striping Plan	1 -inch = 40 feet

3.03 MODIFICATION TO GENERAL SPECIFICATIONS

Modification, or specific to general specifications are:

1. Opticom shall be installed on all approaches to signal and no opticom detector shall be installed on end of mast arms.
2. Traffic detection shall consist of pre-formed (State Spec) loops, as directed by the Director of Public Works or designee.
3. Detection wiring shall be extended to the cabinet for each local and advance field detector and by each lane.
4. Pedestrian fixture shall be international symbols only.
5. Traffic controller cabinet shall be anodized aluminum.
6. Traffic controller and cabinet shall be supplied pre-tested by the Nevada State Division of Transportation or its preapproved testing agent and complete with operation components and software.

3.04 FIELD WIRE TESTING

All signal electrical wiring, including spares, shall pass a High Pot 2kV A.C. test before acceptance.

4. TRAFFIC MARKING

- Traffic marking shall follow the MUTCD as revised by NDOT.
- Material specifications shall conform to NDOT standard specifications for construction.

Materials

All thermoplastic material shall conform to State Specifications. All hot thermoplastic shall be alkyd based.

Reflecting button in lieu of striping is acceptable subject to the approval of Director of Public Works, and may be required on arterial and collector roads as the Director of Public Works deems it necessary.

Application

Existing surfacing which is to receive the thermoplastic material shall be mechanically wire brushed to remove all dirt and contaminants.

Existing pavement markers that are damaged by blast cleaning or wire brushing shall be removed and replaced by the Contractor at his expense.

Thermoplastic material shall be applied only to dry pavement surfaces and only when the pavement surface temperature is above 50 Degrees Fahrenheit.

A primer, of the type recommended by the manufacturer of the thermoplastic material, shall be applied to all asphaltic surfaces over six months old. The primer shall be applied immediately in advance of, but concurrent with, the application of thermoplastic material. The primer shall be applied at the application rate recommended by the manufacturer and shall not be thinned.

Hot Thermoplastic Application

In addition to the applications listed above, the following shall apply to hot thermoplastic applications.

Preheaters with vertical mixers having 360-degree rotation shall be used to preheat granular form material.

The thermoplastic material shall be applied to the pavement at a temperature between 400 and 425 degrees Fahrenheit unless a different temperature is recommended by the manufacturer.

The thermoplastic material shall be applied by either spray or extrusion methods in a single uniform layer.

Stencils shall be used when applying thermoplastic material for pavement markings.

The pavement surface to which thermoplastic material is applied shall be completely coated by the material and the voids of the pavement surface shall be filled.

Unless otherwise specified in the special provisions, the thermoplastic material for traffic stripes shall be applied at a minimum thickness of 0.060-inch. Thermoplastic material for pavement markings shall be applied at a thickness of 0.100-to 0.150-inch. Glass beads shall be applied immediately to the surface of the molten thermoplastic material at a rate of not less than 8 pounds per 100 square feet. The amount of glass beads applied shall be measured by stabbing the glass bead tank with a calibrated rod.

1. Permanent marking shall consist of raised markers, cold or hot thermoplastic. The specific layout of which is to be approved by the Director of Public Works or designee.

2. Painting or foil back tape may be used for temporary marking.

3. Hot thermoplastic shall be used for all permanent marking installed on all concrete streets.

4. Cold thermoplastic 3M or equivalent tape rolled into the surface shall be used on new asphalt streets, including overlays.

5. Raised markers (reflectors and buttons) shall be used in conjunction with permanent marking layouts.

6. Approved striping material and layout shall be submitted to and approved by the Director of Public Works prior to installation.

5. STREET ILLUMINATION

5.01 GENERAL DESIGN

All street lighting shall be designed using the Illuminating Engineering Society guidelines as modified in this manual. All street light poles should be located near property lines and at least 25 feet from any trees, unless otherwise pre-approved in writing by the Director of Public Works.

All electrical components shall be UL approved or approved equal and testing lab approved from labs accepted by the State of Nevada.

All street light plans shall include: pole locations, conduit locations, junction box locations, transformer/controller cabinet locations, photometrics (or P.E. Certification), along with any other pertinent information.

The contractor shall be responsible to provide all required traffic control.

The contractor shall be responsible for making arrangements with the power utility company for connecting the street lighting system to the local distribution system.

The following codes and references shall be used in designing all street light systems:

1. State and National Electric Code (current edition). Engineer to obtain copy of final electrical inspection from the contractor and submit it to County along with his daily inspection reports.
2. An Information Guide for Street Lighting by AASHTO.
3. Fundamentals of Traffic Engineering by the Institute of Transportation Studies (current edition).

Lighting Levels: Average Maintained Illuminance on the Horizontal

Minimum Average Maintained in Foot Candles			
Roadway Classification	Commercial	Intermediate	Residential
Freeways	1.4	1.2	1.0

Arterials	2.0	1.4	1.0
Collectors	1.2	0.9	0.6
Neighborhood Routes	1.2	0.9	0.6
Local Streets	0.9	0.6	0.5
Private Streets	0.6	0.5	0.5
Roadside Walk and Bikeways	0.9	0.6	0.5

Other Pedestrian and Bicycleways	Average Foot Candles
Walk and Bikeways Distant From Roadways	0.5
Pedestrian Tunnels	4.0
Pedestrian Overpasses	0.5
Pedestrian Stairways	0.6

The minimum average uniformity of lighting shall be 6 to 1 for local streets and 3 to 1 for all other areas.

All streetlights shall be option 'A' as defined below unless otherwise approved in writing by the Director of Public Works. The Director of Public Works shall approve all street illumination options (A or B) with the power utility company prior to installation.

4. OPTION 'A' LIGHTING

Under this option, the power utility company will install, own, and maintain street lighting.

5. OPTION 'B' LIGHTING

Under this option, the developer will install the street lighting, County shall own the poles and fixtures, and power utility company will maintain it.

01. CONDUIT

All new installations and replacements of wire shall be in schedule 40 PVC or rigid metal conduit, which shall conform to the applicable requirements of Article 347 of the National Electrical Code. Any conduit which is prone to flooding (near a water source, within a floodplain, within an area of known flooding, or an area of high ground water) shall be installed per the "wet location" requirements of the NEC. Rigid conduit shall extend from the power source to a junction box that is to be located not more than three feet from each pole served. All conduit shall be marked using a "Warning Tape" which shall be located per industry

standards. Junction boxes within sidewalk areas shall be concrete with cast metal covers held with tamper resistant fasteners and shall be stamped "Street Lighting". Any approved box (Brooks #36 or equal) may be used outside of sidewalk areas. Connections between the junction box and the lighting pole are to be by use of direct buried cable (only when using direct bury poles - otherwise conduit shall be required). Splices shall never be done within the conduit. All conduit shall have a burial depth of 36 to 42 inches below finished grade. Conduit size shall be a minimum of 1 inch. All conduit ends shall have terminal adapters and brushings installed. All conduit ends shall be sealed with "Molded Plug" performed foam conduit and pope seals or an approved equal. All conduit ends, with brushings installed, shall be between 4"-6" below the bottom of the junction box lid or be severely bent over the conduit ends. All conduit ends in junction boxes or foundations shall have a one-inch clearance from other conduits, rods, pole walls, and oj-box walls. Conduits shall enter through the bottom of the j-box with factory 90 degree ells. Conduit shall terminate near the box wall to leave the major portion of the box clear. Conduit outlets shall be located on the side of the box that corresponds to the direction of the conduit run, and shall be no closer than 4 inches from the bottom of the box lid and at least 2 inches above the gravel fill. Conduit ends shall be oriented towards the top of the box such that the conductors may be pulled out of the conduit from the top of the box without touching the side of the box.

02. CABLE AND WIRE

Circuits and Cable runs shall be designed to provide separate and independent circuits for streetlights. Wire size shall be determined by the loading and distance of each circuit. Wire shall be sized to limit voltage drops to a maximum of 2% between the utility service connection and the control panel and a maximum of 3% from the control panel to the most distant fixture served. All voltage drop calculations shall be approved by the Director of Public Works.

Solid aluminum or copper wiring shall not be used. All wire shall be stranded copper, single conductor, with a 600-volt insulation. The minimum wire size shall be #10 AWG stranded copper wire, type XHHW for the lighting circuit. The photocell circuit wires shall be #12 AWG stranded copper, type XHHW. The maximum wire size shall be #1 AWG stranded copper. Equipment ground wire shall be stranded copper, single conductor, either bare or with a 600 volt green insulation. Cable installation shall conform to the National Electric Code. All wire and cable splices and connections

shall be made within approved junction boxes and shall be accomplished with approved fasteners. Any splices and connections which are prone to flooding (near a water source, within a floodplain, within an area of known flooding, or an area of high ground water) shall be installed per the "wet location" requirements of the NEC.

Wire insulation color shall conform to the following:

1. 120-volt photoelectric circuit wires shall be #12 AWG stranded copper wire, type XHHW. A yellow wire from the controller to the photocell, purple wire for the return to the cabinet.

2. 240-volt line distribution wires shall be a controller shall be a minimum of #10 AWG stranded copper wire, type XHHW. One wire shall be black in color, the other wire shall be red in color. When two or more separate circuits are run in the same conduit, the second pair of conductors shall be blue and brown. Additional colors for addition circuits may be required with the approval of the lead electrician.

3. Grounded conductors shall be white.

4. Grounding conductors shall be green insulated or bare stranded wire.

Color-coding of each conductor shall remain consistent throughout the entire system. Factory supplied striping of conductors will be accepted when the required color insulation is not available. Color tape will not be accepted as an alternate for insulation color-coding.

Electrical wire splices located in junction boxes, poles, or other similar locations shall be made moisture and water proof by using either a heat shrink tubing with pre-applied sealant or electrical insulating rubber tape overwrapped with electrical vinyl tape. Each splice shall be taped separately. If epoxy sealant bags are used to seal splices, each splice shall be sealed separately.

03. POLES

Anchor base poles shall be used on arterial and collector streets. Direct bury poles shall be used in residential subdivisions unless otherwise pre-approved, on a case-by-case basis, by the Director of Public Works. Wood poles shall not be used.

Residential Streets

The standard pole for collector streets shall be "Whatley" pole,

part no. A4225-07-58-N6 that requires a 14" bolt circle and a bolt size of 1"x36"x4" or approved equal. The standard pole for residential street shall be "Whatley" pole, part no. E4030-07-58-N61 P.G.E. or approved equal. Poles shall be bronze in color and constructed of filament wound fiberglass. If the poles are to be located behind the sidewalk, an aluminum mast arm bronze in color and of sufficient length to locate the fixture over the roadway will be required. The standard length of the arm shall be 6 feet. If the pole is located next to the curb the standard length of mast arm shall be 8 inches.

All direct bury poles and pre-formed pole bases shall be back filled with 1/2 yard of compacted ¾ - 0" crushed rock.

All Other Applications

All other applications shall be evaluated on a case-by-case basis.

Pole Access

All lighting poles shall be constructed with a nominal 2-112 inch by 5-inch hand hole placed at 4 feet above the ground line. In plan view, the hand hole shall be at 90 degrees from the mast arm or curbside of the pole. The hand hole shall be secured with a cast aluminum or galvanized steel cover painted to match the pole and held in place with a stainless steel tamper resistant setscrew.

04. LIGHTING FIXTURES

Lighting fixtures shall be of the rectilinear "shoe box" design with a flat lens, sharp cut-off optical system unless otherwise preapproved by the Director of Public Works. Lighting fixtures shall be of the same bronze finish as the poles and mast arms. The fixtures within residential areas shall have a grounded 100 watt 240 volt high-pressure sodium light source. Mercury vapor lamps shall not be used. Fixtures within other areas shall be high-pressure sodium of a wattage that is necessary to achieve the required light level for the particular application. Fixtures shall be of the "power door" type with the electronic components mounted on a single removable panel that will facilitate dry room repairs or replacement. Lenses shall be mounted in a panel or door to facilitate one hand release for relamping and cleaning. All fixtures shall have a TYPE-III light distribution. When a photocell is installed on fixtures, a three-pole twist-lock receptacle shall be used in conjunction with Fisher Pierce, model 7709B photocell, or equivalent.

All fixtures shall have a multi-tap ballast and be pre-connected to 240-volt taps. All circuits and fixtures shall be wired 240-volts. All fixtures shall be grounded. Every fixtures shall have numbers, visible from the street, indicating the wattage of the fixture. 10=100 watts 15=1 50 watts etc.

05. CONTROLS

Details of the street lighting controller cabinet shall be submitted to the Director of Public Works for approval prior to fabrication. The location and type of street light circuit controller shall be shown on all street lighting plans. Whenever possible, the controller cabinets shall be installed away from intersections. The cabinet shall have a service panel that has a "Service Equipment" rated UL label (or approved equal) attached to the panel. Each controller shall be painted light green and shall be placed on a concrete pad.

A 100 amp, single phase, 3 wire, 240 volt, dedicated unmetered service is to be provided by the developer. Each street lighting circuit shall be wired 240 volts. The street light controller shall be a "Circle AW catalog no. Cup 4111" or equivalent. The street light controller shall be mounted on a concrete pad with craft paper between the controller and the concrete pad. The concrete pad shall measure 24"x24"x18" deep. The anchor bolts shall be %"xl 0" galvanized "J" bolts and shall be set with 1 1/2" of threaded bolt above the finished concrete base. The concrete controller base shall be set at the sidewalk grade and located not more than 2 feet behind the sidewalk. The controller cabinet shall be sealed around the bottom with silicone seal or caulk. All streetlights shall operate at 240 volts and shall be grounded.

All street light circuit shall be controlled by a single photocell installed on the street light fixture closest to the controller cabinet. Photocell shall be NEMA type twist lock with receptacle adjustable to point north. The photocell shall be used in conjunction with a lighting contactor in the controller cabinet.

All circuits shall have a manual on/off switch that will over-ride the photoelectric cell. This switch shall be located within the interior of the controller cabinet.

A fuse connection shall be made between the circuit and each light fixture on that circuit. All fusing of the hot leads shall be done in the pole with in-line fuse holders located as to be accessible through the hand hole. The fuse holder shall be a LFSE LEB-AA

fuse holder, a WPB-1 insulated boot and a 250-volt midgit flm 5 fuse or equivalent. In systems with lights on both sides of the street, the circuitry shall be designed as such that the lights on one side of the street can be "de-energized" without affecting the operation of the lights on the other side of the street.

06. JUNCTION BOXES

All junction boxes shall be wire reinforced precast concrete type with cast iron or steel covers held with tamper resistant fasteners and shall be stamped "Street Lighting". Metal box covers shall be hot dip galvanized after fabrication. Concrete or aluminum covers are not allowed. There shall be 1 junction box for each street light pole. The junction box shall be located not more than 3 feet from the pole that it serves. All junction boxes shall be set at finish grade or curb height, which ever applies. The minimum size and type of junction boxes shall be a Brooks #36, or equivalent. Use a larger size junction box where needed. The metal lids of the junction boxes shall be bonded. All junction boxes shall have a minimum 12" deep of 3/8"-O" pea gravel in the bottom of the junction box for water drainage. 3/4"-0" crushed rock is not acceptable for drainage. If mud or dirt has infiltrated into the junction box, remove all contaminated pea gravel and install new pea gravel. When conduit crosses a street, a junction box shall be set on each side of the street at the crossing. A junction box shall be set at each horizontal turn in the conduit of 45 degrees or more.