

# **CITY OF WEST WENDOVER**



# **STANDARDS AND SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION**

**MAY 2012  
(Revised September 2016)**

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## **INDEX OF REVISIONS**

Date	Descriptions
May 2001	Added plan numbers 505 and 506
October 2001	Plan number 102. Arterial width is now 86'. Arterial sidewalks are now 6' wide.
July 2003	Added plan number 116
June 2007	Added Chapter 10 Decorative Lighting. Revised Drawings 110 and 401. Added drawings 117, 118, 507, 508, 509, 510 and 511
October 2007	Added drawing 208
April 2008	Added plan numbers 403 and 404
April 2009	Revised plan numbers 103, 109, 502,, 503, and 511
May 2010	Revised All Technical Specifications
May 2012	Revised drawing 117. Added Drawings 512, 513, and 514
September 2016	Revised Drawings 502,507, 508, 510, and 511

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## **CHAPTER 1 GENERAL REQUIREMENTS**

### 1.1 INTRODUCTION

#### 1.1.1 Purpose

The purpose of these Construction Standards and Specifications is to govern any work performed or improvements installed within Public rights-of-way of the City of West Wendover, Nevada (City). Developers and/or contractors should thoroughly read and understand these Construction Standards and Specifications before designing and constructing public improvements.

#### 1.1.2 Scope

- a. The contractor shall contact Public Works/Engineering at 801 Alpine Street for all matters dealing with construction work within City rights-of-way or with any work connecting onto a City utility. **Special permits and bonding are required for all such work.** The contractor shall also conform to all applicable ordinances adopted by the City and contained in the City Code of West Wendover Nevada, latest edition, and subsequent amendments or appeals.
- b. These Construction Standards and Specifications are the minimum requirements of the City. In the event that any provision herein conflicts with the City Code of West Wendover Nevada, other requirements specified by the City, or with generally accepted standards for Public Works construction, the more stringent of the standards shall apply.

### 1.2 TERMS AND DEFINITIONS

#### 1.2.1 Definition of the term “City”

The term “City”, as used herein, refers to The City of West Wendover, Nevada, and its personnel or duly authorized agents.

#### 1.2.2 Definition of the term “Code”

The term “Code”, as used herein, refers to the City Code of West Wendover Nevada, latest edition, and subsequent amendments thereto.

#### 1.2.3 Definition of the term “Standards”

The term “Standards”, as used herein, refers to these Construction Standards and Specifications.

1.2.4 Standard Acronyms

- a. UBC: Uniform Building Code
- b. UPC: Uniform Plumbing Code
- c. UFC: Uniform Fire Code
- d. ASTM: American Society for Testing and Materials
- e. AWWA: American Water Works Association
- g. ANSI: American National Standards Institute
- h. OSHA: Occupational Safety and Health Administration
- I ACI: American Concrete Institute

1.2.5 Standard Abbreviations

- a. DI: Ductile Iron
- b. DIP: Ductile Iron Pipe
- c. PVC: Polyvinyl Chloride
- d. PVCP: Polyvinyl Chloride Pipe
- e. CP: Non-reinforced Concrete Pipe
- f. RCP: Reinforced Concrete Pipe
- g. HDPE: High Density Polyethylene
- h. IPS: Iron Pipe Size
- i. psi: Pounds per Square-inch
- j. mg/l Milligrams per Liter
- k. F Fahrenheit
- l. fps Feet per Second
- m. cu ft Cubic Feet

### 1.3 PERMIT, FEE, AND BONDING REQUIREMENTS

#### 1.3.1 Building Permit

It shall be unlawful to perform any construction, excavation work on any street, curb, gutter, sidewalk, sewer line, water line, storm drain line, or other infrastructure addition or improvement in the City without an approved Building Permit as defined by the Code. Absolutely no work shall be started until a properly executed Building Permit is secured. In a case where a contract to perform work for the City has been executed, the contract shall fulfill the Building Permit requirement.

In addition to the requirements of the Code, all applications for Building Permits shall include the following:

- a. The anticipated start and completion dates of the project.
- b. The exact address or location of the work.
- c. A description of the work.
- d. A request, which shall be made at least 48 hours prior to beginning construction, to identify and locate water, sewer, and storm drain lines.
- e. A request, which shall be made at least 7 days prior to beginning construction, for all utility companies to be contacted.

The contractor shall perform all work in accordance with the terms of the Building Permit and the Standards in effect on or before the date of the permit. All work shall be done in a timely manner and time limits, which may be a condition of the permit, can be shortened because of safety concerns. Building Permits can be suspended if a contractor fails to comply with the Standards and Code.

A developer is responsible for its entire development until all construction is completed and accepted by the City.

#### 1.3.2 Fees

Before a Building Permit is issued, a Permit Fee and an Inspection Fee shall be paid to the City. Permit and Inspection fees shall be established by City Council resolution. Fees shall be assessed on the following items or conditions:

- a. Sewer, Water, and Storm Drain Lateral Installation and Inspection.
- b. All re-inspections that are required after an inspection has been requested and performed, but the work, or a portion thereof, is found to be defective or incomplete.

- c. Barricades (provided by, or required by, the City).

### 1.3.3 Bonds

All public improvement projects shall have a financial guarantee for performance, pursuant to the Code, which shall be in the form of bonds or cash deposits. Each contractor doing work in the City is required to maintain a \$10,000.00 bond with the City. This bond is to guarantee the following:

- a. Construction work is completed.
- b. Final inspection is conducted.
- c. The construction of, and repairs to and/or replacement of, public improvements are finished and accepted.

A Surety shall issue bonds or, if desired, a cash bond can be paid directly to the City. The City shall approve all bonds and no bond shall be released until all improvements are completed and accepted by the City.

## 1.4 PRE-CONSTRUCTION APPROVALS

### 1.4.1 City Approval of the Contractor

The City shall approve all contractors before any work is performed. This approval is granted for a period of one (1) year upon submission of the following:

- a. A current Nevada State Contractor's License. Work will be restricted to that authorized by the license.
- b. Proof of comprehensive general liability insurance. Bodily injury insurance will be in an amount of not less than five hundred thousand dollars (\$500,000.00) for any one occurrence. Property damage insurance will be in an amount of not less than five hundred thousand dollars (\$500,000.00) for any one occurrence and shall include underground exposure. Combined liability insurance will be in an amount of not less than one million dollars (\$1,000,000.00) for any one occurrence.
- c. A ten thousand dollar (\$10,000.00) cash bond, paid to the City, that will be in effect for a period of one (1) year after the completion of all work performed by the contractor.

### 1.4.2 City Approval of the Construction Plans

The City, before the commencement of construction, shall approve all construction plans and cut sheets

The contractor, before the commencement of construction, shall hold a pre-construction

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meeting with the City, all utility companies affected by the work, and all contractors involved with the work.

## 1.5 SAFETY

No contractor shall leave any work in an unsafe condition. All persons working on any street, sidewalk, sewer line, water line, storm drain line, etc. shall comply with all applicable federal, state, and local safety regulations including OSHA regulations for work in confined spaces and trenches.

## 1.6 INSPECTIONS

### 1.6.1 Mandatory Inspections

All work covered by a Building Permit shall be inspected by the City prior to the following:

- a. The commencement of backfilling and compacting operations.
- b. The placing of concrete and asphalt surfacing.
- c. The installation of any underground piping.
- d. Any connection to a City utility line.
- e. Any other work done in a public right of way.

City inspectors shall also be notified before beginning construction for any Public Works project.

### 1.6.2 Notification Requirements

Prior notifications for inspections by the City are required as follows:

- a. Inspections performed during regular working hours require at least four (4) hours prior notification.
- b. Inspections needed after 4:00 p.m. require notification by 1:00 p.m. on the day of the inspection.
- c. Inspections needed on the weekend require that notification be given by 1:00 p.m. on the proceeding Friday.
- d. A charge of thirty-five dollars (\$35) per hour, with a two (2) hour minimum, shall be assessed for all inspection call-backs.

## 1.7 TESTING

The developer/contractor is responsible for all testing required under these standards. Failure to perform sufficient tests shall be justification to delay acceptance of the work until such tests are completed by the developer/contractor.

## 1.8 AS-BUILT DRAWINGS

The City requires that As-built drawings for each separate development be submitted by the developer/contractor before the construction of curb, gutter, and sidewalk. Measurements should be referenced from a permanent fixture such as a fire hydrant, manhole, or survey monument located on the outside boundaries of the lots. The outside property line may be used if a permanent fixture is not available. Measurements and utilities should be clearly labeled on the As-built drawings. Utilize similar types of measurements on any valves or manholes located in the street or on the development. Measurements should also show lateral connections to main lines. All As-built drawings must be submitted as full-size drawings.

## 1.9 DAMAGE TO EXISTING UTILITIES

### 1.9.1 Developer/Contractor Responsibilities

The developer/contractor shall notify all utility companies and have them locate and mark their respective utilities prior to any construction. The developer/contractor shall notify all appropriate utility companies of its intent to begin construction. The developer/contractor shall be liable for all damage to properties that are damaged by themselves, their agents, and their employees.

## 1.10 DUST CONTROL AND CLEANUP

### 1.10.1 Dust Control

The developer/contractor shall be responsible to control dust created by its construction operations or originating from the construction site at all times

### 1.10.2 Cleanup of Construction Sites

The developer/contractor shall cleanup its construction site and, where applicable, restore the site its original condition. All materials shall be removed, gravel surfaces replaced, sod areas restored, asphalt replaced, and all other work necessary to leave the area in at least its pre-existing condition must be completed before final approval will be issued by the City.

## CHAPTER 2 EARTHWORK

### 2.1 MATERIALS

#### 2.1.1 General

- a. Fill and backfill materials may be obtained from on-site excavations, processed from on-site materials, or may be imported. Materials shall meet the gradation and composition requirements of these Standards and shall be free of large rocks, excessive organic material, asphalt, or any other deleterious material. Fill material that does not conform to these Standards shall be reworked or removed and replaced with acceptable material. The Contractor shall submit a sieve analysis of all select materials used.
- b. Fill and backfill materials shall be selected or processed clean, fine earth, rock or sand free from grass, roots, brush or other vegetation. Materials for fill, backfill and embankments that are classified under ASTM D-2487 as GC, SC, ML, MH, CL, CH, OL, OH, and PT are herein defined as unsuitable and shall not be used. Materials that cannot be compacted to achieve the required percentage of maximum density for the intended use shall not be used.

#### 2.1.2 Testing

- a. All soils testing shall be completed by a testing laboratory of the Contractor's choice and at the Contractor's expense. Where test results show noncompliance with the required density, the Contractor shall remedy the issue as may be required to ensure compliance. Subsequent testing to show compliance shall be by the testing laboratory selected by the Owner, but at the Contractor's expense.
- b. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance herein. Where cohesionless free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D-4253 and D-4254. Field density in-place tests will be performed in accordance with ASTM D-1556 or ASTM D-2922.
- c. Particle size analysis shall be performed using ASTM D-422.
- d. The sand equivalent value shall be performed using ASTM D-2419.
- e. References in these specifications to soil classification types and standards shall be as set forth in unified soil classification system, ASTM D-2487.

#### 2.1.3 Material Requirements

- a. Granular Base Course: At the option of the Contractor, the gradation for the one (1) inch or three-quarter (3/4) inch maximum size shall be used. The sand equivalent

value shall not be less than 22 and the material shall meet the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum Percentage Passing</u>	<u>¾" Maximum Percentage Passing</u>
1"	100	-
¾"	-	100
½"	79-91	-
⅜"	-	69-100
No. 4	49-61	46-75
No. 16	27-35	22-44
No. 50	10-27	10-28
No. 200	7-11	4-13

The total amount of material passing the No. 200 sieve shall be determined by washing with water in accordance with ASTM C-117. Granular base course shall be placed in finished lifts not to exceed eight (8) inches and shall be compacted to ninety-five (95) percent of maximum dry density per ASTM D-1557.

- b. Drainrock: Crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and have a sand equivalent value not less than 75 and meet the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
1 ½"	100
1"	95-100
½"	25-60
No. 4	0-10
No. 8	0-5
No. 50	0-3

Drainrock shall be placed in finished lifts not exceeding twelve (12) inches and shall be consolidated by vibration.

- c. Crushed Rock and Granular Slab Cushion: Crushed rock or gravel, durable and free from slaking or decomposition under action of alternate wetting or drying. The material shall be uniformly graded and meet the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
2"	100
1 ½"	85-100
1"	25-55
¾"	0-55
No. 200	0-3

Crushed rock and granular slab cushion material shall be placed in lifts not exceeding twelve (12) inches and shall be consolidated by vibration.

- d. Select Pipe Bedding and Backfill: material shall be crushed rock or gravel, durable and free from slaking or decomposition under action or alternate wetting and drying. The material shall be uniformly graded and meet the following gradation requirements.

<u>Sieve Size</u>	<u>Percentage Passing</u>
1/2"	100
3/8"	85-100
No. 4	10-30
No. 8	0-10
No. 16	0-5

Select pipe bedding and backfill shall be placed in finished lifts not to exceed twelve (12) inches in traffic areas and eight (8) inches in non traffic areas. Compaction requirements include ninety-five (95) percent of maximum dry density per ASTM D-1557 in traffic areas and eighty-five (85) percent of maximum dry density per ASTM D-698 in non traffic areas.

- e. Sand: The material shall be uniformly graded and meet the following gradation requirements.

<u>Sieve Size</u>	<u>Percentage Passing</u>
3/8"	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 100	2-10
No. 200	0-2

Sand shall be placed in finished lifts not to exceed 12 inches and compacted to seventy (70) percent of relative density per ASTM D-4253 and 4254.

- f. Structural Fill: Imported granular material free from rock or gravel larger than three (3) inches in any dimension and conforming to the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
3"	100
3/8"	40-50
No. 8	35-65
No. 50	10-30
No. 200	5-15

Structural fill shall be placed in finished lifts not to exceed six (6) inches and compacted to ninety-five (95) percent of maximum dry density per ASTM D-1557 under foundations, slabs, and roadways and ninety (90) percent of maximum dry density per ASTM D-698 in other areas.

- g. Bank-Run Fill: Imported granular material free from rock or gravel larger than six (6) inches in any dimension with less than fifteen (15) percent passing the No 200 sieve

and conforming to the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
6"	100
3/8"	40-50
No. 8	35-65
No. 50	10-30
No. 200	5-15

Bank-run fill shall be placed in finished lifts not to exceed six (6) inches and compacted to ninety-five (95) percent of maximum dry density per ASTM-698.

- h. Flowable Fill: the following is a suggested range for proportioning mix.

<u>Material</u>	<u>Suggested Quantity</u>		
	<u>Minimum</u>	<u>Maximum</u>	
Fly Ash	300	400	lbs/cy
Portland Cement (Type I or II)	50	70	lbs/cy
Coarse and Fine Aggregate	2600	3000	lbs/cy
Water (8" to 10") Slump	350	600	lbs/cy

Fly Ash shall meet the requirements of ASTM C-618, Class F, except loss on ignition shall not exceed three (3) percent maximum and shall come from a source approved by the City.

The coarse and fine aggregates for flowable fill shall be natural sand consisting of mineral aggregated particles. The gradation of this material shall be as follows.

<u>Sieve Size</u>	<u>Percentage Passing</u>
3/4"	100
No. 200	0-10

The mix shall be so proportioned to provide a minimum unconfined compressive strength at 28 days of 70 psi.

- e. Adjacent to structures, fill shall be placed in a manner that will prevent damage to the structures and will allow the structures to gradually receive loads from the backfill. The height of fill adjacent to structures shall be increased at the same rate on all sides of the structure.

## 2.2 INSTALLATION

### 2.2.1 General

- a. Fill materials shall not be placed until the required excavation and foundation preparations have been completed and approved by the City. Fill shall not be placed upon or against any frozen surface, nor shall snow, ice, or frozen material be incorporated into the fill.

- b. The subgrade for earth fills shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill or otherwise scored and loosened to a minimum depth of four (4) inches. The moisture content of the scarified subgrade shall be controlled as specified herein and the surface materials of the foundation shall be compacted and bonded with the first layer of earth fill.
- c. Blasting shall be permitted only by written approval and as directed by the City. The City shall approve the transportation, handling, storage, and use of explosives.
- d. The Contractor shall keep separate and stockpile from required excavations all topsoil. Topsoil is defined as loamy surface soil. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, weeds, roots, and other objects over 2" in diameter. Strip topsoils to whatever depth encountered in a manner to prevent mixing with underlying subsoil or other objectionable material. The Contractor shall place and grade this topsoil material on areas requiring landscaping, if applicable, to the extent it remains available.
- e. Suitable materials from the excavations may be used for constructing permanent earth or rock fill embankments. The suitability of materials for specific purposes shall be determined by the City.
- f. Excavation shall be completed to the lines and grades shown in the plans or established by the Design Engineer and approved by the City. Excavation beyond specified lines and grades shall be filled and compacted in accordance with these Standards. All borrow areas shall be graded and finished to eliminate steep or unstable side slopes or other hazardous or unsightly conditions.
- g. Contractor shall remove and dispose of all surplus or unsuitable excavated material at a site selected by the City.

#### 2.2.2 Site Safety

- a. All construction shall be performed in accordance with the provisions and regulations of the Nevada State Industrial Commission and OSHA Safety and Health Standards for Construction (29CFR1926).
- b. The City must approve plans and specifications for structures if the excavation is greater than five (5) feet. No permanent slopes steeper than three (3) horizontal to one (1) vertical shall be allowed without a retaining structure unless otherwise approved in writing by the City. The width of excavations and trenches shall be increased if necessary to provide space for sheeting, bracing, shoring and other supporting structures.
- c. Trenches shall not be left open at any time unless guarded with adequate barricades, warning lights, and signs.
- d. Any injury or damage resulting from a lack of adequate trench design or support shall be the responsibility of the developer/contractor. The developer/contractor shall, at its own expense, affect all necessary repairs or reconstruction resulting from such

damage.

### 2.2.3 Controlling Moisture Content

- a. All excavations shall be kept reasonably free from excess water during excavation, fine grading, pipe laying, and backfilling operations. Any water that collects in the excavation must be removed before construction proceeds.
- b. During excavation, fine grading, placement and compaction operations the moisture content of the fill and backfill materials shall be maintained in conformance with ASTM C-1557. Disking, blading, or other approved methods shall be used to obtain uniform moisture distribution prior to compaction. Excessively wet materials shall be either removed or brought to acceptable moisture content prior to compaction.
- c. If the surface of a previously placed and compacted layer of fill becomes dry and unsuitable to receive a successive layer; the surface shall be scarified and moistened to acceptable moisture content prior to the placement of additional fill.

### 2.2.4 Structural, Roadway, and Embankment Excavation

- a. Excavation under structures, roadways, and areas to be paved shall extend to the bottom of the aggregate base. After the required excavation has been completed the exposed surface shall be scarified and brought to optimum moisture content and compacted to obtain ninety-five (95) percent of maximum dry density per ASTM D-1557.
- b. The Contractor shall notify the City of the completion of any structural excavation and shall allow the City at least 24-hours review period before the exposed foundation is scarified and compacted or is covered with any structural backfill materials.
- c. When the excavation is made in a paved street, the asphalt surface shall be saw-cut on each side of the trench to provide a vertical joint in the surface.

### 2.2.5 Pipe and Utility Trench Excavation

- a. Excavation for pipelines and utilities shall be open-cut trenches. The bottom of the trench shall have a minimum width equal to the outside diameter of the pipe plus eighteen (18) inches and a maximum width equal to the outside diameter of the pipe plus twenty-four (24) inches. Trenches for pipelines smaller than eight (8) inches shall be excavated uniformly to the grade of the bottom of the pipe. Trenches for pipelines greater than eight (>8) inches shall be excavated uniformly to the depth of four (4) inches below the grade of the bottom of the pipe.
- b. The trench bottom shall be uniformly graded so that each pipe section when first laid will be continually in contact with the bedding along the entire length of the pipe.
- c. In no case shall pipe be installed directly on bedrock, hard clay, shale, or rocks with a maximum diameter larger than two (2) inches. Where such foundations are

encountered, the contractor shall over excavate below the pipe grade and place at least four (4) inches of bedding material below the pipe.

#### 2.2.6 Backfill Around Structures

- a. Fill

#### 2.2.7 Pipe and Utility Trench Backfill

- a. The City shall approve all backfill material. Under no circumstances shall rocks size larger than allowed under this Standard be permitted in the backfill material surrounding any pipe. When sand or gravel is used for backfill above the pipe zone, it must be pre-approved by the City. Sand or gravel should be well-graded and free from slag or pea gravel unless otherwise approved by the City.
- b. Backfill material shall not be dropped directly on the pipe or utility conduit.
- c. Backfill shall be placed under and around the pipe in horizontal layers not to exceed six (6) inches and tamped by hand or pneumatic tampers up to the lower one-sixth (1/6) of the outside diameter of the pipe. The pipe zone shall extend at least twelve (12) inches above the top of the pipe.
- d. After the pipe zone backfill has been placed and inspected by the City, the trench zone backfilling may proceed.

#### 2.2.7 Asphalt Pavement Restoration

- a. The contractor shall perform all work and furnish all materials to restore any asphalt surface damaged or disturbed by its construction operation. Pavement restoration shall follow, as closely as possible, the installation and backfilling of pipe. The contractor shall be responsible for maintaining the road surface in sufficient condition to allow travel by the public at all times until the surface is restored.
- b. The asphalt surface shall be saw-cut on each side of the trench prior to excavation. Granular base course and asphalt shall conform to these Standards. Edges shall also be cut straight and vertical prior to the placement of asphalt if they have become irregular or damaged during pipe installation and backfill.
- c. A temporary granular base course shall be placed flush with the existing asphalt surface and maintained in a good condition until the pavement is restored. This base course shall be excavated to the bottom of the existing pavement prior to restoring the surface. An asphalt tack coat shall be placed on the edges of the cut asphalt, and new asphalt placed and compacted with a fine-ton minimum steel-wheeled roller or other approved method to attain at least ninety-five (95) percent of maximum laboratory density. The asphalt shall be placed in such a manner that the finish surface is flush with the existing surface and provides a smooth riding surface. The finished asphalt shall be at least two and one-half (2-1/2) inches thick, or as thick as the existing asphalt, whichever is greater.

**CHAPTER 3  
WATER LINES AND SERVICE CONNECTIONS**

3.1 MATERIALS

3.1.1 Water Line Materials

Materials for constructing water lines shall be limited to the following

- a. Ductile Iron Pipe, pressure class or special thickness class, conforming to ANSI/AWWA C150/A21.50 and C151/A21.51. All DIP shall be protected with polyethylene encasement, at least 8 mils thick, conforming to ANSI/AWWA C105/A21.5 having a minimum thickness of 8 mils. All DIP shall be cement mortar lined in conformance with AWWA C104 and have a factory-applied coating of coal tar enamel.
- b. Polyvinyl Chloride Pipe conforming to AWWA C900 (12" diameter or less) or AWWA C905 (diameters larger than 12") with a Dimension Ratio (DR) of 18 or less.
- c. Joints and fittings shall be push-on bell and spigot type conforming to ANSI/AWWA C111/A21.11; mechanical joint type conforming to ANSI/AWWA C111/A21.11; or flanged type conforming to ANSI/AWWA C110/A21.10. All DI fittings shall be protected with polyethylene encasement, at least 8 mils thick, conforming to ANSI/AWWA C105/A21.5. All DI fittings shall be cement mortar lined in conformance with AWWA C104 and have a factory applied coating of coal tar enamel.
- d. All gate valves shall be resilient seated wedge type gate valves conforming to AWWA C509 and suitable for buried service. The valves shall be equipped with a 2" square operating nut, and furnished with a slip type valve box and all required mounting hardware.
- e. All butterfly valves shall conform to AWWA C504 Class 150B suitable for buried service. The valves shall be equipped with a 2" square operating nut, and furnished with a slip type valve box and all required mounting hardware.
- f. All fire hydrants shall conform to AWWA C502 and shall be equipped with a five and one-quarter valve opening, two hose nozzles, one pumper nozzle, and have appurtenant valve, box, fittings, and concrete footing and thrust block. Fire hydrants shall be "Traffic" type with a replaceable break-away section immediately above finish grade. All fire hydrants shall be of the "dry barrel" type and suitable for use in climates subject to freezing.
- g. Thrust Blocking shall be installed at all applicable locations to prevent the pipe from moving due to hydrostatic and hydrodynamic forces. Thrust blocks shall be constructed of concrete placed to bear against undisturbed soil. Fittings and bolts shall be covered with polyethylene to prevent their encasement in concrete. The use

of mechanical thrust restraining systems, whether in conjunction with thrust blocks or separately, must be approved by the City.

### 3.1.2 Water Service Materials

Materials for constructing water services shall be limited to the following:

- a. Laterals shall be IPS HDPE with a Standard Dimension Ratio (SDR) of 7. Use the same diameter and material as the existing service lateral when extending a lateral. Water service lines larger than two (2) inches shall be approved by the City on a case-by-case basis.
- b. Saddles shall be of bronze or brass construction and shall have two “U” bolts or a wide band with two bolts on each side of the saddle. The rubber gasket shall conform to the outside diameter of the main water line.
- c. Corporation Stops shall be the same size as the service lateral and shall be suitable for use with copper or HDPE service laterals, whichever is applicable.
- d. Meter Setter assemblies shall have a State approved double check valve backflow prevention device.
- e. Meter Boxes shall have a diameter of 18” and a depth of 36” and shall be constructed from either concrete or HDPE.
- f. All Meter Boxes shall be equipped with a cast iron ring and lid.

## 3.2 PIPE INSTALLATION

### 3.2.1 Care, Handling, and Inspection

- a. Special care shall be taken to prevent damage to pipe and protective coatings. Proper equipment, tools and facilities shall be provided and used for safe and controlled construction procedures. Pipe placed in trenches shall be lowered in place by means of ropes, booms or any type of power equipment sufficient to handle each piece separately. In no case shall pipe be allowed to fall freely. Pipe will not be allowed to be stored in the flow line of any gutter.
- b. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. Should the pipe become dirty or contaminated or flooded with trench water, it shall be cleaned in accordance with methods specified in the latest edition of AWWA C651 prior to disinfection.
- c. All pipes shall be carefully inspected by the contractor/developer prior to installation and defective pipe shall not be used.

### 3.2.2 Installation

- a. Installation methods shall conform to the requirements of the latest edition of AWWA C600 and best current practices. The type of bedding required shall be specified by the design, the City, or as detailed on the plans. Under no circumstances will any pipe be laid until inspection is complete and selected samples have adequately passed the requirements of the applicable specification. All pipes shall be laid true to line and grade. Cut sheets or grade stakes shall be supplied to the City for approval.
- b. Pipe shall be laid with the bell end upstream with relation to flow. A slight excavation for the bell at the joints shall maintain a suitable foundation for the barrel of the pipe. Maximum deflection shall not exceed manufacturer recommendations. Pipe shall have a minimum cover of four (4) feet to a maximum cover of five (5) feet below finish grade unless otherwise approved in writing by the City. Installation shall conform to the requirements of the applicable AWWA standards or manufacturer's recommendations whichever is most stringent.
- c. All openings in a pipeline shall be closed with watertight or rodent-proof plugs when installation is stopped at the close of work or when work is stopped for other reasons. If the trench becomes flooded, watertight plugs shall be installed, and remain in place, until the trench is dewatered.
- d. All rubber-gasket joints shall be completed in accordance with installation instructions supplied by the manufacturers of the pipe. All joints to be deflected shall be laid straight and then deflected after the joint is complete. In no case shall the deflection exceed five (5) degrees. Backfill may or may not be completed prior to placing the next section of pipe at the option of the developer/contractor, but subsequent adjustment or damage to joints shall require the pipe section to be removed, cleaned and reinstalled.
- e. All pipelines shall be marked with locator tape placed at the top of the pipe zone. Metallic locator tape shall be used for all non-metallic pipeline installations.

### 3.3 DISINFECTION AND TESTING

#### 3.3.1 Field Hydrostatic Testing of Water Lines

- a. The section of line to be tested shall be isolated and slowly filled with water. Air should be expelled from the line through hydrants or taps made at the high points. The pipe shall be tested at two-hundred (200) psi or higher as determined by the City and shall be maintained at this pressure for at least two (2) hours using either pneumatic or hydraulic means. Accurate means shall be provided for measuring the quantity of water required to maintain the test pressure. This allowable leakage rate is defined by the formula:

$$L = \frac{HND(P)^{1/2}}{148,000}$$

Where: L = allowable leakage, gallons  
D = diameter of pipe, inches  
N = length of the pipe, feet  
P = specified test pressure, psi  
H = duration of the test, hours

- b. All damaged or defective pipe or fittings shall be replaced and any known leaks shall be repaired prior to field hydrostatic testing.

### 3.3.2 Disinfection of Water Lines

- a. Disinfection of water lines shall be performed in accordance with AWWA C651. The pipe shall be clean prior to disinfection. If, in the opinion of the City, contamination in the pipe is such that it cannot be removed by flushing, the pipe shall be cleaned by mechanical means and then swabbed with a one (1) percent hypochlorite disinfecting solution. All new lines shall be isolated from existing lines during the disinfection and testing process.
- b. The Tablet Method, as described in AWWA C651 shall consist of placing calcium hypochlorite tablets at the specified rate in the water line during construction at the upstream end of each section of pipe. The tablet shall be attached with an adhesive, such as Permatex No. 1. The line shall then be filled slowly to expel all air, and maintained full for at least twenty four (24) hours, or forty eight (48) hours when the water temperature is less than forty-one (41) degrees F. The disinfection solution shall contain at least twenty-five (25) mg/l of available chlorine after these periods.
- c. If the Continuous Feed Method, as described in AWWA C651, is used; the disinfecting solution shall contain at least twenty-five (25) mg/l of available chlorine after twenty-four (24) hours.
- d. No contractor will be allowed to flush the line until a chlorine residual test has been passed and accepted by the City.

### 3.3.3 Flushing and Sampling of Water Lines

- a. After disinfection is complete, the water line shall be thoroughly flushed with clean water and, if necessary, re-chlorinated until satisfactory bacteriologic tests are obtained. Flow velocities of at least 2.5 fps must be maintained throughout the flushing process. In any test fails, the contractor shall be responsible for the fees incurred for additional testing.
- b. Bacteria samples shall be obtained at the sites designated by the City for each job. There shall be a minimum of one sample obtained for waterlines up to 200 feet in length and a minimum of two samples obtained for waterlines between 200 and 600 feet in length. For water lines longer than 600 feet in length, at least one sample shall be obtained for every 600 feet.
- c. The line will be flushed and re-tested if any sample point fails on the first test. The

line will be completely re-disinfected and re-tested at all sample points if any sample point fails a second time. In addition, the line will be re-disinfected and re-tested at all sample points if any returned sample is marked “presence”, indicating the existence of coliform bacteria.

- d. Water services will not be installed until the City has approved all bacteria sample results.

**CHAPTER 4  
SANITARY SEWER AND STORM DRAIN LINES AND LATERALS**

4.1 MATERIALS

4.1.1 Sanitary Sewer Line Materials

Materials for constructing sanitary sewer lines shall be limited to the following

- a. Ductile Iron Pipe, pressure class or special thickness class, conforming to ANSI/AWWA C150/A21.50 and C151/A21.51. All DIP shall be protected with polyethylene encasement, at least 8 mils thick, conforming to ANSI/AWWA C105/A21.5 having a minimum thickness of 8 mils. All DIP shall be cement mortar lined in conformance with AWWA C104 and have a factory-applied coating of coal tar enamel.
- b. Polyvinyl Chloride Pipe conforming to ASTM 3034 with a Standard Dimension Ratio (SDR) of 35 or less. PVC/P having an installation depth greater than twelve (12) feet shall require special approval by the City.
- c. Polyethylene Pipe conforming to ASTM F405 and ASTM F667.
- d. All joints shall be completed in accordance with the requirements and recommendations of the pipe manufacturer.
- e. Manhole sections shall be of precast reinforced concrete. Manhole covers and frames shall be cast in accordance with ASTM A48, Class 35, and shall be free from blow-holes and shrinkage defects. The minimum weight of the frame shall be two hundred eighty (280) pounds and the minimum weight of the cover shall be one hundred sixty (160) pounds.
- f. Bases for manholes shall be precast concrete manufactured according to the dimensions on the drawings. All manholes shall have at least a forty (40)-inch channel between the inlet and outlet pipes. The entire surface of the manhole invert, including channels and shelves, shall be made dense and smooth with a steel trowel. All inverts shall follow the grades of the pipe entering the manholes unless there is a change of direction greater than ten (10) degrees; in which case there shall be a drop of at least one-tenth (0.1) foot between the inlet and outlet pipes. When a smaller pipe joins a larger one, the invert of the larger pipe should be lowered sufficiently to maintain the same energy gradient. Precast manhole bases shall include all materials necessary for a complete installation, including rubber boots. In no case shall an incoming line be allowed to drop more than twelve (12) inches to the base. A drop manhole connection shall be used if the elevation difference is greater than twelve (12) inches.

#### 4.1.2 Sanitary Sewer Lateral Materials

Materials for constructing sanitary sewer laterals shall be limited to the following

- a. Ductile Iron Pipe, pressure class or special thickness class, conforming to ANSI/AWWA C150/A21.50 and C151/A21.51. All DIP shall be protected with polyethylene encasement, at least 8 mils thick, conforming to ANSI/AWWA C105/A21.5 having a minimum thickness of 8 mils. All DIP shall be cement mortar lined in conformance with AWWA C104 and have a factory-applied coating of coal tar enamel.
- b. Polyvinyl Chloride Pipe conforming to ASTM 3034 with a Standard Dimension Ratio (SDR) of 35 or less. PVC/P having an installation depth greater than twelve (12) feet shall require special approval by the City.
- c. Polyethylene Pipe conforming to ASTM F405 and ASTM F667.
- d. All joints shall be completed in accordance with the requirements and recommendations of the pipe manufacturer.
- e. Sanitary sewer lateral clean-out stand pipes shall be cast iron or ABS with a cast iron or brass cap.

#### 4.1.3 Storm Drain Line Materials

Materials for constructing storm drain lines shall be limited to the following

- a. Ductile Iron Pipe, pressure class or special thickness class, conforming to ANSI/AWWA C150/A21.50 and C151/A21.51. All DIP shall be protected with polyethylene encasement, at least 8 mils thick, conforming to ANSI/AWWA C105/A21.5 having a minimum thickness of 8 mils. All DIP shall be cement mortar lined in conformance with AWWA C104 and have a factory-applied coating of coal tar enamel.
- b. Polyvinyl Chloride Pipe conforming to ASTM 3034 with a Standard Dimension Ratio (SDR) of 35 or less. PVC/P having an installation depth greater than twelve (12) feet shall require special approval by the City.
- c. Polyethylene Pipe conforming to ASTM F405 and ASTM F667.
- d. Non-reinforced Concrete Pipe conforming to ASTM C14 providing it meets the strength requirements for the particular application.
- e. Reinforced Concrete Pipe conforming to ASTM C76.
- f. All joints shall be completed in accordance with the requirements and

recommendations of the pipe manufacturer.

- g. Manhole sections shall be of precast reinforced concrete. Manhole covers and frames shall be cast in accordance with ASTM A48, Class 35, and shall be free from blow-holes and shrinkage defects. The minimum weight of the frame shall be two hundred eighty (280) pounds and the minimum weight of the cover shall be one hundred sixty (160) pounds.
- h. Bases for manholes shall be precast concrete manufactured according to the dimensions on the drawings. All manholes shall have at least a forty (40)-inch channel between the inlet and outlet pipes. The entire surface of the manhole invert, including channels and shelves, shall be made dense and smooth with a steel trowel. All inverts shall be adjusted such that the crowns of all incoming pipes is equal and there is at least a five-hundredths (0.05)-foot drop between the crowns of the inlet pipes and the crown of the outlet pipe. All precast manhole bases shall include all materials necessary for a complete installation, including rubber boots.
- i. Catch basins shall meet the requirements as shown in the Standard Drawings section of these Standards.

## 4.2 PIPE INSTALLATION

### 4.2.1 Care, Handling, and Inspection

- a. Special care shall be taken to prevent damage to pipe and protective coatings. Proper equipment, tools and facilities shall be provided and used for safe and controlled construction procedures. Pipe placed in trenches shall be lowered in place by means of ropes, booms or any type of power equipment sufficient to handle each piece separately. In no case shall pipe be allowed to fall freely. Pipe will not be allowed to be stored in the flow line of any gutter.
- b. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying.
- c. All pipes shall be carefully inspected by the contractor/developer prior to installation and defective pipe shall not be used.

### 4.2.2 Installation

- a. Installation methods shall conform to the requirements of the manufacturer. The type of bedding required shall be specified by the design, the City, or as detailed on the plans. Under no circumstances will any pipe be laid until inspection is complete and selected samples have adequately passed the requirements of the applicable specification. All pipes shall be laid true to line and grade. Cut sheets or grade stakes shall be supplied to the City for approval.

- b. A slight excavation for the bell at the joints shall maintain a suitable foundation for the barrel of the pipe. Maximum deflection shall not exceed manufacturer recommendations but in no case shall it exceed five (5) percent. The bedding condition for concrete pipe shall conform to at least a Class C condition.
- c. All openings in a pipeline shall be closed with watertight or rodent-proof plugs when installation is stopped at the close of work or when work is stopped for other reasons. If the trench becomes flooded, watertight plugs shall be installed, and remain in place, until the trench is dewatered.
- d. All rubber-gasket joints shall be completed in accordance with installation instructions supplied by the manufacturers of the pipe. Backfill may or may not be completed prior to placing the next section of pipe at the option of the developer/contractor, but subsequent adjustment or damage to joints shall require the pipe section to be removed and reinstalled.
- e. All pipelines shall be marked with locator tape placed at the top of the pipe zone. Metallic locator tape shall be used for all non-metallic pipeline installations.

#### 4.2.3 Minimum Size and Slope Requirements

- a. In no case shall the diameter of any sanitary sewer line be less than eight (8) inches. In no case shall the diameter of any storm drain line be less than fifteen (15) inches.
- b. The minimum slopes for sanitary sewers and storm drain lines are as follows:

<u>Size, in.</u>	<u>Slope, ft/ft</u>
8	0.004
10	0.003
12	0.0022
15	0.0015
18	0.0012
21+	0.0010

- c. Whenever possible, the slope should exceed 0.006 ft/ft. The pipe should be sized to meet anticipated hydraulic loads. Increasing the pipe size to reduce the minimum slope requirement shall not be allowed unless approved by the City. Sewer slopes shall not exceed 0.10 ft/ft. Drop manholes shall be used to keep the sanitary sewer line grade flatter than this maximum allowable slope.
- d. In no case shall the diameter of any sewer lateral be less than four (4) inches. The minimum slope for sanitary sewer laterals is one-quarter (1/4) inch per foot.

#### 4.2.4 Connection to Existing Sewer

- a. Manholes that connect a new sewer to an existing sewer shall be plumb and centered
-

on the existing pipe at the elevation designated on the drawings. Care shall be taken not to disturb the alignment of the existing sewer line.

- b. The cutting of the existing sewer line shall be in the presence of the City. The cut shall be for the full area of the new pipe and shall be finished so as to leave no projections that will restrict the flow or collect solids. Every precaution shall be taken to prevent foreign material from entering the new or existing sewer lines.
- c. Brick shall not be used to raise a manhole nor cones broken-out to lower a manhole. Sections shall be removed and grade rings used to adjust manhole lids to the required grade.

#### 4.2.5 Lateral Connections to Sanitary Sewer Lines

- a. Connections shall conform to these Standards. If the sewer lateral is greater than one-half (1/2) the size of the main sewer line, a manhole shall be placed at the main line connection. All laterals shall extend into property line a minimum distance of ten (10) feet and the minimum length of any pipe section used shall be five (5) feet. The minimum depth of cover for sewer laterals is three and one-half (3.5) feet.
- b. There shall be a maximum distance of five (5) feet from the foundation wall to the first exterior clean-out with a maximum distance between clean-outs of seventy-five (75) feet. There shall also be a clean-out at any ninety (90) degree bend or any combination of bends in excess of ninety (90) degrees.

#### 4.2.6 Separation

- a. Sewer laterals shall not be installed in the same trench as the water service line unless the water service line is placed on a solid shelf excavated at one side of the common trench. At all times the water service shall be separated from the sewer lateral at least eighteen (18) inches horizontally and eighteen (18) inches vertically above the sewer lateral.
- b. Water services shall be separated from sewer laterals by at least five (5) feet horizontally and eighteen (18) inches vertically above the sewer lateral in public rights-of-way.

### 4.3 FIELD TESTING

#### 4.3.1 Air Pressure Testing

- a. All Sanitary sewer lines and laterals shall be air pressure tested. After the first lift is placed and compacted, the section of sewer line to be tested shall be pressurized to four (4) psi. When the pressure in the line drops to three and one-half (3.5) psi, a time count shall be started. If the pressure in the line drops more than one (1) psi during the time period prescribed in ASTM C924, the line shall not be accepted.

- b. Any other method of leak testing must have the approval of the City. Storm drain lines need not be tested unless specifically required by the City.

**CHAPTER 5  
CONCRETE CURB, GUTTER AND SIDEWALK**

5.1 MATERIALS

5.1.1 General

- a. All concrete shall conform to the requirements of these Standards. Under no circumstances shall the water cement ratio exceed 0.53 or six (6) gallons of water per bag of cement. The slump shall not exceed the tolerances specified in these Standards.
- b. All forms shall be made from steel except at curves with a radius smaller than 200 feet. They shall be of a size to match the sections shown on the plans. Forms shall be held firmly in place with stakes or other approved means and shall be true to line and grade. Forms for curved sections shall be so constructed and placed that the finish surface of walls and edge of sidewalks, curbs and gutters will not deviate from the arc of the curve.

5.1.2 Subgrade

- a. See Chapter 2 - Earthwork

5.2 INSTALLATION

5.2.1 Subgrade Preparation

- a. The developer/contractor shall construct subgrade to the lines and grades approved by the City. The subgrade shall be properly shaped to conform with the approved cross section and grade and placed and compacted to meet the densities specified in these Standards.
- b. Placement of concrete on unsuitable materials shall not be permitted.
- c. Subgrade preparation shall extend three (3) feet beyond back of sidewalk. The elevation of subgrade preparation shall be not lower than the bottom of the back of walk.

5.2.2 Joints

- a. Contraction joints shall be constructed at a minimum of every eight (8) feet by using steel templates one-eighth (1/8) inch in thickness. The templates shall be removed as soon as concrete has set sufficiently to hold its shape. Expansion joints shall be constructed at a minimum of forty (40) feet. Joints in the curb, gutter, and sidewalk shall coincide when the sidewalk is placed adjacent to the curb and gutter.

- b. At the end of each day's concrete placement, or when work is terminated, or when a delay of more than thirty (30) minutes occurs, the joint shall be made vertical and square ended. In no case shall the day's concrete placement be terminated at a driveway.

### 5.2.3 Finished Surfaces

- a. All exposed surfaces of the concrete shall be accurately screened to grade, then float finished, edged, and lightly broom finished. Finishing shall be delayed until concrete has reached its initial set and has stopped bleeding. Excessive floating or finishing of concrete surfaces shall not be permitted. The addition of dry cement or water to the newly placed concrete surface shall not be allowed.

### 5.2.4 Curing

- a. Immediately after final finishing, all surfaces that are exposed to the air shall be coated with curing compound. The compound used shall be a chlorinated rubber type conforming to ASTM C309, Type 1, red pigment that can be readily seen by the City. The compound shall be applied in accordance with the manufacturer's recommendations.
- b. The developer/contractor shall be responsible to bring the earth grade to within plus or minus one (1) inch of the top back of walk. This grade shall be maintained for a distance of three (3) feet from back of walk.

### 5.2.5 Removal or Repair of Sidewalk

When concrete is honeycombed, damaged, improperly cured or otherwise defective, the developer/contractor shall remove and replace the structure or structural member containing the defective area. A licensed and qualified contractor is required to take out a no-charge permit to replace any concrete in a City right-of-way. Any damage to adjoining walk shall also be replaced. The City will determine the required extent of removal, replacement or repair. No less than a five (5) foot section of concrete shall be replaced. Prior to starting repair work, the developer/contractor shall obtain the City's approval of its plan for the repair. The developer/contractor shall erect and maintain suitable barriers to protect the finished surface. Any section damaged from traffic or other causes occurring prior to its official acceptance, shall be repaired or replaced by the developer/contractor at its own expense in a manner satisfactory to the City. Failure to comply with specified tolerances may be cause for rejection.

### 5.2.6 American Disabilities Accessibility Standards in Public Street Rights-of-Way

- a. American Disabilities Accessibility Standards are to be applied during the design, construction, and alteration of street construction or public buildings. The construction of curb ramps shall conform to these Standards.

- b. Curb ramps complying with shall be provided wherever an accessible route crosses a curb. Longitudinal slopes of curb ramps shall be constructed with the least slope possible. The maximum slope of a ramp in new construction shall be one (1) horizontal to twelve (12) vertical. The maximum rise for any run shall be thirty (30) inches. Transitions from ramps to walks, gutters, or streets shall be flush and free from abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed one (1) horizontal to twenty (20) vertical.
- c. The minimum width of a curb ramp shall be thirty-six (36) inches, exclusive of flared sides.
- d. The surface of curb ramps shall be stable, firm, and slip resistant.
- e. If a curb ramp is located where pedestrians must walk across the ramp, or where it is not protected by hand rails or guardrails, it shall have flared sides; the maximum slope of the flare shall be one (1) horizontal to twelve (12) vertical. Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp.
- f. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes.
- g. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.
- h. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.
- i. If diagonal (corner type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a minimum of forty-eight (48) inches of clear space. If diagonal curb ramps are provided at marked crossings, the forty-eight (48)-inch clear space shall be within the markings. If diagonal curb ramps have flared sides, they shall also have at least a twenty-four (24)-inch long segment of straight curb located on each side of the curb ramp and within the marked crossing.
- j. Any raised islands in crossing shall be cut through level with the street or have curb ramps at both sides of a level area forty-eight (48) inches long between the curb ramp in the part of the island intersected by the crossings.
- k. Detectable warnings shall consist of a rough-broom concrete finish. The area of the ramp and flared sides shall be a visually contrasting surface. The City will determine on a case by case basis how the surface should be contrasted.

**CHAPTER 6**  
**ASPHALT PAVING AND GRANULAR BASE COURSE**

6.1 MATERIALS

6.1.1 General

- a. Use locally available materials and gradations which exhibit a satisfactory record of previous installations.

6.1.2 Base Course Aggregate

- a. Granular base for all street pavements shall consist of select materials, either natural or crushed, meeting specifications of Section 704 - Base Aggregates, State Of Nevada Specifications For Road And Bridge Construction, latest edition. The City must approve the thickness of all granular base courses.
- b. See Chapter 2 – Earthwork.

6.1.3 Surface Course Aggregate

- a. Bituminous surface course shall be in accordance with Section 402 - Bituminous Surface Course of the State Of Nevada Standards Specifications For Road And Bridge Construction, latest edition. One-half (1/2) inch maximum gradation shall be used.

6.1.4 Asphalt Cement

- a. Comply with ASTM D-3381.

6.1.5 Asphalt-Aggregate Mixtures

- a. 1/2 Inch Gradation Mix: the material shall be uniformly graded and meet the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
1/2"	100
No. 4	55-85
No. 16	24-38
No. 50	9-21
No. 200	4-8

- b. 3/4 Inch Gradation Mix: the material shall be uniformly graded and meet the following gradation requirements.

<u>Sieve Size</u>	<u>1" Maximum</u>
3/4"	100
3/8"	69-91
No. 4	42-58
No. 16	17-31
No. 50	9-21
No. 200	4-8

- c. Aggregate shall have a percentage of wear not to exceed fifty (50) when tested in accordance with ASTM C-131. This requirement shall be used only in determining the suitability of the aggregate source and shall not be used for routine control testing.
- d. Crushed blast furnace slag, if used, shall be uniform in density and quality and have a rodded weight of not less than seventy-five (75) pounds per cubic foot when tested in accordance with ASTM C-29. Open-hearth slag will not be permitted for use as granular base course.

## 6.2 INSTALLATION

### 6.2.1 Surface Preparation

- a. Place asphalt on prepared base of compacted base course aggregate. Base shall be inspected, tested, and approved by the City prior to placing asphalt.
- b. Bituminous Seal Coat: shall conform to Section 407 - of the State Of Nevada Standard Specification For Road And Bridge Construction, latest edition. AC-10 or AC-20 bituminous material shall be used. Seal coats shall be used only if specifically called for on the plans or specified in writing by the City.
- c. Bituminous Prime and Tack Coats: shall conform to Section 405 and 406 respectively of the State Of Nevada Standard Specifications For Road And Bridge Construction, latest edition. Tack coats shall be applied to the edges of existing asphalt when new asphalt is placed adjacent to or when new asphalt is placed over old asphalt, or new concrete curb.

### 6.2.2 Placing Asphalt Concrete Mix

- a. A self-propelled lay down machine shall be used on all City streets. A box type lay down machine may be used on strip paving, patches, and areas where the self-propelled type lay down machine cannot be used as determined by the City.
- b. Make joints between old and new pavements or between successive days' work to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness. Clean contact surfaces and apply tack coat.

- c. No asphalt shall be placed when the ambient air temperature is less than forty degrees (40) F. No asphalt shall be placed when there are any frozen materials in the subgrade or the granular base course. Asphalt shall not be placed during rainy weather, when the road is wet, or during other adverse weather conditions. At the time of delivery to the site of the work, the temperature of the asphalt shall not be lower than two hundred sixty degrees (260) F. Compaction shall be complete before the temperature of the asphalt drops below one hundred eighty degrees (180) F. If the asphalt temperature drops below one hundred eighty degrees (180) F, asphalt placement shall be halted.
  
- d. Trenches cut during winter months or when asphalt plants are not operating shall be patched the same day of the cut with a good quality cold mix and maintained until asphalt plants open. When the asphalt plants open, the cold patch shall be removed and a new patch of hot mix asphalt shall be placed within twenty (20) days of plant opening.

### 6.2.3 Field Quality Control

- a. Thickness: A minimum of two and one-half (2 1/2) inches of asphalt is required unless otherwise specified by the City.
  
- b. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10-foot straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the tolerance of 3/8" for smoothness.

Check surface areas at intervals as directed by the City.

- c. Asphalt Content: Samples of the bituminous pavement mixture will be collected from the roadway and tested for both gradation and asphalt content. If the samples differ from the mix design submitted for approval by the OWNER and ENGINEER, the actual mix design (as determined from the sample) will be evaluated. If the in-place mix is found to be unacceptable, a plant mix seal coat will be required. The plant mix seal coat and tack coat will be installed at no additional cost to the Owner.

**CHAPTER 7  
PORTLAND CEMENT CONCRETE**

7.1 MATERIALS

7.1.1 Portland Cement Concrete

- a. Portland Cement shall conform to the requirements of ASTM C-150. Type II cement shall be used unless otherwise specified.
- b. Water shall be clean and free from damaging amounts of oil, salt, acid, alkali, organic matter, or other deleterious substances and shall meet the requirements of ACI 318-77.
- c. Aggregates shall conform to the requirements of ASTM C-33 and shall be well graded and free from substances that are chemically active relative to hydrated cement.
- d. Coarse aggregate shall consist of clean, hard, and durable particles of a mixture of crushed and natural aggregate and shall be well graded to produce as dense a mixture as practical. Deleterious substances in the aggregate shall be limited as follows:

<u>Deleterious Substance</u>	<u>Percent by Weight</u>
Soft Fragments	3.0
Coal Lumps	1.0
Clay Lumps	0.5
Material passing #100 sieve	1.5
Organic Material	0.1
. Total for any or all of above	3.0

- e. Abrasion loss, as determined by the Los Angeles Abrasion Test, shall not be more than forty percent (40%) by weight.
- f. Loss on exposure to five cycles of the Sodium Sulfate Soundness Test shall not be more than eight percent by weight.
- g. The maximum size of aggregate to be used shall not exceed one and one-half (1- 1/2) inches in terms of the size definition contained in ASTM Standards, except that the maximum size shall not exceed:

- 1/5 of the narrowest dimension between the sides of forms
- 1/3 of the depth of slabs
- 3/4 of the minimum clear spacing between individual reinforcing bars, wires, bundles of bars, and pre-stressing tendons and ducts

- h. Fine aggregate shall consist of clean, hard, and durable particles of a mixture of crushed and natural aggregate and shall be well graded to produce as dense a mixture as practical. Deleterious substances in the aggregate shall be limited as follows:

<u>Deleterious Substance</u>	<u>Percent by Weight</u>
Soft Fragments	3.0
Coal	1.0
Material passing #200 sieve	3.0
Micaceous or Flaky Particles	3.0
· Total for any or all of above	5.0

- i. Performance of the Organic or Color-metric test using sodium hydroxide shall result in a color that is lighter than Number 2.
- j. Unless otherwise specified in these Standards, unreinforced concrete flat work shall have a slump range of 1 to 3 inches, reinforced concrete shall have a slump range of 2 to 4 inches unless super plasticized, and mass concrete shall have a slump range of 2 to 6 inches.

#### 7.1.2 Additives and Admixtures

- a. Air-Entraining Admixtures shall conform to "Specifications for Chemical Admixtures to Concrete," ASTM C494. Admixtures containing chloride ions shall not be used in pre-stressed concrete or in concrete containing embedded aluminum or galvanized accessories.
- b. The City must approve any use of calcium chloride. In no case shall more than two (2) percent of calcium chloride be used. In no case shall calcium chloride be used in any reinforced slab.
- c. The City must approve any use of fly-ash or other pozzolans. Pozzolans shall conform to the requirements of ASTM C618. In no case shall more than fifteen (15) percent of the Portland Cement be replaced by an equal weight of pozzolans.
- d. Curing compounds shall meet the requirements of ASTM C309. The compound shall be applied in accordance with the manufacturer's recommendations as soon as possible after final finishing. Transparent curing compounds shall consist of a liquid that is free from suspended matter at the time of application and shall be sufficiently low in viscosity to result in an even, uniform coating when applied by spraying. The compound shall be sufficiently transparent and free from permanent color to result in no pronounced change in color from that of the natural concrete at the conclusion of the curing period. However, the compound shall contain a red pigment dye, conforming to the requirements of ASTM C309 1-0 Class B, sufficient to render the film distinctly visible on the concrete for a period of at least four (4) hours after

application.

### 7.1.3 Reinforcing Steel

- a. Reinforcing steel shall conform to the requirements of ASTM A615 and shall be of the sizes and grade specified on the plans. Reinforcing steel shall be clean and free from rust, scale, paint, grease or other foreign matter that might prevent or impair the formation of a bond with the concrete.
- b. Steel welded wire fabric shall conform to the requirements of ASTM A185 and shall be of the sizes and grade specified on the plans. Welded wire fabric shall be clean and free from rust, scale, paint, grease, or other foreign matter that might prevent or impair the formation of a bond with the concrete.
- c. Reinforcing steel shall be cut and bent per the requirements of ACI 315 and shall not be bent, heated or straightened in a manner that will injure the material. Reinforcing steel with kinks, cracks, or improper bends will be rejected.
- d. All epoxy coated reinforcing steel shall be coated according to ASTM A-775. Only those bars required by the approved plans shall be coated. All bent bars shall be coated after bending. Epoxy coated bars that are to be cut in the field shall be either sawed or sheared but shall not be torch-cut. The sawed or sheared end and all other damaged coating shall be repaired using a specified patching or repair material approved by the manufacturer for epoxy coating repair.

### 7.1.4 Accessories

- a. Preformed expansion joint filler shall conform to the requirements of ASTM D-1752 or ASTM D-994.

## 7.2 CONCRETE MIX DESIGN

### 7.2.1 Strength Requirements

- a. Unless otherwise specified, the minimum compressive strength of concrete at twenty-eight (28) days shall be as follows:

4,000 psi for all reinforced concrete

3,500 psi for all flat work, sidewalks, curbs, gutters, pavements, and unreinforced slabs and footings

2,500 psi for thrust blocks, thrust anchors, and mass concrete

- b. Rejection of concrete on the basis of strength shall be considered if the average of any three consecutive compressive strength tests is below the required value or if any

individual compressive strength test is more than 500 psi below the required value.

- c. The City shall require tests or otherwise investigate concrete that fails to meet the strength requirements and may elect to have the concrete replaced at the expense of the developer/contractor. Any investigation of reinforced concrete structures shall conform to the requirements of ACI 318-77 section 4.8.4. Load tests, if required, shall be performed at the expense of the developer/contractor.
- d. Procedures for testing concrete compressive strength shall be in accordance with the requirements of ASTM C31 Method of Making and Curing Concrete Test Specimens in the Field, ASTM C39 Method of Test for Compressive Strength of Cylindrical Concrete Specimens, and ASTM C142 Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- e. The proportions of the aggregates shall serve to produce a concrete mixture that will work readily into the corners and angles of the forms and around reinforcement when consolidated, but will not segregate or exclude free water during consolidation.
- f. Prior to placement of concrete, the developer/contractor shall furnish the City with a statement of the proposed materials, mix proportions, and admixtures. The statement shall include evidence that the materials and the proportions will produce concrete conforming to this specification. The materials and proportions so stated shall constitute the job mix. The source and character of aggregates and the type or brand of cement or admixture shall not be changed without approval by the City.
- g. For curb, gutter, sidewalk, and other flat work the water cement ratio shall not exceed 0.53 by weight or six (6) gallons per bag of cement. Only air entraining admixtures shall be allowed for flat work exposed to freezing temperatures when wet, without written approval from the City.
- h. Materials shall be stockpiled and combined by methods that will prevent segregation or contamination of aggregates and to ensure accurate proportioning of the ingredients in the mix.
- i. Cement shall be measured by weight or in bags of 94 pounds each. When cement is measured in bags, no fraction of a bag shall be used unless weighed.
- j. Aggregates shall be measured by weight. Mix proportions shall be based on saturated, surface-dry weights. The batch of each aggregate shall be the required saturated, surface-dry weight plus the weight of the surface moisture it contains.
- k. Water shall be measured by volume or by weight, to within one percent of the total quantity of water required for the batch. No water in excess of the amount specified in the mix design for the job mix shall be added to the concrete.

- l. Admixtures shall be measured within plus or minus three (3) percent.
- m. Concrete shall be uniform and thoroughly mixed when delivered to the work site. Variations in the slump of more than 1 inch within the batch will be considered evidence of inadequate mixing and shall be corrected by increasing mixing time or by other means.
- n. For stationary mixtures, after all cement aggregate and water are in the mixer drum, the mixing time shall not be less than 1 1/2 minutes.
- o. Unless otherwise specified, volumetric batching and continuous mixing at the construction site will be permitted only when approved by the City. The batching and mixing equipment shall conform to the requirements of ASTM C685 and shall be demonstrated prior to the placement of concrete, by tests with the job mix, to produce concrete meeting the specified proportioning and uniformity requirements. Concrete made by this method shall be produced, inspected, and certified in conformance with Sections 6, 7, 8, 13 and 14 of ASTM C685.

### 7.3 PLACING CONCRETE

#### 7.3.1 Forms

- a. Forms shall be of wood, plywood, steel or other approved material and shall be mortar tight. The forms and associated false work shall be substantial and unyielding and shall be constructed so that the finished concrete will conform to the specified dimensions and contours. Form surfaces shall be clean, smooth, and free from holes, dents, sags or other irregularities. Forms shall be coated with non-staining form oil before being set into place. Care shall be taken to prevent oil from getting on reinforcement or anchors. Reinforcement or anchors shall be clean before placing of concrete.
- b. Metal ties or anchors within the forms shall be equipped with cones, she-bolts, or other devices that permit their removal to a depth of at least one inch without injury to the concrete. Ties designed to break off below the surface of the concrete shall not be used without cones.
- c. All edges that will be exposed to view when the structure is completed shall be chamfered or finished with molding tools.
- d. Forms shall not vary from vertical grade by more than 0.02 feet and from horizontal alignment by more than 0.05 feet. All forms shall have smooth even lines in both the horizontal and vertical plane.

#### 7.3.2 Conveying Concrete

- a. When the air temperature is eighty (80) degrees F or greater, a maximum time of
-

45 minutes will be allowed from the time the cement mix is added to the concrete until the concrete mix is discharged from the carrier. When the temperature is less than eighty (80) degrees F, a maximum time of 90 minutes will be allowed from the time the water is added to the concrete mix until the concrete mix is discharged from the carrier. The concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods that will prevent segregation of the aggregates or loss of mortar. Concrete shall not be dropped more than five feet vertically unless suitable equipment is used to prevent segregation.

- b. Concrete shall not be placed until the subgrade, forms, and steel reinforcement have been inspected and approved by the City.
- c. The concrete shall be initially placed as closely as possible to its final position in the forms and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Unless otherwise specified, slab concrete shall be placed to the design thickness in one continuous layer. Formed concrete shall be placed in horizontal layers not more than twenty (20) inches thick. Hoppers, chutes, pipes, and concrete pumps shall be used as necessary to prevent splashing of mortar on the forms and reinforcing steel above the layer being placed.
- d. Immediately after the concrete is placed in the forms, it shall be consolidated by spading, hand tamping, or vibration as necessary to insure smooth surfaces and dense concrete. Each layer shall be consolidated to insure a monolithic bond with the preceding layer. If the surface of a layer of concrete in place sets to a degree that it will not flow and merge with the succeeding layer when spaded or vibrated, the developer/contractor shall discontinue placing concrete and shall make a construction joint.
- e. If concrete placement is discontinued before a complete horizontal layer is in place, a vertical bulkhead, at a location approved by the City, shall be used to form the unfinished end of the layer.
- f. No concrete flat work shall be placed or finished in the rain or snow.
- g. In walls and columns, as each lift is completed, the top surfaces shall be immediately and thoroughly protected from any condition that might adversely affect the hardening of the concrete.

### 7.3.3 Construction, Expansion, and Contraction Joints

- a. Construction joints shall be installed as shown on the drawings. If construction joints, not shown on the drawings are needed, they shall be placed in locations approved by the City.
  - b. Where a feathered edge would be produced at a construction joint, as in the top
-

surface of a sloping wall, an insert form shall be used so that the resulting edge thickness on either side of the joint is not less than six (6) inches.

- c. Steel tying and form construction to be accomplished adjacent to newly placed concrete shall not be started until the concrete has cured at least 12 hours. Before new concrete is deposited on or against newly hardened concrete, the forms shall be kept moist for at least one hour prior to placement of the new concrete.
- d. Expansion and contraction joints shall be made only at the locations shown on the drawings.
- e. Exposed concrete edges at expansion and contraction joints shall be carefully tooled or chamfered, and the joints shall be free of mortar and concrete. Joint filler shall be left exposed for its full length with clean and true edges.
- f. Preformed expansion joint filler shall be held firmly in the correct position while the concrete is placed.
- g. When open joints are specified, they shall be constructed by the insertion, and subsequent removal, of a wooden strip, metal plate, or other suitable template in such a manner that the corners of the concrete will not be chipped or broken. The edges of open joints shall be finished with an edging tool prior to removal of the joint strips.

#### 7.3.4 Waterstop

Waterstop shall be held firmly in the correct position while the concrete is placed. Joints in metal waterstop shall be soldered, brazed, or welded. Joints in rubber or plastic waterstop shall be cemented, welded, or vulcanized as recommended by the manufacturer.

#### 7.3.5 Air Content and Consistency

- a. Concrete, that after curing, will be exposed to freezing temperatures while wet shall contain entrained air within the following limits:

<u>Normal Maximum Aggregate Size, in</u>	<u>Total Air Content, % by Volume/cu ft</u>
3/8	6 to 10
1/2	5 to 9
3/4	4 to 8
1-1 1/2	3.5 to 6.5

- b. If the content of entrained air falls below the minimum value set as determined from two or more tests in a batch, the City may reject the concrete.

### 7.3.6 Rejection Based on Excessive Slump

- a. If the slump measurements are inconsistent with the job mix, the City can reject the concrete if the adequacy of the batch is in question. Inconsistency shall be defined by at least two slump tests, from the same load, falling more than two (2) inches below the job mix slump.
- b. The first slump test will be taken after the first yard of concrete has been placed. If this test fails a second test will be taken immediately after.

### 7.3.7 Finishing Formed Surfaces

- a. All fins and irregular projections shall be removed from exposed surfaces.
- b. The holes produced by the removal of the form ties, cones, bolts, and she-bolts, shall be cleaned, wetted, and filled with a dry-pack mortar consisting of one part portland cement, three parts sand that will pass a #16 sieve, and water just sufficient to produce a consistency such that the filling is at the point of becoming rubbery when the material is solidly packed.

### 7.3.8 Finishing Unformed Surfaces

- a. All exposed surfaces of the concrete shall be accurately screened to grade, then float finished, and lightly broom finished, unless otherwise specified. Finishing shall be delayed until concrete has reached its initial set and stopped bleeding. Excessive floating or trowel finishing shall not be permitted.
- b. The addition of dry cement or water to the surface of the screened concrete to expedite finishing shall not be permitted.
- c. Joints and edges on unformed surfaces that will be exposed to view shall be chamfered or finished with molding tools.

### 7.3.9 Curing

Immediately after final finishing, surfaces that are exposed to the air shall be coated with curing compound.

### 7.3.10 Removal or Repair of Concrete

- a. When concrete is honeycombed, damaged, improperly cured, or otherwise defective, the developer/contractor shall remove and replace the structure or structural member containing the defective area. The City shall have cause for rejection when the requirements of these Standards are not met.

- b. The developer/contractor shall erect and maintain suitable barriers to protect the finished surface. Any section damaged by traffic or other causes occurring prior to its official acceptance by the developer/contractor at his own expense in a manner satisfactory to the City.

#### 7.3.11 Placing Concrete in Cold Weather

- a. When the ambient temperature is expected to drop below forty (40) degrees F at the time concrete is delivered to the work site, during placement, or at any time during the curing period, the temperature of the concrete at time of placement shall not be less than fifty (50) degrees F nor more than ninety (90) degrees F. The temperature of aggregates and mixing water shall not be more than one hundred (100) degrees F just prior to mixing with the cement.
- b. Concrete structures shall be insulated or housed and heated if the daytime ambient temperature is less than forty (40) degrees F. The temperature of the concrete and air adjacent to the concrete shall be maintained at not less than fifty (50) degrees F or more than ninety (90) degrees F for the duration of the curing period.
- c. The method of insulation shall be by standard concrete insulation blankets or straw. When using straw, the contractor shall install two layers of plastic sheeting with six (6) inches of straw between them. Methods of insulating, housing and heating the structure shall conform to ACI 306 Recommended Practice for Cold Weather Concreting.
- d. When dry heat is used to protect concrete, some means of maintaining an ambient humidity of at least forty (40) percent shall be provided unless the concrete has been coated with curing compound or is covered with an approved impervious material.

#### 7.3.12 Placing Concrete in Hot Weather

- a. When the ambient temperature is expected to rise above ninety (90) degrees F at the time concrete is delivered to the work site, during placement, or for the first twenty-four (24) hours after placement, the contractor shall maintain the temperature of the concrete below ninety (90) degrees F. The methods used shall conform to ACE 605 Recommended Practice for Hot Weather Concreting.
- b. The concrete shall be placed immediately after mixing. Truck mixing shall be delayed until only enough time remains to finish mixing before the concrete is placed.
- c. Exposed concrete surfaces that tend to dry or set too rapidly shall be continuously moistened by means of fog sprays or otherwise protected from drying during the time between placement and finishing and curing.
- d. Finishing of slabs and other exposed surfaces shall be started as soon as the condition of the concrete allows, and completed without delay.

- e. Concrete surfaces exposed to the air shall be covered as soon as the concrete has hardened sufficiently and shall be kept continuously wet for at least the first 24 hours of the curing period.
- f. Formed surfaces shall be kept completely and continuously wet for the duration of curing period or until curing compound is applied as specified in these Standards.

#### 7.3.13 Inspection and Testing

- a. The City shall have free access to the construction site and batch plant. Proper facilities shall be provided for the City to inspect materials, equipment, and processes and to obtain samples of the concrete. Any inspections and tests performed by the City will be conducted in a manner that will minimize disruptions to the production and delivery of concrete.

## **CHAPTER 8 WORK SITE TRAFFIC CONTROL**

### **8.1 GENERAL REQUIREMENTS**

#### **8.1.1 Purpose**

- a. Work site traffic control shall provide for safe and expeditious movement of traffic through construction and maintenance work zones at all times. The developer/contractor and other utilities (hereinafter referred to as work agencies) shall provide and maintain all construction signs, barricades, warning lights, flagmen or uniformed law enforcement officers required for the proper protection, direction, and traffic control within the construction or maintenance work zone
- b. Traffic control devices and methods shall serve to protect the motoring public, protect the work force, provide a safe and expeditious flow of traffic, provide for efficient and safe construction and maintenance operations, and maintain good public relations.

#### **8.1.2 Standards and Requirements**

The requirements, standards, and methods of application shall conform to the Manual on Uniform Traffic Control Devices (MUTCD). Typical situations, indicating the proper application of approved devices to control traffic through construction and maintenance areas, are illustrated in the MUTCD. The application of these devices to other circumstances shall be handled in a manner consistent with the MUTCD. Reference to the MUTCD shall include the revisions adopted by the State of Nevada Department of Transportation.

#### **8.1.3 Permission to Restrict Traffic on City Streets**

- a. All work agencies and persons must obtain authorization or in some cases a permit for partial or complete closure of any public right-of-way, street, or sidewalk within the City of West Wendover. All requests to restrict right-of-way will be directed to the City. Requests that require partial or complete closure of any City street or sidewalk, detouring or rerouting of pedestrian traffic, or other similar public impacts shall include a Traffic Control Plan that must be approved by the City. The City can require a Traffic Control Plan for any project that impacts a City street, right-of-way, or sidewalk.
- b. The Traffic Control Plan (TCP) may range in complexity from, use of the typical illustrations in the MUTCD, to a detailed site plan displaying signing, barricading, material delivery areas, construction office, utility poles, staging areas, and construction phasing. In all cases the TCP must address satisfactorily all of the requirements of the MUTCD for the project. Exceptions to the requirements of the MUTCD must be requested in writing by the applicant, and be approved by the City and shall be added to the TCP.
- c. All permits and TCPs must be kept on the job site.

- d. Street closures of any type will not be permitted without advance notice, except during emergency conditions. The City reserves the right to deny any street closure permit during anytime, when in their judgment, the traffic restriction could result in unbearable congestion or unnecessary accident potential.

#### 8.1.4 General Traffic Control Regulations

- a. The closure of traffic lanes is not permitted during the hours of 7 to 9 a.m. and 4 to 6 p.m. on weekdays.
- b. During Off-peak traffic hours when one traffic lane is restricted at signalized intersections with left-turn lanes, traffic shall be channeled to provide a through lane.
- c. A traffic lane shall not be considered as satisfactorily open to traffic unless it is at least 12 feet wide and is paved with hot mix or cold mix asphalt paving and is surrounded by or adjacent to existing pavement. Where existing pavement has been removed, a traffic lane shall not be considered as satisfactorily open to traffic unless it is graded reasonably smooth and maintained dust free. The major streets shall be patched the same day as work is done and all other streets shall be patched within forty-eight (48) hours.
- d. Local access shall be maintained to all properties on all streets whenever possible. When local access cannot be maintained, the work agency shall notify the affected property owner, resident, or tenant a minimum of twenty-four (24) hours in advance and restore access as soon as possible.
- e. Access to fire stations, police stations, hospitals and schools shall be maintained at all times. When access restrictions are necessary, the work agency shall coordinate such access restrictions with the responsible person in charge of the affected fire station, police station, hospital, or school.
- f. Vehicles that are not essential to the work shall not be permitted to park in the work area that is barricaded or otherwise marked. Vehicles required in the work area shall park down-traffic from the immediate work area. Parking of private vehicles shall be out of the work area and in conformance with parking regulations in the surrounding area. At no time shall the work agency vehicles or equipment impede the traffic lane adjacent to the work site.

## **CHAPTER 9**

### **DECORATIVE LIGHTING**

#### 9.1 GENERAL REQUIREMENTS

##### 9.1.1 Purpose

- a. This section covers the installation of decorative lighting on streets specified by the City as part of the City Center Master Plan and the full length of Wendover Boulevard or as otherwise specified by the City.

#### 9.2 PRODUCTS

##### 9.2.1 Fixture Requirements

The globe shall be made of high impact acrylic, refractive type, utilizing prisms formed both on the outside and inside. The decorative look of the globe shall match exactly to the drawing attached. The manufacture of the globe shall warrant the acrylic used in the globe, not to yellow for 10 years from the date of installation. The decorative top should be made of clear non-yellowing acrylic, incorporating a top specular aluminum shield which, will block all light from going upward when the lamp is lit, and redirect the light downward to the roadway surface. All exposed metal should be painted Black to match the color of the ballast housing and the pole. Standard seeded and frosted acrylic globes are not acceptable. The photometrics of the globe are to be Type 5 and designed to provide a minimum space to mounting height ratio of 12 to one. The fixture must be provided with a snap-on/snap off houseside shield, which can be field installed to customize the installation by the end-user. The fixture shall also have the ability to accept a modular cage in the future, which is a separate decorative component from the rest of the fixture. All the parts above are separate components, and can be replaced as such on a as need basis. The decorative look of the whole assembly will match the drawing attached.

##### 9.2.2 Ballast Housing

The ballast housing shall be made of a die-cast aluminum, and painted to match the rest of the pole components. It shall house a 165 Watt Induction Generator for the upper fixture, and a 85 Watt Induction Generator for the lower fixtures on three lamp poles. Single lamp poles house a 165 Watt Induction Generator only. The housing shall incorporate a twist-off, tool-less entry tray, with electrical quick connects that has the generator, socket, and lamp mounted to it for ease of maintenance. It shall also have a push button tool-less entry side door to easily gain access to the photocell receptacle, or plug-in receptacles that may be installed inside the fixture housing. Where plug-in receptacles are to be used, the fixture door will have a notch with a brush guard for plug-in wire entry. The decorative look of the ballast housing shall match exact to the drawing attached.

##### 9.2.3 Pole Requirements

The pole shall be of an anchor base type, with fluted tapered design. It will be made of fluted steel. The three lamp poles shall be 22 feet in height, Single lamp poles 17 feet in height, and designed to have a 15 EPA rating in a wind zone of 80 MPH with a gust factor of 1.3. Paint pole to match the other painted components on the assembly. The decorative look of the pole shall exactly match the drawing attached. Provide an accessible hand hole in the pole located six inches above the anchor base.

#### 9.2.4 Decorative Base

The decorative look of the base will exactly match the drawings attached. It will be 24" in diameter, and 40" high. It should be made of a high density elastomer material (71 pounds per cubic foot), with a minimum thickness of at least three quarters of an inch. Bases made of ABS plastic, or Cast Aluminum will not be acceptable. Paint the base to match the rest of the assembly.

#### 9.2.5 Plug in Receptacle (Where Specified By City)

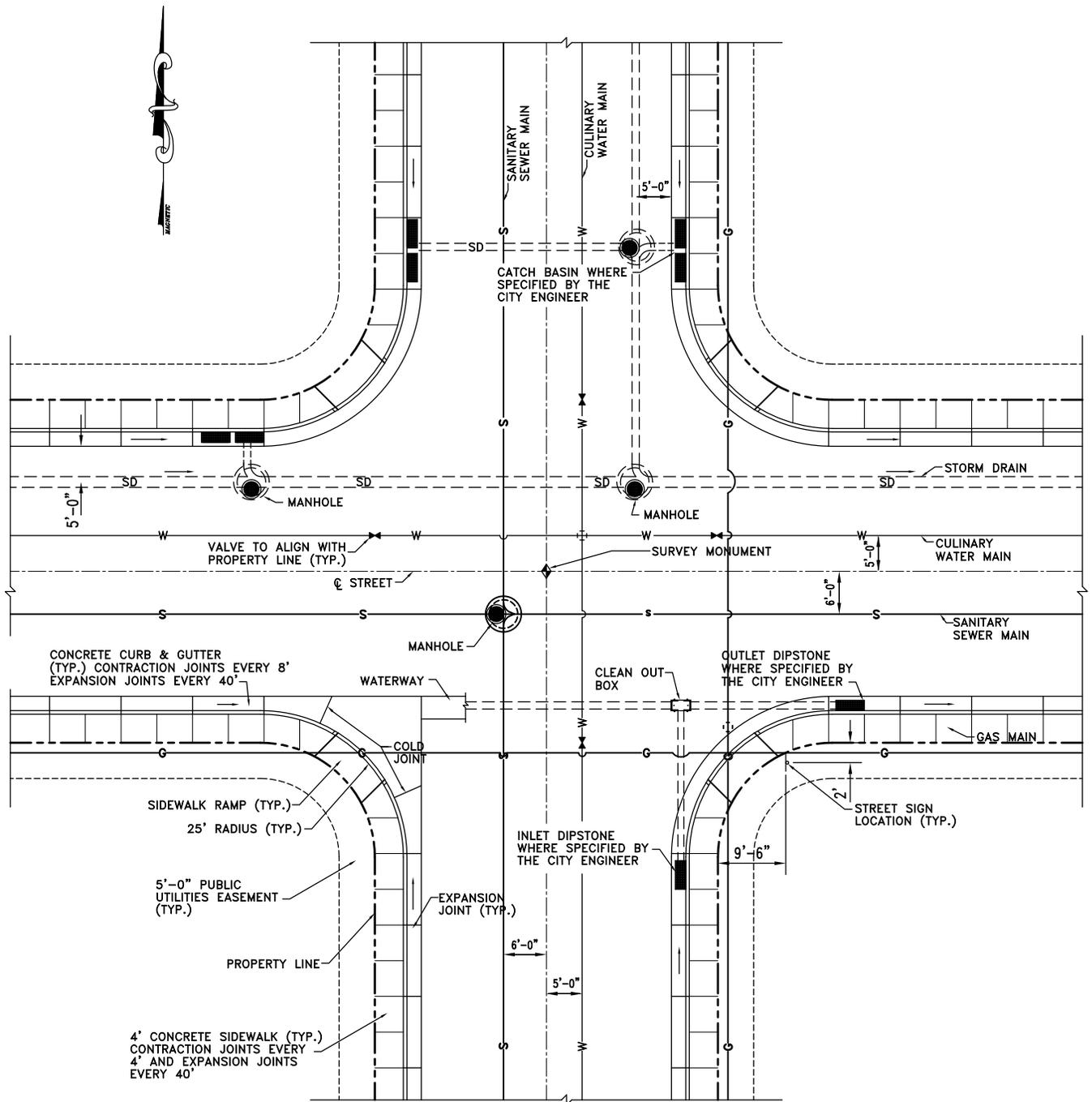
Where specified in the project scope of work provide a plug-in receptacle where noted to be located inside the fixture housing. It will be a 120 Volt duplex GFI receptacle.

#### 9.2.6 Pole Mounting

The pole should be mounted on a concrete base as detailed in the drawings.

*APPENDIX A - STANDARD DRAWINGS*

**PART 1 – ROADWAY**



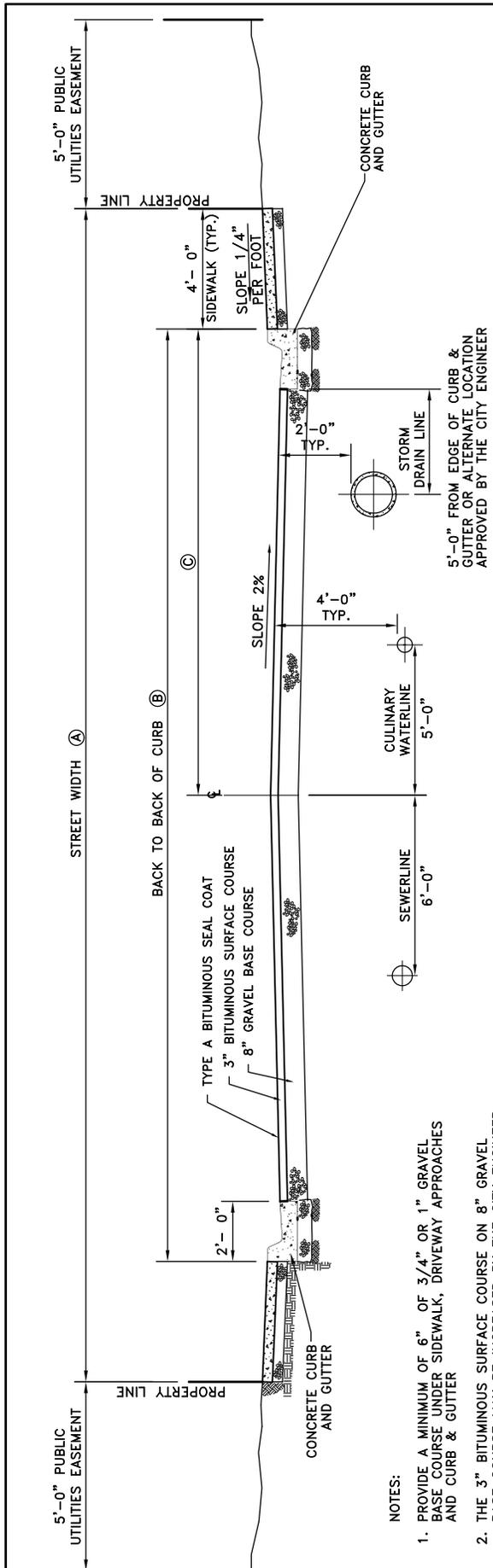
NOTE:  
 WATER LINES SHALL BE LOCATED ON THE NORTH AND EAST SIDE OF  
 CENTER LINE AND SEWER LINES SHALL BE LOCATED ON THE SOUTH  
 AND WEST SIDE OF CENTER LINE



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

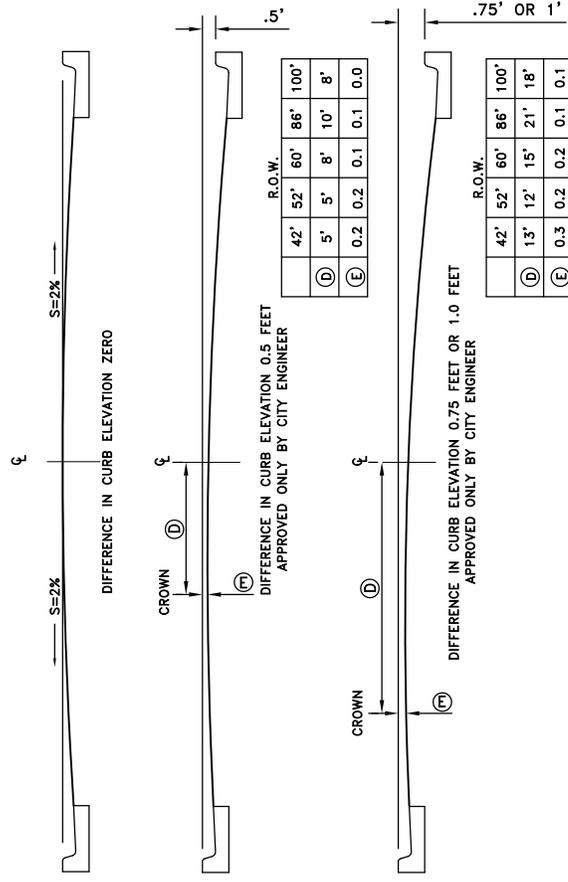
CITY OF WEST WENDOVER  
 STANDARD INTERSECTION DETAIL

PLAN NO:  
**101**  
 REVISION:  
 8/98



**STANDARD URBAN ROADWAY SECTION**

- NOTES:
1. PROVIDE A MINIMUM OF 6" OF 3/4" OR 1" GRAVEL BASE COURSE UNDER SIDEWALK, DRIVEWAY APPROACHES AND CURB & GUTTER
  2. THE 3" BITUMINOUS SURFACE COURSE ON 8" GRAVEL BASE COURSE MAY BE INCREASED BY THE CITY ENGINEER WHEN THE SUBGRADE C.B.R. IS LESS THAN 10 OR WHEN A GREATER DEPTH IS NECESSARY TO PROVIDE SUFFICIENT STABILITY. DEVELOPER MAY SUBMIT AN ALTERNATIVE PAVEMENT DESIGN BASED ON A DETAILED SOILS ANALYSIS FOR APPROVAL BY THE CITY ENGINEER.
  3. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDE OF STREET SHALL NOT EXCEED 1'-0".
  4. ON ARTERIAL STREETS THE CITY ENGINEER WILL PROVIDE A PAVEMENT DESIGN, LOCATION OF SIDEWALK AND CURB & GUTTER MAY VARY ON INDIVIDUAL ARTERIAL STREETS PER DIRECTION BY THE CITY ENGINEER. WALKS ARE 6' WIDE



STREET DESIGNATION	R.O.W. WIDTH (A)	T.B.C. TO T.B.C. (B)	℄ TO T.B.C. (C)
LANE	42'	34'	17'
RESIDENTIAL	52'	44'	22'
COLLECTOR	60'	52'	26'
ARTERIAL ▲	86'	74'	37'
MAJOR ARTERIAL ▲	100'	90'	45'

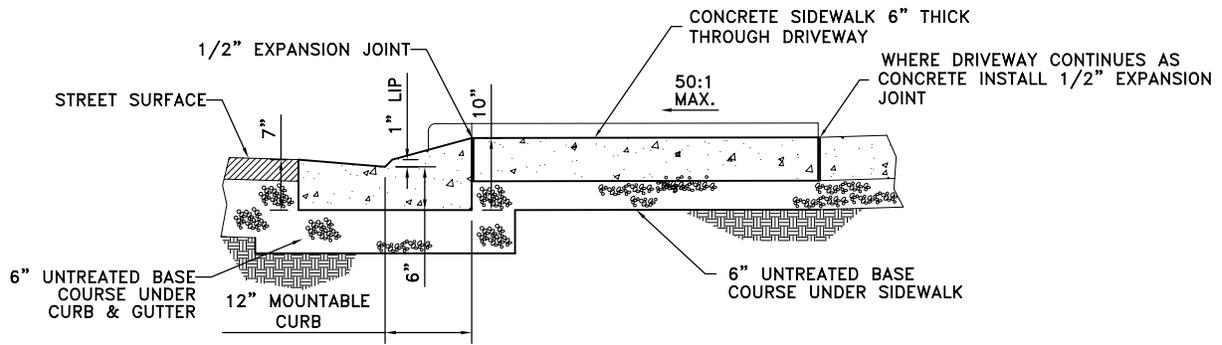
**CROWN LOCATIONS FOR VARIOUS CROSS SLOPES**



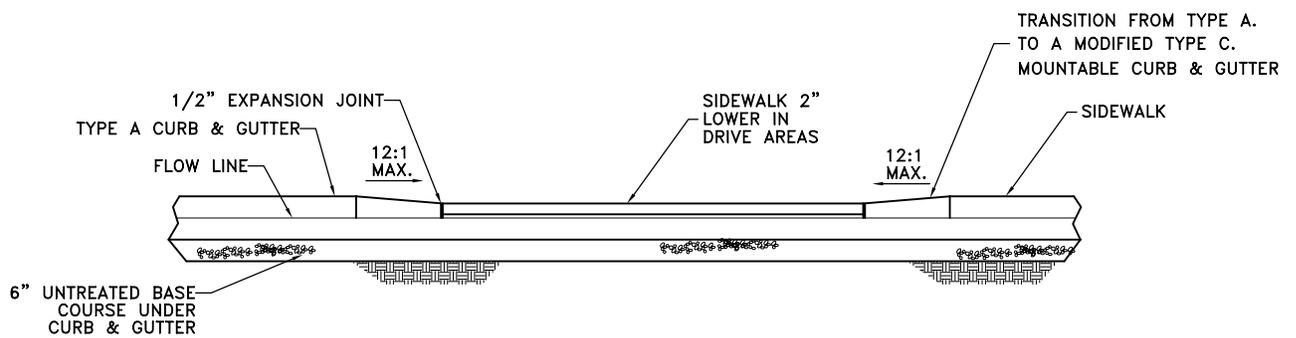
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 URBAN ROADWAY DETAILS

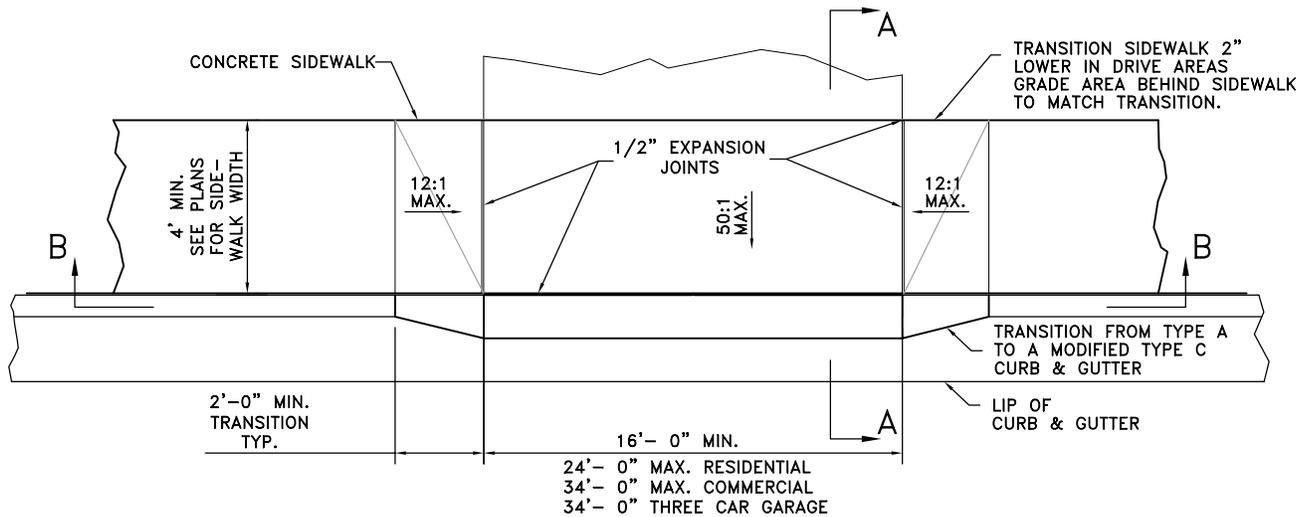
PLAN NO: **102**  
 REVISION:  
 10/01



SECTION A-A



SECTION B-B



TYPE A DRIVEWAY APPROACH  
DROP-DOWN STYLE  
FOR MOUNTABLE CURB & GUTTER

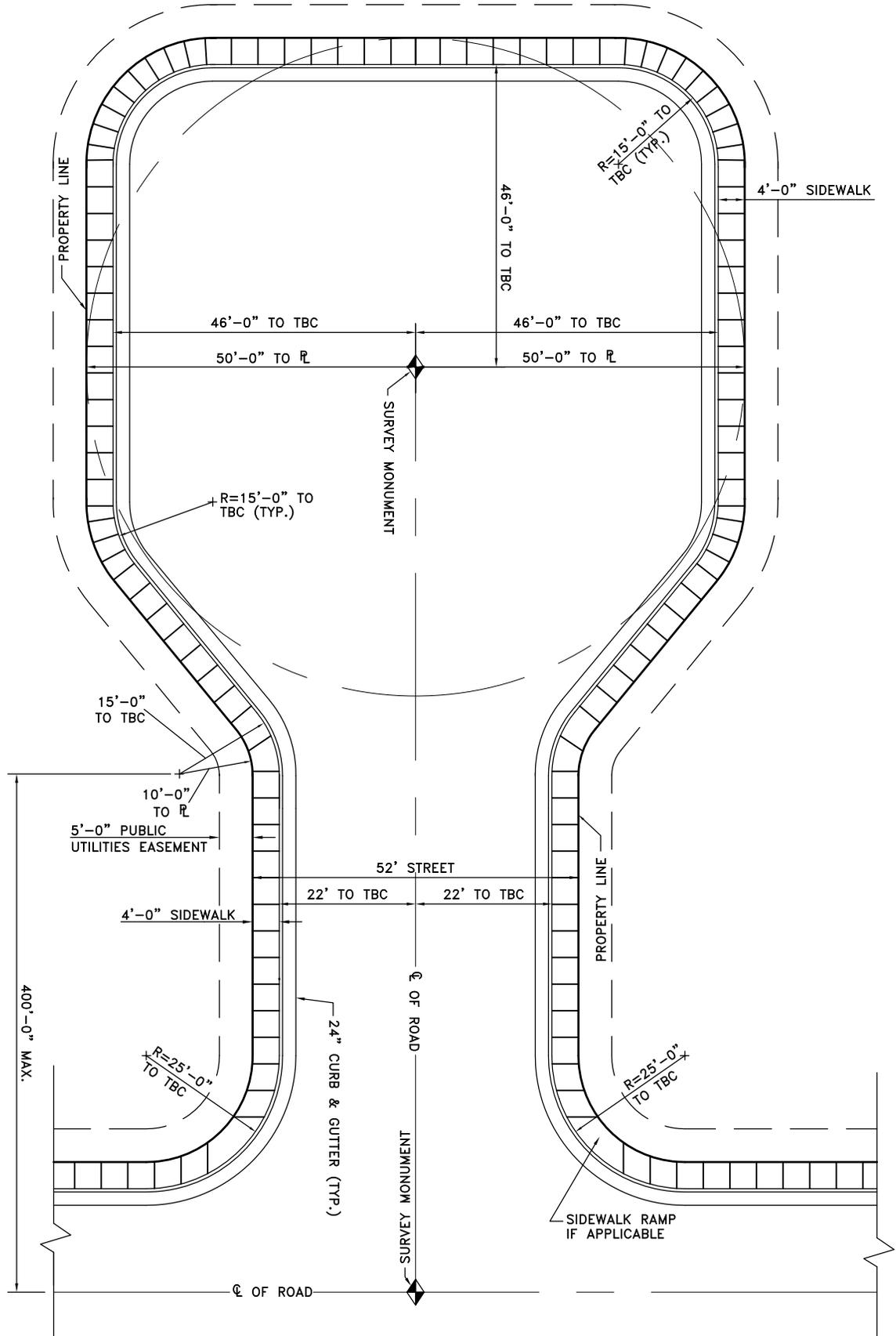


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WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
DRIVEWAY APPROACH DETAILS

PLAN NO: **103**  
REVISION:  
3/09





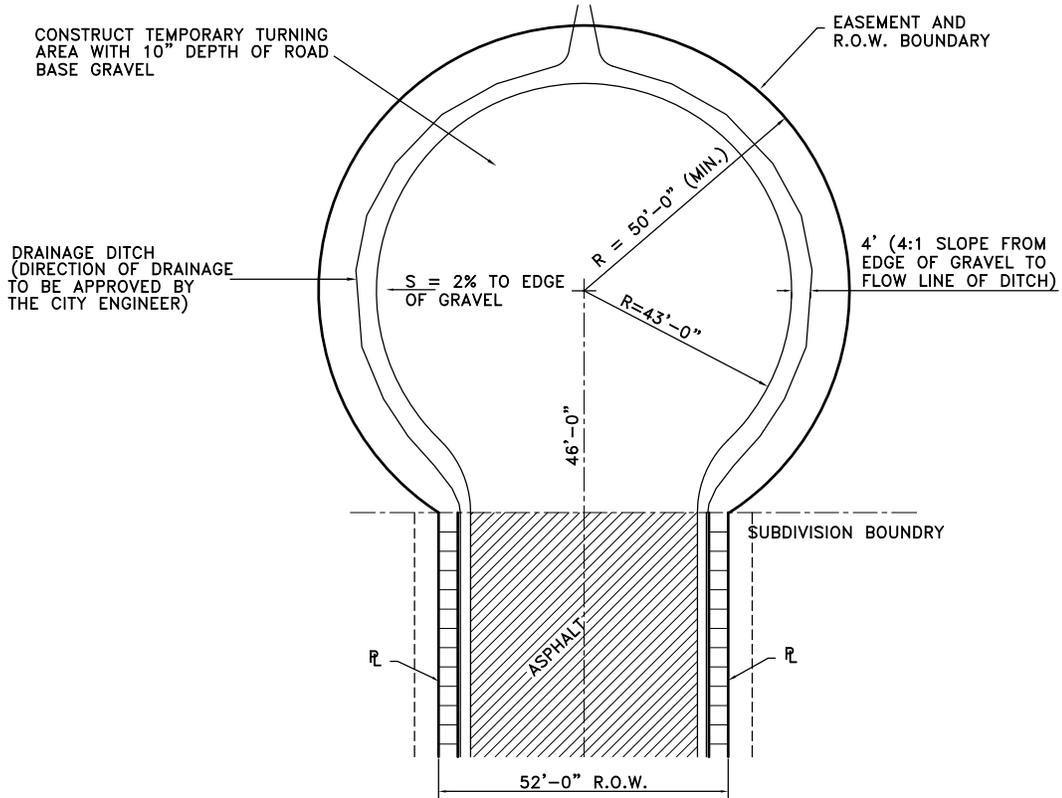
**WEST WENDOVER**  
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 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

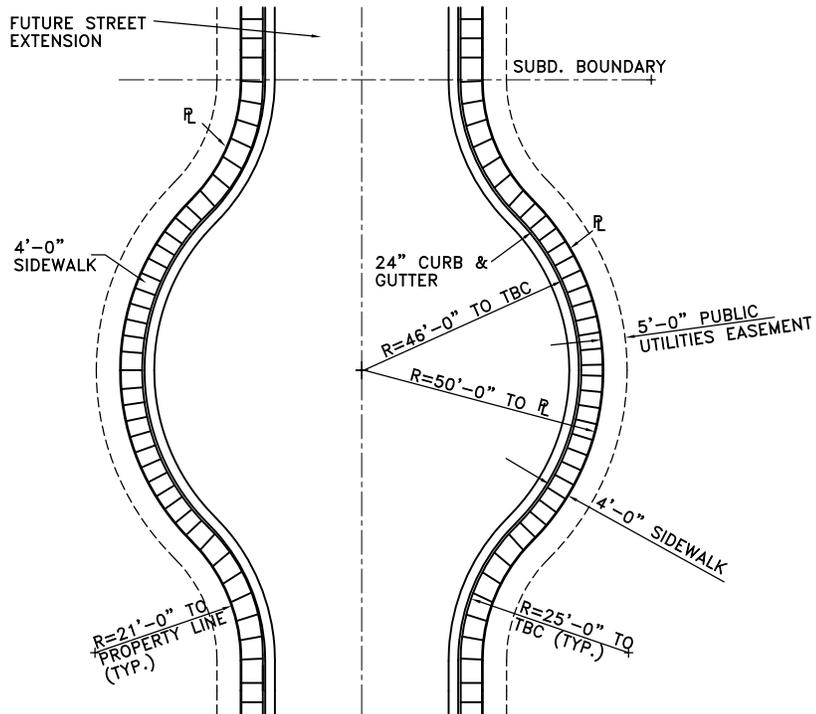
MODIFIED CUL-DE-SAC

PLAN NO: **105**

REVISION: 8/98



**TEMPORARY TURNAROUND**



**PERMANENT STREET BUBBLE**

TO BE USED AS A TURNING AREA ON TEMPORARY DEAD END STREET WHEN DISTANCE FROM NEAREST STREET INTERSECTION IS GREATER THAN 400 L.F OR WHERE A TEMPORARY TURNAROUND OUTSIDE OF SUBDIVISION IS NOT POSSIBLE.



**WEST WENDOVER**  
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CITY OF WEST WENDOVER

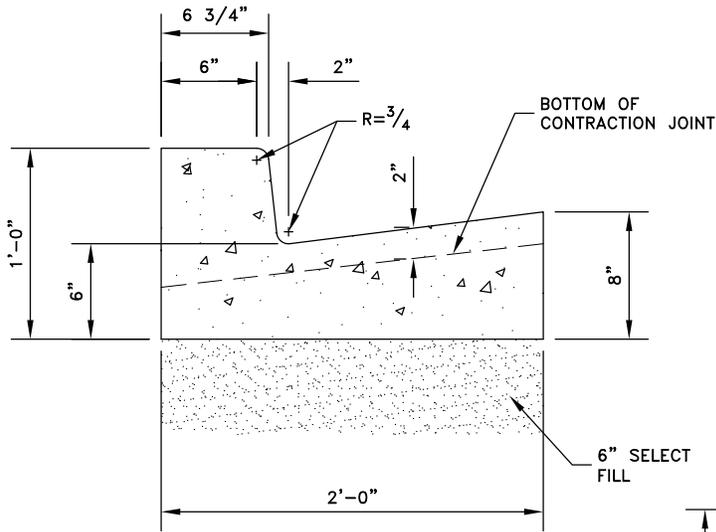
TURNING AREA DETAILS

PLAN NO:

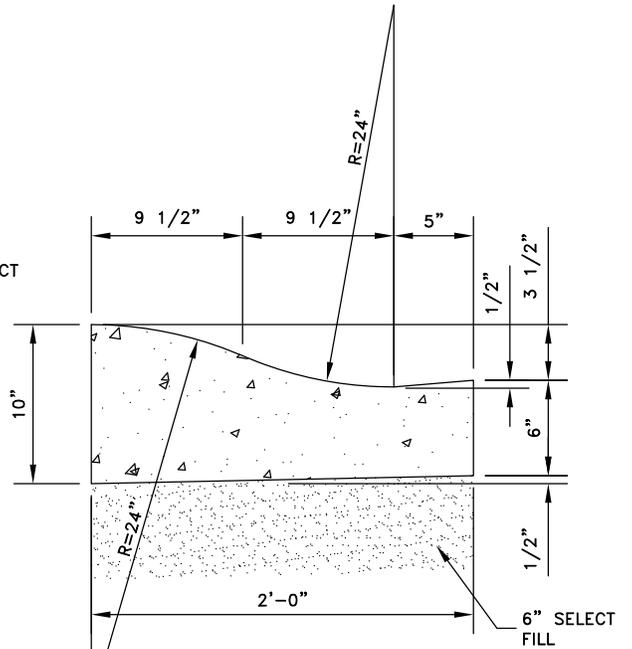
**106**

REVISION:

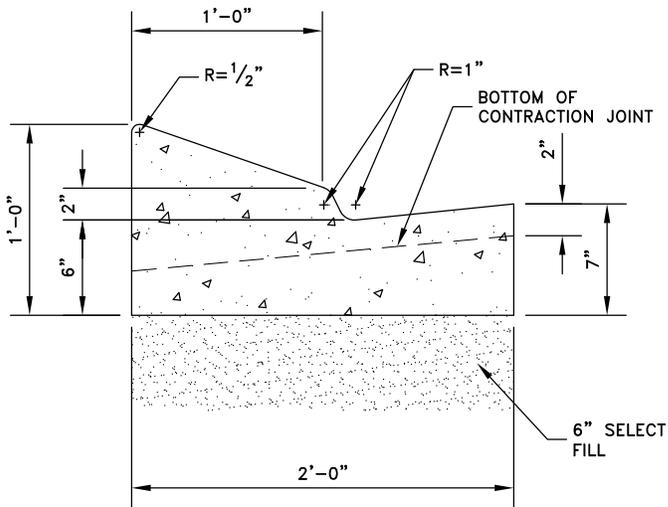
8/98



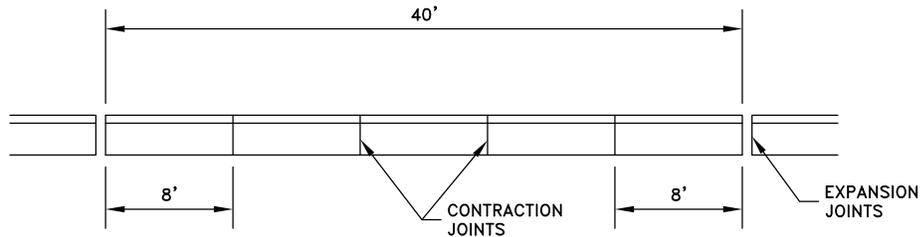
**TYPE A**  
HIGH BACK



**TYPE B**  
ROLL



**TYPE C**  
ROLL



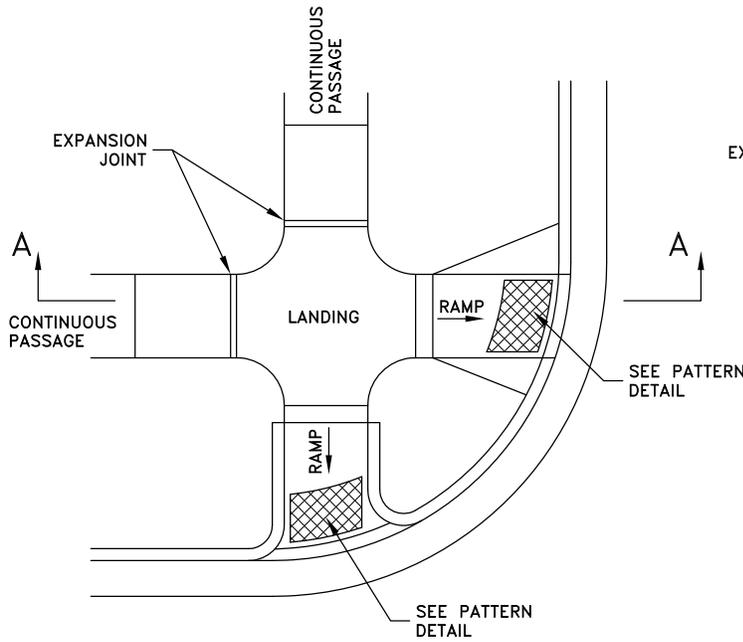
**CURB AND GUTTER JOINT DETAIL**



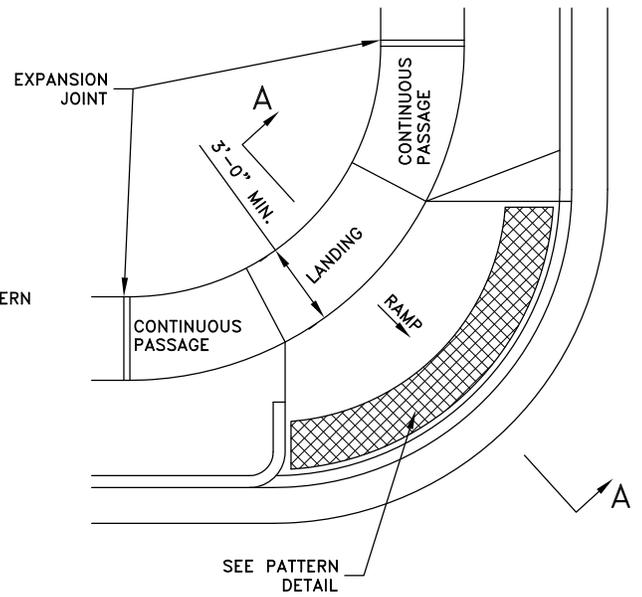
**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
CURB AND GUTTER DETAILS

PLAN NO:  
**107**  
REVISION:  
5/98



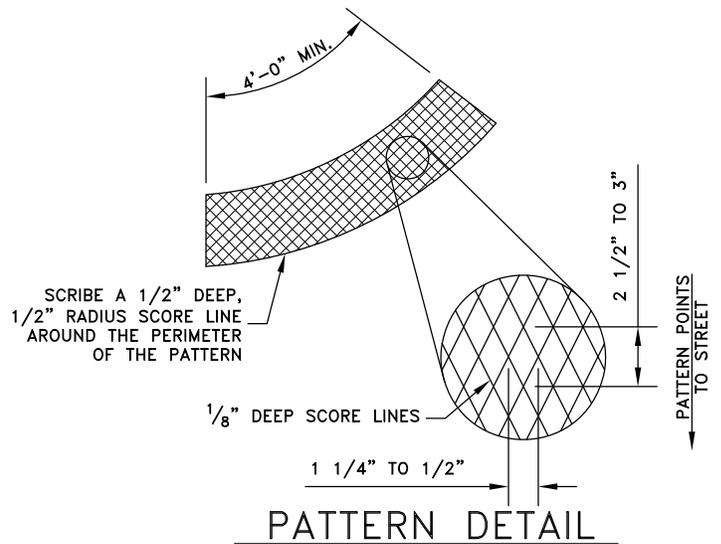
PLAN



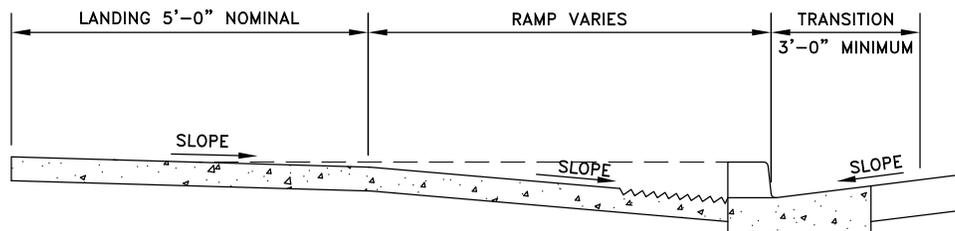
PLAN

TABLE OF MAXIMUM SLOPES		
ELEMENT OF WORK	NEW CONSTRUCTION	MODIFICATIONS
RAMP (a)	1:12 (8.33%)	1:10 (10%) (b)
LANDING	1:50 (2%)	1:25 (4%)
TRANSITION	1:20 (5%)	1:20 (5%)

(a) VARIANCES: GET WRITTEN APPROVAL FROM THE ENGINEER WHEN THE SLOPE IS GREATER THAN SPECIFIED.  
 (b) RAMP LENGTH SHALL BE 10'-0" MAXIMUM WHEN THE RAMP SLOPE EXCEEDS 1:12 (8.33%)



PATTERN DETAIL



SECTION A



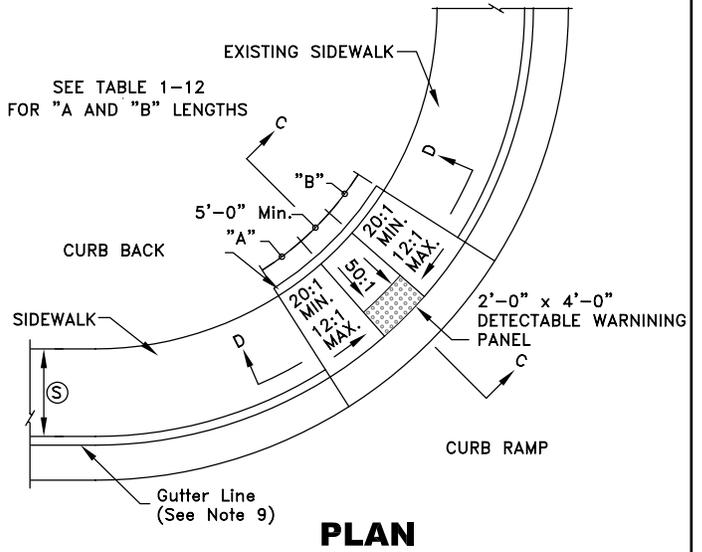
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 SIDEWALK RAMP AT CORNER  
 LANDING AT SIDEWALK LEVEL

PLAN NO:  
**108**  
 REVISION:  
 8/98

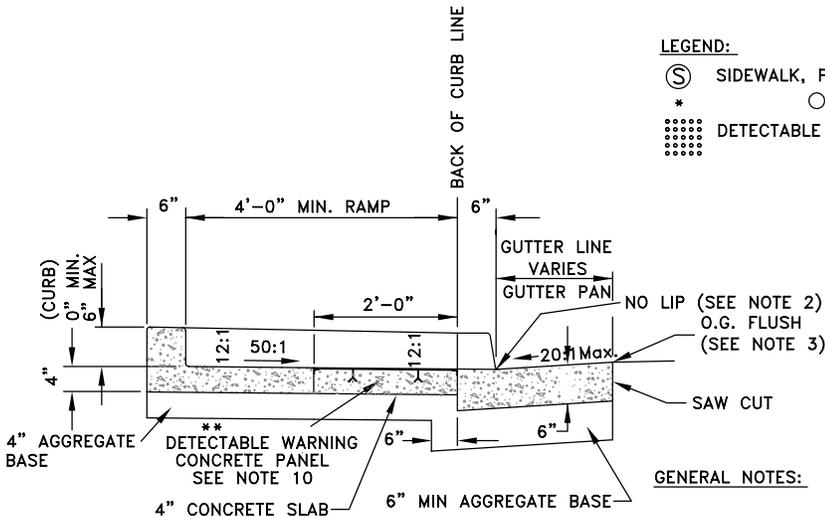
TABLE 1-12  
TRANSITION LENGTHS FOR 12:1 SIDE SLOPES

"B" TO "A"	"A" MIN.	"B" MIN.
-6 TO -5.01	4' - 6"	21' - 6"
-5 TO -4.01	4' - 6"	15' - 6"
-4 TO -3.01	4' - 6"	12' - 6"
-3 TO -2.01	5' - 0"	9' - 6"
-2 TO -1.01	5' - 0"	8' - 6"
-1 TO 1	8' - 0"	5' - 0"
1.01 TO 2	8' - 0"	5' - 0"
2.01 TO 3	9' - 0"	5' - 0"
3.01 TO 4	12' - 0"	6' - 0"
4.01 TO 5	15' - 0"	6' - 0"
5.01 TO 6	21' - 0"	6' - 0"



LEGEND:

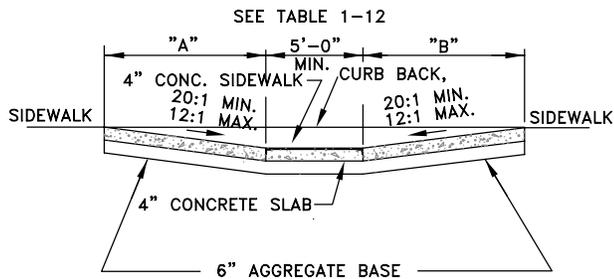
- ⊙ SIDEWALK, PER PROJECT DRAWINGS
- \* ○ ○
- ⊞ DETECTABLE WARNING PANEL, SEE NOTE 10.



**SECTION C-C W/ BACK CURB**

GENERAL NOTES:

1. GRATINGS OR SIMILAR ACCESSES SHALL NOT BE LOCATED IN THE AREA AT THE BASE OF THE CURB RAMP OR LANDING AREA.
2. NO LIP SHALL BE PERMITTED AT THE CURB RAMP SLOPE TO GUTTER PAN. GRINDING SHALL BE 6" MINIMUM PERPENDICULAR TO FLOWLINE FOR RETROFIT.
3. PLANTMIX BITUMINOUS OPEN-GRADED SURFACE SHALL BE FLUSH WITH THE EDGE OF THE GUTTER PAN IN THE AREA OF THE CURB RAMP. GRINDING WIDTH 9" MINIMUM OR 12:1 PLANTMIX BITUMINOUS SURFACE MINIMUM FOR RETROFIT.
4. ROUGH BROOM TEXTURE ON CURB RAMPS AND WINGS. TEXTURE SHALL PROVIDE A VISUAL CONTRAST TO THE SIDEWALK.
5. ALL RAMPS SHALL BE 12:1 OR FLATTER.
6. ALL SLOPE RATES ARE RELATIVE TO LEVEL.
7. IF THERE ARE R/W RESTRICTIONS, SIDEWALK WIDTHS MAY BE REDUCED TO 4'-0" WITH PRIOR APPROVAL PROJECT ENGINEER. IN THESE INSTANCES A 5'-0" X 5'-0" PASSING ZONE IS REQUIRED EVERY 200'-0" PER ADA APPENDIX C, SECTION 4.3.4.
8. CONCRETE SHALL BE CLASS A OR AA.
9. ADJUST FLOWLINE WHEN REQUIRED TO PREVENT PONDING AT THE RAMP AND MAINTAIN POSITIVE DRAINAGE.
10. DETECTABLE WARNING PANNELS SHALL BE ARMOR CAST PRODUCTS COMPANY A6002448RADA-BRICK RED OR EQUAL. DETECTABLE WARNING PANNELS SHALL BE INSTALLED PER MANUFACTURES INSTALLATION GUIDLINES AND CONFORM TO ADAAG (4.29.2) "CONTRAST".



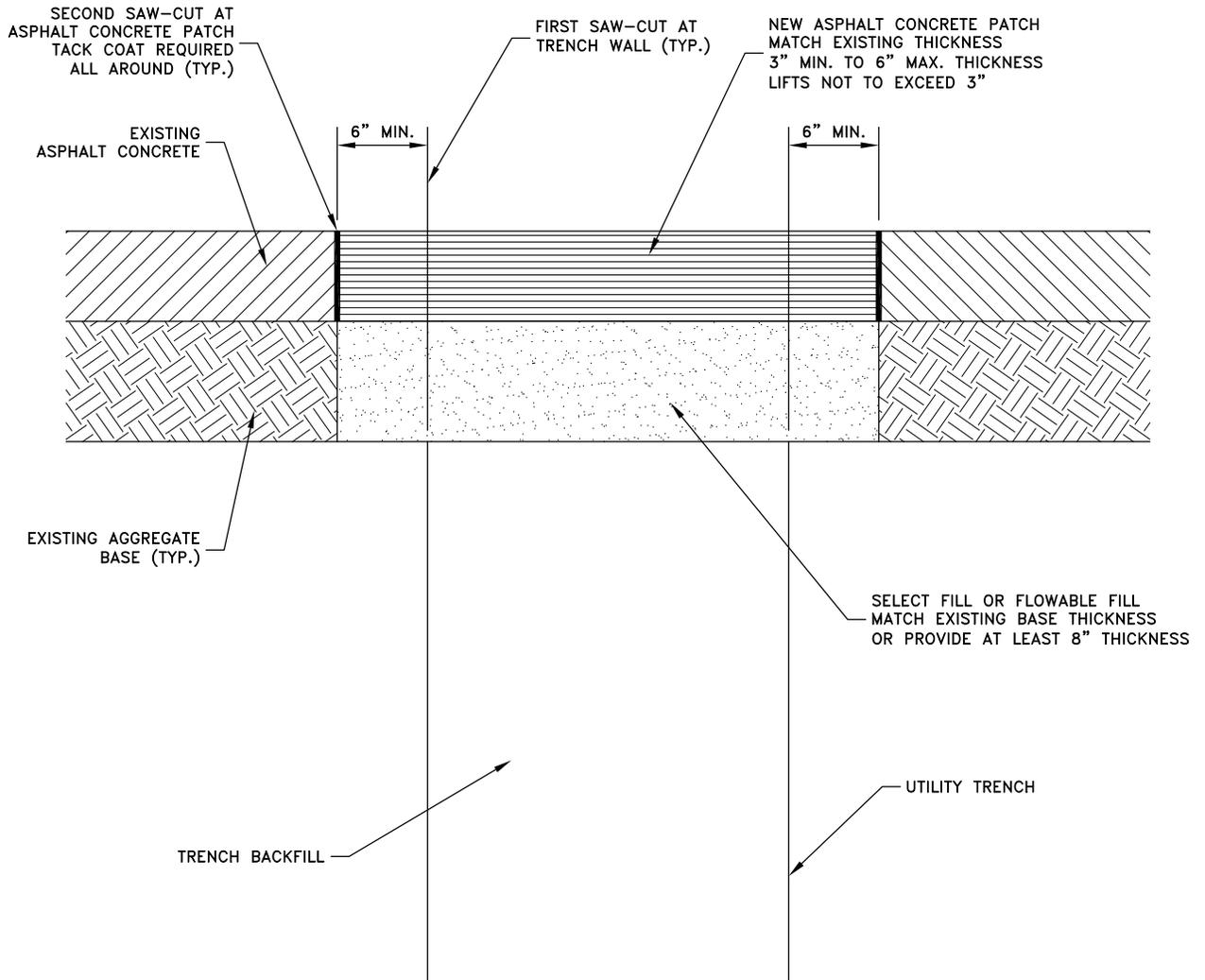
**SECTION D-D**



**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
SIDEWALK CURB RAMP

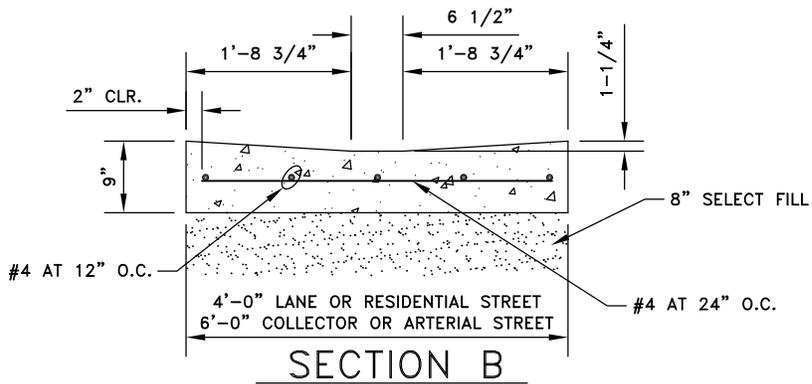
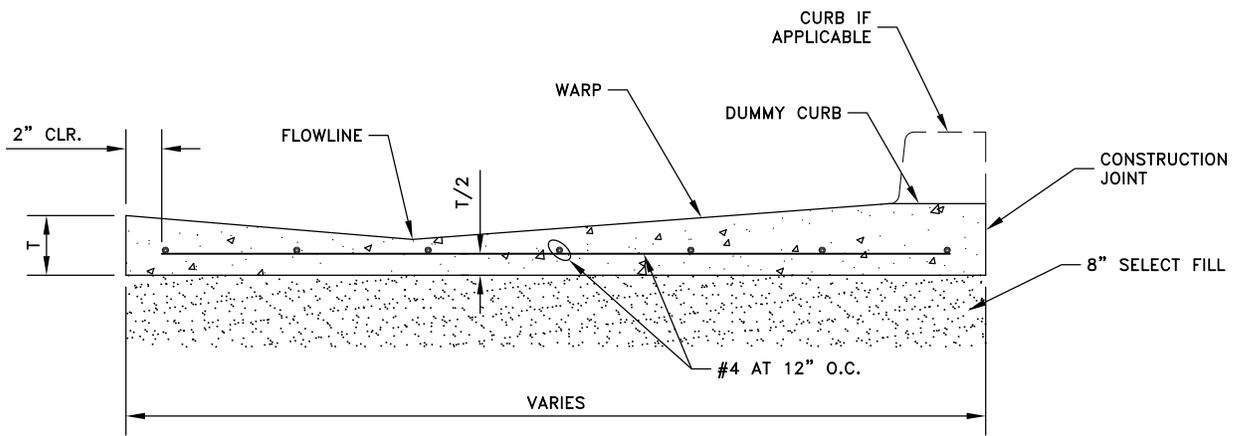
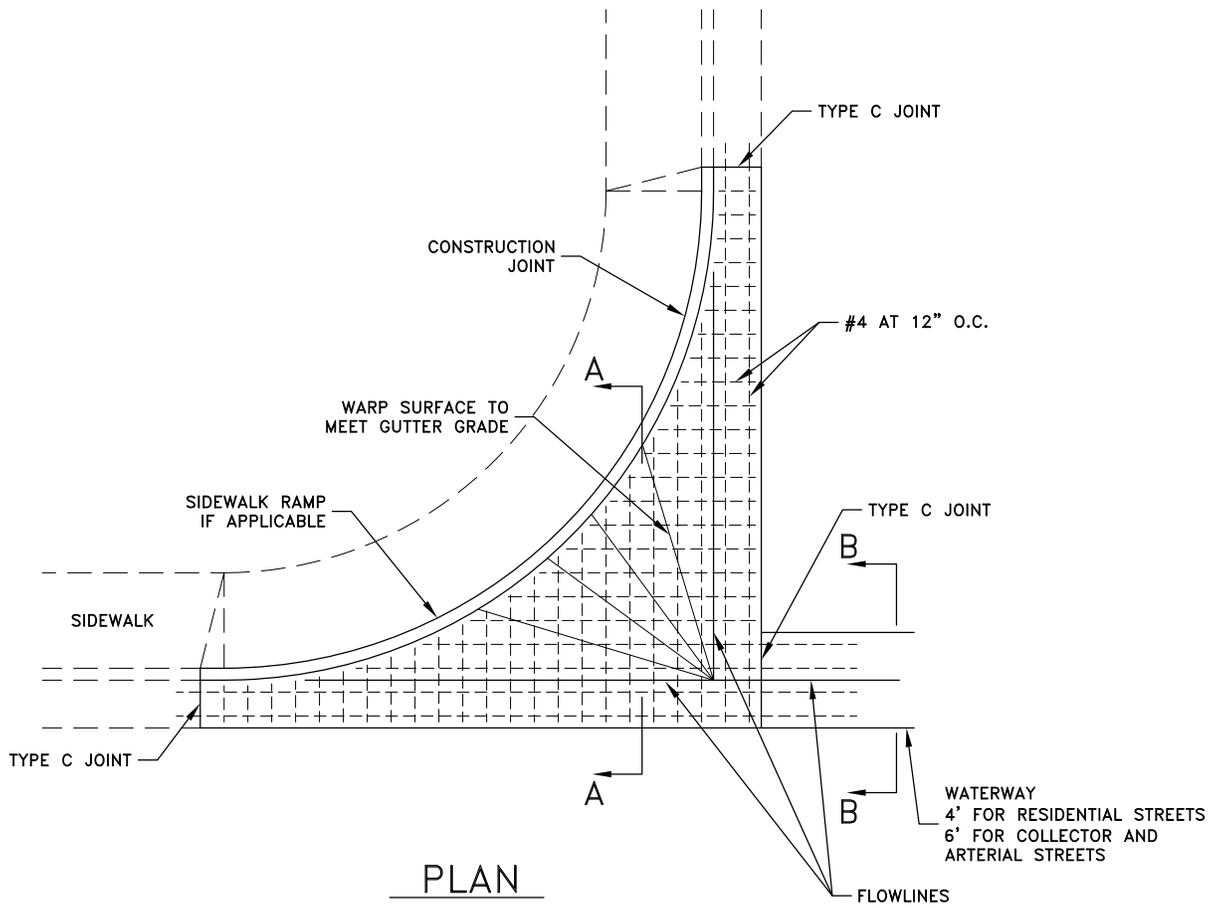
PLAN NO:  
**109**  
REVISION:  
4/09



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 ASPHALT CONCRETE "T" PATCH

PLAN NO: 110  
 REVISION: 5/98

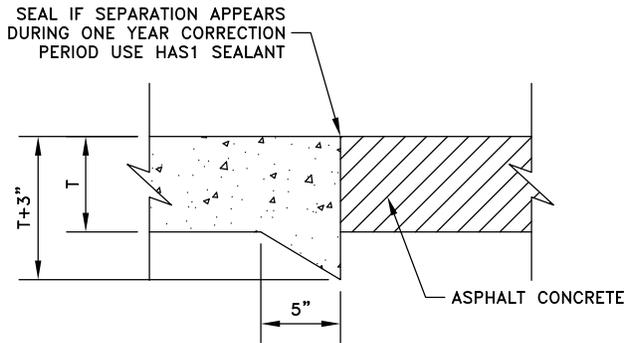


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WEST WENDOVER, NEVADA 89883

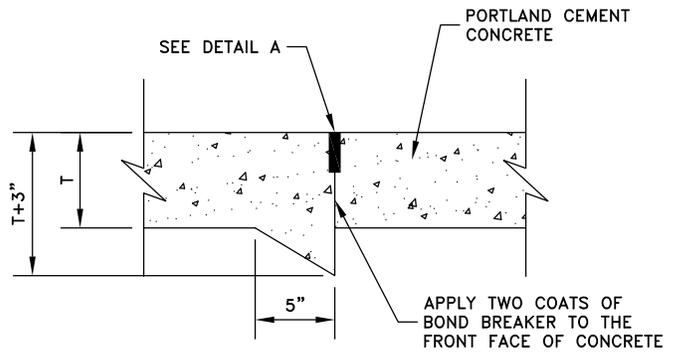
CITY OF WEST WENDOVER  
WATERWAY TRANSITION STRUCTURE

PLAN NO:  
**111**

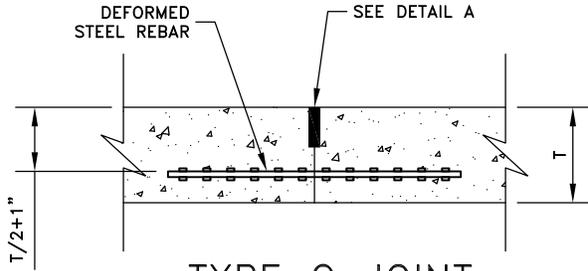
REVISION:  
8/98



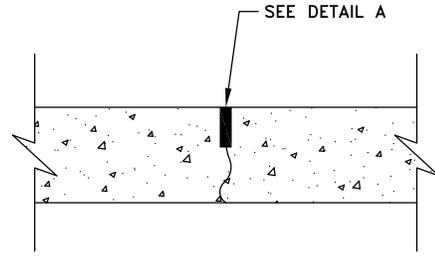
TYPE A JOINT



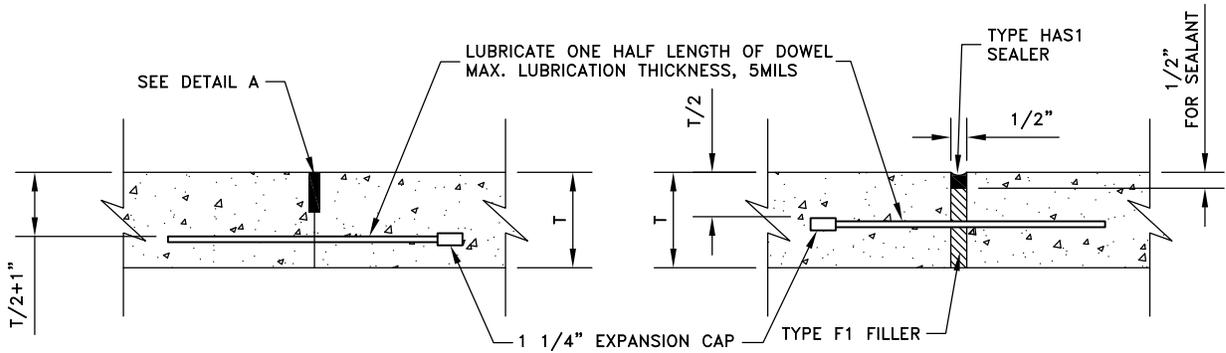
TYPE B JOINT



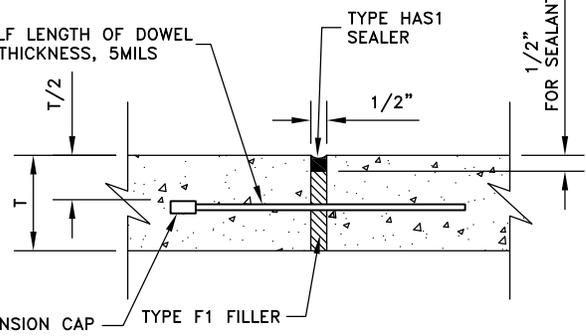
TYPE C JOINT



TYPE D JOINT

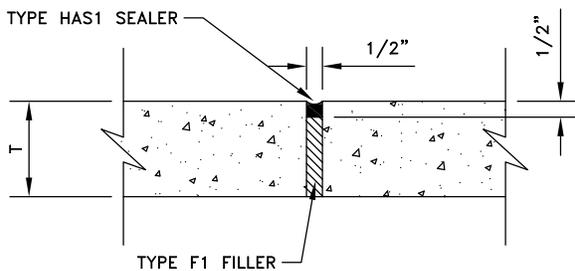


TYPE E JOINT

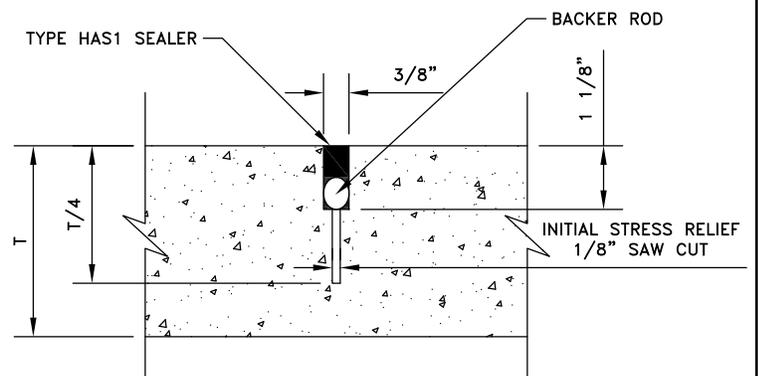


TYPE F JOINT

TABLE OF DIMENSIONS			
T = SLAB DEPTH IN.	DOWEL DIAMETER IN.	TOTAL DOWEL LENGTH IN.	SPACING
5-8	5/8	14	12" O.C.
9-12	1	18	12" O.C.



TYPE G JOINT



DETAIL A



**WEST WENDOVER**  
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 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 CONCRETE PAVEMENT JOINTS

PLAN NO:  
**112**  
 REVISION:  
 5/98

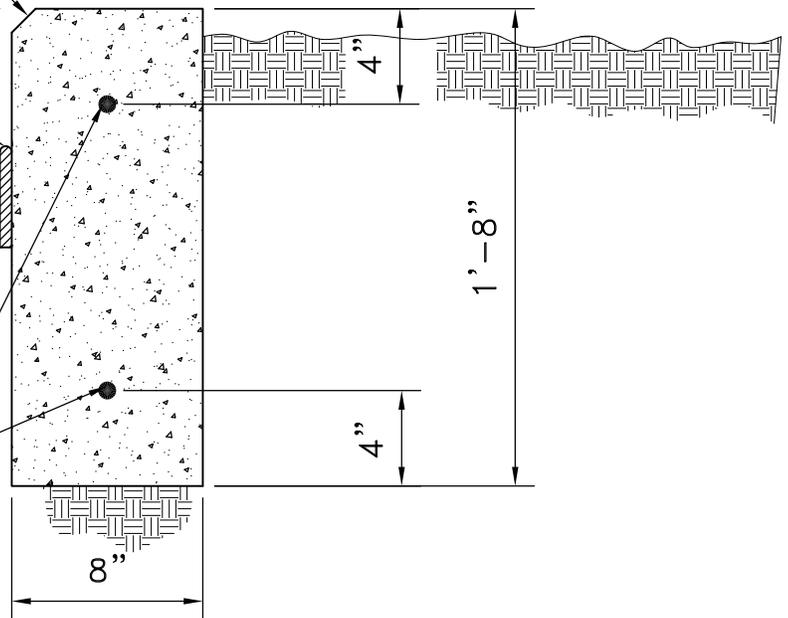
1" CHAMFER AT CORNER

1/2" FILLED  
EXPANSION JOINT

6"

SIDEWALK

#4 BARS CONTINUOUS  
TOP AND BOTTOM



NOTE:

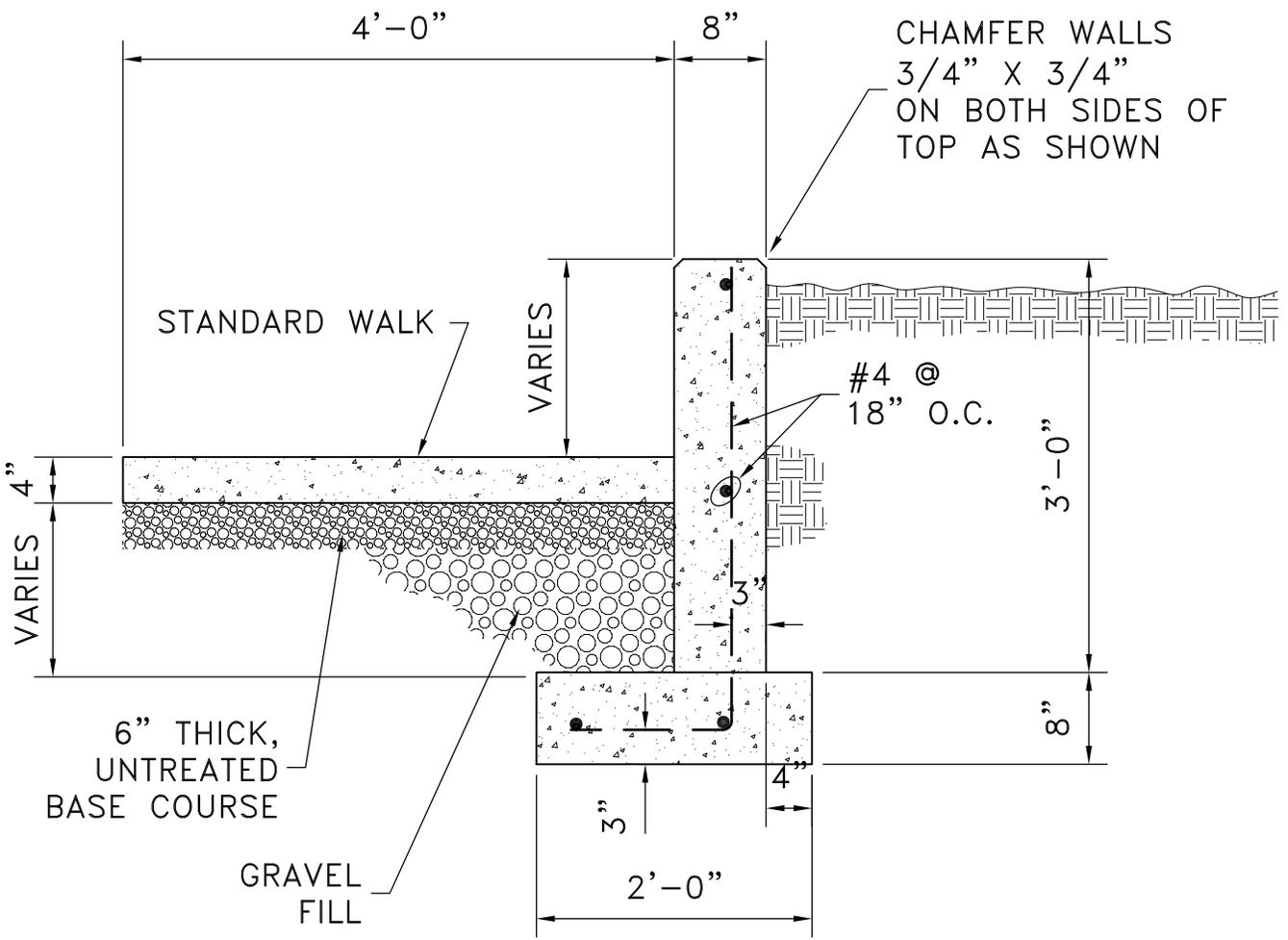
ALL EXPOSED CONCRETE SURFACE  
TO HAVE RUBBED FINISH.



**WEST WENDOVER**  
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WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
REINFORCED CONCRETE CURB WALL

PLAN NO:  
**113**  
REVISION:  
5/98



CHAMFER WALLS  
 3/4" X 3/4"  
 ON BOTH SIDES OF  
 TOP AS SHOWN

STANDARD WALK

VARIES

#4 @  
 18" O.C.

VARIES  
 4"

6" THICK,  
 UNTREATED  
 BASE COURSE

GRAVEL  
 FILL

NOTES:

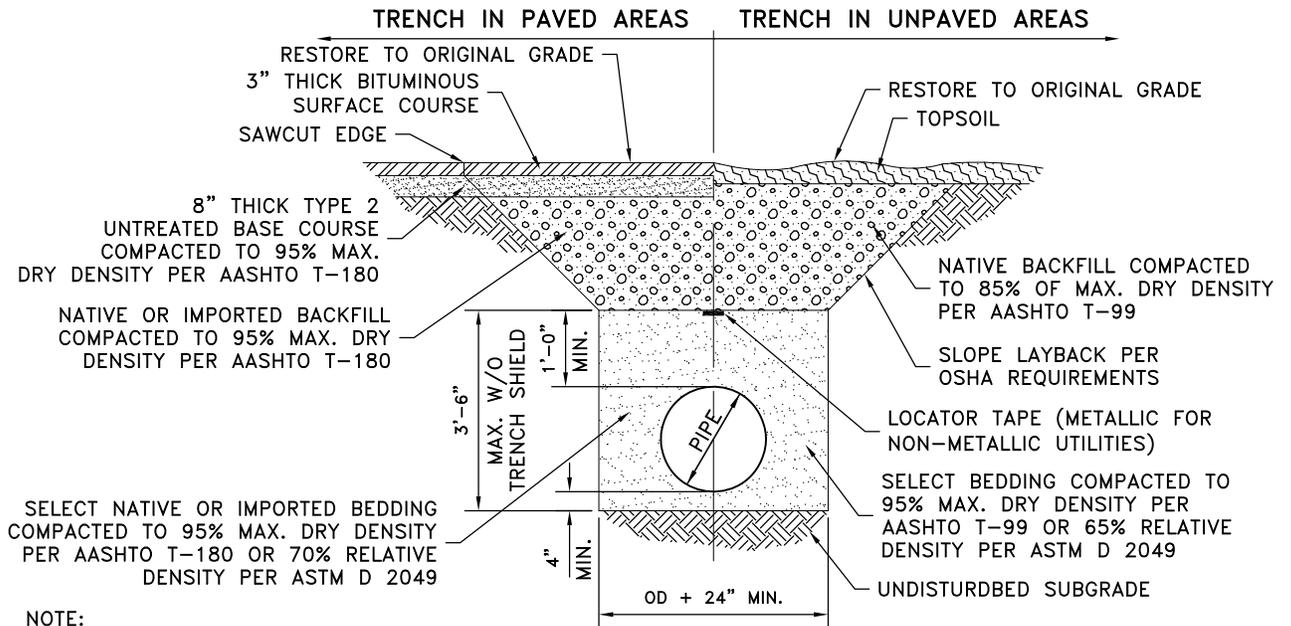
1. ALL EXPOSED CONCRETE SURFACE TO HAVE RUBBED FINISH.
2. WALL TO CONTAIN 0.125 CU. YARDS OF CONCRETE PER FOOT, 6.6 LBS. REINF. STEEL PER FOOT.



**WEST WENDOVER**  
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CITY OF WEST WENDOVER  
 36" CONCRETE RETAINING WALL

PLAN NO:  
114  
 REVISION:  
 5/98



NOTE:  
 EDGES OF PATCH TO BE STRAIGHT, UNIFORM AND PARALLEL OR PERPENDICULAR TO THE TRENCH. EDGES TO BE SAW CUT AND A TACK COAT APPLIED PER PLAN NO. 110 ASPHALT CONCRETE "T" PATCH. ALL EXCESS EXCAVATED MATERIAL TO BE HAULED AWAY AND DISPOSED OF OFF THE HIGHWAY RIGHT-OF-WAY UNLESS OTHERWISE PERMITTED BY THE ENGINEER.

## TYPICAL TRENCH SECTION



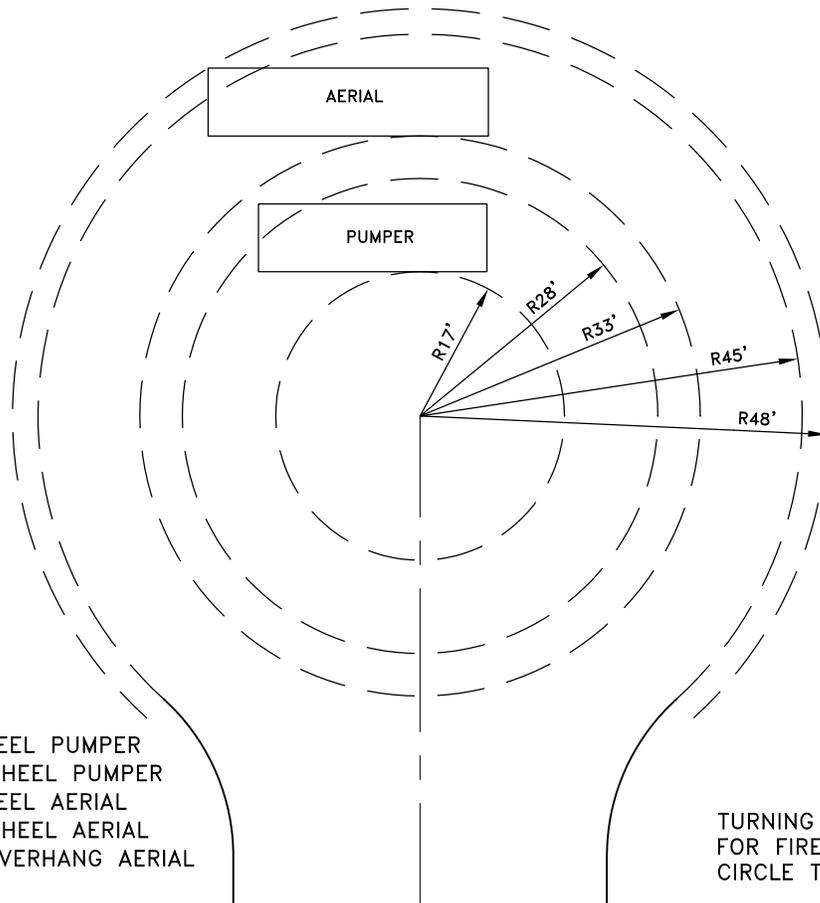
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

TYPICAL TRENCH DETAILS

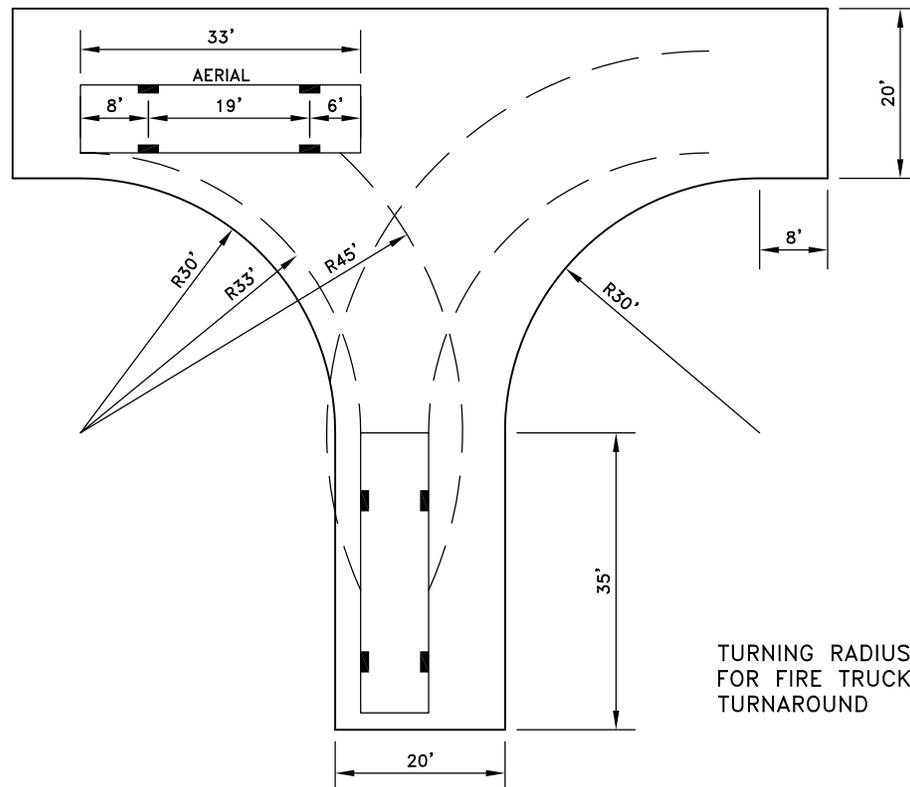
PLAN NO:  
115

REVISION:  
5/98



- R=17' - INSIDE WHEEL PUMPER
- R=28' - OUTSIDE WHEEL PUMPER
- R=33' - INSIDE WHEEL AERIAL
- R=45' - OUTSIDE WHEEL AERIAL
- R=48' - OUTSIDE OVERHANG AERIAL

TURNING RADIUS REQUIRED FOR FIRE TRUCKS IN A CIRCLE TURNAROUND



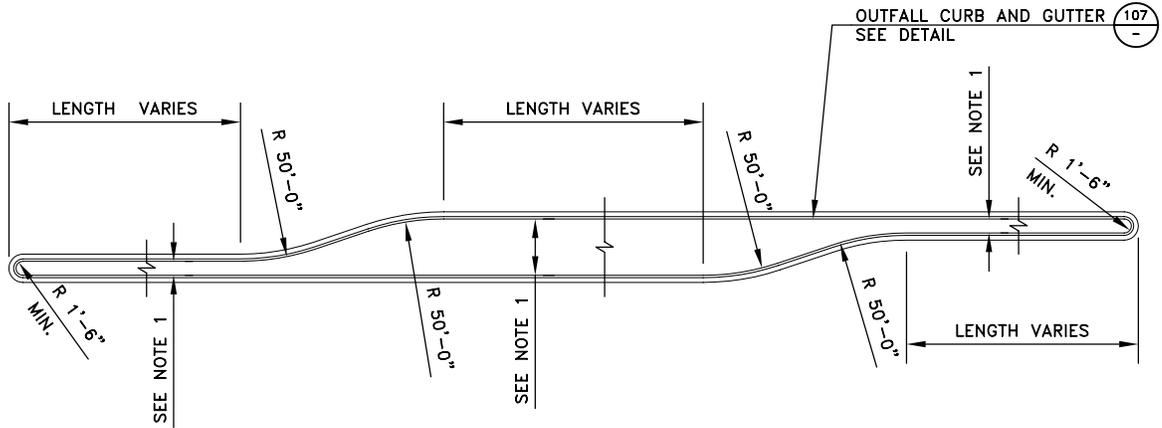
TURNING RADIUS REQUIRED FOR FIRE TRUCKS IN A TEE TURNAROUND



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 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 TURNING RADIUS SPECIFICATIONS

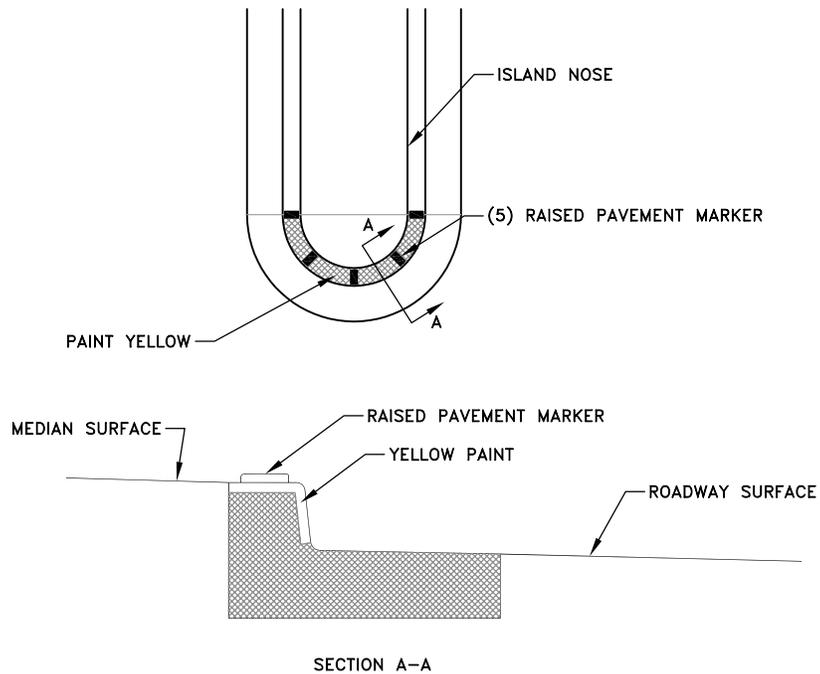
PLAN NO: **116**  
 REVISION:  
 7/03



**TYPICAL ISLAND DETAIL**  
SCALE: N.T.S.

**NOTE:**

1. THE CITY MAY REQUIRE ISLANDS TO BE CONSTRUCTED ON ARTERIAL AND MAJOR ARTERIAL STREETS.
2. BREAKS IN ISLANDS OR MEDIANS SHALL BE PROVIDED AT PUBLIC INTERSECTIONS. BREAKS FOR DRIVEWAYS SERVING INDIVIDUAL BUSINESSES OR RESIDENCES ARE NOT ALLOWED. BREAKS FOR DRIVEWAYS SERVING MULTIPLE BUSINESSES WILL BE CONSIDERED ON A CASE BY CASE BASIS. IN NO CASE SHALL MEDIAN BREAKS BE LOCATED AT A SPACING LESS THAN 300 FEET MEASURED BETWEEN THE CENTERS OF THE BREAKS.
3. RIGHT OF WAY WIDTH LESS THAN 100' - 12' TO 14' WIDE ISLAND W/ 3' TO 4' WIDE NOSES (PRIOR CITY APPROVAL REQ'D).  
RIGHT OF WAY WIDTH MORE THAN 100' - 14' WIDE ISLAND W/ 4' WIDE NOSES.



**RAISED ISLAND STRIPING DETAIL**  
**TYPICAL ALL ISLAND NOSES**  
SCALE: N.T.S.

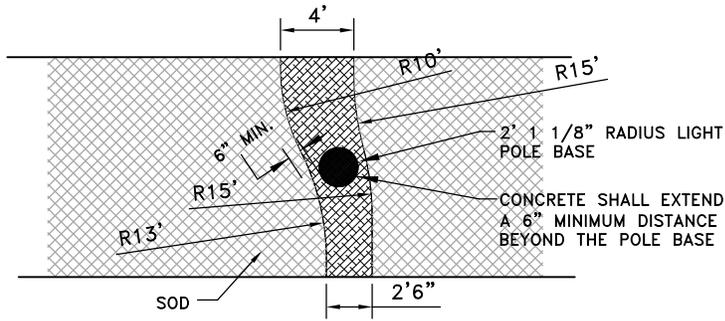


**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

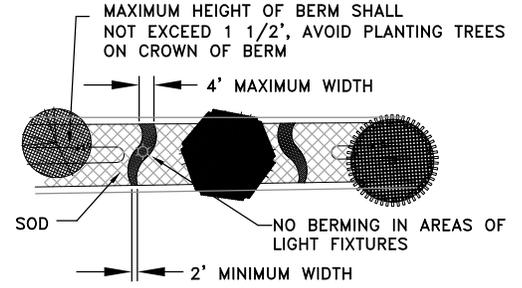
CITY OF WEST WENDOVER

TYPICAL ISLAND DETAIL

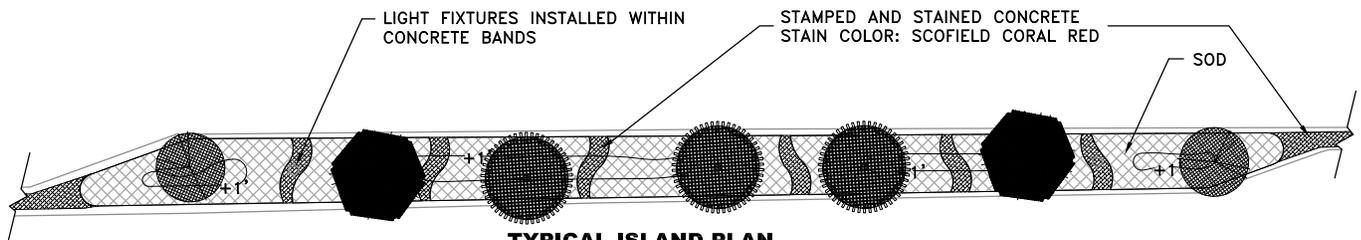
PLAN NO:	117
REVISION:	5/12



**CONCRETE BAND ENLARGEMENT**  
SCALE: N.T.S.



**TYPICAL ISLAND ENLARGEMENT**  
SCALE: N.T.S.



**TYPICAL ISLAND PLAN**  
SCALE: N.T.S.



**TYPICAL ISLAND ELEVATION**  
SCALE: N.T.S.

Botanical Name	Common Name	Size
Malus 'Prairie Fire'	Prairie Fire Crab Apple	1 3/4" Cal.
Malus 'Spring Snow'	Spring Snow Crab Apple	1 3/4" Cal.
Pinus nigra	Austrian Pine	5'-6' Ht.
90% 3 Blend (Min.) Dwarf Fescue Mix 10% Kentucky Bluegrass		
STAMPED AND STAINED CONCRETE, STAIN COLOR: SCOFIELD CORAL RED.		
○ LIGHT POLE LOCATION		

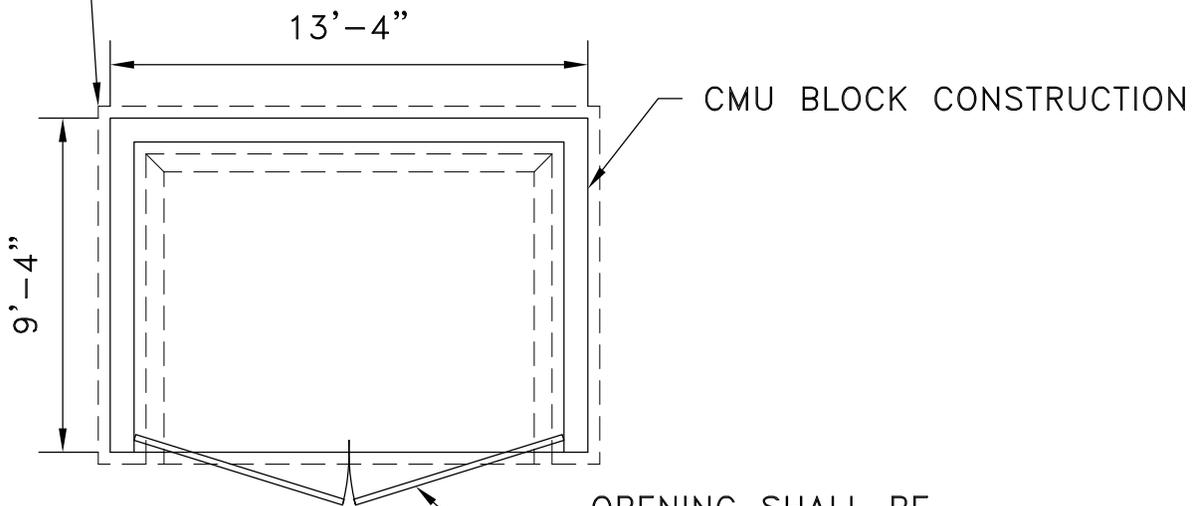


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CITY OF WEST WENDOVER  
ISLAND LANDSCAPING DETAIL

PLAN NO:  
**118**  
REVISION:  
5/07

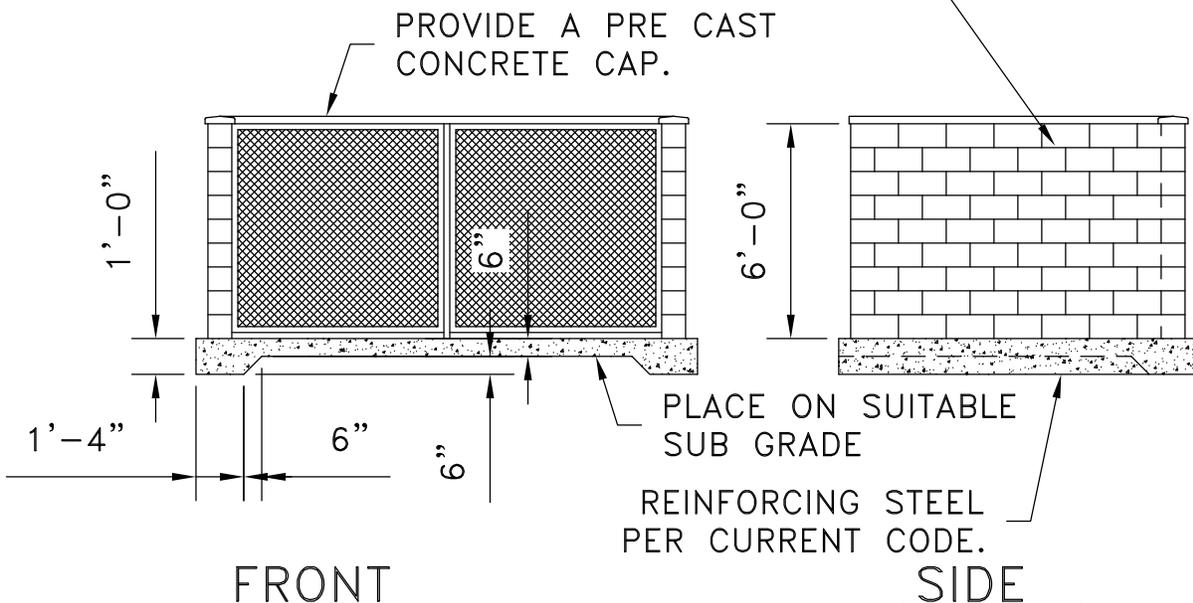
FLOOR/FOOTING SHALL EXTEND 4" BEYOND EXTERIOR FACING MATERIAL.



PLAN

OPENING SHALL BE GATED WITH A FENCING MATERIAL THAT WILL BLOCK THE VIEW OF THE INTERIOR. CHAIN LINK FENCE MAY BE USED IF SLATS ARE INSTALLED IN GATE.

ACCEPTABLE FACING MATERIALS INCLUDE SPLIT FACE BLOCK, BRICK, STUCCO, AND OTHER FACINGS THAT MATCH THE SURROUNDING ARCHITECTURE. INTERIOR OF ENCLOSURE DOES NOT NEED FACING



**WEST WENDOVER**  
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CITY OF WEST WENDOVER

DUMPSTER ENCLOSURE

PLAN NO:

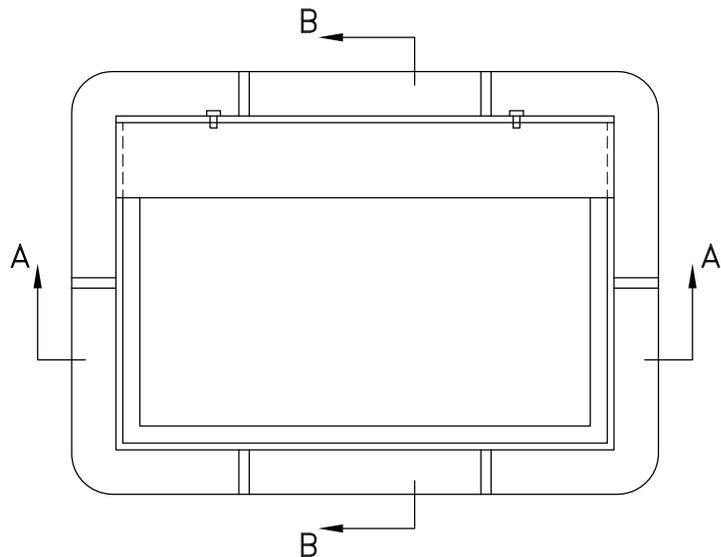
119

REVISION:

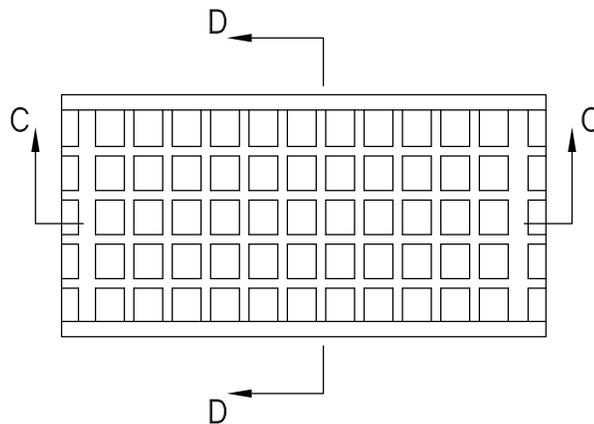
10/04

*APPENDIX A - STANDARD DRAWINGS*

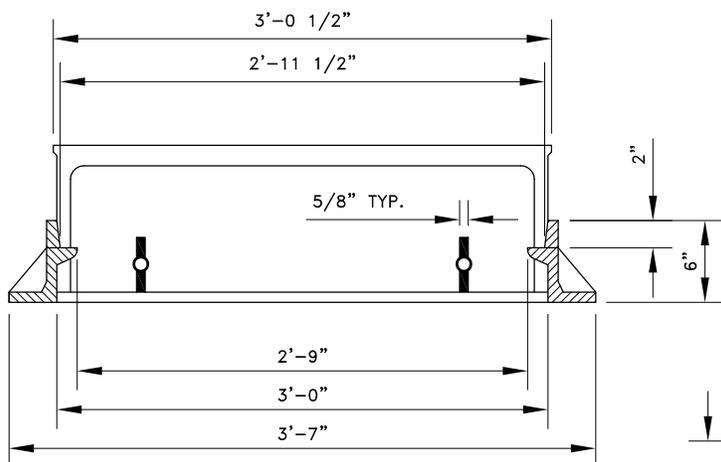
**PART 2 – STORM DRAIN**



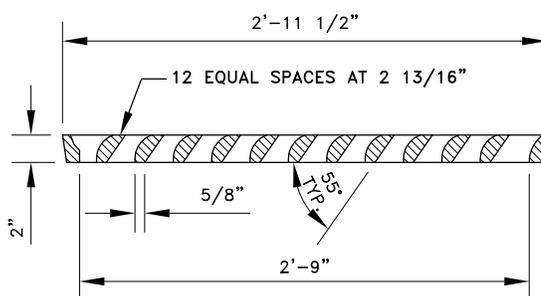
PLAN



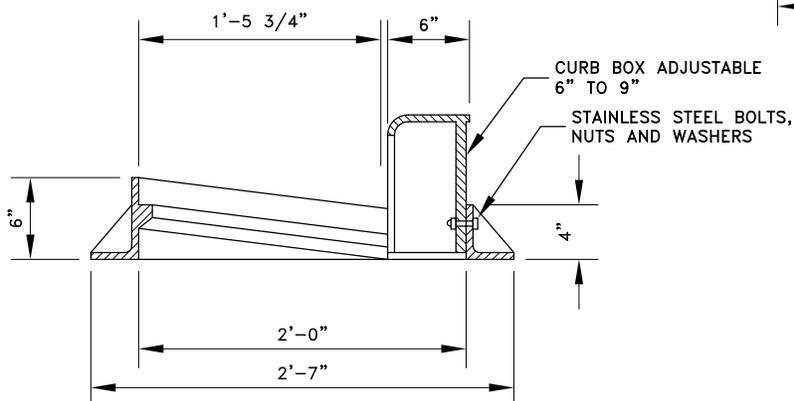
PLAN  
BICYCLE SAFE GRATE



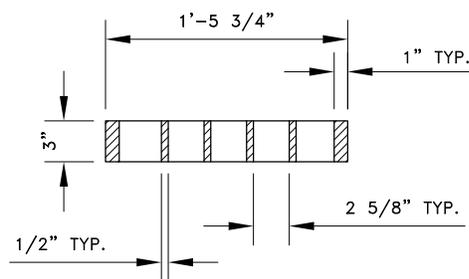
SECTION A



SECTION C



SECTION B



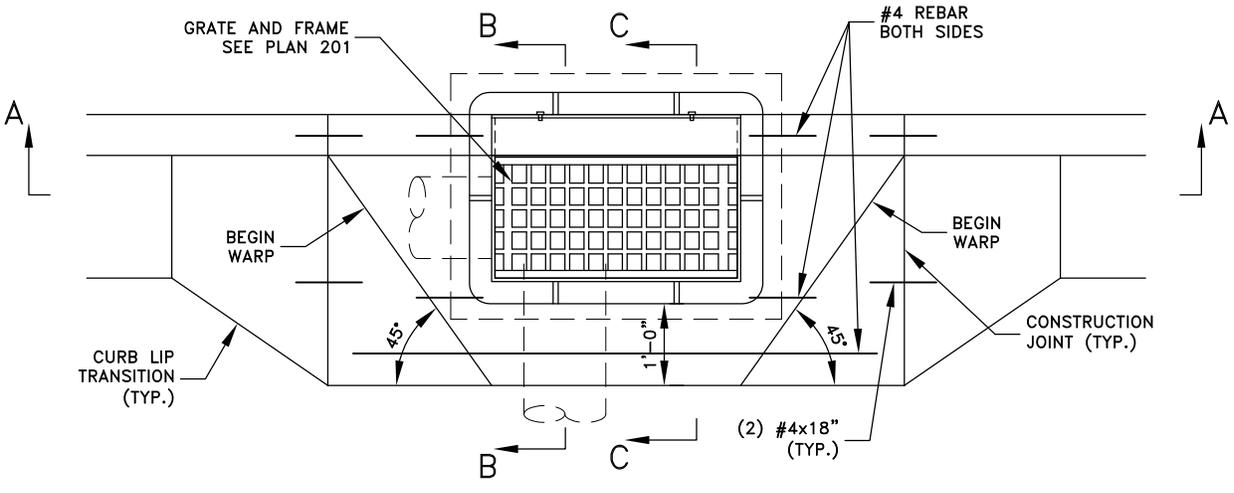
SECTION D



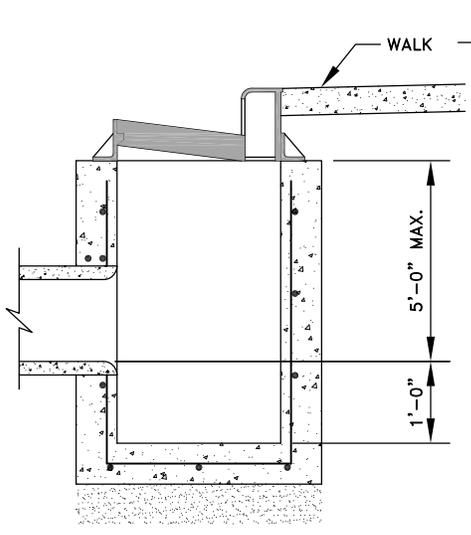
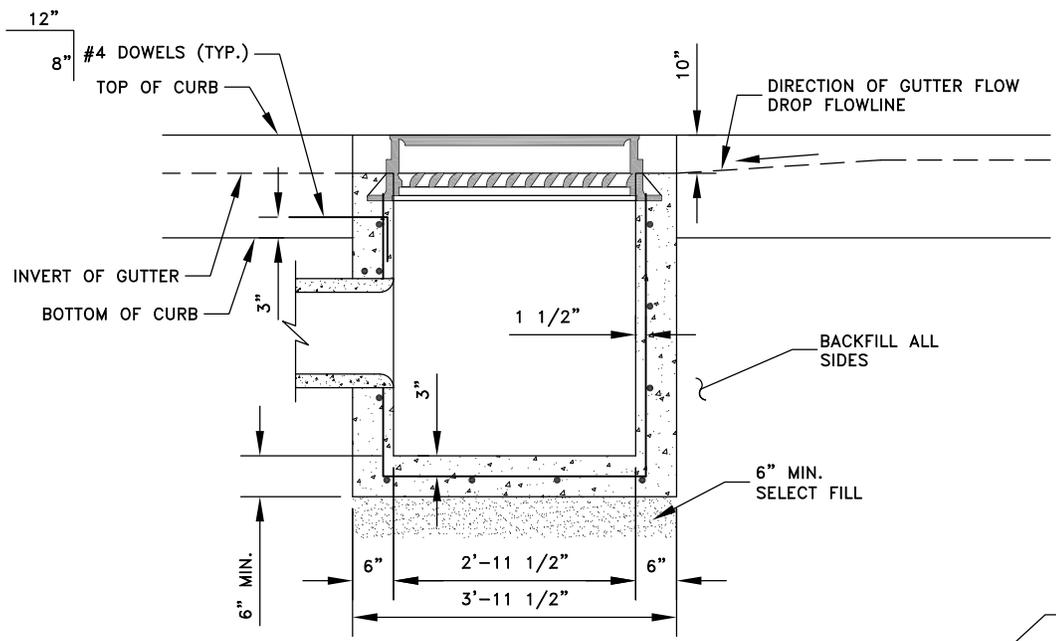
**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
35 1/2" GRATE AND FRAME  
WITH ADJUSTABLE CURB BOX

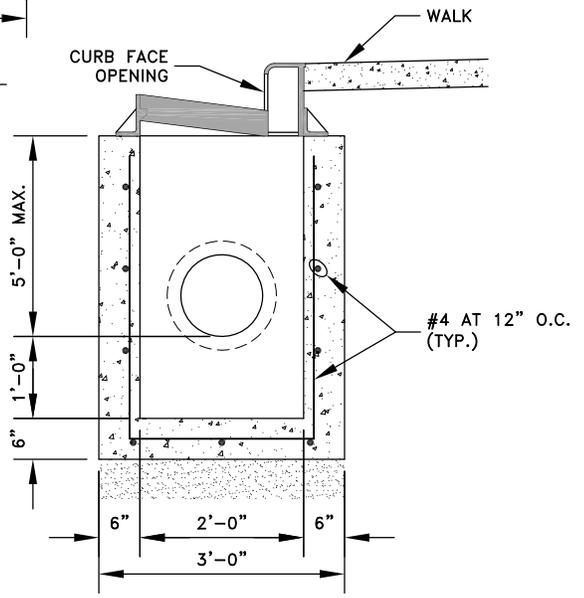
PLAN NO:  
**201**  
REVISION:  
5/98



**TYPE A - CURB INLET WITH SINGLE GRATE**



**SECTION A**



**SECTION B**

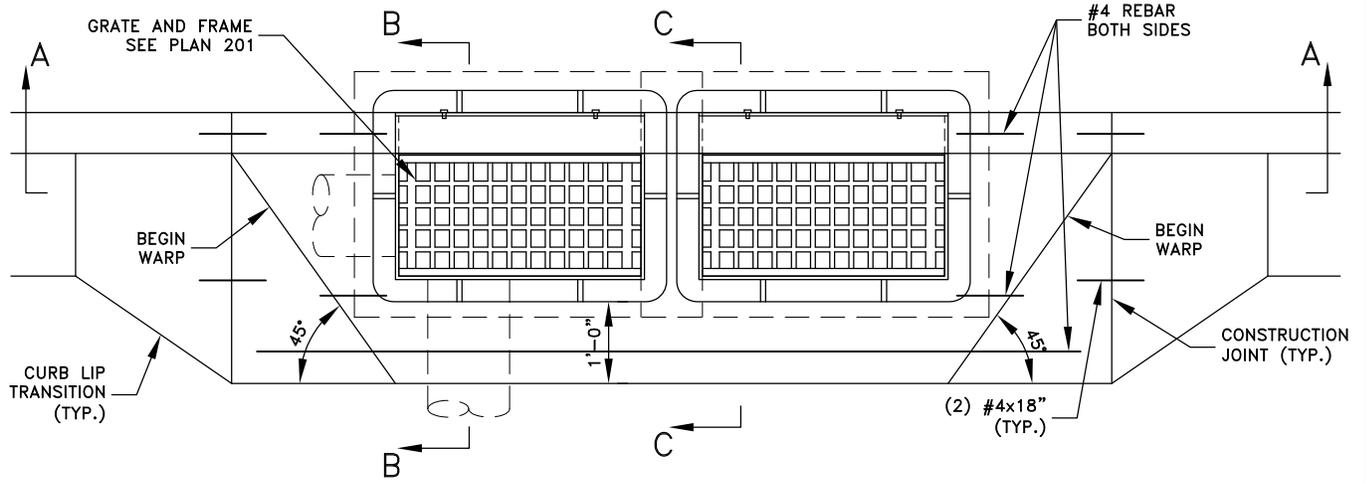
**SECTION C**



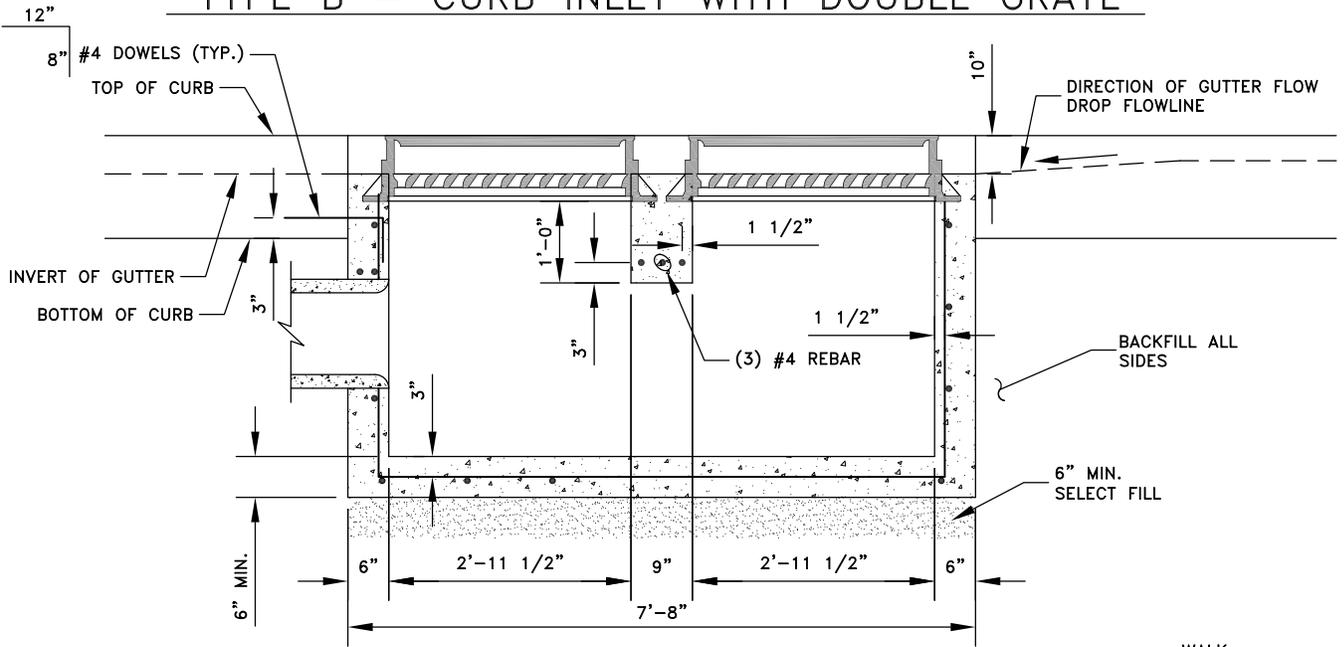
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 CATCH BASIN - SINGLE GRATE  
 FOR HIGH-BACK CURB AND GUTTER

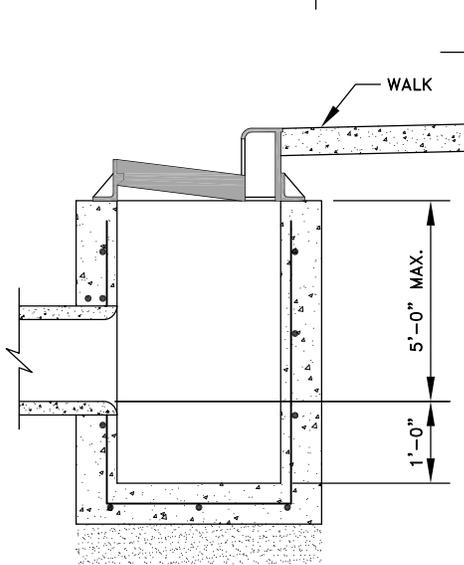
PLAN NO:  
**202**  
 REVISION:  
 8/98



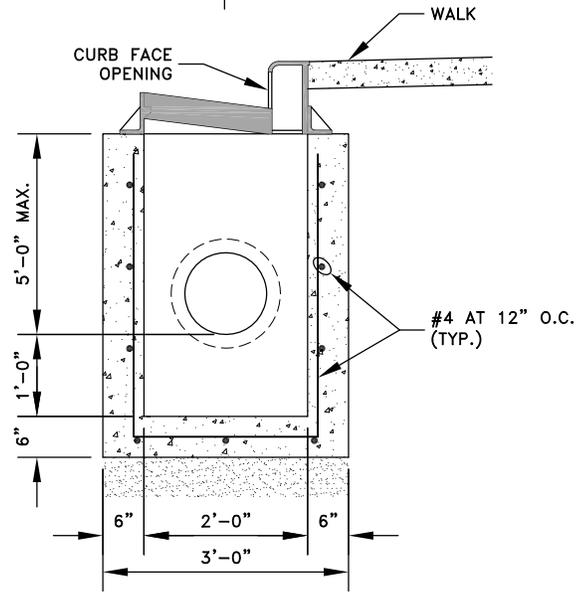
**TYPE B - CURB INLET WITH DOUBLE GRATE**



**SECTION A**



**SECTION B**



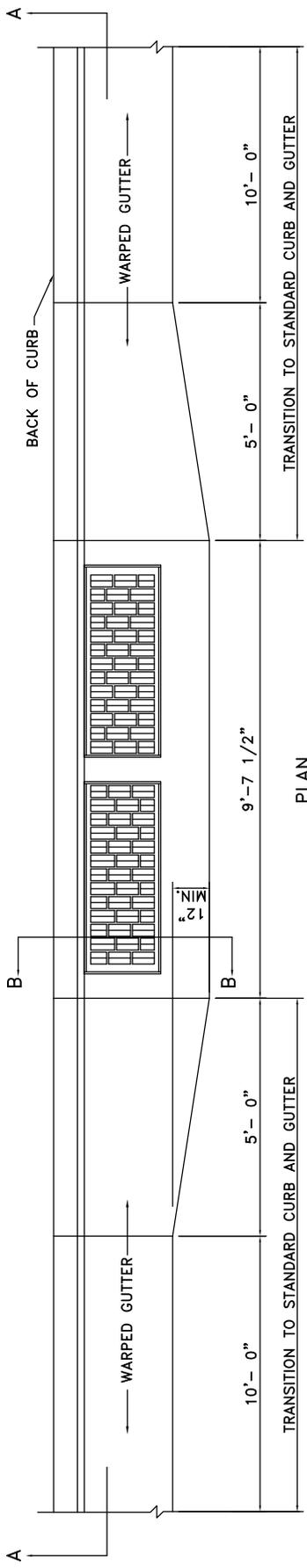
**SECTION C**



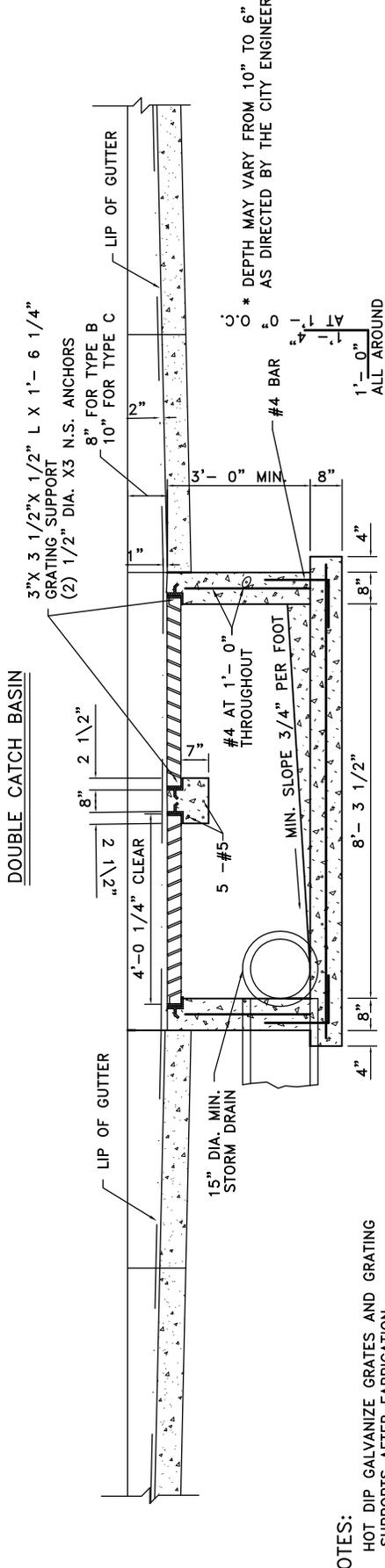
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 CATCH BASIN - DOUBLE GRATE  
 FOR HIGH-BACK CURB AND GUTTER

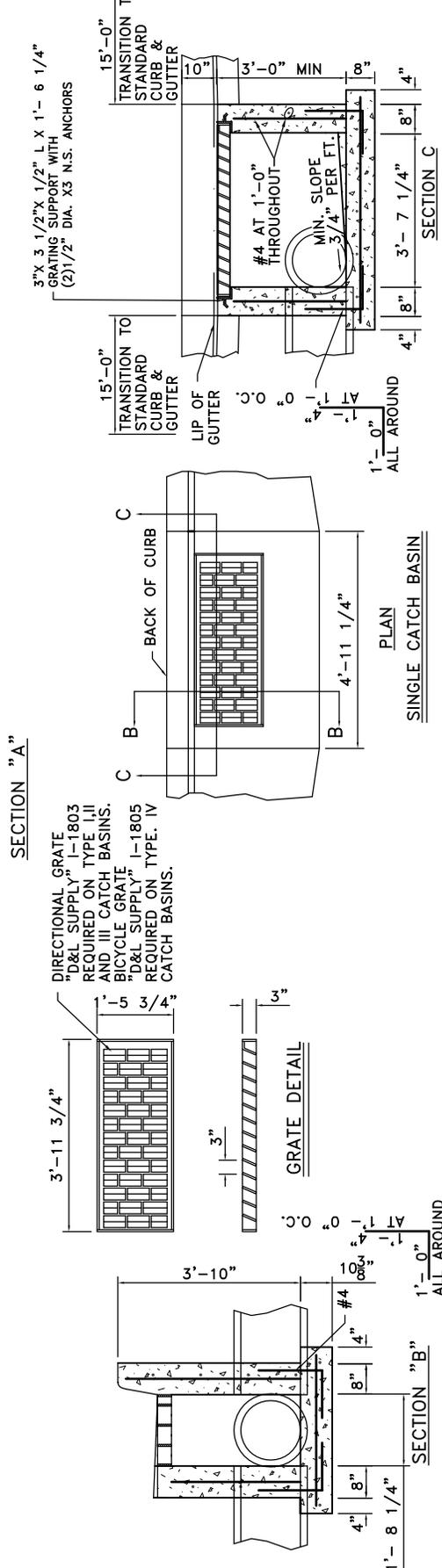
PLAN NO:  
**203**  
 REVISION:  
 8/98



PLAN

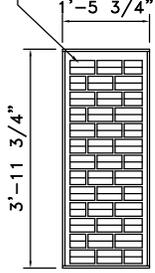


DOUBLE CATCH BASIN

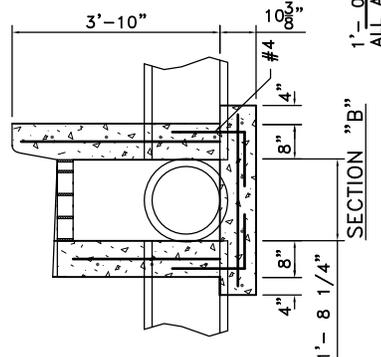


SECTION "A"

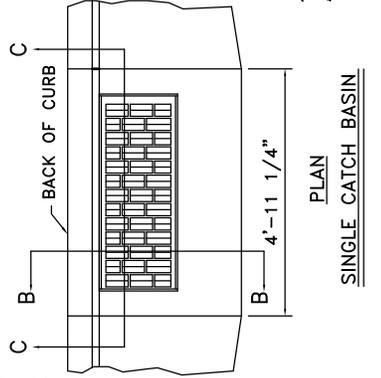
DIRECTIONAL GRATE "D&L SUPPLY" I-1803 REQUIRED ON TYPE I, II AND III CATCH BASINS. BICYCLE GRATE "D&L SUPPLY" I-1805 REQUIRED ON TYPE IV CATCH BASINS.



GRATE DETAIL



SECTION "B"



PLAN

SINGLE CATCH BASIN

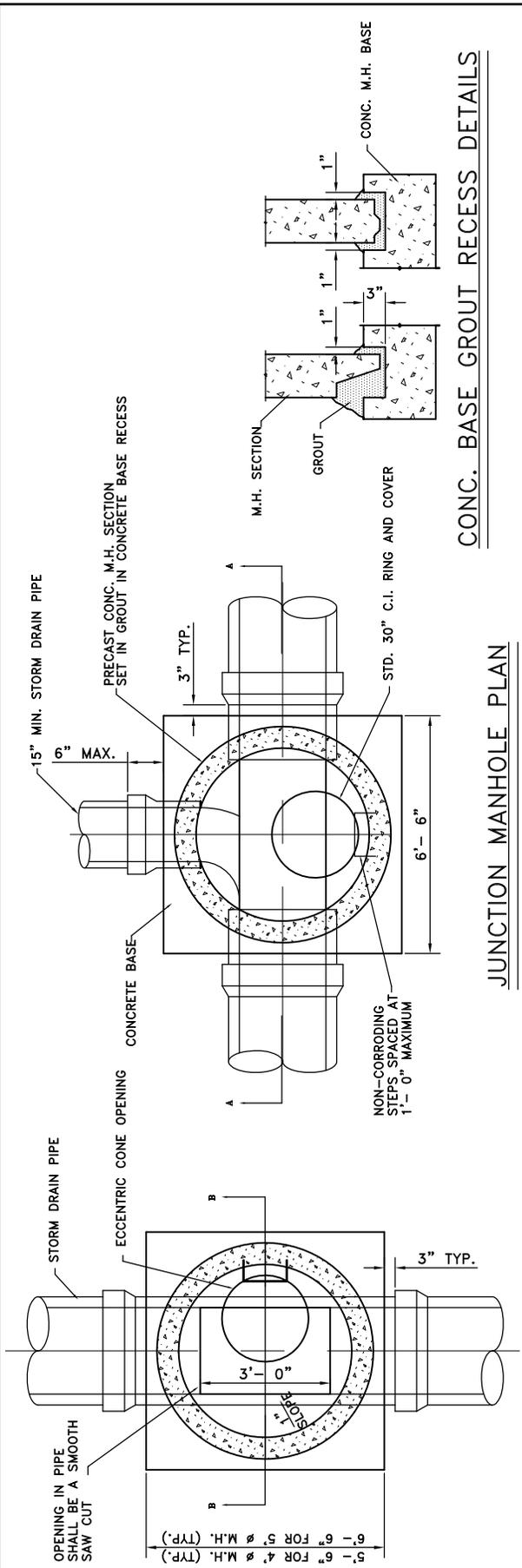
NOTES:  
1. HOT DIP GALVANIZE GRATES AND GRATING SUPPORTS AFTER FABRICATION.



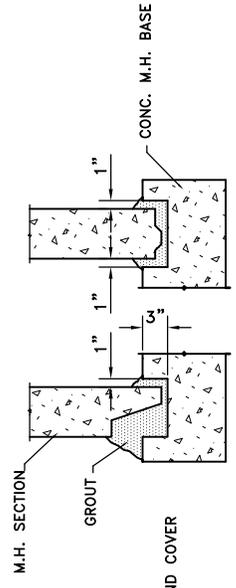
**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
CATCH BASIN - SINGLE & DOUBLE GRATE  
FOR ROLL CURB AND GUTTER

PLAN NO:  
**204**  
REVISION:  
5/98



**CONC. BASE GROUT RECESS DETAILS**



NOTE: 48" Ø M.H. REQUIRED WHERE LINE SIZE IS 15"  
 60" Ø M.H. REQUIRED WHERE LINE SIZE IS 18" OR LARGER

NOTE: CAST IN PLACE MANHOLE SHOWN PRECAST REINFORCED MANHOLE ACCEPTABLE

**TYPICAL LINE MANHOLE PLAN**

**SECTION A-A**

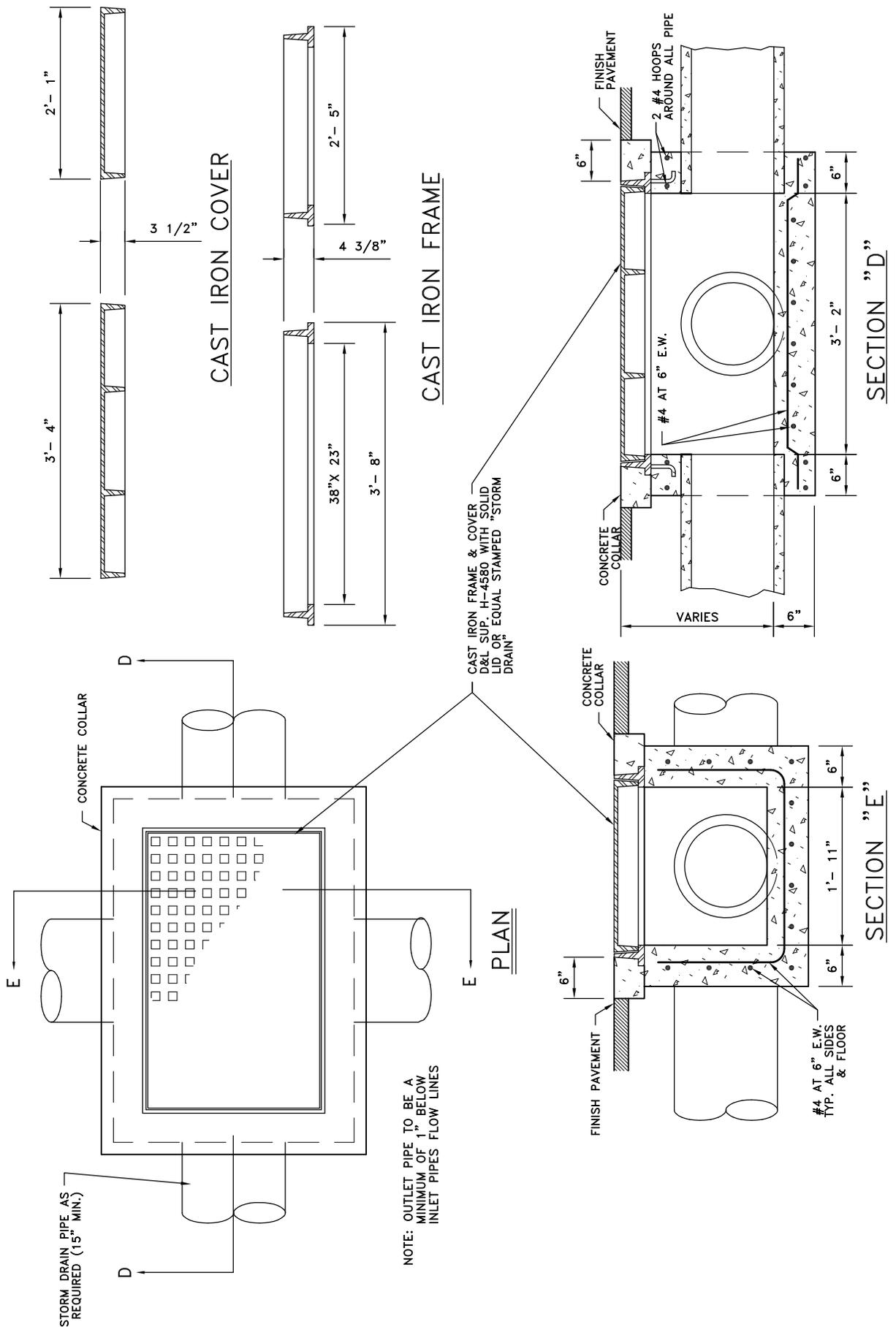
**SECTION B-B**



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 CIRCULAR STORM DRAIN CLEANOUT

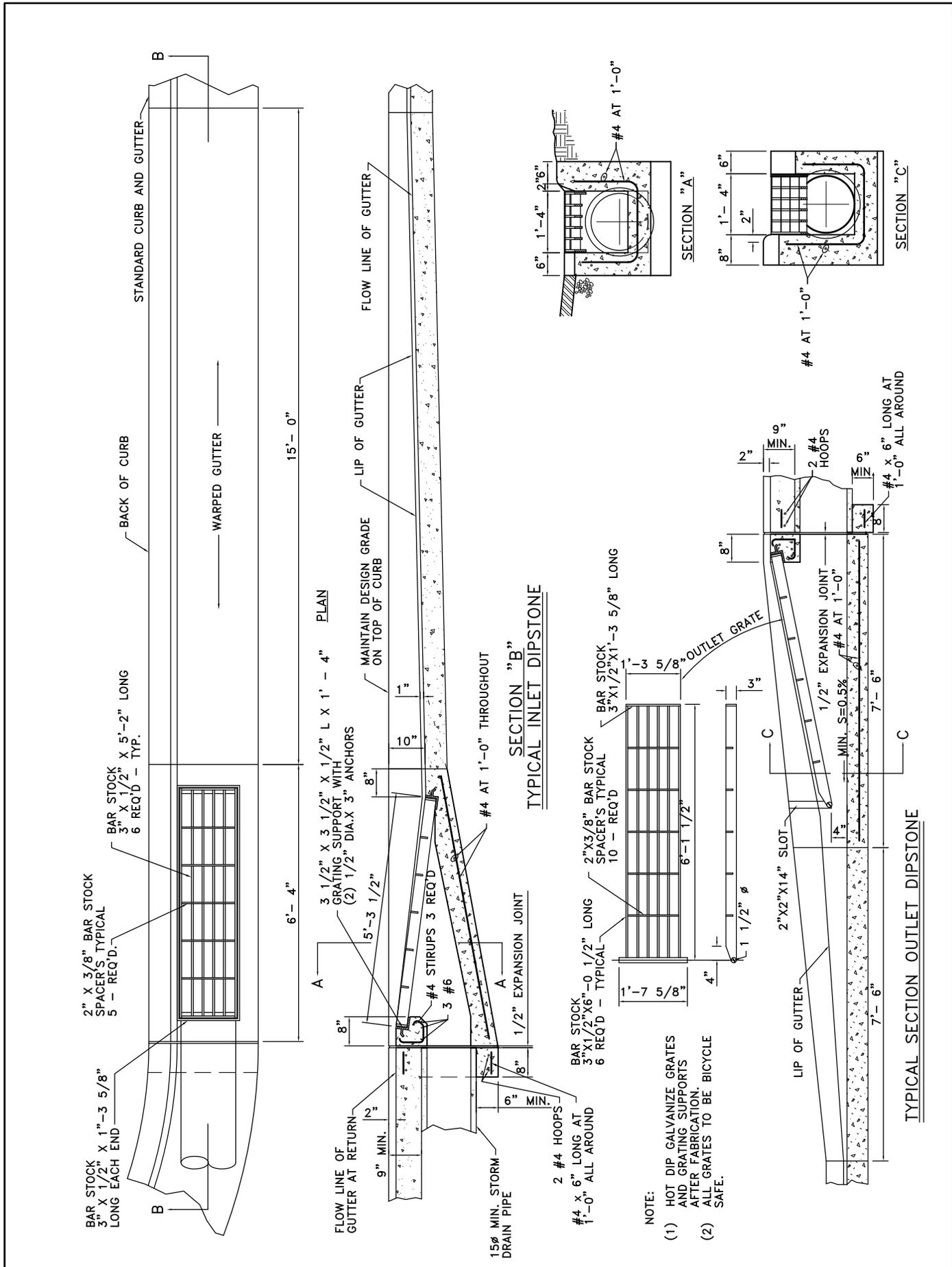
PLAN NO: **205**  
 REVISION:  
 5/98



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 RECTANGULAR STORM DRAIN CLEANOUT

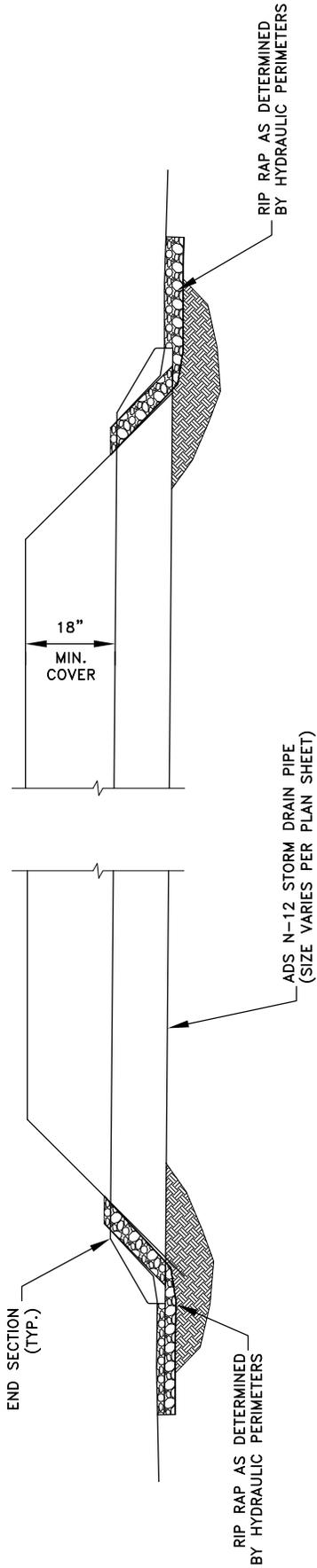
PLAN NO:  
**206**  
 REVISION:  
 5/98



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 DIPSTONE

PLAN NO:  
**207**  
 REVISION:  
 5/98



STORM DRAIN INLET/OUTLET DETAIL



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 STORM DRAIN INLET/OUTLET DETAIL

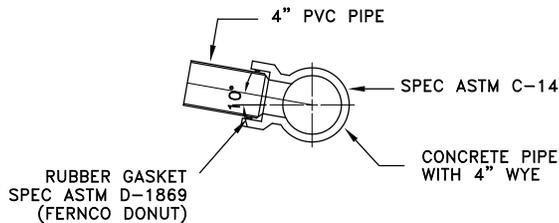
PLAN NO: 208

REVISION: 10/07

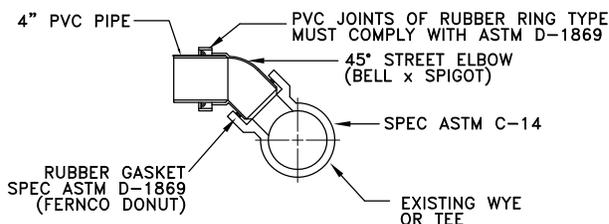
*APPENDIX A - STANDARD DRAWINGS*

**PART 3 – SANITARY SEWER**

NOTE:  
WHEN CONNECTION IS MADE INTO EXISTING  
CONCRETE WYE THE WYE MUST BE ROTATED  
TO A MINIMUM OF 10° AND A MAXIMUM OF  
45° FROM THE HORIZONTAL AS SHOWN

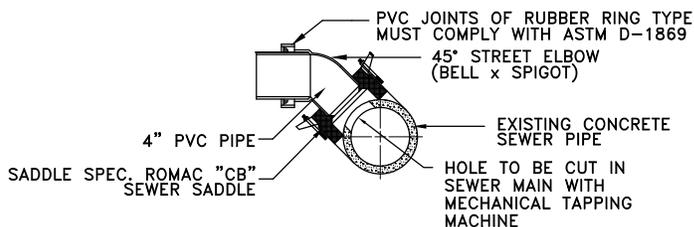


CONNECTING INTO CONCRETE WYE  
(WITHOUT 45° ELBOW)

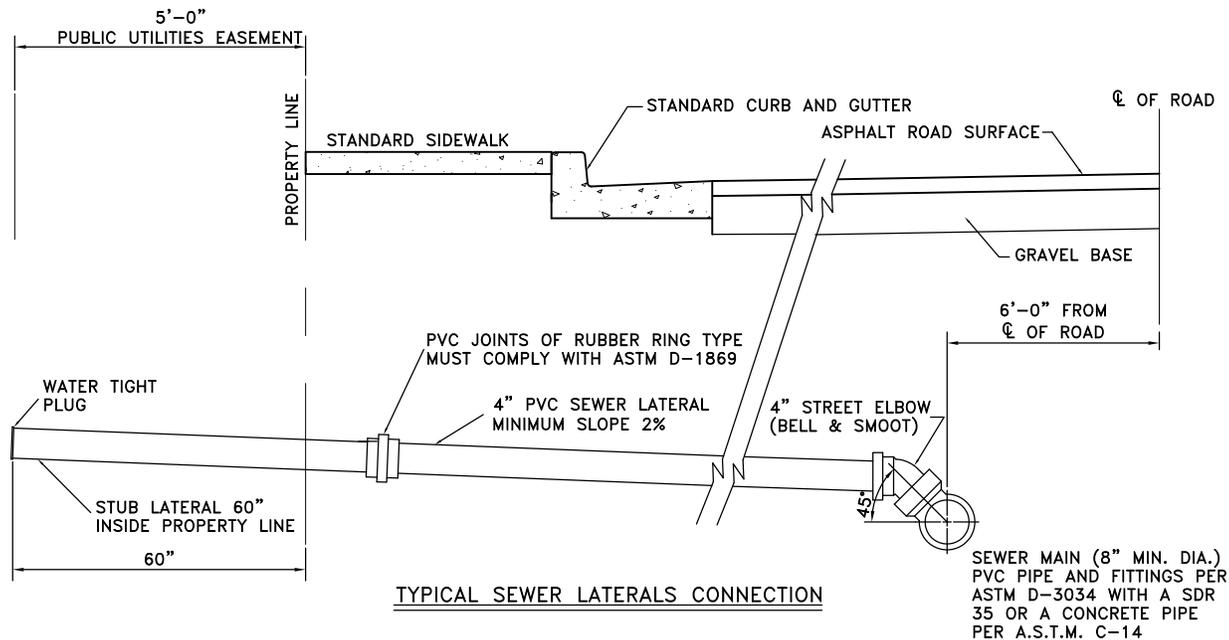


CONNECTING INTO CONCRETE WYE  
(WITH 45° ELBOW)

NOTE:  
PVC PIPE FITTINGS ASTM D-3034  
WITH A S.D.R. 35



TAPPING INTO EXISTING CONCRETE PIPE



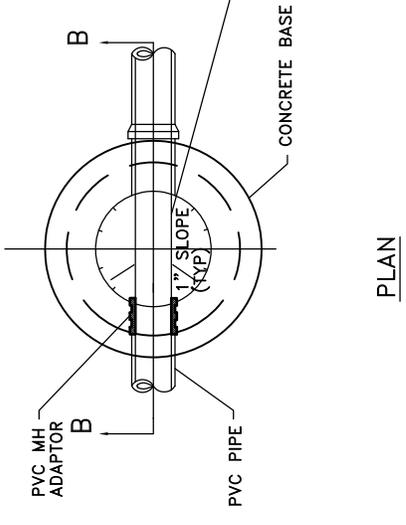
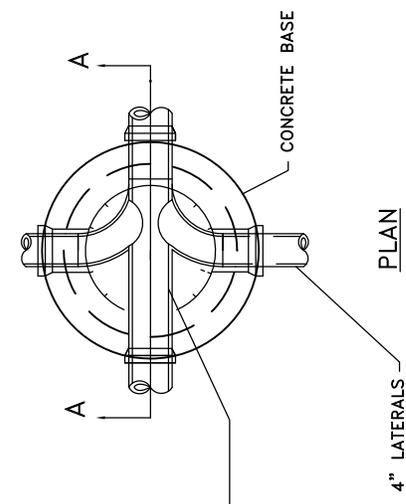
TYPICAL SEWER LATERALS CONNECTION



**WEST WENDOVER**  
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WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
PIPE CONNECTION DETAILS

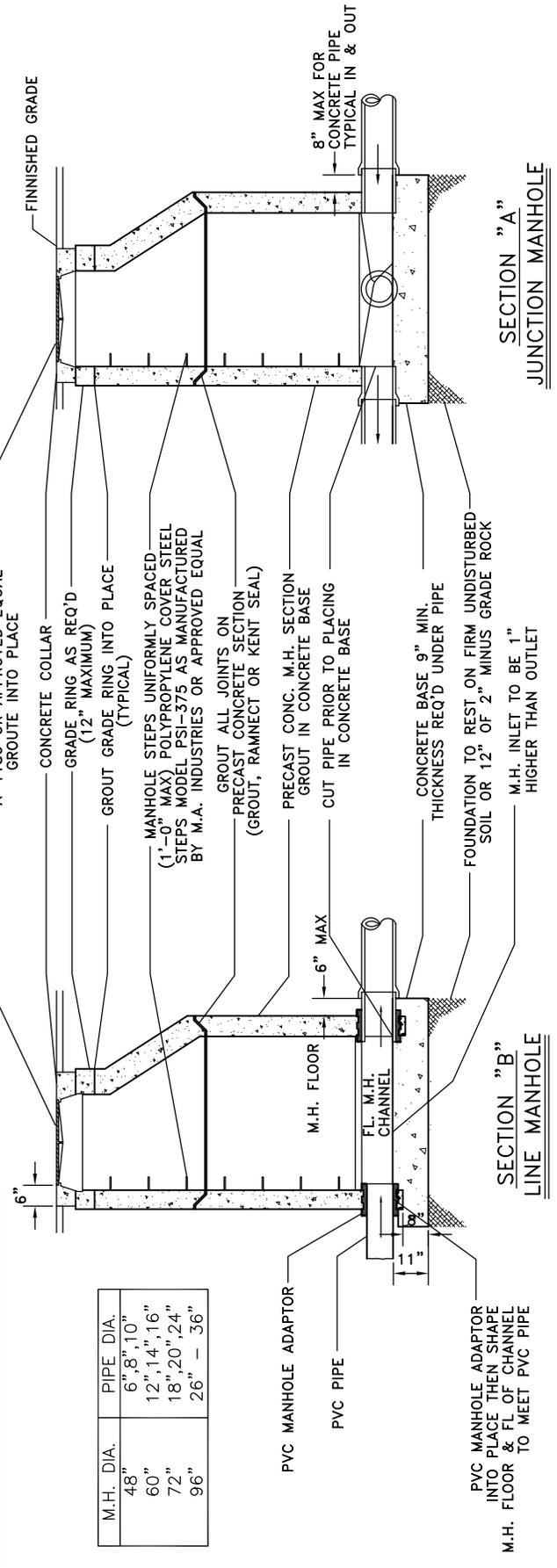
PLAN NO:  
**301**  
REVISION:  
8/98



NOTE: CAST IN PLACE MANHOLE SHOWN PRECAST REINFORCED MANHOLE ACCEPTABLE

NOTE: RUBBER BOOT JOINTS WITH STAINLESS STEEL CONNECTION BAND ARE ACCEPTABLE SUBSTITUTES FOR STANDARD JOINTS SHOWN

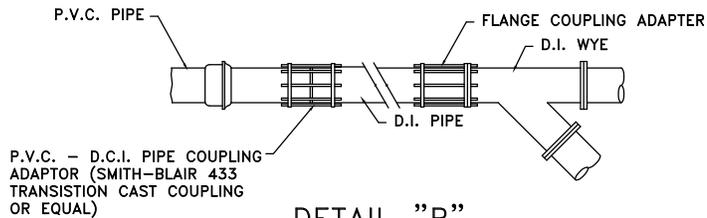
M.H. DIA.	PIPE DIA.
48"	6", 8", 10"
60"	12", 14", 16"
72"	18", 20", 24"
96"	26" - 36"



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

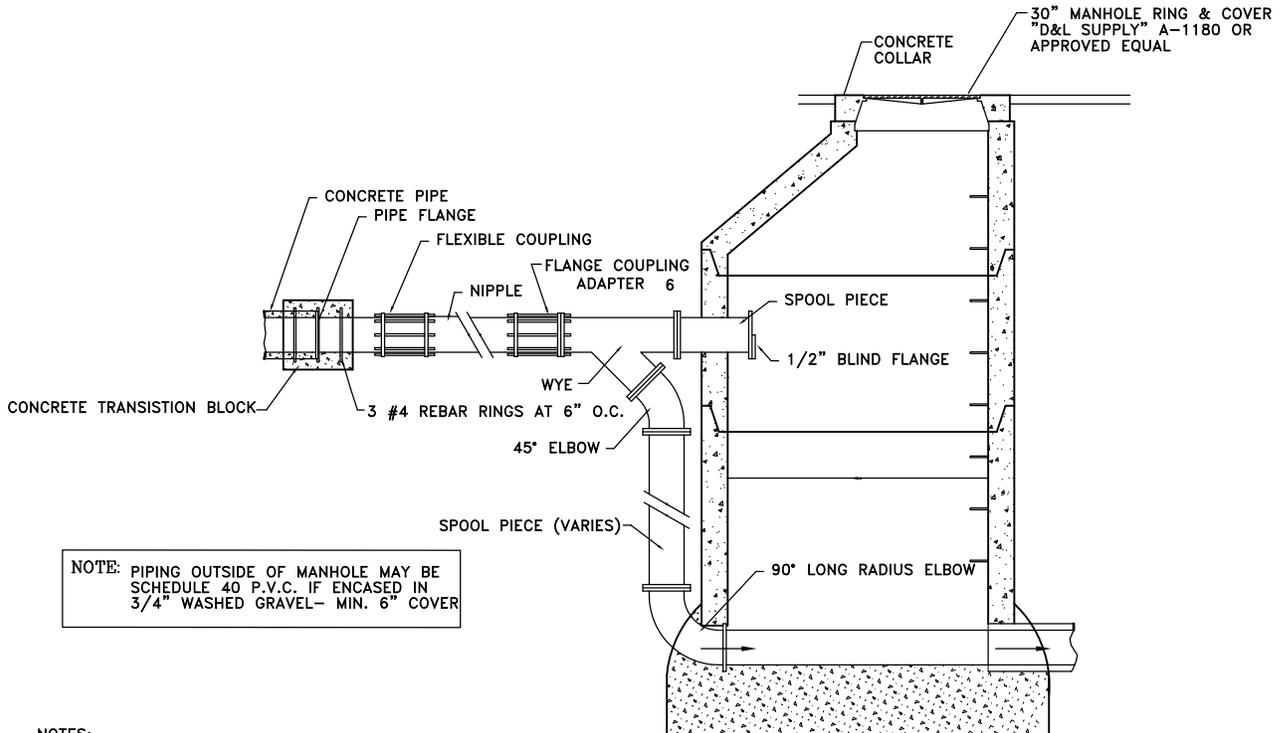
CITY OF WEST WENDOVER  
 LINE AND JUNCTION MANHOLE DETAILS

PLAN NO: **302**  
 REVISION:  
 5/98



**DETAIL "B"**

TYPICAL FOR CONNECTION D.I. PIPE TO P.V.C. PIPE



NOTE: PIPING OUTSIDE OF MANHOLE MAY BE SCHEDULE 40 P.V.C. IF ENCASED IN 3/4" WASHED GRAVEL- MIN. 6" COVER

- NOTES:
1. USE DROP MANHOLE ONLY WHEN DROP EXCEEDS 2'- 0"
  2. FOR CONSTRUCTION DIMENSION OF DROP MANHOLE SEE JUNCTION MANHOLE
  3. ALL PIPE FOR DROP MANHOLE TO BE FLANGED DUCTILE IRON PIPE OR ALTERNATE SCHEDULE 40 P.V.C. IF ENCASED IN 3/4" WASHED GRAVEL MIN. 6" COVER.

DROP MANHOLE



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

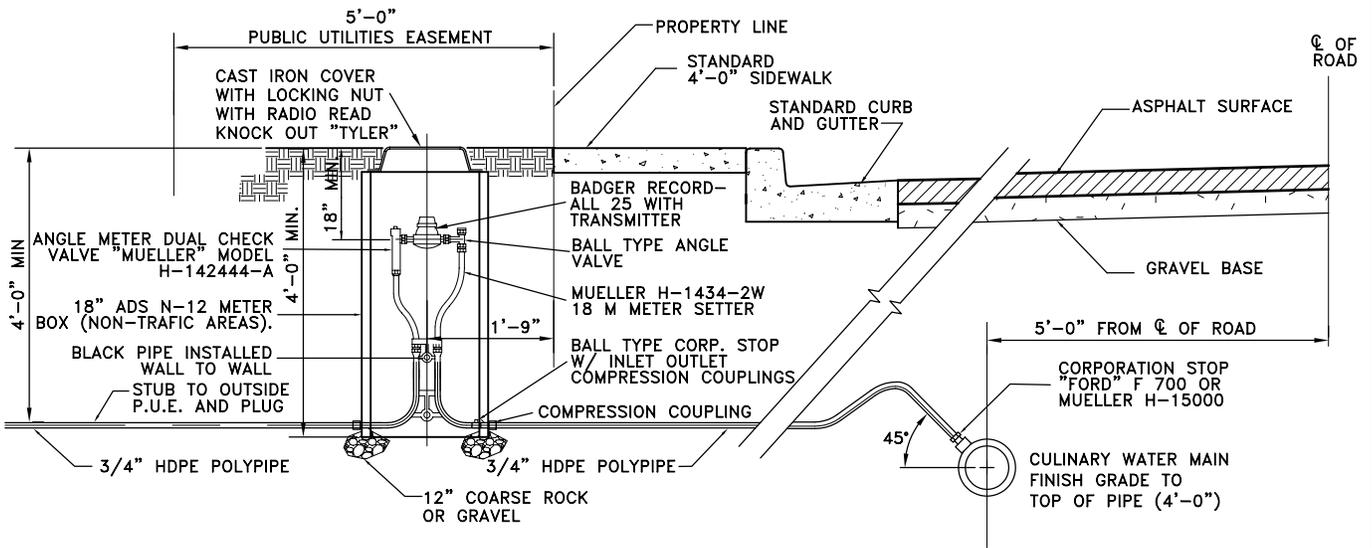
DROP MANHOLE / PIPE TRANSITION DETAILS

PLAN NO: **303**

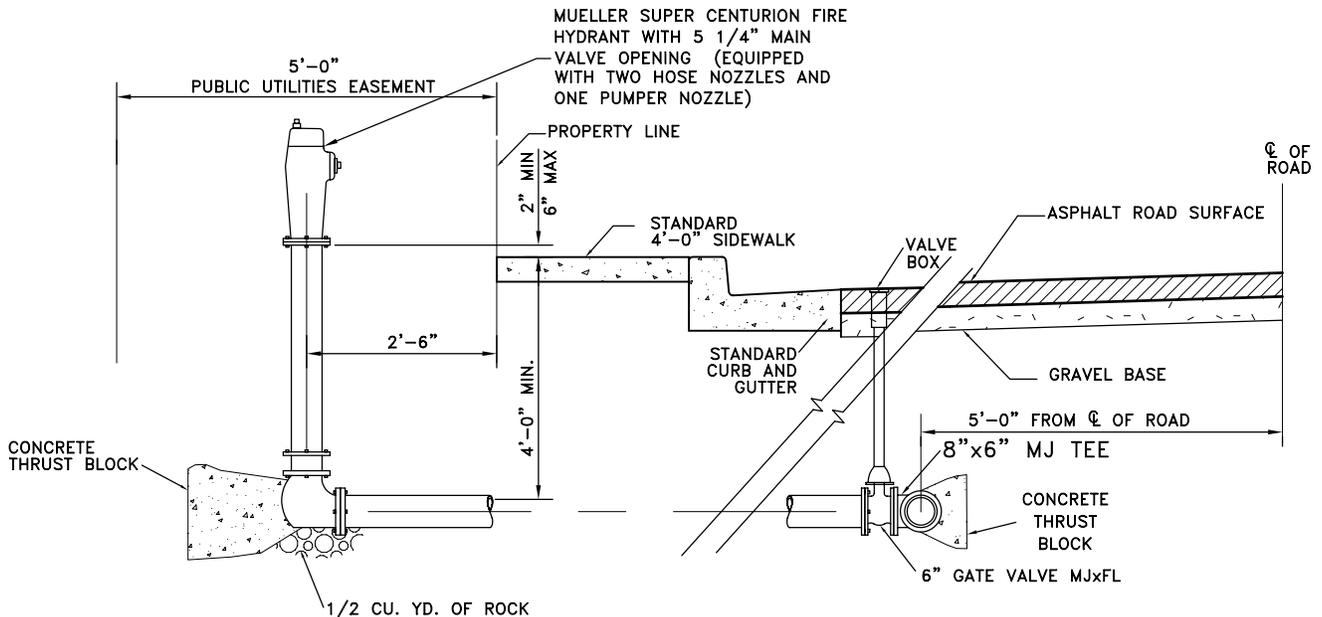
REVISION: 5/98

*APPENDIX A - STANDARD DRAWINGS*

**PART 4 – CULINARY WATER**



TYPICAL WATER SERVICE INSTALLATION



TYPICAL FIRE HYDRANT INSTALLATION

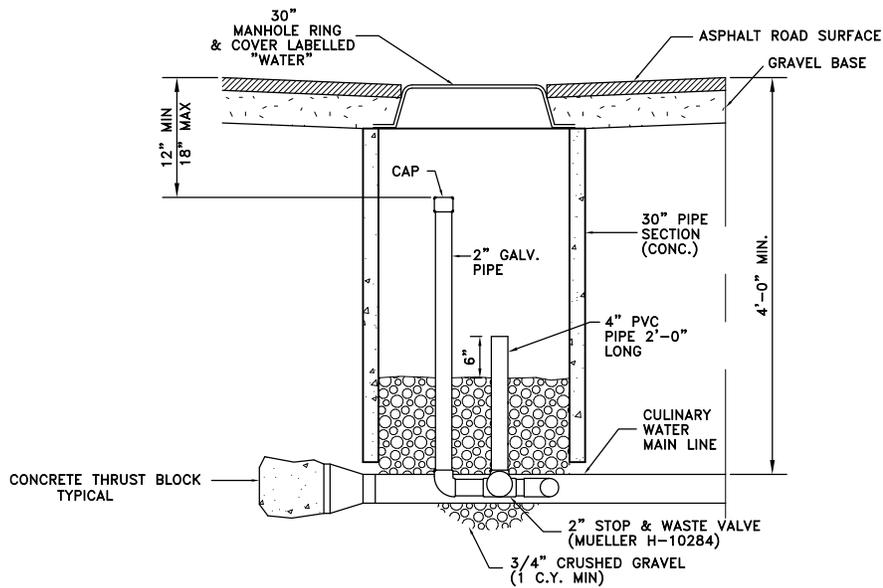


**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

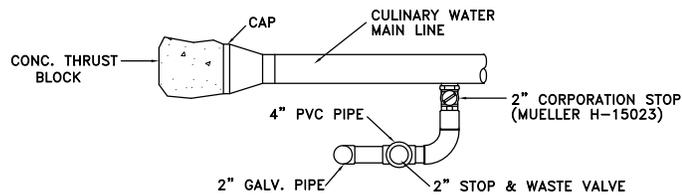
**CITY OF WEST WENDOVER**  
**WATER SERVICE AND FIRE HYDRANT**  
**DETAILS**

**PLAN NO:**  
**401**

**REVISION:**  
**12/08**

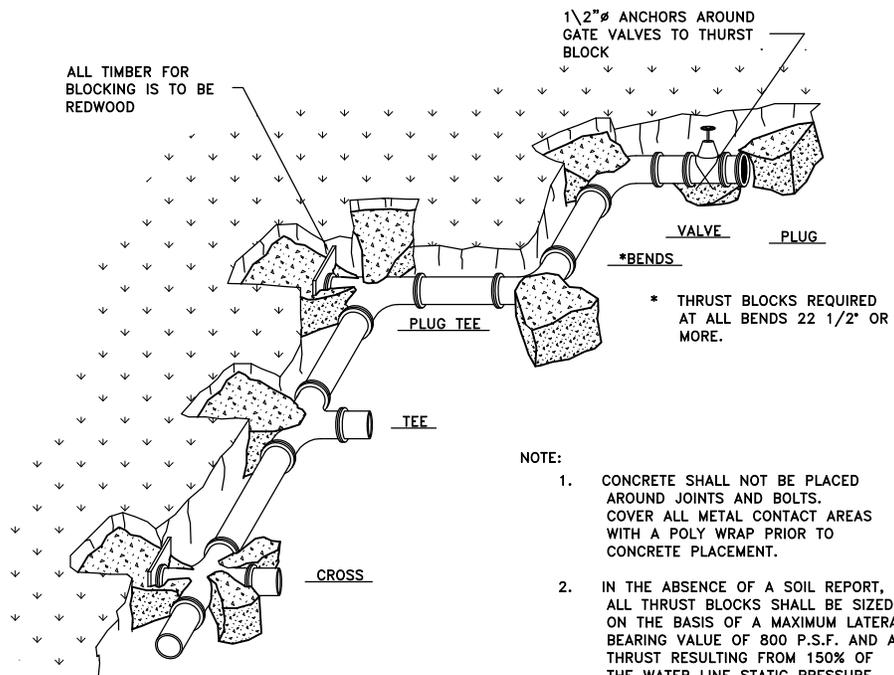


SECTION



PLAN

WATERLINE WASHOUT



THRUST BLOCKING

NOTE:

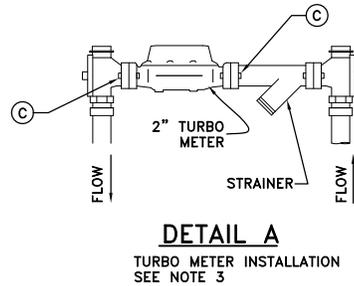
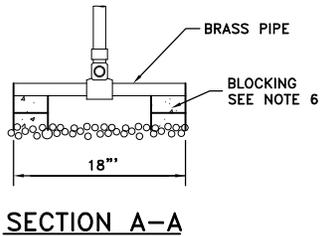
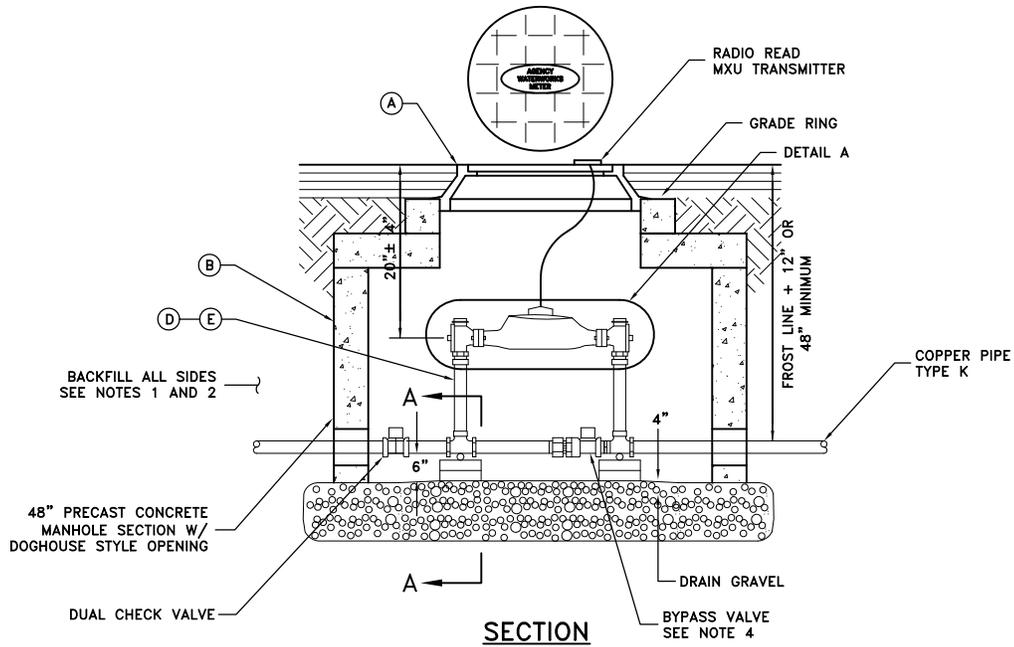
1. CONCRETE SHALL NOT BE PLACED AROUND JOINTS AND BOLTS. COVER ALL METAL CONTACT AREAS WITH A POLY WRAP PRIOR TO CONCRETE PLACEMENT.
2. IN THE ABSENCE OF A SOIL REPORT, ALL THRUST BLOCKS SHALL BE SIZED ON THE BASIS OF A MAXIMUM LATERAL BEARING VALUE OF 800 P.S.F. AND A THRUST RESULTING FROM 150% OF THE WATER LINE STATIC PRESSURE, OR 100% OF THE WATERLINE FIELD HYDROSTATIC TEST PRESSURE, WHICH EVER IS GREATER



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 WASHOUT AND  
 THRUST BLOCKING DETAILS

PLAN NO:  
402  
 REVISION:  
 5/98



LEGEND		
NO.	*	DESCRIPTION
(A)		27" FRAME AND COVER
(B)		CONCRETE BOX
(C)		METER BOLTS
(D)		1 1/2" CUSTOM SETTER WITH BYPASS
(E)		2" CUSTOM SETTER WITH BYPASS

\* FURNISHED BY UTILITY AGENCY

**NOTES**

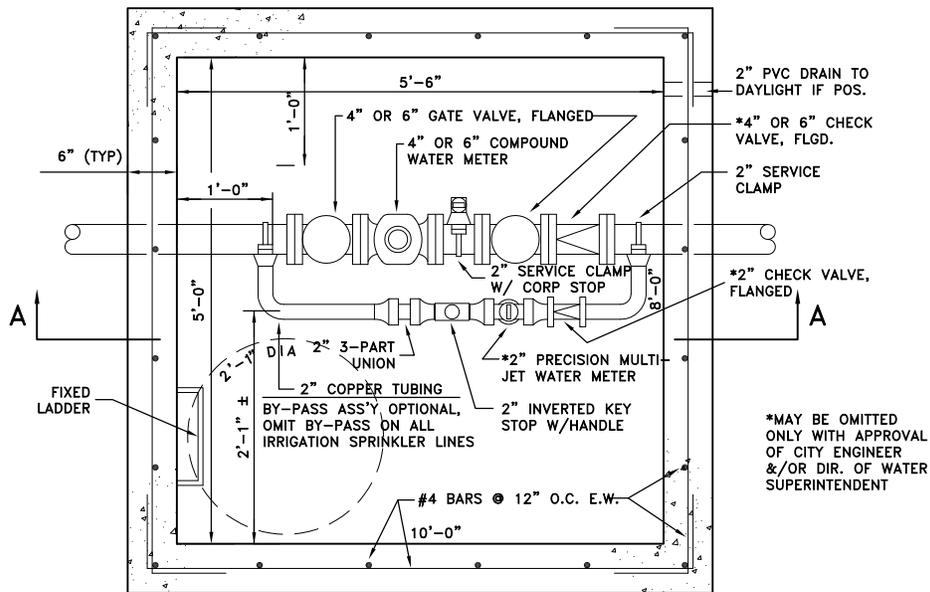
1. INSPECTION: PRIOR TO BACKFILLING AROUND THE METER BOX, SECURE INSPECTION OF INSTALLATION BY ENGINEER.
2. BACKFILL: INSTALL AND COMPACT ALL BACKFILL MATERIAL PER STANDARDS.
3. BYPASS VALVE: LOCK IN OFF POSITION.
4. CONCRETE BOX: ALLOW 1 INCH CLEARANCE AROUND WATERLINE WHERE LINE PASSES THROUGH WALL. SEAL OPENING WITH COMPRESSIBLE SEAL. CENTER FRAME AND COVER OF WATER METER.
5. BLOCKING: USE CLAY BRICK OR CONCRETE BLOCK.
6. METER: PROVIDE WATER METER UNLESS PROVIDED BY UTILITY AGENCY.
7. PIPE: INSTALL TYPE "K" COPPER PIPE TO PROPERTY LINE. COORDINATE WITH UTILITY AGENCY FOR TYPE OF PIPE TO BE USED OUTSIDE OF RIGHT-OF-WAY.
8. PLACEMENT:
  - A. DO NOT INSTALL METERS UNDER DRIVEWAY APPROACHES, SIDEWALKS, OR CURB AND GUTTER.
  - B. IN NEW CONSTRUCTION, INSTALL METER AT CENTER OF LOT OR AS DIRECTED BY ENGINEER.
  - C. ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP OR WITHIN 5 FEET OF THE PROPERTY LINE (STREET SIDE).



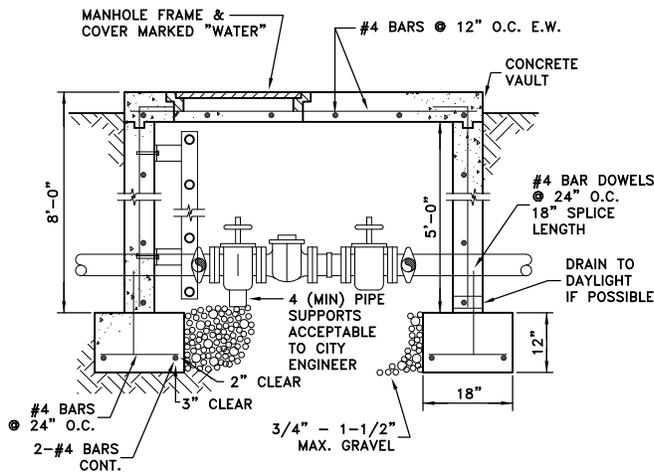
**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 METER PIT & BYPASS DETAIL  
 FOR 1 1/2" AND 2" METERS ONLY

PLAN NO:  
**403**  
 REVISION:  
 4/08



**PLAN**



**SECTION A-A**

NOTES: FIRE LINES SHALL ALSO BE METERED UNLESS OTHERWISE APPROVED BY WATER SUPERINTENDENT. METER PROVIDED BY CITY. VAULT BY DEVELOPER. IF MULTIPLE METERS ARE USED IN ONE VAULT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING VAULT SIZE NECESSARY TO CONTAIN ALL COMPONENTS.

EIGHT-INCH OR LARGER METERS SHALL BE INSTALLED IN AN APPROPRIATELY SIZED VAULT SUBJECT TO APPROVAL OF CITY ENGINEER. AT THE EXPENSE OF DEVELOPER/OWNER, REMOTE READOUT WITH APPURTENANT WIRING MAY BE REQUIRED BY CITY ENGINEER OR PUBLIC WORKS DIRECTOR.

FIXED ALUMINUM OR STAINLESS STEEL LADDER REQ'D. IN ALL VAULTS.

TOP OF VAULT NEEDS TO BE WITHIN 1'-0" OF FINISH GRADE.



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 METER VAULT & BYPASS DETAIL  
 FOR 4" AND 6" METERS ONLY

PLAN NO:  
**404**  
 REVISION:  
 4/08

*APPENDIX A - STANDARD DRAWINGS*

**PART 5 – MISCELLANEOUS DETAILS**

## West Wendover City Testing And Inspection Standards

SANITARY SEWER*	PIPELINE INSPECTION – ALIGNMENT, GRADE, AND CLASS OF PIPE LOW PRESSURE AIR TEST OR INFILTRATION TEST DISPLACEMENT TEST
STORM DRAINAGE*	PIPELINE INSPECTION – ALIGNMENT, GRADE, AND CLASS OF PIPE CATCH BASIN BOXES INSPECTION – DEPTH & REBAR
LAND DRANAGE*	PIPE LINE INSPECTION – ALIGNMENT, GRADE, CLASS OF PIPE AND BEDDING METHOD
CULINARY WATER	PIPE LINE INSPECTION – ALIGNMENT, GRADE, CLASS OF PIPE, BEDDING METHOD, SERVICES AND INSTALLTION PRESSURE TEST – MINIMUM 200 PSI FOR 2 HOUR CHLORINATION TEST – MINIMUM 30 RPM-24 HOUR CLEAR WATER TEST
ROADWAY	SUB BASE INSPECTION – DEPTH AND COMPACTION BEFORE ROAD BASE PLACEMENT ALL UTILITY LINES NEEDS TO BE INSTALLED ROAD BASE DENSITY TEST – DEPTH AND COMPACTION (CONTRACTOR RESPONSIBLE TO GIVE ROADBASE PROCTOR TO CITY) ASPHALT PLACEMENT – DEPTH AND COMPACTION
CURB, GUTTER, AND SIDEWALK	CURB, GUTTER, SIDEWALK INSPECTION – DEPTH AND COMPACTION, SLUMP, ENTRAINED AIR AND COMPRESSIVE STRENGTH

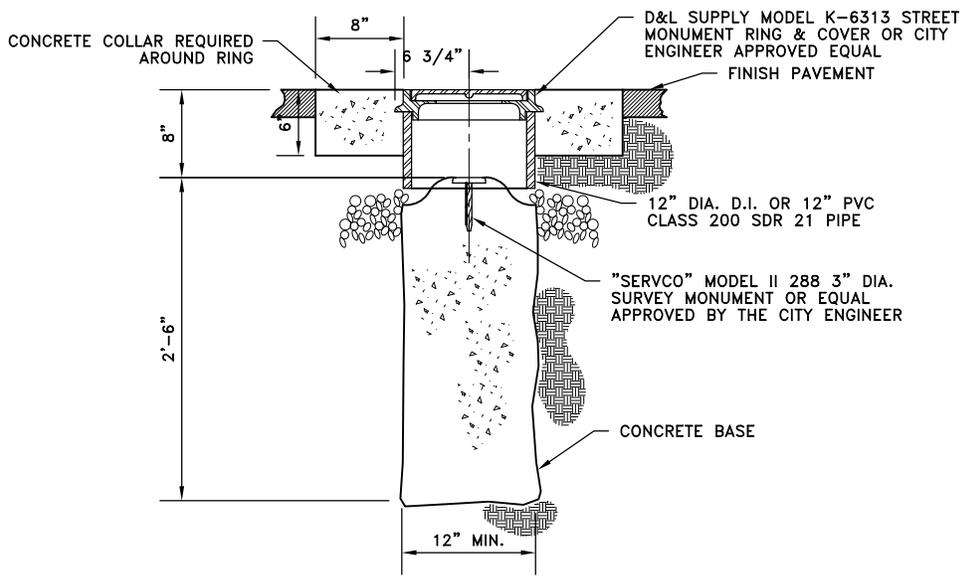
\*CONTRACTOR SHALL NOT FLUSH ROCK & DEBRIS FROM NEWLY INSTALLED PIPELINES DOWN STREAM INTO EXISTING SYSTEM.



**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

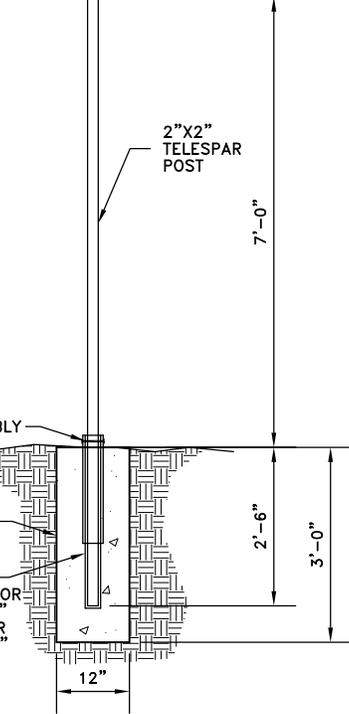
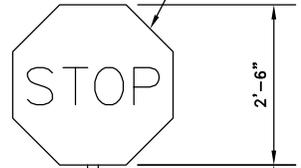
CITY OF WEST WENDOVER  
TESTING AND INSPECTION STANDARDS

PLAN NO:	<b>501</b>
REVISION:	5/98

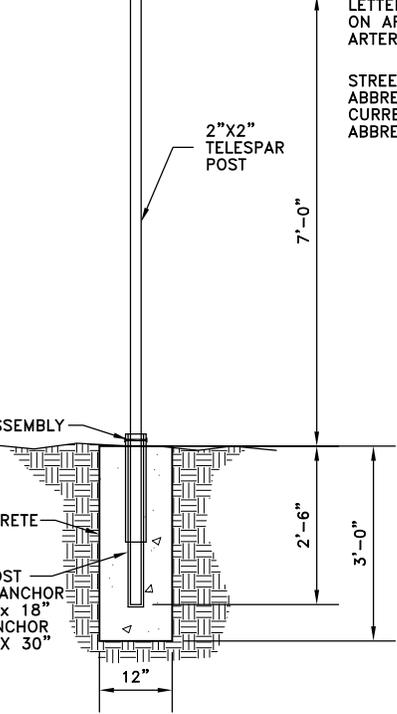


SURVEY MONUMENT SECTION

SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"



TYPICAL REGULATORY SIGN



TYPICAL STREET NUMBERING SIGN

ALUMINUM 9" BLADE W/ 6" LETTERING TYPE B-4P ASSEMBLY (GREEN SCOTCH LITE) OR EQUAL. BLUE BACKGROUND W/ WHITE LETTERING AT ALL INTERSECTIONS ON ARTERIAL AND MAJOR ARTERIAL STREETS.

STREET NAME CONVENTIONAL ABBREVIATIONS SHALL FOLLOW CURRENT MUTCD ACCEPTABLE ABBREVIATIONS GUIDELINES



**WEST WENDOVER**  
801 ALPINE STREET  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
STREET SIGN AND MONUMENT DETAILS

PLAN NO: **502**

REVISION: **9/16**

GE PHOTO CELL OR APPROVED EQUAL

200 WATT 240 VOLT LUMINAIRE  
G.E. M2RR2050A2GMS

FIBER GLASS POLE  
SHAKESPEARE BH35-18

NOTE:

STREET LIGHT POLES SHALL BE LOCATED AT ROADWAY INTERSECTIONS ( NEAR FIRE HYDRANTS WHERE POSSIBLE) AND AT OTHER REQUIRED LOCATIONS PER CITY ENGINEER

GRADE

JUNCTION BOX  
CDR SYSTEMS C857 A-8 OR EQUAL

GROUNDING ROD

10% + 2'-0"  
OF POLE HEIGHT

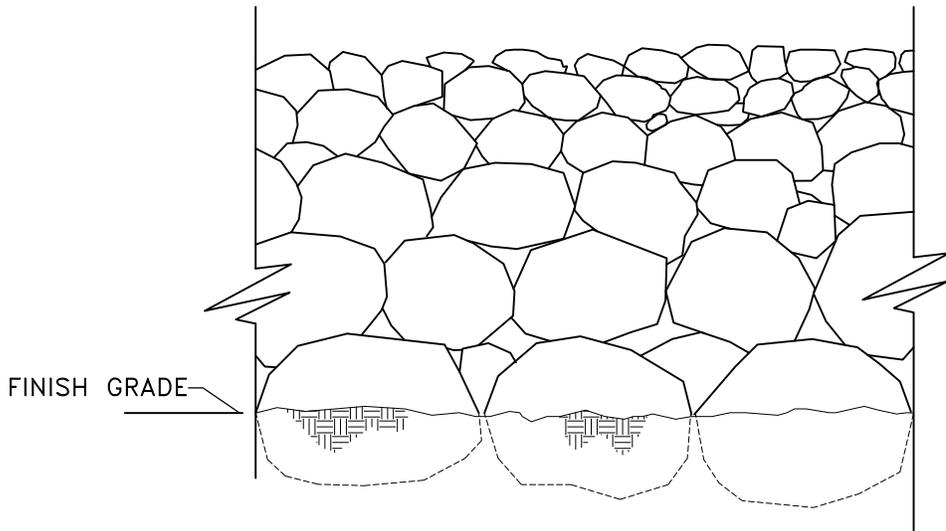


**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

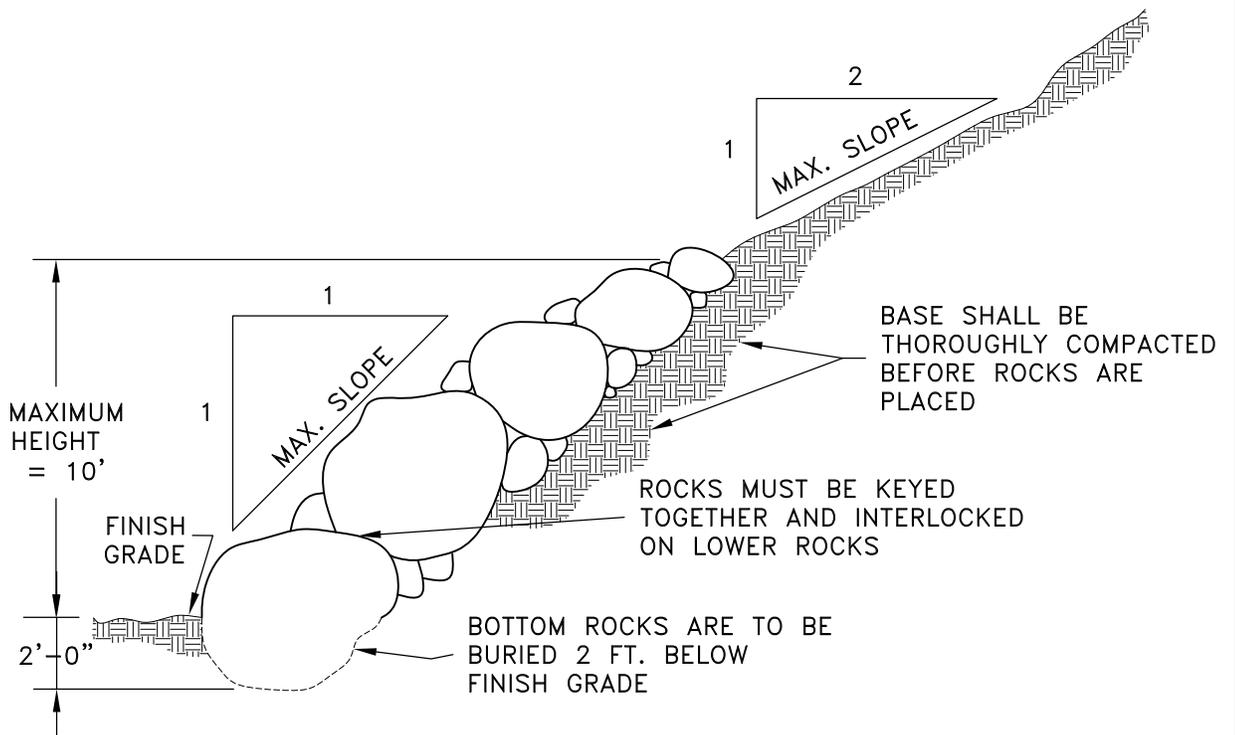
CITY OF WEST WENDOVER  
STREET LIGHT POLE DETAILS

PLAN NO:  
**503**

REVISION:  
4/09



FRONT VIEW



CROSS SECTION

NOTE:

THE ROCK SHALL BE HARD, DURABLE, ANGULAR FIELD STONES AND SHALL INTERLOCK WITH ADJACENT ROCKS.  
 THE ROCKS SHALL BE SET SO AS NOT TO EXCEED A 1 TO 1 SLOPE AS SHOWN.  
 LARGE IRREGULARITIES BETWEEN STONES SHALL BE FILLED WITH ROCK SPALLS OF SUITABLE SIZE RAMMED TIGHTLY INTO PLACE FROM THE BOTTOM TO THE TOP.



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

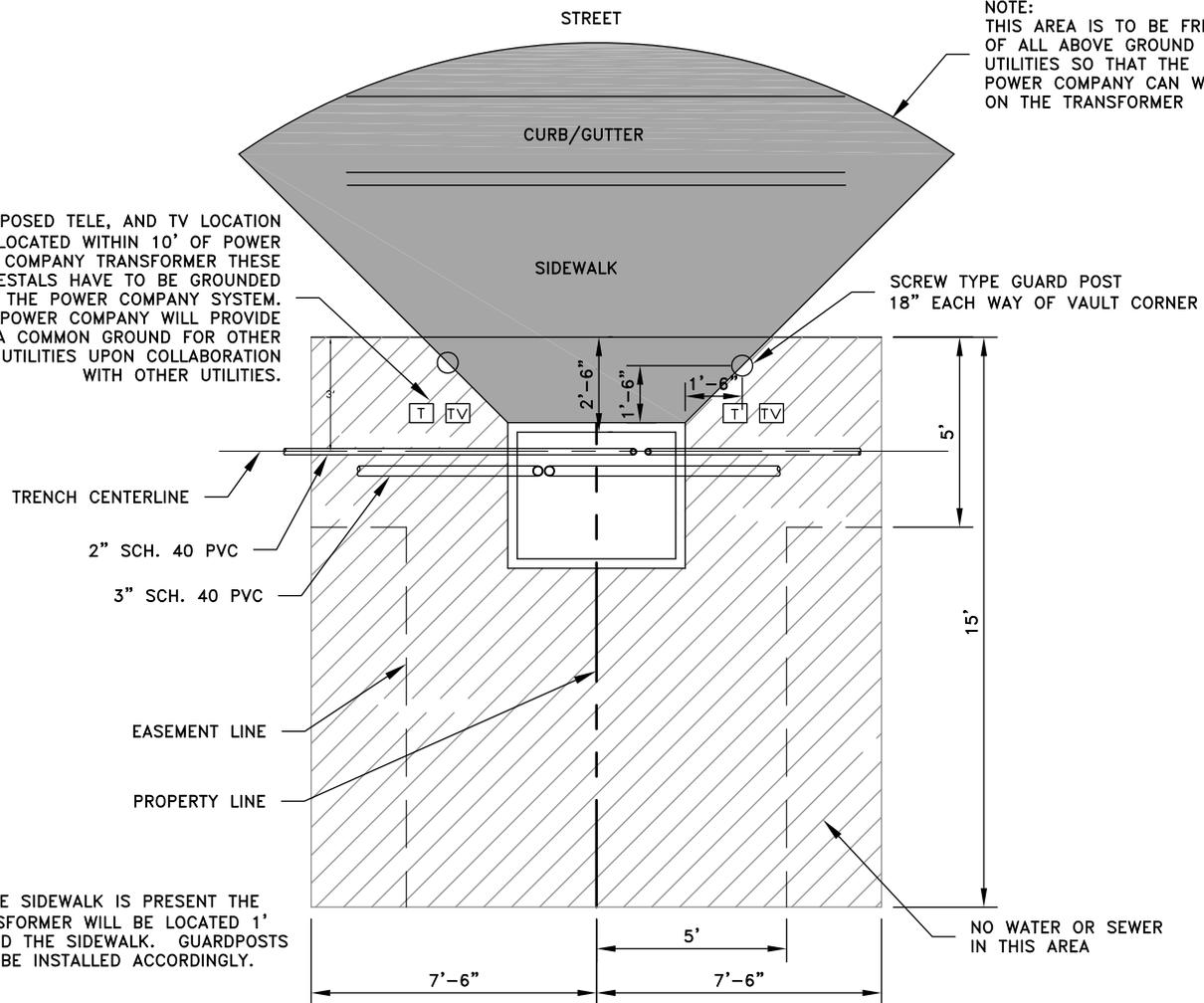
ROCK RETAINING WALL

PLAN NO:  
**504**

REVISION:  
 5/98

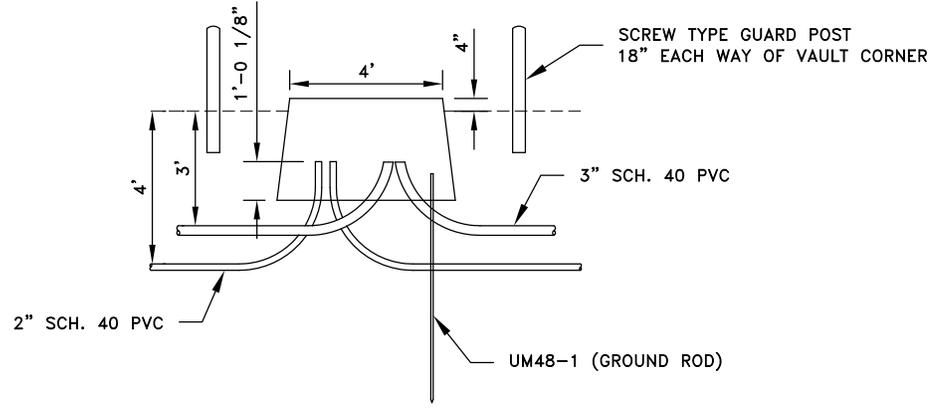
PROPOSED TELE, AND TV LOCATION IF LOCATED WITHIN 10' OF POWER COMPANY TRANSFORMER THESE PEDESTALS HAVE TO BE GROUNDED ON THE POWER COMPANY SYSTEM. POWER COMPANY WILL PROVIDE A COMMON GROUND FOR OTHER UTILITIES UPON COLLABORATION WITH OTHER UTILITIES.

NOTE: THIS AREA IS TO BE FREE OF ALL ABOVE GROUND UTILITIES SO THAT THE POWER COMPANY CAN WORK ON THE TRANSFORMER



NOTE: WHERE SIDEWALK IS PRESENT THE TRANSFORMER WILL BE LOCATED 1' BEHIND THE SIDEWALK. GUARDPOSTS WILL BE INSTALLED ACCORDINGLY.

**PLAN**  
N.T.S.



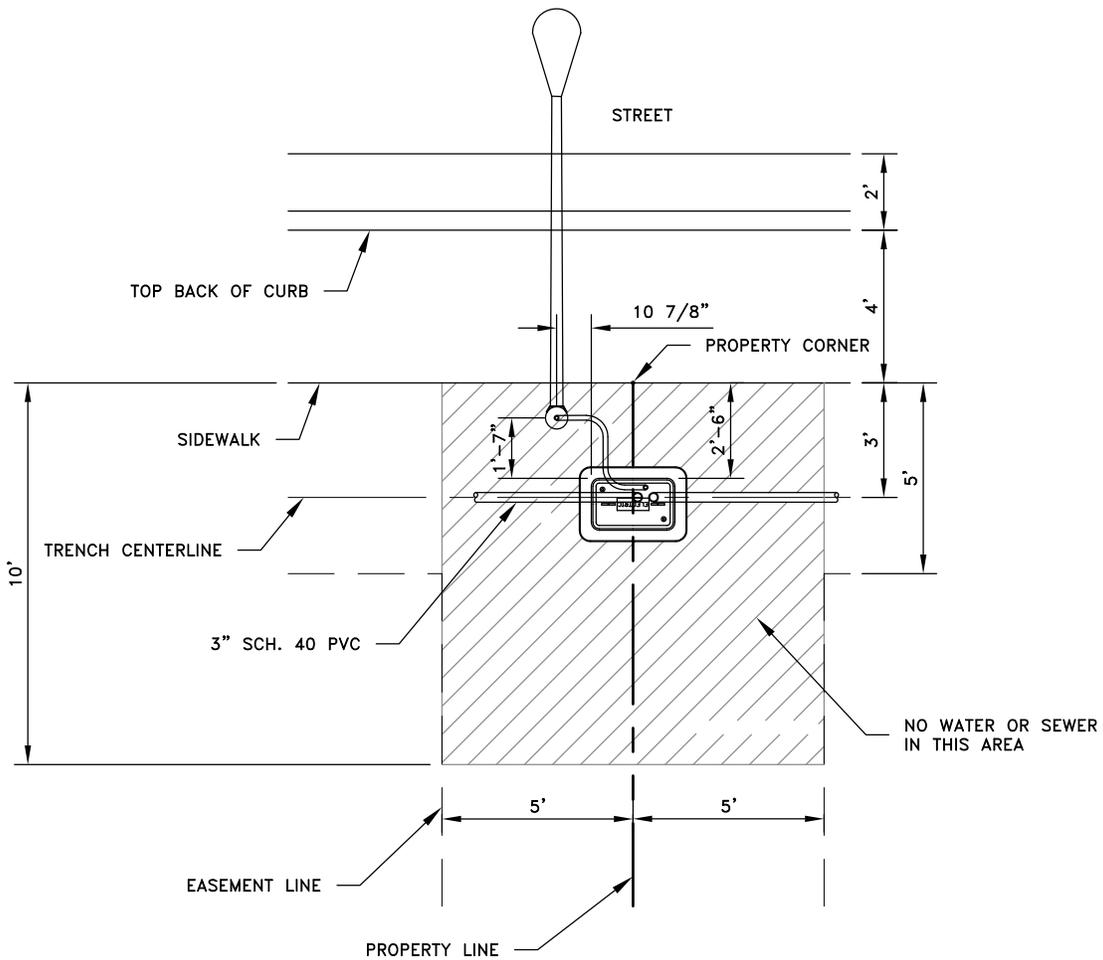
**PROFILE**  
N.T.S.

**TYPICAL TRANSFORMER VAULT**  
N.T.S.



NOTE: THIS DRAWING WAS TAKEN FROM WELLS RURAL ELECTRIC COMPANY DRAWING - TRANSFORMER SITE TYPICALS AND MODIFIED TO MATCH THE DEVELOPMENT STANDARDS FORMAT.

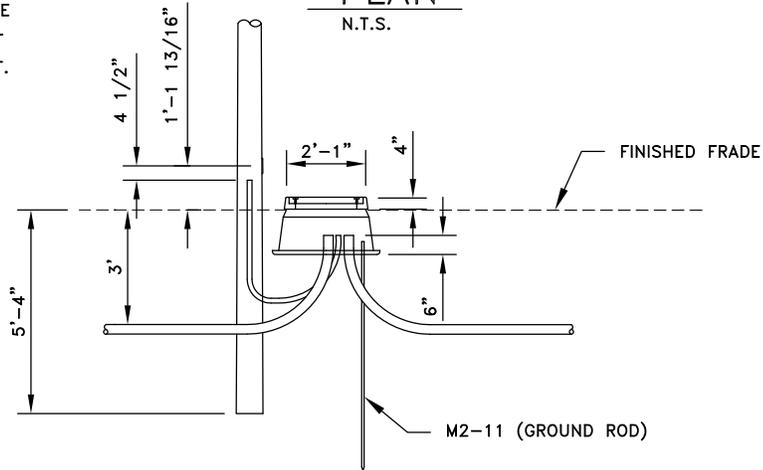
 <b>WEST WENDOVER</b> 1111 NORTH GENE L. JONES WAY WEST WENDOVER, NEVADA 89883	<b>CITY OF WEST WENDOVER</b>	PLAN NO: <b>505</b>
	<b>TYPICAL TRANSFORMER SITE</b>	REVISION: 11/00



NOTE:  
 WHERE THERE IS ONLY CURB ALONG THE STREET, THE SECONDARY BOX WILL BE LOCATED 2.5' BACK OF THE CURB. THE BACK OF SIDEWALK WILL BE THE CONTROLLING ELEVATION, OR THE CURB, WHICH EVER IS CLOSEST.

**PLAN**

N.T.S.



**(UK6)**

**PROFILE**

N.T.S.

**UK6 & M26-5S TYPICAL**

N.T.S.



NOTE:  
 THIS DRAWING WAS TAKEN FROM WELLS RURAL ELECTRIC COMPANY DRAWING - SECONDARY BOX SITE TYPICALS AND MODIFIED TO MATCH THE DEVELOPMENT STANDARDS FORMAT.

WELLS, NEVADA



**WEST WENDOVER**  
 1111 NORTH GENE L. JONES WAY  
 WEST WENDOVER, NEVADA 89883

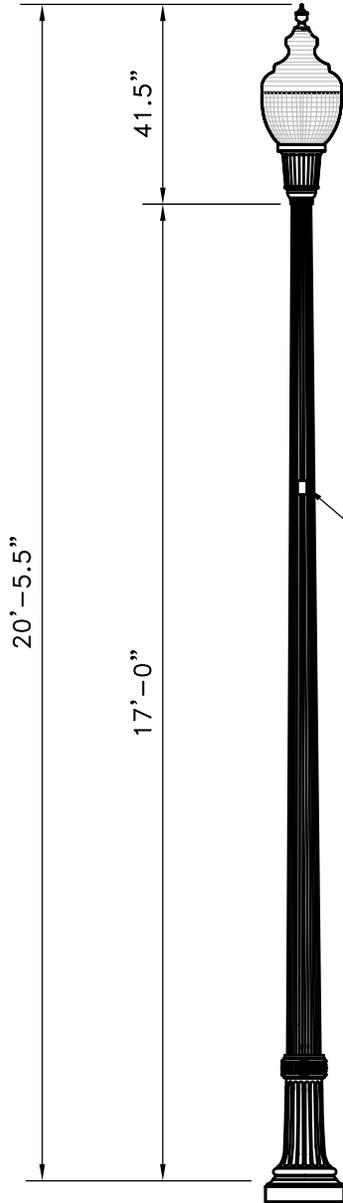
CITY OF WEST WENDOVER  
 TYPICAL SECONDARY BOX SITE

PLAN NO:  
**506**

REVISION:  
 11/00

NOTICE:  
THIS DRAWING IS FOR REFERENCE ONLY. CHECK FOR LATEST  
REVISION PRIOR TO ORDERING.

# CORNER – STREET LIGHT



LUMILOCK 80 LED MODULE (165 WATT  
EQUIVALENT) HADCO FIXTURE  
DRAWING S7751-DWG06

NOTE:  
ALL PAINTED PARTS UNLESS NOTED  
OTHERWISE TO BE PAINTED WITH EPOXY  
PRIMER, URETHANE OVERCOAT.

120 VOLT GFI PLUG-IN RECEPTACLE  
(MOUNTED 12' UP FROM BASEPLATE)

POLE BY MOUNTAIN STATES #17TFS-6/3-TT/4" O.D.x3" H-17MAD-BK  
17' TAPERED FLUTED STEEL 6"x3" O.D./3" O.D. TENON  
PAINTED BLACK WITH FIRST 16" OF POLE & BASE PLATE TO BE  
COATED WITH COLD TAR EPOXY  
MIN EPA OF 17.5 IN 90 MPH ZONE (1.3 GUST FACTOR)  
BOLT CIRCLE SLOTTED HOLES 11.5-15.5 VARIABLE/  
(4) 3/4"X 30" BOLT

HIGH DENSITY ELASTOMER  
BASE PART# 20" MAD-BK  
BY MOUNTAIN STATES LIGHTING

## LIGHT POLE DETAIL

SCALE: N.T.S.



**WEST WENDOVER**  
801 ALPINE STREET  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

LIGHT POLE

PLAN NO:

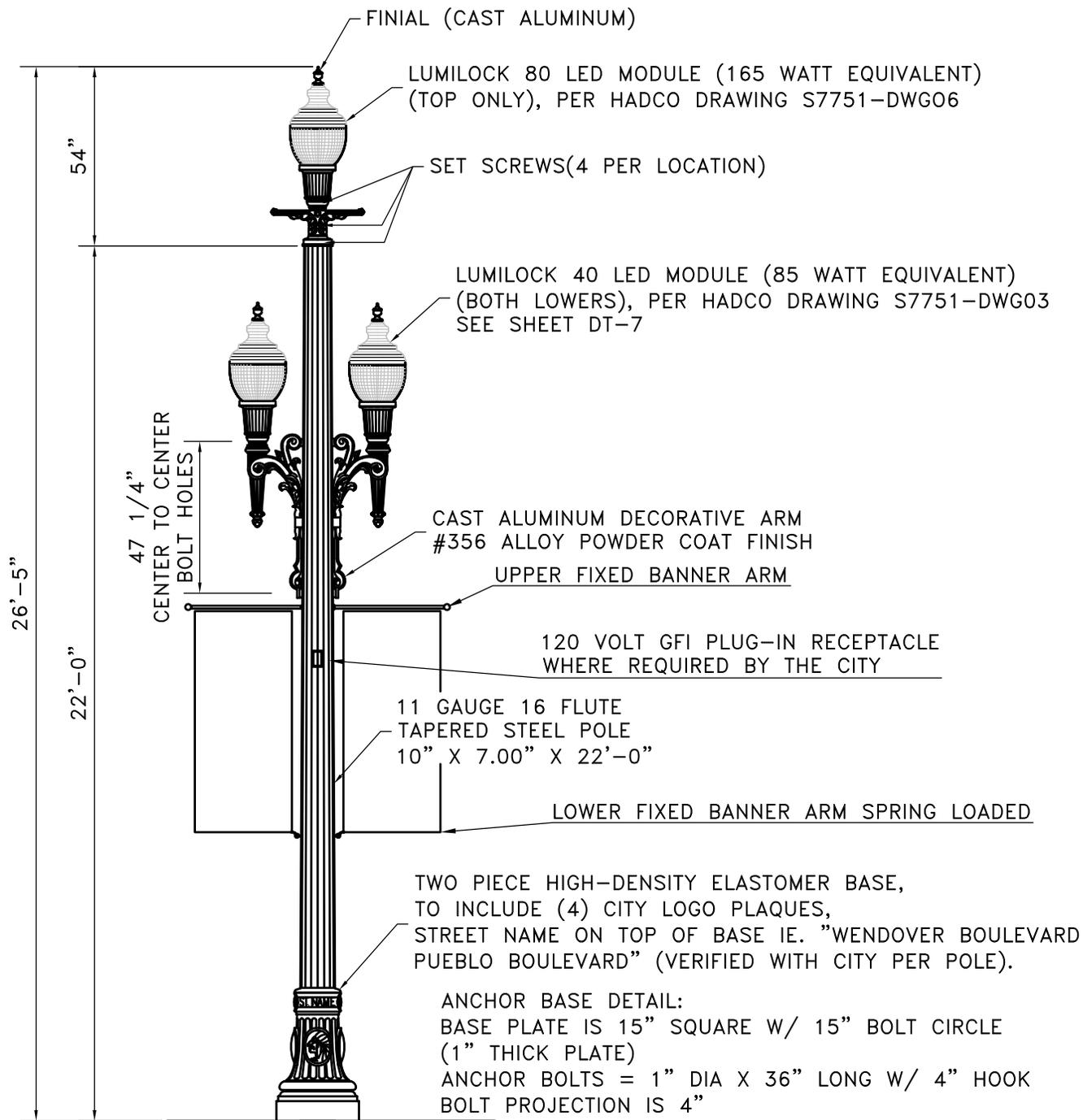
**507**

REVISION:

9/16

NOTICE:  
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LATEST REVISION PRIOR TO ORDERING.

# CACTUS – STREET LIGHT



## CACTUS - STREET LIGHT

SCALE: N.T.S.

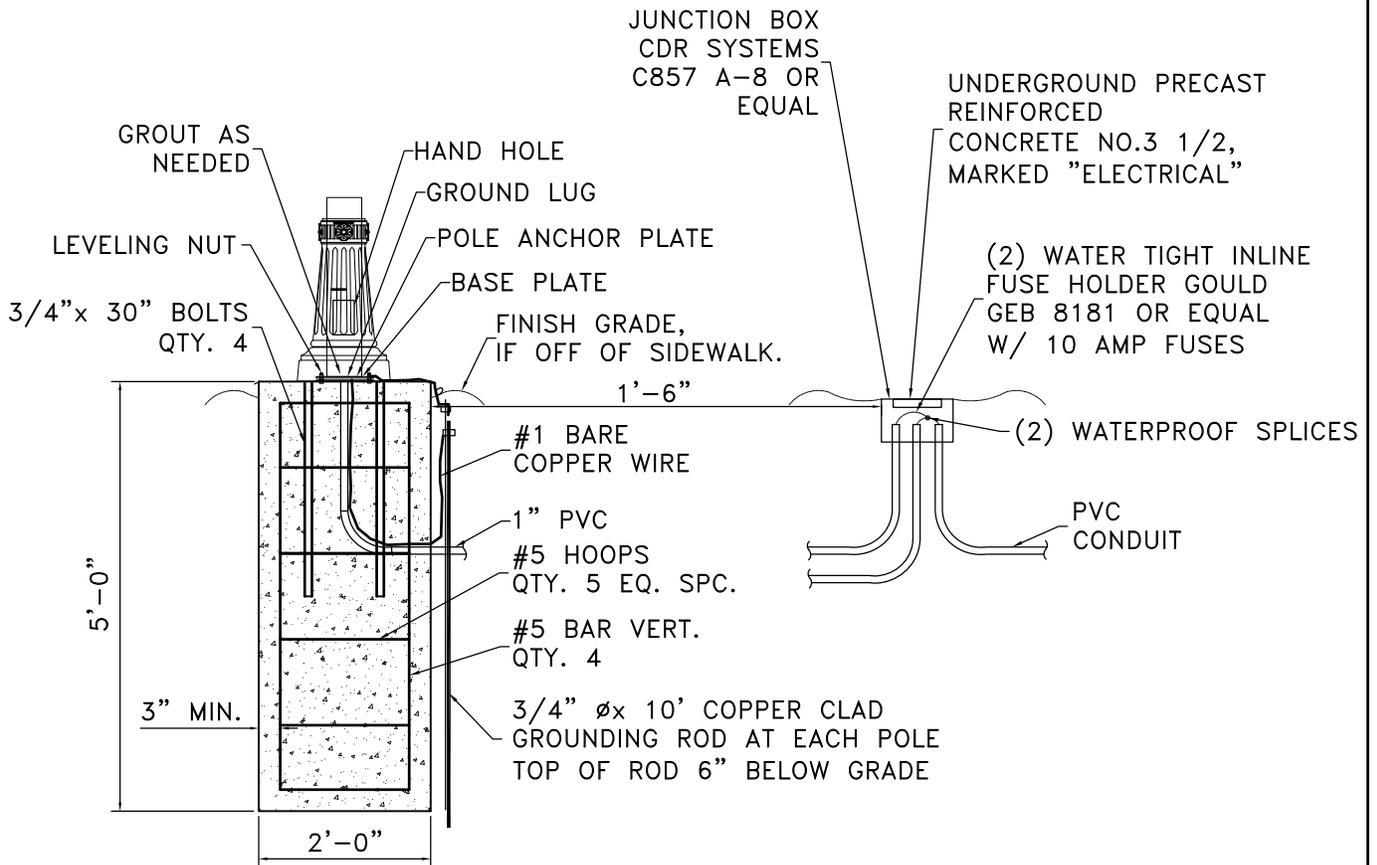


**WEST WENDOVER**  
801 ALPINE STREET  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
CACTUS – STREET LIGHT

PLAN NO:  
**508**

REVISION:  
9/16



## **POLE FOUNDATION INSTALLATION DETAIL**

SCALE: N.T.S.



**WEST WENDOVER**  
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CITY OF WEST WENDOVER

LIGHT POLE FOUNDATION

PLAN NO:

**509**

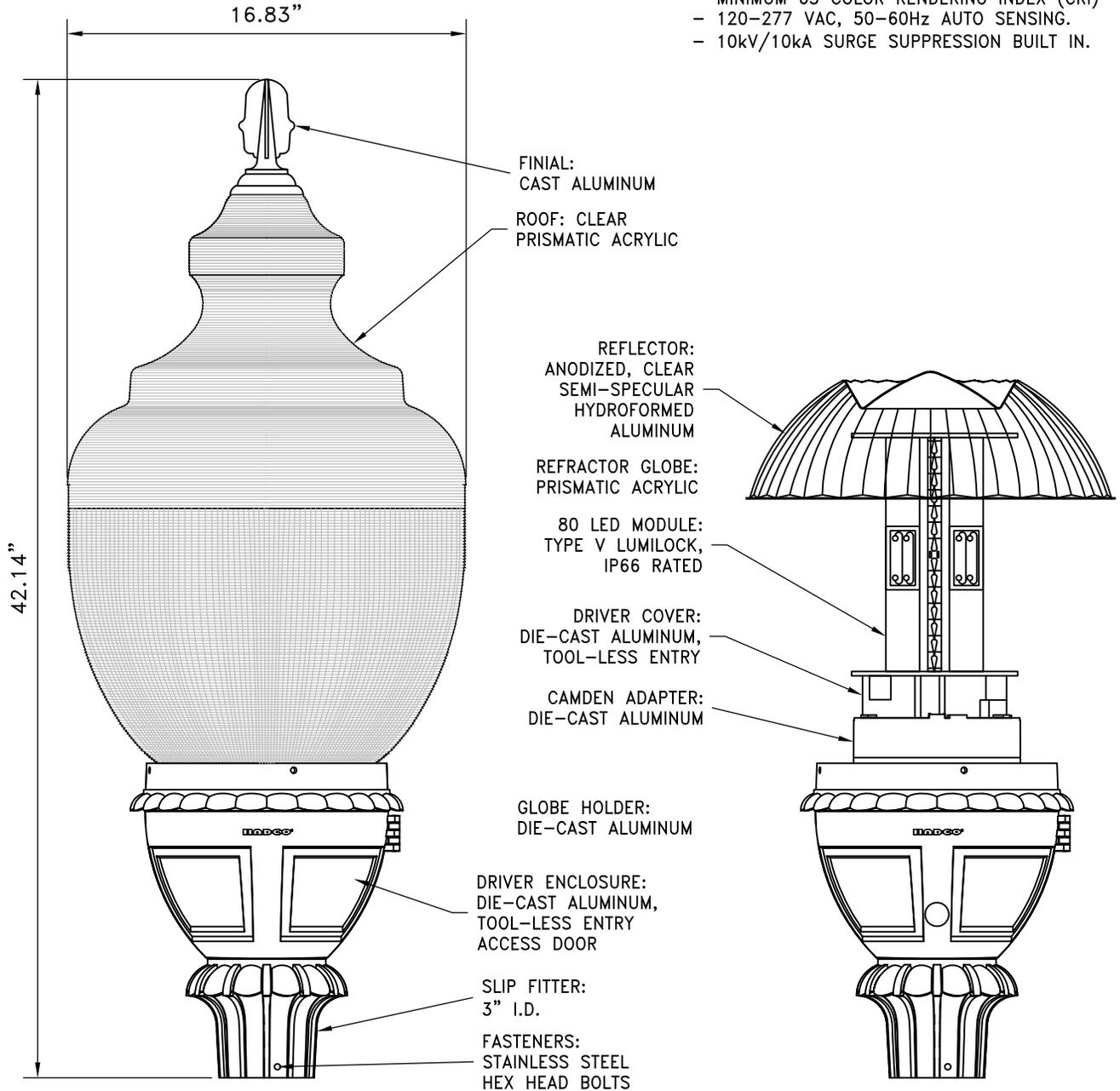
REVISION:

5/07

**NOTICE:**  
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**LUMILOCK LED SPECIFICATIONS:**

- TYPE V SYMMETRIC DISTRIBUTION.
- 4000L (CCT) 80 LUXEON REBEL ES LED'S ON ALUMINUM CORE PCB, SEALED ACRYLIC LENS, IP66 RATED.
- MINIMUM 65 COLOR RENDERING INDEX (CRI)
- 120-277 VAC, 50-60Hz AUTO SENSING.
- 10kV/10kA SURGE SUPPRESSION BUILT IN.



**HADCO DRAWING S7751**

SCALE: N.T.S.



**WEST WENDOVER**  
801 ALPINE STREET  
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CITY OF WEST WENDOVER

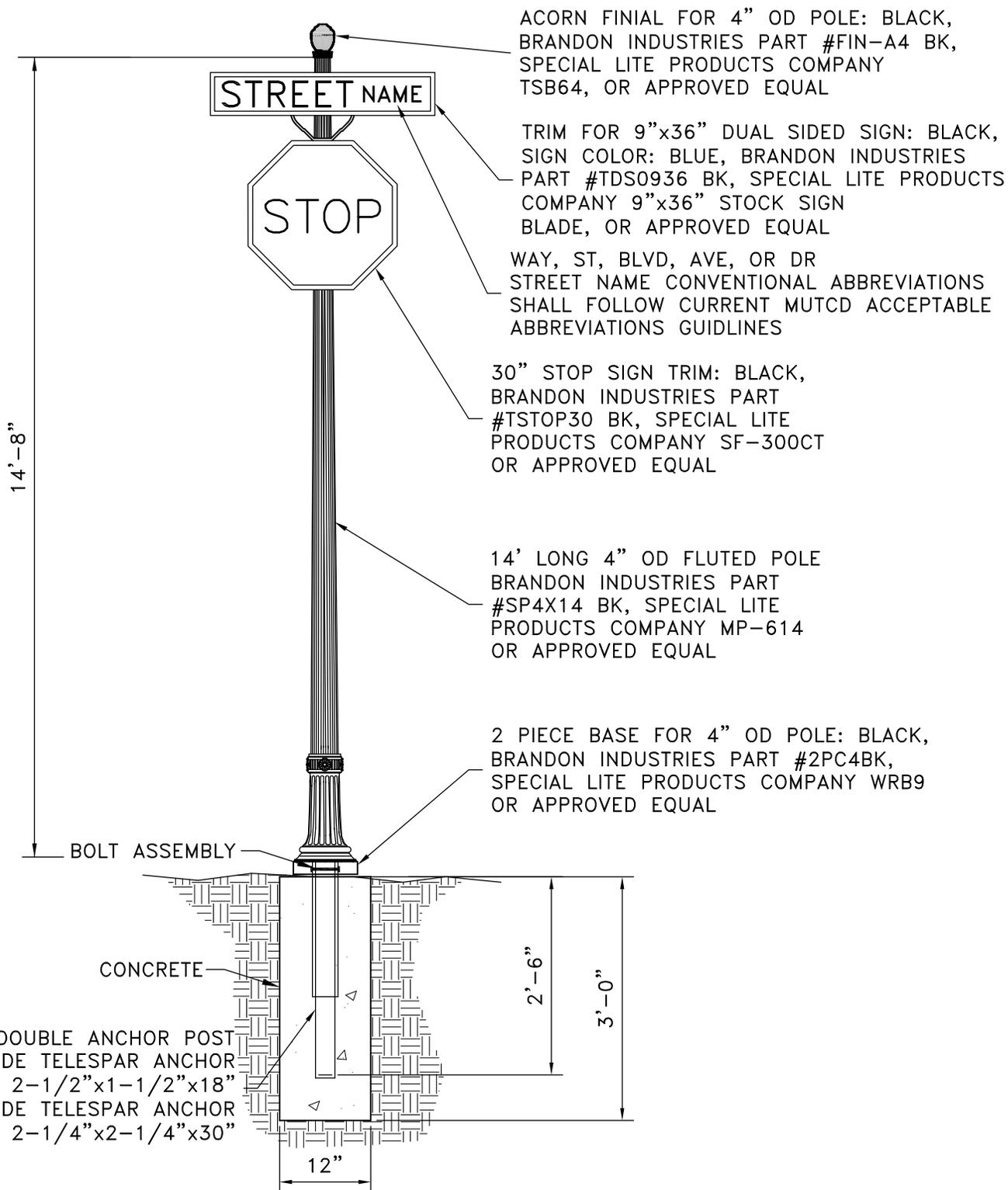
HADCO DRAWING S7751  
DWG06

PLAN NO:

**510**

REVISION:

9/16



## DECORATIVE STOP AND STREET SIGN POLE

SCALE: N.T.S.

SIGNS TO BE USED ON STREETS THAT UTILIZE DECORATIVE LIGHTING OR AS DIRECTED BY THE CITY.



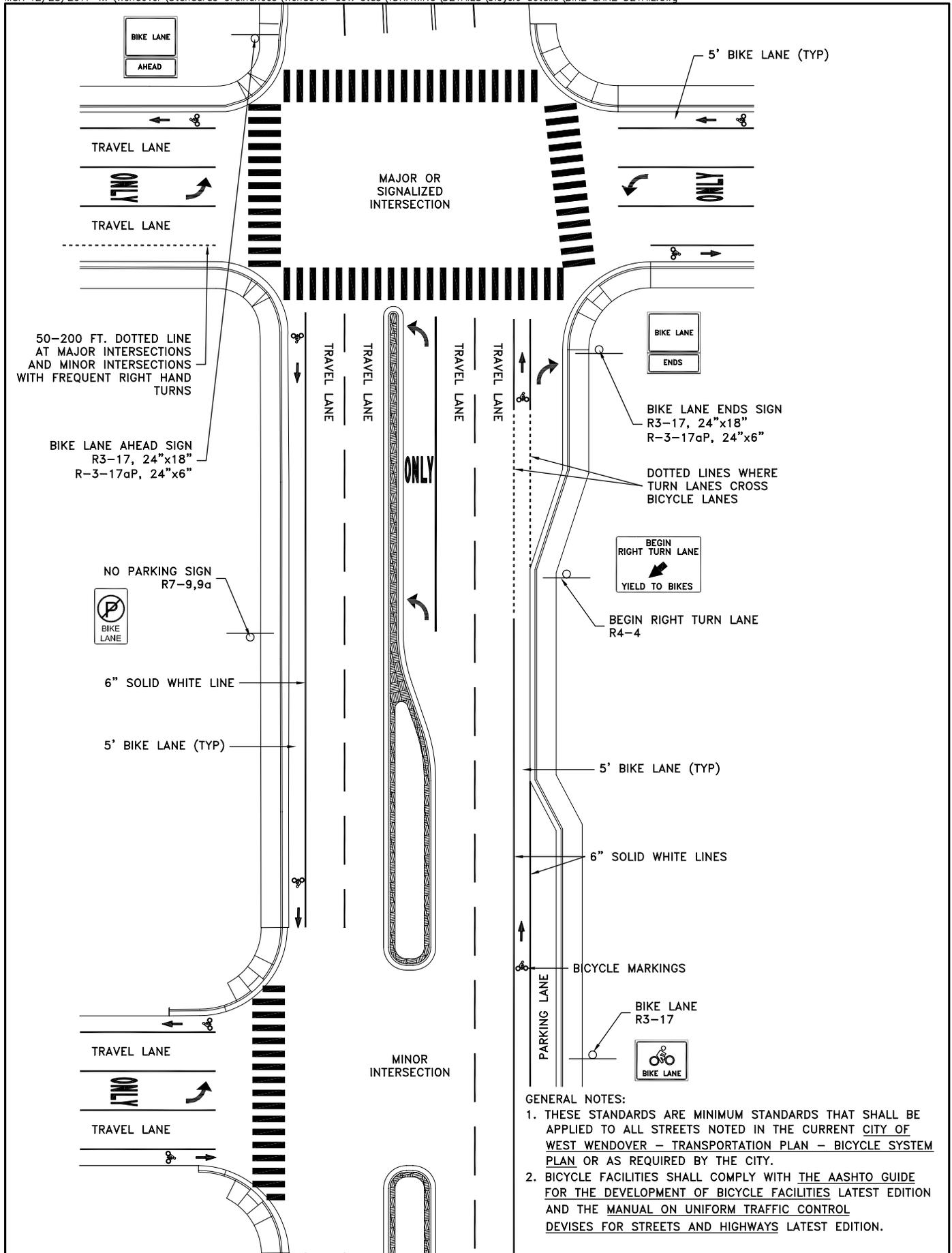
**WEST WENDOVER**  
801 ALPINE STREET  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER

DECORATIVE STOP AND STREET SIGN POLE

PLAN NO: **511**

REVISION:  
9/16



50-200 FT. DOTTED LINE AT MAJOR INTERSECTIONS AND MINOR INTERSECTIONS WITH FREQUENT RIGHT HAND TURNS

BIKE LANE AHEAD SIGN  
R3-17, 24"x18"  
R-3-17aP, 24"x6"

NO PARKING SIGN  
R7-9.9a



6" SOLID WHITE LINE

5' BIKE LANE (TYP)

BIKE LANE ENDS SIGN  
R3-17, 24"x18"  
R-3-17aP, 24"x6"

DOTTED LINES WHERE TURN LANES CROSS BICYCLE LANES



BEGIN RIGHT TURN LANE  
R4-4

5' BIKE LANE (TYP)

6" SOLID WHITE LINES

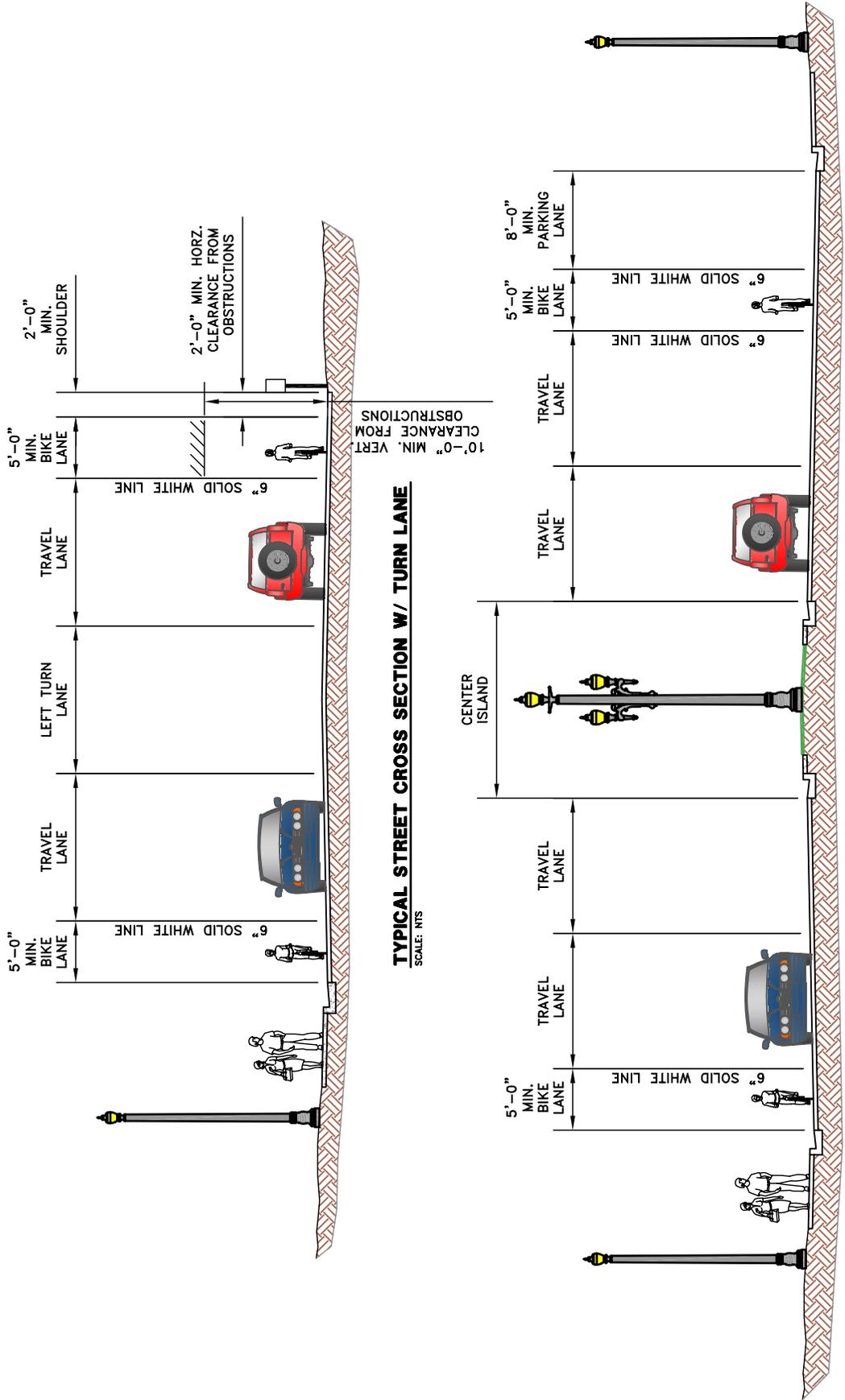
BICYCLE MARKINGS

BIKE LANE  
R3-17



GENERAL NOTES:

1. THESE STANDARDS ARE MINIMUM STANDARDS THAT SHALL BE APPLIED TO ALL STREETS NOTED IN THE CURRENT CITY OF WEST WENDOVER - TRANSPORTATION PLAN - BICYCLE SYSTEM PLAN OR AS REQUIRED BY THE CITY.
2. BICYCLE FACILITIES SHALL COMPLY WITH THE AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES LATEST EDITION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS LATEST EDITION.



**TYPICAL STREET CROSS SECTION THRU ISLAND**  
SCALE: NTS

- GENERAL NOTES:
1. THESE STANDARDS ARE MINIMUM STANDARDS THAT SHALL BE APPLIED TO ALL STREETS NOTED IN THE CURRENT CITY OF WEST WENDOVER - TRANSPORTATION PLAN - BICYCLE SYSTEM PLAN OR AS REQUIRED BY THE CITY.
  2. BICYCLE FACILITIES SHALL COMPLY WITH THE AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES LATEST EDITION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS LATEST EDITION.

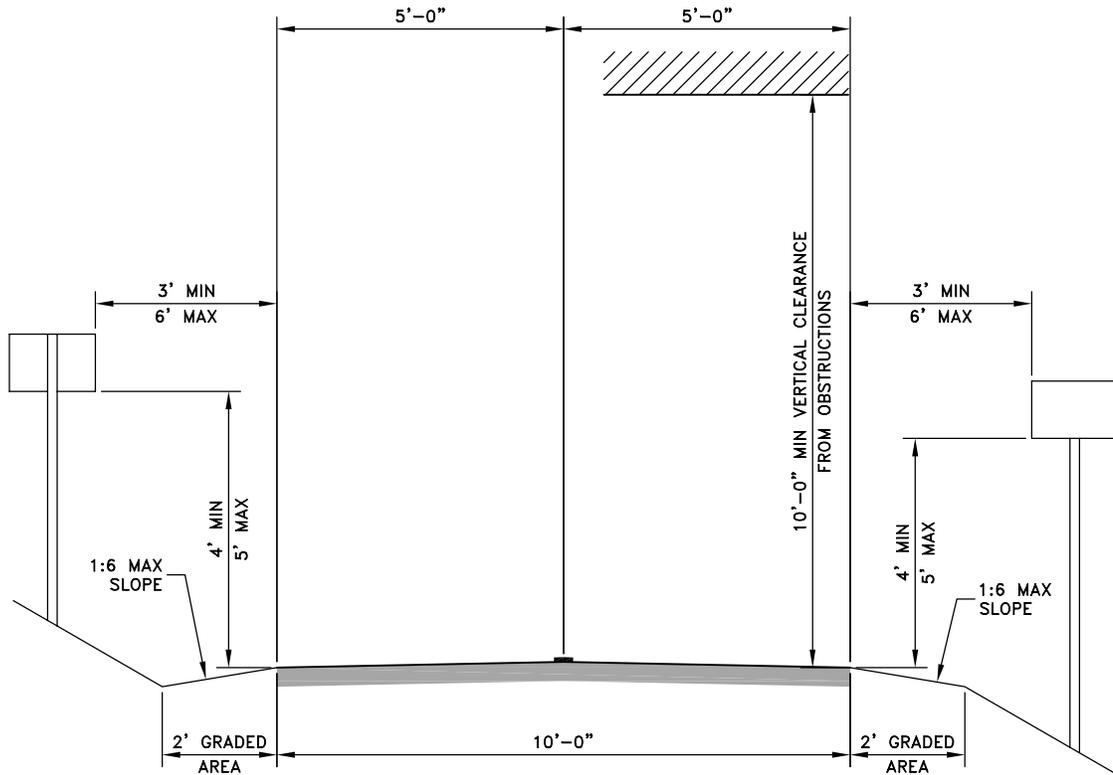


**WEST WENDOVER**  
1111 NORTH GENE L. JONES WAY  
WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
BICYCLE FACILITIES DETAIL

PLAN NO:  
**513**

REVISION:  
2/12



**TYPICAL MULTI-USE TRAIL CROSS SECTION**

SCALE: NTS

GENERAL NOTES:

1. THESE STANDARDS ARE MINIMUM STANDARDS THAT SHALL BE APPLIED TO ALL STREETS NOTED IN THE CURRENT CITY OF WEST WENDOVER – TRANSPORTATION PLAN – BICYCLE SYSTEM PLAN OR AS REQUIRED BY THE CITY.
2. BICYCLE FACILITIES SHALL COMPLY WITH THE AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES LATEST EDITION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS LATEST EDITION.



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 WEST WENDOVER, NEVADA 89883

CITY OF WEST WENDOVER  
 BICYCLE FACILITIES DETAIL  
 MULTI-USE TRAIL CROSS SECTION

PLAN NO:  
**514**  
 REVISION:  
 2/12