

Bid Number YY.XXXXX
Hansen Number 75156

SPECIAL PROVISIONS
90% SUBMITTAL
MAY 2019

215 BELTWAY CHANNEL
DURANGO DRIVE TO GRAND MONTECITO PARKWAY

PREPARED FOR:

CITY OF LAS VEGAS

PREPARED BY:

GCW, INC.

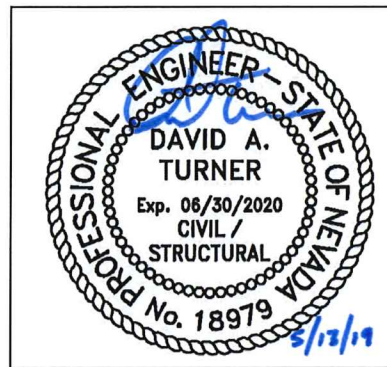
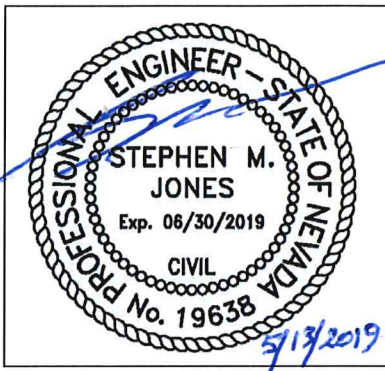
FUNDED BY:

CLARK COUNTY

PROJECT NAME

SPECIAL PROVISIONS

The following special provisions supplement and modify the "Uniform Standard Specifications for Public Works' Construction Off-site Improvements Clark County Area Nevada", most current edition; and the "Uniform Standard Drawings for Public Works' Construction Off-site Improvements Clark County Area Nevada, Volume I, and Volume II, along with revisions thereto, also referred to as the "Standard Specifications" and "Standard Drawings". Said Standard Specifications and Standard Drawings are hereby incorporated into these Special Provisions.



NOTE: THE ENGINEERS' APPROVAL AND SUBSEQUENT SEAL IS LIMITED TO THE FOLLOWING PORTIONS OF THESE DOCUMENTS AS PREPARED BY OR UNDER THE DIRECT SUPERVISION OF THE ENGINEER:

- (1) SPECIAL PROVISIONS, PAGES SP-100-1 THROUGH SP-637-4
- (2) BID SCHEDULE PAGE(S) – ATTACHMENT A

ALL OTHER ATTACHMENTS, INCLUSIONS, ENCLOSURES, SCHEDULES, FORMS, GRAPHICS, ETC. WERE PREPARED BY OTHERS AND NOT UNDER THE DIRECT SUPERVISION OF THE ENGINEER.

TABLE OF CONTENTS

SECTION	TITLE
SECTION 100	GENERAL PROJECT REQUIREMENTS
SECTION 101	DEFINITIONS AND TERMS
SECTION 102	BIDDING REQUIREMENTS AND CONDITIONS
SECTION 103	AWARD AND EXECUTION OF CONTRACT
SECTION 104	SCOPE OF WORK
SECTION 105	CONTROL OF WORK
SECTION 106	CONTROL OF MATERIALS
SECTION 107	LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC
SECTION 108	PROSECUTION AND PROGRESS
SECTION 109	MEASUREMENT AND PAYMENT
SECTION 110	WAGES, HOURS AND CONDITIONS OF EMPLOYMENT
SECTION 170	CONSTRUCTION CONFLICTS AND CONTINGENCIES
SECTION 200	MOBILIZATION AND DEMOBILIZATION
SECTION 201	CLEARING AND GRUBBING
SECTION 202	REMOVAL OF STRUCTURES AND OBSTRUCTIONS
SECTION 203	EXCAVATION AND EMBANKMENT
SECTION 204	ROUNDED AND TRANSITION SLOPES
SECTION 206	STRUCTURE EXCAVATION
SECTION 207	STRUCTURE BACKFILL
SECTION 208	TRENCH EXCAVATION AND BACKFILL
SECTION 270	DEWATERING
SECTION 302	AGGREGATE BASE COURSES
SECTION 501	PORTLAND CEMENT CONCRETE
SECTION 502	CONCRETE STRUCTURES
SECTION 505	REINFORCING STEEL
SECTION 601	PIPE CULVERTS-GENERAL
SECTION 603	REINFORCED CONCRETE PIPE
SECTION 609	CATCH BASINS, MANHOLES AND INLETS
SECTION 616	FENCING
SECTION 621	MONUMENTS
SECTION 622	CONSTRUCTION SURVEYING BY THE CONTRACTOR
SECTION 624	ACCOMMODATIONS FOR PUBLIC TRAFFIC
SECTION 625	CONSTRUCTION SIGNS

SECTION 626 – FINAL CLEANUP

SECTION 637 – POLLUTION CONTROL

APPENDICES

APPENDIX A – PROJECT SIGNS

APPENDIX B – CITY OF LAS VEGAS TRENCH PLATE REQUIREMENTS

APPENDIX C – SAMPLE PROJECT SCHEDULES

APPENDIX D – SWPPP CHECKLIST

APPENDIX E – UTILITY FINAL LOCATION SURVEYS

APPENDIX F - NATIONWIDE PERMIT 7 FROM US ARMY CORPS OF ENGINEERS

APPENDIX G - CLARK COUNTY ENCROACHMENT PERMIT

APPENDIX H – NDEP 401 PERMIT

APPENDIX X - CONSTRUCTION QUALITY PROGRAM AND SECTIONS 111-117

ADD THE FOLLOWING SECTION TO DIVISION I – GENERAL REQUIREMENTS**SECTION 100 – GENERAL PROJECT REQUIREMENTS****100.01 REFERENCE SPECIFICATIONS AND DRAWINGS**

- A. Work specified herein shall conform to or exceed the requirements of all applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Special Provisions or the applicable codes. Wherever references are made in the contract, standards or codes in accordance with which work under this contract is to be performed or tested, the latest edition or latest revision(s) of the standards or codes shall apply.
- B. The following standards and codes are an integral part of the contract and are incorporated herein by reference. The Contractor is advised to become familiar with the contents of the “Uniform Standard Specifications”, “Special Provisions” and the “Uniform Standard Drawings”, as they shall govern the construction of this Project. Work on any public utility shall be performed in accordance with the Uniform Standard Specifications and Drawings except where modified by the utilities’ own standards.
- C. **“Uniform Standard Specifications for Public Works Construction Off-Site Improvements, Clark County Area, Nevada”**, also referred to as the “Uniform Standard Specifications” or “USS”. All of the requirements and provisions of said Uniform Standard Specifications shall apply except where otherwise provided herein or otherwise shown on the Contract Drawings. There may be recently adopted changes to the Uniform Standard Specifications and the Contractor should be aware of these before he submits a bid. Copies may be obtained from the Regional Transportation Commission of Southern Nevada, 600 S. Grand Central Parkway, Suite 350, Las Vegas, Nevada 89106 or online at www.rtcsonthernnevada.com
- D. **“Uniform Standard Drawings for Public Works Construction, Clark County Area, Nevada Volume I and Volume II”**, also referred to as the “Uniform Standard Drawings” or “USD” and shall be adhered to except where otherwise provided herein or otherwise shown on the Contract Drawings. Copies may be obtained from the Regional Transportation Commission of Southern Nevada, 600 S. Grand Central Parkway, Suite 350, Las Vegas, Nevada 89106 or online at www.rtcsonthernnevada.com
- E. **“Manual on Uniform Traffic Control Devices”**, also referred to as “MUTCD” and shall be adhered to except where otherwise provided herein or otherwise shown on the Contract Drawings. Copies may be obtained from the U.S. Government Printing Office, Washington, D.C. 20402 or online at mutcd.fhwa.dot.gov
- F. **“State of Nevada Department of Transportation Standard Specifications for Road and Bridge Construction”**, also referred to as the “NDOT Standard Specifications” or the “State of Nevada Standard Specifications” and shall be adhered to when specifically referenced herein or as shown on the Contract Drawings. NDOT is located at 123 E. Washington Blvd., Las Vegas, Nevada 89101; Phone (702) 385-6500 or online at www.nevadadot.com/business/contractor/standards/

- G. **“State of Nevada Department of Transportation Standard Plans for Road and Bridge Construction”**, also referred to as the “NDOT Standard Drawings” or the “State of Nevada Standard Plans” and shall be adhered to when specifically referenced herein or as shown on the Contract Drawings. NDOT is located at 123 E. Washington Blvd., Las Vegas, Nevada 89101; Phone (702) 385-6500 or online at www.nevadadot.com/business/contractor/standards/.
- H. **“Nevada Work Zone Traffic Control Handbook”**, also referred to as the “Work Zone Handbook”. Copies may be obtained from Lisa Cody, University of Reno Nevada, (775) 784-1433.
- I. **“American Society for Testing and Materials”**, also referred to as the “ASTM”. ASTM is located at 100 Barr Harbor Drive, Conshohocken, Pennsylvania, 19428-2959; Phone (610) 832-9585 or online at www.astm.org
- J. **“Uniform Design and Construction Standards for Water Distribution Systems”**, also referred to as the “Water District Standards” or “UDACS”. Copies may be obtained from the Las Vegas Valley Water District, 1001 South Valley View Boulevard, Las Vegas, Nevada 89153 or online at http://www.lvwwd.com/html/eng_udacs.html
- K. **“LVVWD Design Guidance Documents”**, Copies may be obtained from the Las Vegas Valley Water District, 3700 W. Charleston Blvd., Las Vegas, Nevada 89153.
- L. **“Design and Construction Standards for Wastewater Collection Systems – Southern Nevada Current Edition”**, also referred to as the “Sewer Specifications” or “DCSWCS”. Issued by the Clark County Water Reclamation District, 5857 E. Flamingo Blvd., Las Vegas, Nevada, 89122; Phone (702) 668-8160.

END OF SECTION 100

SECTION 101 – DEFINITIONS AND TERMS

DELETE SUBSECTION 101.01 BLANK AND REPLACE WITH THE FOLLOWING:

101.01 **ABBREVIATIONS**

AGA	American Gas Association
AI	The Asphalt Institute
AIEE	American Institute of Electrical Engineers
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
API	American Petroleum Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ATSSA	American Traffic Safety Services Association
CFR	Code of Federal Regulations
CPM	Critical Path Method
CRSI	Concrete Reinforcement and Steel Institute
EPA	Environmental Protection Agency (USA)
IMSA	International Municipal Signal Association
IPCEA	Insulated Power Cable Engineers' Association
ITB	Instructions to Bidders
NBFU	National Board of Fire Underwriters
NCPI	National Clay Pipe Institute
NDEP	Nevada Department of Environmental Protection
NDOT	Nevada Department of Transportation
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRS	Nevada Revised Statutes
OSHA	Occupational Safety and Health Standards
PCA	Portland Cement Association
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code, International Conference of Building Officials
USS	Uniform Standard Specifications for Public Works' Construction Off-Site Improvements, Clark County Area Nevada
USD	Uniform Standard Drawings for Public Works' Construction Off-Site Improvements, Clark County Area Nevada, Volumes I & II

101.02 **ADDENDUM**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Addendum means a written or graphic instrument issued by the Owner via the City of Las Vegas Purchasing and Contracts Office prior to the submission of bids which modifies or interprets the Bidding Documents by means of additions, deletion, clarification, correction or other type of modification. All Addenda will become part of the executed Contract.

101.06 **BASE COURSE**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

215 BELTWAY CHANNEL
DURANGO DR. TO GRAND MONTECITO PKWY.

Bid No. YY.XXXXX
CLVRev091715

- A. The layer or layers of specified or selected material of designated thickness on a subgrade to support a surface course.

101.07 BIDDER

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

Refer to the INSTRUCTIONS TO BIDDERS section IT B 2 Definitions of the Bid Documents.

101.11 CONTRACT CHANGE ORDER OR FIELD CHANGE ORDER

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

101.11 CHANGE ORDER AND CONSTRUCTION CHANGE DIRECTIVE

- A. Change Order means a written order issued by the Owner to the Contractor after execution of the Contract that authorizes a change in the Work, Contract Amount or Contract Time. Except as allowed by the Contract Documents, the Contract Amount or Contract Time may be changed only by the issuance of a Change Order. The execution of the Change Order indicates the Contractor's agreement to the terms set forth therein including the adjustment, if any, in the Contract Amount or Contract Time.
- B. Construction Change Directive means a written order issued by the Owner to the Contractor directing immediate changes in the Work for which a modification to the Contract Amount, Contract Time or other provision of the Contract may be appropriate but may not have been negotiated at the time of issuance. The Contractor is to proceed immediately with the implementation of the Construction Change Directive.

101.13 CONTRACT

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Refer to the INSTRUCTIONS TO BIDDERS section ITB 2 Definitions of the Bid Documents.

101.16 CONTRACTOR

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Refer to the INSTRUCTIONS TO BIDDERS section ITB 2 Definitions of the Bid Documents.

101.17 CONTRACT TIME

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Refer to the INSTRUCTIONS TO BIDDERS section ITB 2 Definitions of the Bid Documents.

101.40 NOTICE TO PROCEED

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Refer to the INSTRUCTIONS TO BIDDERS section ITB 2 Definitions of the Bid Documents.

101.50 QUALITY ASSURANCE (QA)***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- A. Planned and systematic operations conducted to ensure that the operations and/or product meets specifications. QA encompasses the Engineer's review and oversight of the Contractor's "Quality Control"; verifying the results of "Quality Control"; and inspecting for conformance to plans and specifications. QA is the responsibility of the "Engineer."

101.51 QUALITY CONTROL (QC)***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- A. Planned and specified operations necessary to construct items that will meet the requirements for quality and performance as specified. QC includes, but should not be limited to material testing, controlling the quality of raw materials, produced materials assemblies, components, finished product, and construction process. QC is the responsibility of the "Contractor."

101.58 SPECIAL PROVISIONS***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- A. Special Provisions mean the written descriptions of the requirements for the Work incorporated as a part of the Contract.

101.61 SUBCONTRACTOR***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- A. Refer to the INSTRUCTIONS TO BIDDERS section ITB 2 Definitions of the Bid Documents.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:**101.80 ACTIVITY-ON-NODE (AON)**

- A. A format for illustrating a network diagram where activities are represented by nodes, and arrows are used to show the precedence relationships. AON format is utilized in Precedence Diagramming.

101.81 AGENCY

- A. The governing body to which a work or facility will be dedicated upon successful completion. Agency may be one or more of the following entities: City of Las Vegas, Nevada; City of North Las Vegas, Nevada; Las Vegas Valley Water District, Las Vegas, Nevada; Clark

County Sanitation District, Las Vegas, Nevada; Clark County, Nevada; and state of Nevada Department of Transportation.

101.82 BAR (GANTT) CHART

- A. A graphical format for displaying network schedules which shows planned and actual progress for a number of tasks against a horizontal time scale. The Bar Chart is frequently updated throughout the project to monitor the detailed progress of the work and is the primary source of reporting/displaying project schedule information to others.

101.83 CERTIFIED ENVIRONMENTAL MANAGER (CEM)

- A. One who is certified by Nevada Department of Environmental Protection as an Environmental Manager.

101.84 CRITICAL PATH METHOD (CPM)

- A. A mathematical analysis technique for schedule development utilizing realistic activity time estimates. CPM is designed to control both the time and costs of a project by identifying the activities, which must be kept on schedule ("critical" activities) and the activities, which have extra time ("float") available for their completion.

101.85 DEWATERING

- A. The removal and/or lowering of any surface or subsurface water by a method chosen by the Contractor and acceptable to the Engineer, which results in a ground moisture content which enables construction to be carried out under relatively dry and stable conditions. Unless specifically indicated elsewhere in these specifications, no separate payment will be made for dewatering but shall be included in other items of work.

101.86 FLOAT

- A. The amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any activity or group of activities in the schedule.

101.87 NETWORK DIAGRAM

- A. A general scheduling term for several methods of describing the net effect of interconnecting lines used to indicate dependencies and interrelationships of project activities.

101.88 NOMINAL DIAMETER

- A. The inside diameter of a standard pipe as specified by the manufacturer.

101.89 PRECEDENCE DIAGRAMMING (PDM)

- A. A graphical format of presenting a schedule utilizing the AON network diagramming method. All activities are linked to successor and predecessor activities with start-start, finish-finish, finish-start or start-finish relationships, allowing lead and lag.

101.90 PROJECT SCHEDULE (SCHEDULE)

- A. The fundamental basis for planning, scheduling, monitoring and controlling project activity. The schedule illustrates the interdependence of all tasks, work packages and work units.

101.91 SERVICE CONNECTION LATERAL

- A. All or any portion of a utility, including pipe, conduit, wire, cable or duct, including meters between a utility distribution (or collection) line and an individual customer or customers.

END OF SECTION 101

SECTION 102 – BIDDING REQUIREMENTS AND CONDITIONS

SUBSECTIONS 102.01 THROUGH 102.03 AND 102.06 THROUGH 102.13 SHALL BE DELETED IN THEIR ENTIRETY AND REPLACED WITH THE FOLLOWING:

A. The INSTRUCTIONS TO BIDDERS section of the Bid Documents shall govern.

102.04 INTERPRETATION OF QUANTITIES IN THE PROPOSAL

ADD THE FOLLOWING TO THIS SUBSECTION:

C. It shall be the Contractor's responsibility to field verify required quantities prior to bidding.

102.05 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND SITE OF WORK

ADD THE FOLLOWING TO THIS SUBSECTION:

G. The Contractor, by submitting a bid proposal for this work, represents that Contractor has studied all surveys and investigative reports about potential surface and subsurface conditions pertaining to the site of work; that Contractor has performed such additional surveys and investigations as Contractor deems necessary to complete the work at Contractor's bid proposal price; and that Contractor has correlated the results of all such data with the requirements of the contract documents.

H. A geotechnical exploration report was prepared by GES on April 10, 2019 and may be reviewed at the following address: 7150 Placid Street, Las Vegas, Nevada 89119 or may be purchased by calling the following phone number: 702-365-1001 twenty-four hours prior to pick-up.

1. Bidders shall be aware of the contents of these reports and shall make their own interpretation of the data contained therein.

2. ***This report(s) is provided as "Materials Information" only.***

3. The Contractor shall not be relieved of liability under the Contract for any loss sustained as a result of variances between conditions indicated and the actual conditions encountered during the progress of the work.

H. The Contractor should be aware that high levels of petroleum hydrocarbons may be present in the area.

1. In such case that hazardous material is encountered, the Contractor shall notify the Engineer and all appropriate agencies in writing in accordance with subsection 203.03.71 "Hazardous Material" of these Special Provisions.

END OF SECTION 102

SECTION 103 – AWARD AND EXECUTION OF CONTRACT

THIS SECTION SHALL BE DELETED IN ITS ENTIRETY AND REPLACED WITH THE FOLLOWING:

- A. The INSTRUCTIONS TO BIDDERS section of the Bid Documents shall govern.

END OF SECTION 103

SECTION 104 – SCOPE OF WORK***ADD THE FOLLOWING SUBSECTION:*****104.00 LOCATION AND SCOPE OF WORK**

- A. LOCATION: The 215 Beltway Channel – Durango Drive to Grand Montecito Parkway project is located along the northern boundary of the 215 Beltway, extending from an existing culvert outlet east of Durango Drive to an existing culvert inlet west of Grand Montecito Parkway. The overall project length is approximately 0.5 miles.
- B. SCOPE OF WORK: The work to be performed under this contract consists of constructing a concrete channel along the north side of the CC215 Beltway from Durango Drive to Grand Montecito Parkway. Improvements include 14-foot wide by 7-foot high rectangular concrete channel with access ramps, 14-foot wide by 7-foot wide reinforced concrete box, transition structures, reinforced concrete pipe, manholes, drop inlets, fencing, and gates. Work shall also include designated demolition and removals, construction surveying, dust control, traffic control, and permitting.

104.04 MAINTENANCE OF TRAFFIC***ADD THE FOLLOWING TO THIS SUBSECTION:***

- F. The maximum amount of open trench permitted in any one location shall be per Section 624 of these Special Provisions.

END OF SECTION 104

SECTION 105 – CONTROL OF WORK

105.01 AUTHORITY OF THE ENGINEER

ADD THE FOLLOWING TO THIS SUBSECTION:

- E. The Engineer shall not direct Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and program incident thereto and will not be responsible for Contractor's failure to perform the work in accordance with the Contract.
- F. Engineer will not be responsible for the acts or omissions of the Contractor, or any Subcontractor or any of his or their agents or employees or any other persons at the site or otherwise performing any of the work.

105.02 PLANS AND WORKING DRAWINGS

ADD THE FOLLOWING TO THIS SUBSECTION:

- D. The Contractor shall make submittals for all materials prior to use. All submittals shall be via electronic communication (pdf at ≥ 300 dpi) unless otherwise approved by the Engineer.
 - 1. All submittals made and signed by the Contractor shall be accompanied by a submittal coversheet with the Contractor's review stamp and the Contractor's standard transmittal form, containing, at a minimum, the bid item to which the submittal pertains. All submittals are to be numbered by specification section then sequential submittal number (e.g. 203-001, 203-002, etc.).
 - 2. Any submittals not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for re-submittal.
 - 3. Items submitted by anyone other than the Contractor will be returned, without action, for resubmission by the Contractor.
 - 4. All submittals shall be carefully reviewed by an authorized representative of the Contractor prior to submission to the Engineer.
 - 5. Each submittal shall be dated, signed, and certified by the Contractor as being correct and in strict conformance with the Contract Documents.
 - 6. All non-certified submittals will be returned to the Contractor without action taken by the Engineer and any delays caused thereby shall be the total responsibility of the Contractor.
- E. The Contractor shall submit any City of Las Vegas acceptance letters for aggregate and Portland Cement Concrete in the absence of test data.
 - 1. If the aggregate or Portland Cement Concrete mix designs are not on the current IQAC list of approved materials, a mix design for Portland Cement Concrete or test data must be signed and approved by a Nevada Licensed P.E.
 - 2. The Contractor shall establish its bid price according to the mix designs that are delineated on the current IQAC list of approved materials.
 - 3. Any additional costs arising from mix designs submitted by the Contractor that are rejected for not meeting the IQAC criteria for any reason whatsoever shall be borne solely by the Contractor.

4. All mix designs are to be submitted thirty (30) days prior to anticipated material placement.
- F. The Engineer's review of working drawings submitted by the Contractor will cover only general conformity to the Drawings, Specifications and Special Provisions, external connections and dimensions which affect the layout. Unless otherwise specified within the Special Provisions, allow Owner fifteen (15) Working Days for each submittal review.
1. The Engineer's review does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, devices or items shown.
 2. The Engineer's review of submittals shall not relieve Contractor from responsibility for errors, omissions, or deviations, or responsibility for compliance with the Contract Documents.
 3. Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.
- G. If a submittal is returned to the Contractor marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS AS NOTED", formal revision and resubmission of said submittal will not be required.
- H. If a copy of the submittal is returned to the Contractor marked "AMEND – RESUBMIT", or "REJECTED – RESUBMIT" the Contractor shall revise said submittal and shall resubmit to the Engineer.
1. When corrected copies are submitted, the Contractor shall indicate any revisions not made and any revisions made other than those called for by the Engineer on previous submissions.
 2. Manufacture, fabrications or purchasing of items prior to final acceptance is at the Contractor's own risk.

105.03 CONFORMITY WITH PLANS AND SPECIFICATIONS

ADD THE FOLLOWING TO THIS SUBSECTION:

- D. In the event the Contractor desires to substitute materials or perform work that does not conform with the plans and specifications, the Contractor will make a written request to the Engineer for review and approval.
- E. As a minimum, the written request will address the following:
1. The Contractor will demonstrate that the substituted materials and/or the performed work are of equal or greater value than the materials and/or work specified in the plans and specifications.
 2. Various requests for substitution may require the seal and signature of approval from a licensed Nevada Professional Engineer. Prior to submitting a request for substitution, the Contractor shall inquire as to whether the Owner will require the approval of an Engineer, and if so, the Contractor will be responsible for the associated costs of this review.
- F. The substitution of material or performance of work as requested by the Contractor will not begin until the Contractor has received a written approval by the Engineer. Any additional

costs or delays incurred as a result of unapproved substitutions shall be the responsibility of the Contractor. Manufacture, fabrication or purchasing of items prior to final acceptance is at the contractor's own risk.

105.04 COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. During the Bidding Phase of the proposed Work the governing order of the Bid Documents shall be per Instruction to Bidders (ITB) Section 3.02 "Governing Order of Bid Documents".
- B. After the Contract has been awarded, the governing order of the Contract Documents shall be per General Conditions (GC) Section 14.03 "Governing Order of Bid Documents".
- C. The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers such an error or omission, he shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.
- D. The Contractor shall attend the Pre-Construction meeting.

105.05 COOPERATION BY CONTRACTOR

DELETE PARAGRAPH "A" OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:

- A. All approved plans and contract assemblies including special provisions are available on demandstar.com and the Contractor is responsible for printing all copies for his use, one set of which the Contractor shall keep available on the work site at all times.

DELETE PARAGRAPH "C" OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:

- C. The Contractor shall provide his own mobile telephone, capable of making and receiving both local and long distance calls to allow communication with the Engineer and Resident Project Representative at all times. The Contractor shall provide his own electronic device capable of receiving and sending e-mails from the field. The Contractor shall also provide his own electric power, potable water, construction water, and sanitary facilities required in the performance of the work under the contract. All costs associated with these items shall be the responsibility of the Contractor.

105.06 COOPERATION WITH UTILITIES

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- X. The Contractor shall be responsible for verifying that each utility has responded to each notification.

- Y. If, during the course of paving operations, the Contractor paves over manholes, water, and/or gas distribution valves, the Contractor shall have no more than 48 hours to remove the asphalt over the manholes or valves and adjust the manholes or valves to grade. The Contractor shall be responsible for adequately marking all such manholes and valves prior to paving operations so as to readily locate them after paving. Adjustment of manhole and valves may require a temporary adjustment to dense grade prior to the permanent final adjustment to the top of finish grade.

105.07 COOPERATION BETWEEN CONTRACTORS

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- E. Contractor shall cooperate fully with other contractors and conduct operations to cause minimum interference with work of other contractors constructing concurrent projects, including but not limited to:
1. NDOT Contract 3724, US 95 Northwest Corridor Phase 3C and CC 215 from Grand Montecito to Tenaya Way – Contact: Abid Sulahria (702) 671-6682.
 2. 215 Beltway Trail Connection Centennial Parkway to Decatur Boulevard, Segment “C” Centennial Parkway to Grand Montecito Parkway – Contact: Anita Marquez (702) 229-6264.

105.08 CONSTRUCTION STAKES, LINES AND GRADES

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. Construction staking work shall be required of the Contractor, as indicated in Section 622 “Construction Surveying by the Contractor” of these Special Provisions, and shall conform to all requirements therein.

DELETE SUBSECTION 105.09 “BLANK” OF THE USS IN ITS ENTIRETY AND REPLACE WITH 105.09 “RECORD DOCUMENTS” AS DESCRIBED BELOW:

105.09 RECORD DOCUMENTS

- A. General Instructions
1. Ensure entries are complete and accurate. Current Progress Record Documents shall be available for review by the Owner, Owner’s Consulting Engineer and the Owner’s Construction Management Consultant (if applicable) at all times during the progress of the work.
 2. Store Progress Record Documents separate from documents used for construction.
 3. Neatly record information concurrent with construction progress. Maintain Progress Record Documents in a clean and orderly manner. The Contractor shall not conceal any work until the required record information has been recorded on the record document set. The Contractor shall bear the cost of uncovering any prematurely concealed work for required record documentation.
 4. Progress Record Documents shall be made available to the Owner, the Owner’s Consulting Engineer, and the Owner’s Construction Management Consultant (if applicable) for review at the site, at progress meetings, and during Owner’s review of the monthly progress bill requesting payment.

5. Failure of the Contractor to maintain a current record of information on the Progress Record Documents shall entitle the Owner to withhold payment until corrected. The release of payment to the Contractor shall be contingent upon the Contractor's diligent performance as required herein.
- B. Progress Record Documents - The Contractor shall maintain the following documents, which constitute the Progress Record Documents, at the job site during construction:
1. Drawings – Owner shall provide a full size copy of the approved set of drawings on bond paper for use as the Progress Record Document drawings prior to starting the work.
 - a. The Contractor will supplement the drawing set with approved drawings submitted as deferred submittals. The Contractor shall insert approved Addenda and revision sheets in front of the original sheet
 - b. The Contractor shall legibly mark each sheet to record actual construction including (but not limited to):
 - i. Measured horizontal and vertical locations of underground installations, utilities and appurtenances referenced to permanent surface improvements;
 - ii. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work;
 - iii. Field changes of dimension and detail;
 - iv. Details not on original Contract Drawings
 2. Specifications – The Contractor shall legibly mark and record at each product section description of actual products installed, including (but not limited to) the following:
 - a. Manufacturer's name and product model and number
 - b. Product substitutions or alternates utilized;
 - c. Changes made by addenda and modifications.
 3. The Contractor shall keep copies of and maintain a record of all Change Orders and any other modifications to the Contract.
 4. The Contractor shall keep copies of and maintain a record of all reviewed Shop Drawings, Product Data and Samples.
 5. The Contractor shall keep copies of and maintain a record of all Manufacturer's instructions for assembly, installation and adjusting.
- C. Final Record Documents - Upon completion of the work, including all punch list items and prior to Release of Retention, the Contractor shall provide to Owner a complete set of Final Record Documents. The Final Record Documents shall include (but not limited to) the following:
1. Final Drawings
 - a. The Contractor will supplement the drawing set with approved drawings submitted as deferred submittals. The Contractor shall insert approved Addenda and revision sheets in front of the original sheet including any revisions required for completion of the punch list
 - b. The Contractor shall legibly mark each sheet to record actual construction including, (but not limited to):
 - i. Measured horizontal and vertical locations of underground installations, utilities and appurtenances referenced to permanent surface improvements;

- ii. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work;
 - iii. Field changes of dimension and detail;
 - iv. Details not on original Contract Drawings;
 - v. Changes made during completion of the punch list.
- c. The Contractor shall mark each sheet as "Record" or "As-Built"
- 2. Specifications
 - a. Manufacturer's name and product model and number
 - b. Product Substitutions or alternates utilized
 - c. Changes made by Addenda and modifications
 - d. Changes made during completion of the punch list.
- 3. Contractor shall keep copies of and maintain a record of all Change Orders and any other modifications to the Contract including any changes made during completion of the punch list.
- 4. The Contractor shall keep copies of and maintain a record of all reviewed Shop Drawings, Product Data, and Samples including any additional shop drawings, product data, and samples required for completion of the punch list.
- 5. The Contractor shall keep copies of and maintain a record of all Manufacturer's instructions for assembly, installation, and adjusting and any Manufacturer's instructions for assembly, installation, and adjusting required for completion of the punch list.

105.17 CLAIMS FOR ADJUSTMENT AND DISPUTES

DELETE PARAGRAPH "A" OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:

- A. If the Contractor deems that additional compensation is due for work or material not clearly covered in the Contract and not ordered by the Engineer as extra work as defined herein, the Contractor shall notify the Engineer in writing within 24 hours of his intention to make claim for additional compensation before beginning the work which will be the subject of the claim.
 - 1. If the notification is not given, and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as required, then the Contractor shall be deemed to have waived any claim for such additional compensation.
 - 2. The notice by the Contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving or substantiating the validity of the claim.
 - 3. If the claim, after consideration by the Engineer, is found to be just, it will be paid as extra work as provided for as "Force Account" work.
 - 4. Nothing in this subsection shall be construed as establishing any claim contrary to the terms of Subsection 104.02, "Increased or Decreased Quantities and Change in Character of Work".

DELETE PARAGRAPH "C" OF THIS SUBSECTION IN ITS ENTIRETY.

ADD THE FOLLOWING SUBSECTION:

105.18 VALUE ENGINEERING PROPOSALS

- A. Value Engineering Proposals (VEP) may be submitted in writing for modifying the plans, specifications or other requirements of the contract for the purpose of reducing the total cost of construction without reducing design capacity or quality of the finished product. If accepted, net savings resulting from a VEP will be shared by the Owner and the Contractor on a 50-50 basis.
- B. The requirements herein apply to all VEPs initiated and developed by the Contractor and which are identified as such at the time of submission. Nothing herein shall be construed as requiring consideration or approval of a VEP submitted hereunder.
- C. Each VEP shall result in a net savings over the contract costs without impairing essential functions and characteristics of the item(s) or of any other part of the project, including but not limited to environmental considerations, service life, reliability, economy of operation, ease of maintenance, desired aesthetics and safety. Submit the following information with each VEP:
 - (a) A statement that the proposal is submitted as a VEP;
 - (b) A statement concerning the basis for the VEP and benefits to the Owner together with an itemization of the contract requirements affected by the VEP;
 - (c) A detailed estimate of the cost under the existing contract and under the VEP;
 - (d) Proposed specifications and recommendations as to how such VEP changes are to be accomplished; and
 - (e) A statement as to the time by which a contract change order adopting the VEP must be issued so as to obtain the maximum cost effectiveness.
- D. The VEP will be processed in the same manner as prescribed for any other proposal which would necessitate issuance of a contract change order. The Owner may accept in whole or in part any VEP by issuing a contract change order which will identify the VEP on which it is based. The Owner will not be liable for failure to accept or act upon any VEP submitted pursuant to these requirements nor for any delays to the work attributable to any such proposal. Until a proposal is effected by contract change order, remain obligated to perform under the terms and conditions of the existing contract. If an executed contract change order has not been issued by the date upon which the proposal specifies that a decision thereon should be made, or such other date as the Contractor may have subsequently specified in writing, such proposal shall be deemed rejected.
- E. The contract change order effecting the necessary contract modification will establish the net savings agreed upon, will provide for adjustment in the contract prices and will indicate the new savings to be equally divided between the Contractor and the Owner. Absorb all costs incurred in preparing a VEP for submission. All reasonably incurred costs of reviewing and administering the VEP will be borne by the Owner. The Owner reserves the right to include in the agreement any conditions it deems appropriate for consideration, approval, and implementation of the proposal. The Contractor's 50% share of the net savings shall constitute full compensation to him for effecting all changes pursuant to the agreement.
- F. Acceptance of the VEP and performance of the work thereunder will not change the contract time limit as a result of the VEP, unless specifically provided for in the contract change order authorizing the VEP.

- G. The Owner expressly reserves the right to adopt a VEP for general use in contracts administered by the Owner when it determines that said proposal is suitable for application to other contracts. VEPs identical or similar to previously submitted proposals will be eligible for consideration and compensation under these provisions if such proposals were not previously adopted for general application to other contracts administered by the Owner. When a VEP is adopted for general use, compensation pursuant to these requirements will be applied only to those contracts awarded and for which the subject VEP has been submitted before the date of adoption of the specific VEP.
- H. Proposed changes in the basic design of a bridge or pavement type, traffic control plan, or changes which require different right of way limits, will not normally be considered as an acceptable VEP. The elimination or changes to the required marination of plantmix bituminous aggregates will not be considered as an acceptable VEP. The Engineer shall be the sole judge of the acceptability of a VEP. Subject to the provisions contained herein, the Owner or any other public agency shall have the right to use all or part of any accepted VEP without obligation or compensation of any kind to the Contractor. In the event a VEP is accepted by the Owner, the provisions of Subsection 104.02 which pertain to adjustment of contract unit prices due to alterations of contract quantities will not apply to items adjusted or deleted as a result of effecting the VEP by contract change order.

105.69 QUALITY ASSURANCE (QA)

- A. Quality Assurance encompasses the Engineer's review and oversight of the Contractor's Quality Control. Quality Assurance will verify the results of Quality Control and shall also be inspecting for conformance to plans and specifications.
- B. The Quality Assurance is the responsibility of the Engineer. Results determined by the Quality Assurance will be the deciding factor of the materials acceptance.

105.70 QUALITY CONTROL (QC)

- A. The Contractor is responsible for submitting a Quality Control Program to the Engineer for acceptance two weeks prior to the tentative notice to proceed and must be approved prior to beginning work. If a program is not submitted for acceptance, the Contractor is responsible to have Quality Control performed to the requirements set forth in the latest copy of the approved City of Las Vegas Department of Public Works Construction Quality Program for non-federal projects (See Appendix X).
- B. The Contractor Quality Control Program is to ensure that materials and workmanship incorporated into the work meet the requirements of the Standard Specifications, Special Provisions, and all other contract documents. Quality Control is the sole responsibility of the Contractor for all projects.
- C. In order to ensure an understanding of the program by all persons, including both Quality Control and Quality Assurance, there is a mandatory Quality Control program pre-activity meeting to be conducted by the Engineer.

ADD THE FOLLOWING SUBSECTION:

105.73 PAYMENT FOR CONTRACTOR QUALITY CONTROL PROGRAM

- A. Payment will be made for Contractor Quality Control. The costs for all quality control efforts required to complete the work described in the General and Special Provisions and project Drawings, including the Contractor's QC Plan, punch list, and cleanup shall be paid as LUMP SUM.
- B. The LUMP SUM price bid for Contractor Quality Control shall include full compensation for performing all required control of quality including, but not limited to, costs to develop the quality control program, management of the quality control program, on-site testing, off-site source/production inspection, off-site source/production testing, laboratory testing of field samples, preparation of the weekly and monthly reports, submittal of the program, submittal of results and daily, weekly, and monthly reporting of results.
- C. The Engineer may request additional testing not to exceed a maximum of 5% of the required testing for a given type performed on the project at no additional cost to Owner. Additionally, extra testing required for minor line item extensions, up to 5% increase in said line item will be performed on the project at no additional cost to Owner
- D. Testing at a frequency greater than the minimum called for, other than at the direction of the Engineer, is considered to be a methods and means decision of the Contractor and as such is at the expense of the Contractor.
- E. In the event of improperly conducted Quality Control Program, the Progress Payment amount will be reduced by **\$300.00** per day per incident by the Engineer until resolved. No retroactive payments will be provided for improperly conducted Quality Control Program. An incident is defined as:
 - 1. The use of an incorrect or the improper test method.
 - 2. Non-compliance to any portion of the Contractor Quality Control Program.
 - 3. Non inspection
 - 4. No documentation of inspection
 - 5. No notification of the QA inspector
 - 6. Not using hold points.
 - 7. No pre-activity meeting.
 - 8. Improperly submitted reports.
 - 9. Testing not in conformance with the testing procedure.
 - 10. Lack of timely resolution of deficiencies and non-compliances.
 - 11. Non-compliance of a Quality Control Administration audit.
- F. If the testing was conducted by a non-accredited laboratory, the testing will not be accepted and payment will not be made for the installed material or testing cost unless resolved to the satisfaction of the Engineer within 30 days. If after 30 days, the laboratory cannot satisfy the Engineer, the Contractor shall replace the non-complying laboratory. If the testing was conducted by a non-certified technician, the quantity of material and testing cost shall be subject to non-payment and the Contractor shall also pay for the Quality Assurance testing until such time the certified technician is replaced.
- G. The Contractor shall implement removal of personnel for the following infringements:
 - 1. Nonqualified personnel based on the ICC, WAQTC, and NAQTC requirements.

2. Knowingly falsify contract documents of any kind.

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
105.01	CONTRACTOR QUALITY CONTROL	LS

END OF SECTION 105

SECTION 107 – LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

107.02 PERMITS, LICENSES, AND TAXES

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- B. The Contractor shall obtain Grading and/or Stockpile permits for on-site storage or disposal of materials from the City of Las Vegas Building Department prior to beginning the work.
- C. It shall be the Contractor's responsibility to determine if the permit requirements of Section 637 "Pollution Control" shall be required.
- D. The Contractor shall obtain a permit from the Las Vegas Valley Water District to use a hydrant as a water source.
- E. The Contract Documents detail the right-of-way and construction easement/AEPs and in some cases staging areas the Contractor may occupy during the duration of the project and traffic control requirements associated with the occupation of said areas. If the Contractor desires to use any areas outside the limits described in the Drawings and Specifications, he shall be responsible for meeting the requirements of the Unified Development Code (UDC) or applicable requirements for jurisdictions outside of the City. The Contractor shall obtain all permits required for the use of private property and provide copies to the City prior to any use of the site. If a temporary commercial permit is required for work performed on private property, the Contractor shall ensure that a temporary commercial permit is obtained through the City of Las Vegas Planning Department or other applicable jurisdictions prior to any use of the site. All work, fees, and scheduling associated with compliance to this subsection shall be borne entirely by the Contractor and shall not be a justification for delay claims.
- F. The Owner has obtained a Nationwide Permit 7 from the United States Army Corps of Engineers. Refer to Appendix F and comply with all requirements as described, including but not limited to compliance with all terms and conditions of the general and regional conditions of the NWP.
- G. The Owner has obtained a Clark County Encroachment Permit. Refer to Appendix G and comply with all requirements as described.
- H. The Owner has obtained an NDEP 401 Water Quality Certification. Refer to Appendix H and comply with all requirements as described.

DELETE SUBSECTION 107.05 BLANK AND REPLACE WITH THE FOLLOWING:

107.05 SAFETY

- A. General: Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The name and telephone number of the Contractor's safety officer shall be provided to the Contracting Agency. He shall take all

necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All employees engaged in the work and the other persons who may be affected thereby;
2. All the work and all materials or equipment to be incorporated therein, whether in storage or on the project site, and
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the work.

B. Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He shall erect, install, employ and maintain, as required by the conditions and progress of the work, all necessary safeguards. Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and a "Notice of Completion" has been issued to the Contractor by the Engineer.

C. Trench Safety: Trench Safety shall be per Subsection 208.03.01.

107.07 TRAFFIC AND ACCESS

ADD THE FOLLOWING TO PARAGRAPH "C" OF THIS SUBSECTION:

1. When the Contractor's construction operations encroach upon a sidewalk, walkway, or crosswalk area, the Contractor shall take special precautions to protect the pedestrian's safety including provisions to separate pedestrian traffic from the work area and vehicular traffic.
 - a. When pedestrian traffic is routed onto the roadway, at other than existing crosswalk locations, the Contractor shall use portable precast concrete barrier rails to separate the pedestrian traffic from the work area and vehicular traffic.
 - b. All portable precast concrete barrier rails shall be butted tight and pinned in accordance with the requirements of the NDOT Standard Drawing R-8.7.1, entitled "Portable Precast Concrete Barrier Rail."
2. When a designated Suggested Route to School is encroached upon by a construction work zone and/or the City of Las Vegas's Traffic Engineering Division identifies a need for students to be assisted in the safe crossing through the work zone, the Contractor shall be required to provide a qualified crossing guard.
 - a. The guard shall be present for the full duration of time that children are likely to be present, as determined by the Traffic Engineering Division.
 - b. It will be the Contractor's responsibility to contact the Metropolitan Police Department Special Events Unit (702-828-3442) to arrange for crossing guards properly trained in traffic control. Pursuant to local ordinances.
 - c. Fees for the use of these guards, if required, will be paid under Bid Item No. 624.01 "Traffic Control and Maintenance".
 - d. Following are designated Suggested Routes to School that will be impacted by construction:
 - 1) NONE.

DELETE PARAGRAPH “K” OF THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

K. Notifications:

1. The Owner shall receive a copy of all notifications for acceptance prior to distribution.
2. The Contractor shall cooperate with, and give written notice to all emergency agencies, public entities, each resident, homeowner, homeowner association, business or school that will be affected by any part of the construction process, particularly concerning temporary interruptions to vehicular access.
3. This notice of the approximate schedule and explanation of work shall be distributed at least fourteen (14) days prior to commencement of work in the area.
4. A second written notice, as well as a verbal notice, including door-to-door communication, shall be made at least twenty-four (24) hours prior to construction to remind all affected parties of the construction to take place.
5. The Contractor shall notify by phone the following agencies:

METRO DISPATCH	702-795-3111
FIRE DEPARTMENT DISPATCH	702-382-3001
AMBULANCE DISPATCH CENTER	702-384-3400
RTC TRANSIT	702-676-1731
CLARK COUNTY SCHOOL DISTRICT	702-799-8100 X 5395
NEVADA DEPT. OF TRANSPORTATION (NDOT)	702-385-6588
CLV - TRAFFIC ENGINEERING DIVISION	702-229-6327
UNITED STATES POSTAL SERVICE	1-888-275-8777
REPUBLIC SERVICES	702-735-5151 X 314

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- M. Construction materials may not be stored in streets, roads or highways for more than five days after unloading. All materials or equipment not installed or used in the construction within five days after unloading shall be stored elsewhere by the Contractor at his expense unless he is authorized additional storage time.

- N. Construction equipment shall not be stored at the work site before its actual use on the work nor for more than five days after it is no longer needed on the work. Time necessary for repair or assembly of equipment may be authorized by the Engineer.
- O. Excavated material, except that which is to be used as backfill in the adjacent trench, may not be stored in public streets, roads or highways unless otherwise permitted. After placing backfill, all excess material shall be removed immediately from the site.
- P. Wherever possible the Contractor shall use high early strength concrete for final utility grade adjustments to facilitate reopening the road to traffic.
- Q. Contractor's proposed lane closures shall comply with the following:
 - 1. For work requiring lane closures on Durango Drive, the Contractor shall maintain a minimum of two lanes in each direction.
 - 2. For work requiring lane closures on Grand Montecito Parkway, the Contractor shall maintain a minimum of one lane in each direction and equivalent left-turn pocket storage lengths to what currently exists at all times.

107.12 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- J. Contractor shall provide for the drainage of storm water and such water as may be applied or discharged on the site in the performance of the work. Drainage facilities shall be adequate to prevent damage to the work, the site and the adjacent property.
- K. Contractor shall prevent erosion of soil on the site and adjacent property resulting from his construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation or other operation that will disturb the natural protection of the soil.

107.17 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICE

ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:

- I. All utility valves, manholes, vaults, pull boxes, etc., which are buried, shall be conspicuously marked by the Contractor to allow their location to be determined by the Engineer or utility personnel under adverse conditions (i.e., inclement weather or darkness).

107.18 FURNISHING RIGHT-OF-WAY

ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:

- B. Contractor shall provide copy of necessary permits and written consent from property owner(s) prior to entering or occupying any lands outside the right-of-way or easement or where no Authorization to Enter Property exists.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:**107.70 CONTRACTOR'S RESPONSIBILITY TO THE PUBLIC**

- A. The Contractor is responsible to answer and resolve any conflicts that may arise between a homeowner or business owner and himself during the construction process.

107.71 ALLOWABLE WORK HOURS

- A. No work between the hours of 6 p.m. and 7 a.m. will be allowed in residential areas unless approved by the Engineer or otherwise stated in the Special Provisions. If work after the aforementioned hours is approved, then the Contractor shall provide each affected resident at least forty-eight (48) hours' written notice explaining the reason for the work after hours and providing an approximate duration of the activity.

107.72 NATURAL DRAINAGE AND STORM WATER RUNOFF

- A. The Contractor shall be responsible for protecting and preserving public and private property from damage directly or indirectly caused by drainage or storm water runoff leaving the project during construction of all improvements, including downstream properties if damage is a result of the Contractor's actions in diverting or redirecting existing natural runoff patterns.

END OF SECTION 107

SECTION 108 – PROSECUTION AND PROGRESS

108.03 PROSECUTION AND PROGRESS

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- A. The CONTRACTOR shall be responsible for planning, scheduling and reporting the progress of the work to ensure timely completion of the contract utilizing realistic durations, material lead time, logic flow, representative cure time, etc. CONTRACTOR acknowledges overall duration as realistic and buildable per provided plans and within the contract duration.
- B. The CONTRACTOR shall designate an authorized representative who will be responsible for the preparation, revision, modification, and maintenance of all project schedules. This person shall be experienced in the preparation and management of schedules of similar complexity. For projects longer than 90 days in duration, as established by the Owner, the project scheduler shall have 3 years verifiable experience and shall be proficient in the use of a Critical Path Method Scheduling (CPM) Software (i.e. Primavera, Suretrack). The CONTRACTOR shall submit the name and resume of the project scheduler per ITB 7.03.

ENGINEER may order that the scheduler be removed and replaced with a competent scheduler if the scheduler provided does not meet acceptable qualifications and performance standards.

Additional schedule formatting & presentation requirements may be requested by ENGINEER.

- C. The CONTRACTOR shall utilize critical path method (CPM) format.

General Definition of Critical Path Method Schedule: The Critical Path Method (CPM) is a project schedule model that reflects all the work required under the contract, and depicts the CONTRACTORs preferred sequence, or means and methods, of completing the work within the required contract time. The CPM calculations assist the CONTRACTOR and subcontractors, in proactively planning, coordinating, managing and measuring the level of effort required to complete the work within the contract time. In CPM “work” is defined as schedule activities, and “sequence” is defined as appropriate applied logic dependencies that represent the CONTRACTOR’s means and methods for completion of the work. The Completed CPM shall not be artificially constrained, and shall have the ability to dynamically measure the CONTRACTOR’s actual progress of the work as it occurs over the duration of the project.

Software Settings:

- a. Retained logic shall be used.
- b. All schedule activities shall be considered contiguous.
- c. Critical activities shall be defined as those activities whose total float is less than or equal to zero (0) Days.
- d. Duration percent complete shall be utilized to update schedule progress.
- e. Calculate "Start-to-Start" lag from early start.
- f. Show open ends as critical.
- g. Calculate total float as finish float.

- D. The CONTRACTOR shall submit a CPM baseline schedule in two parts, based upon the Sequence of Construction shown in the project plans or in these Special Provisions, in accordance with the following:
1. Part I shall be a Preliminary Baseline Project Schedule (PBPS) and shall be submitted in accordance with ITB 7.06, within 24 hours of bid opening. Note, this is prior to Notice of Award.
 2. Part II shall be a Baseline Project Schedule (BPS) and shall be submitted 7 calendar days prior to Notice to Proceed.
- E. Schedule Acceptance:
1. ENGINEER's review and acceptance of CONTRACTOR's CPM Schedule is for conformance to the requirements of the Contract Documents only. Review and acceptance by ENGINEER of CONTRACTOR's CPM Schedule does not relieve CONTRACTOR of any of its responsibility whatsoever for the accuracy or feasibility of the CPM Schedule, or of CONTRACTOR's ability to meet interim Contract Milestone dates and the Contract Times, nor does such review and acceptance expressly or impliedly warrant, acknowledge, or admit the reasonableness of the logic, durations, and resource value loading of CONTRACTOR's CPM Schedule.
 2. In the event that a schedule submittal is rejected, the CONTRACTOR's Project Manager and Scheduler may be asked to attend a Corrective Action Meeting with the OWNER within five (5) Work Days.
- F. Milestones - Schedule shall identify the following milestones as a minimum:
1. Notice to Proceed Date (NTP): Issuance of this date indicates the Project site is available to the CONTRACTOR and contract time has begun. The NTP is determined in coordination between the ENGINEER and the CONTRACTOR and shall be within 60 calendar days of the Award Date unless extenuating circumstances warrant setting the NTP more than 60 calendar days after the Award Date. Include any extenuating circumstances in the narrative. The Notice to Proceed Date shall be the first milestone in the schedule.
 2. Interim Completion Dates or Interim Milestones: When interim completion dates or interim milestones (associated with Project stages) are included in the Contract.
 3. Substantial Work Completion Date: Anticipated date that all work under the Contract will be substantially complete. Should the CONTRACTOR fail to substantially complete the project within the allotted contract time, there shall be deducted from any money due to the CONTRACTOR the sum of **\$3500** per each calendar day exceeding the allotted time. This sum shall be considered and treated, not as a penalty, but as Liquidated Damages due to the Contracting Agency from the CONTRACTOR.
 4. Final Completion Date: Date defined by the Owner as the end of the 30 calendar day punchlist period per Subsection 108.08.01 & 108.08.02.
- G. Float:
1. Float within the schedule, and total float within the overall schedule, is not for the exclusive use of either OWNER or CONTRACTOR, but is jointly owned by both parties and is a resource available to be reasonably used by both parties as needed to meet the Contract Times (or Milestones).
 2. Since float within the schedule is jointly owned, it is acknowledged that OWNER caused delays may be offset by OWNER caused time savings (i.e. critical path submittals returned

in less time than allowed by the Contract, approval of substitution requests which result in a savings of time to CONTRACTOR, etc.). In such an event, CONTRACTOR shall not be entitled to receive a time extension until all OWNER caused time savings are exceeded and the Contract Times (or Milestones) are also exceeded.

3. Use of float suppression techniques such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity durations are prohibited.

H. CALENDARS

1. CONTRACTOR's planned work schedule, assigned to all general work activities.
2. OWNER Calendar: 5-day calendar that depicts all of the CLV's holidays, assigned to all OWNER-related activities, such as submittal review & approval, inspection, startup & testing, and training activities.
3. Seven-Day Calendar: 7-day calendar containing no holidays or "nonwork" days, assigned to activities such as concrete curing time and Contract Milestones.
4. If CONTRACTOR has alternate work schedules these shall also be identified with a separate calendar.
5. If CONTRACTOR submits a written request to perform physical work during a CLV holiday, or a non-work period, and the request is approved by ENGINEER, any resulting inspection overtime costs shall be the sole responsibility of CONTRACTOR.

CLV's holidays are:

- a. New Year's Day
- b. Martin Luther King Day
- c. Presidents' Day
- d. Memorial Day
- e. Independence Day
- f. Labor Day
- g. Nevada Day Friday
- h. Veterans Day
- i. Thanksgiving Day
- j. Family Day (Friday after Thanksgiving)
- k. Christmas Day.

- I. The ENGINEER may conduct a Preconstruction Scheduling Meeting with CONTRACTOR's Project Manager, General Superintendent and Scheduler to take place within 7 calendar days after Award. This meeting is intended to cover schedule requirements including; baseline schedule preparation, reporting required, updates, revisions, and schedule delay analysis.

108.03.01 PRELIMINARY BASELINE PROJECT SCHEDULE (PBPS)

- A. The CONTRACTOR shall prepare and submit to the Project Contract Specialist in Finance – Purchasing and Contracts, the PBPS as specified herein shall illustrate the CONTRACTOR's overall plan and sequence of all work under the contract, within the contract time required.
 1. This submittal shall be a general time-scaled logic diagram displaying the major activities and sequence of planned operations. This shall include a depiction of any phasing that may be required.
 2. This diagram shall also display how the CONTRACTOR will complete work within the Contract requirements.

3. Along with the PBPS, the CONTRACTOR shall include his calendar for the contract period, which shall show workdays, calendar days and dates, CONTRACTOR holidays and historical anticipated weather delays.

B. Failure to submit required and acceptable PBPS may be grounds for award reconsideration. PBPS should represent a realistic Level 1 type schedule recognizing overall project completion. See Appendix C for sample project schedules.

108.03.02 BASELINE PROJECT SCHEDULE (BPS)

- A. Part II shall be submitted for the ENGINEER's acceptance at least seven (7) calendar days prior to Notice to Proceed. The CONTRACTOR shall allow seven (7) calendar days for review by the ENGINEER. If BPS is rejected, an additional seven (7) calendar days is allowed for each subsequent review by the ENGINEER. Note that the NTP will not be issued until the BPS is accepted. If an acceptable BPS is not agreed upon within the time frame referred to in Section 108.03, Paragraph F of these Special Provisions, then the CONTRACTOR may be considered in breach of contract. The BPS shall be generated using either Primavera or a compatible scheduling program acceptable to the Project ENGINEER.
- B. The BPS shall include a detailed network diagram acceptable to the ENGINEER with the following features:
 1. It shall be time scaled in calendar days. Construction activities may be measured in work days, however all schedule Milestones shall be based on Calendar days, not work days. Unless approved by the ENGINEER, activities shall not exceed twenty-one (21) calendar days in length except concrete curing, Submittal review and equipment fabrication and deliveries.
 2. All activities shall be plotted on their early start and finish dates. The plot shall have a size and scale acceptable to the ENGINEER.
 3. Each Activity shall be part of the logic driven network and include a predecessor (excepting the first activity) and a successor (excepting the last activity).
 4. It shall show the order and interdependence of activities and the sequence of work. The critical activities shall be prominently distinguished on all reports by the use of color or other means acceptable to the ENGINEER.
 5. It shall include any utility relocation required by project documents and any coordination required with other projects. Further, any owner furnished CONTRACTOR installed items shall be included.
 6. The construction activities shall be in sufficient detail to list all components of the work and to allow day-to-day monitoring of the CONTRACTOR's operations. For example, an activity such as placement of a concrete structure should show the interdependency of all related items, such as submittals (mix designs, rebar certifications, shop drawings, etc.); any required review period; start work; excavation; forming; reinforcing; concrete placement; concrete curing; removal of forms; etc.

7. The activities shall be coded so as to conform to the contract bid item number in order to demonstrate the schedule contains all contractual work.
8. Only the NTP, Substantial Completion & Final Completion Milestones shall have constraints. Further, the use of mandatory constraints is not acceptable. (Reference Section 108.03.F for required Milestones)
9. No schedule activities shall be allowed after Final Completion
10. The use of Notebook topics or logs shall not be considered written notification to the owner.
11. The diagram shall be accompanied by a Schedule Report of the network with a tabulation of the following data for each activity:
 - a. Activity ID number
 - b. Activity description
 - c. Activity duration
 - d. Earliest start date
 - e. Earliest finish date
 - f. Latest start date
 - g. Latest finish date
 - h. Total float
 - i. Predecessor & Successors
 - j. Responsibility for activity (e.g. CONTRACTOR, SubCONTRACTOR, Supplier, etc.)
 - k. Bid item for which the activity is a part
 - l. Any activity constraints
 - m. **For Projects Over Five (5) Million Dollars –**
 - 1) Schedule activities shall be assigned a budgeted cost & resource value.
 - 2) Cost and resource loading shall define Cost, Labor and Equipment (model/size) by CONTRACTOR, Subcontractor, and Suppliers for all activities in the schedule.
 - 3) The sum of all budgeted cost values shall be equal to the Contract Value and the sum of all of the resource values shall equal the total resources included in the CONTRACTORs bid estimate.
 - n. Additional schedule formatting & presentation requirements may be requested by ENGINEER.
12. The CONTRACTOR shall not submit a proposed baseline Schedule that indicates an overall forecast substantial completion date earlier than contractually required. If interim completion milestones are included in the contract, their dates must also reflect the dates required by the contract as well. If the CONTRACTOR feels they can finish the project earlier than contract dates, they can add a Schedule Contingency activity to capture the float time between last day of work and Contract Completion. This float or contingency allowance belongs to the project, ie; both the CONTRACTOR and Owner (Reference Subsection 108.03.02.B.17 below)
13. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work influenced by high or low ambient temperatures and/or precipitation to ensure completion of all work within the contract time.

14. Seasonal weather conditions shall be determined by an assessment of average historical climatic conditions based upon the preceding ten (10) year records published for the locality by the National Oceanic and Atmospheric Administration (NOAA) and entitled "Local Climatological Data".
15. The following schedule of anticipated adverse weather delays is based on NOAA or similar data for the project location and will constitute the baseline for the total contract time adverse weather delay evaluations. The CONTRACTOR's Baseline Project Schedule must assume to anticipate this degree of adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DAYS
Based on Work Days as Described in Section 110

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
6	2	2	1	1	0	2	2	1	1	1	3

16. The CONTRACTOR is to provide written notification to the ENGINEER of the occurrence of adverse weather delay days and resultant impact to normally scheduled work, within ten (10) calendar days of each occurrence, when such weather prevents work on critical activities for fifty percent (50%) or more of the CONTRACTOR's scheduled workday. A time extension may be granted when the number of actual adverse weather days calculated from the Notice to Proceed date to the date the CONTRACTOR asserts the request exceeds the total anticipated adverse weather delays using the above table for the same time period. If the CONTRACTOR wishes to assert additional claim(s) for time adjustment at later date(s), each succeeding claim must address the time period from Notice to Proceed date to the date of the request. No compensation will be made for monetary damages due to anticipated adverse weather delay(s).
17. Float time belongs to the project and is not for the exclusive use or benefit of either the Owner or the CONTRACTOR. Extension of time for performance may be granted to the extent that equitable time adjustment for the activity affected exceeds the total float, or where otherwise justified, and impact on the contract completion can be shown. The CONTRACTOR's schedule shall be based on the contract time and shall not be based on an early completion schedule. No additional compensation will be allowed to the CONTRACTOR for delays to an early completion schedule.
18. Baseline Schedule Submittal shall include as a minimum the following components;
- Tabular listing of all activities including activity data
 - Time scaled bar chart
 - Predecessor/successor report
 - Budgeted cost assigned to each construction activity
 - Phase, responsibility, area and work type coding of activities (P3/ Suretrak)
 - Work Breakdown Structure (P6 Software)
 - Total Float Report (organized by total float)
 - The Baseline Schedule narrative shall at a minimum explain the schedule logic and construction sequencing, identify risk areas, and identify critical path

- i. Single write CD containing all of the above diagrams in PDF form and the complete native CPM schedule program file for electronic review by ENGINEER.

See Appendix C for sample project schedules.

19. Acceptance of the CONTRACTOR's schedules by the ENGINEER is not to be construed as relieving the CONTRACTOR of his obligation to complete the work within the contract time; or as granting, rejecting or in any other way acting on the CONTRACTOR's requests for adjustments to the date for completing contract work, or claims for additional compensation.
20. Furthermore, the accuracy and viability of the submitted schedule is the responsibility of the CONTRACTOR. The ENGINEER does not take responsibility for the CONTRACTOR's actions by either accepting or approving the schedule submittal, they merely indicate, whether or not, the schedule submittal complies with the required scheduling specification and standard of care regarding current scheduling practices.
21. Progress payments to the CONTRACTOR may be, at the option of the ENGINEER, withheld until the Baseline Schedule, satisfactory in form and substance to the ENGINEER, has been received, review and accepted. Further, CONTRACTOR may be subject to receipt of a Stop Work notice and potential default of contract, pursuant to NRS Chapter 338.

108.03.03 MONTHLY PROGRESS SCHEDULE

- A. For all projects the CONTRACTOR shall submit a monthly progress schedule with each pay estimate.
- B. Monthly progress schedules shall be submitted and accepted monthly. Should the CONTRACTOR fail to submit two consecutive acceptable monthly progress schedules or three over the course of the project, CONTRACTOR will be issued a 10-day cure notice and may be subject to receipt of a Stop Work notice and potential default of contract, pursuant to NRS Chapter 338. Ten percent (10%) of the monthly progress payment will be withheld until an acceptable monthly progress schedule is submitted.
- C. The monthly progress schedule shall conform to all the requirements indicated under Subsection 108.03.02 "Baseline Project Schedule" and shall state the percentage of revenue actually earned as of the report date. The monthly progress schedule shall also be accompanied by a narrative description of job progress, problem areas and current and anticipated delaying factors and their expected effect and any corrective actions proposed or taken. The narrative description shall also clearly identify any departures from earlier Baseline Project Schedules, including but not limited to, changes in logical sequence or logical ties, constraints, changes in activity duration and changes, additions or deletions in event numbers, activity numbers and activity descriptions. The reasons for each departure shall be included in the narrative description.
- D. Monthly Schedule Submittal shall include as a minimum the following components;
 - a. Work Completed this Period

- b. All Activities Progress Schedule
 - c. Critical Path Filter
 - d. Three Week Look Ahead
 - e. Total Float Report (organized by total float)
 - f. Resource Reports (as required)
 - g. The Monthly Project Status Schedule narrative shall at a minimum explain schedule logic changes, added activities, identify risk or delay areas, identify critical path and general progress of work
 - h. Single write CD containing all of the above diagrams in PDF form and the complete native CPM schedule program file XML (generated by Microsoft Project or Primavera P6) for electronic review by ENGINEER.
- E. The CONTRACTOR shall allow fourteen (14) calendar days for the Owner's review and acceptance or rejection of any Monthly Progress Schedules or Project Recovery Schedules. The CONTRACTOR shall participate in a review and evaluation of the schedules with the ENGINEER, as requested. Requested revisions to the schedules shall be provided to the Owner within seven (7) calendar days.

108.03.04 THREE WEEK LOOK AHEAD SCHEDULE – FOR ALL PROJECTS

- A. Concurrent with the weekly progress meetings, the CONTRACTOR shall submit a three week look ahead schedule (two weeks forward and one behind) to the Construction Manager and/or ENGINEER. This schedule shall be generated from the master schedule. It shall indicate the status on scheduled activities within the three week window, including:
- 1. Percent complete
 - 2. Actual start/finish dates
 - 3. Planned start dates
 - 4. Continuation of work
 - 5. Start and Finish Variance Columns (Targeted to the previous update)
- B. These status reports shall serve as the basis for discussion at construction progress meetings and will be used to evaluate the status of the work in progress on a continuing basis.

108.03.05 PROJECT RECOVERY SCHEDULE

- A. The CONTRACTOR shall submit a Project Recovery Schedule, at the discretion of the ENGINEER, when the most current Progress Schedule Update reflects a calculated schedule status of negative fifteen (15) calendar days (or five percent (5%) of the remaining duration of time to complete the Project, whichever is less) later than currently contractually allowed.
- B. The Project recovery Schedule shall utilize as its basis, the most current Progress schedule update data with reasonable modifications to remaining work sequences, means or methods that will allow the project to complete, as required, by the current contractual completion date.
- C. The conditions under which a Project Recovery Schedule will be required include the following:
- 1. When delays in submittals or deliveries make re-planning or rescheduling of the work necessary.

2. When the schedule does not represent actual prosecution and progress of the work.
3. When any change to the sequence of activities, the completion date for major portions of the work, or changes occur which affect the critical path.
4. When contract modification necessitates schedule revision.

108.04 LIMITATIONS OF OPERATIONS

ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:

- D. The CONTRACTOR shall conduct the work in such a manner and in such a sequence as will ensure the least interference with traffic and as approved by the ENGINEER.

108.05 CHARACTER OF WORKMEN; METHODS AND EQUIPMENT

ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:

- H. OSHA Standards and Interpretations, CFR 29 Part 1926 Subpart P, defines “competent person”, one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate those hazards and conditions.

108.08 DETERMINATIONS AND EXTENSION OF CONTRACT TIME

DELETE PARAGRAPH “A” OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:

- A. The contract time for completion will be fixed by the Contracting Agency and will be stated in the Owner–CONTRACTOR Agreement, either as a calendar date or based on a number of working days or on a specified number of calendar days.

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- E. Completion of all Work within Contract Time Limits. When change orders are indicated, possible delays can be experienced, or the CONTRACTOR proposes to revise the Baseline Project Schedule with impact to project milestones and/or substantial completion, the CONTRACTOR shall submit to the Owner a written Time Impact Analysis (TIA) illustrating the influence of each modification, delay or CONTRACTOR request on the contract time. The preparation costs for the TIA is considered part of the potential added CONTRACTOR's Overhead pricing, if a change order impacted the project milestones.

Each TIA shall include a fragmentary network (network analysis) demonstrating how the CONTRACTOR proposes to incorporate the modification, delay or CONTRACTOR request into an accepted progress schedule with a status date immediately before or just prior to the delaying event. The TIA shall demonstrate the time impact based on the date the modification is given to the CONTRACTOR or the date the delay occurred; the status of construction at that point in time; and the event time computation of all affected activities. The event times used in the TIA shall be those included in the latest schedule update or as adjusted by mutual agreement. The possible time impact demonstrated by the TIA will serve as justification for an excusable time extension, but not necessary a compensable one. In order for a time

extension to be both excusable and compensable, the CONTRACTOR must account for the effects of other concurrent delays that were on-going at the time, but had a differing, and less impact of the project milestones.

- F. A contract time change shall only be authorized by executed Change Order, and when a TIA justifies and substantiates a time impact to milestone or substantial completion dates extending them beyond that required by the Contract. The approved revision shall then be incorporated into the next monthly progress schedule submission.
- G. No time impact costs, delays, or damages shall be considered by the Owner if during the period that the CONTRACTOR's actual performance of work is better than that planned and the effect of the better than planned work is that the contract schedule reflects an earlier than required contractual date.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:

108.70 CONTRACT CLOSE-OUT PROCEDURE

- A. When the CONTRACTOR considers that all work under the contract is substantially complete, the CONTRACTOR shall inform the ENGINEER in writing.
- B. Upon receipt of notification from the CONTRACTOR that all work has been substantially complete, the ENGINEER shall:
 - 1. Inspect the work to determine if it is substantially complete and inform the CONTRACTOR in writing of this determination.
 - 2. Notify, in writing, all affected utilities and other governmental agencies and request their acceptance or punch list comments within fourteen (14) calendar days of receipt of the request or as an alternate their participation in the project walk-thru.
 - 3. Schedule an inspection with the CONTRACTOR's representative and any other affected agency. This inspection shall be for the purpose of developing a punch list of items requiring correction, repair or completion. The punch list shall include comments made by the ENGINEER to date on the Record Drawings submitted by the CONTRACTOR.
 - 4. Compile the punch list from the comments provided at the inspection and supply type written copy to the CONTRACTOR. Upon distribution of the punch list items to the CONTRACTOR, the punch list time allotment shall commence.
- C. At the time of the CONTRACTOR's notice of presumptive completion of the work, which shall include all valve and manhole adjustments, complete signal systems and streetlight assemblies which are operational with permanent power, all permanent signage, striping and other pavement markings and all other work, excepting punch list items and clean up, the CONTRACTOR will receive a Notice of Substantial Completion from the ENGINEER. On the date of the Notice of Substantial Completion, the time specified in the contract for completion of the work will terminate. Thereafter, the CONTRACTOR shall complete all work on the punch list and required clean up **within thirty (30) calendar days** or other time as agreed to by the CONTRACTOR and the ENGINEER. Granting of additional time shall not be considered a compensable time extension.
- D. Scheduled completion of the punch list shall not exceed thirty (30) calendar days from date of the punch list letter or as otherwise agreed to by the CONTRACTOR and ENGINEER.

- E. When all punch list items are completed and as-built drawings are submitted, the CONTRACTOR shall then notify, in writing, the Owner/ENGINEER who will verify their completion and CONTRACTOR shall submit the Final Record Drawings (Reference section GC 5.06; and Section 105 of the Special Provisions)
- F. Should the CONTRACTOR fail to complete the punch list and required clean up within the allocated time or within such extra time as allowed by the ENGINEER, there shall be deducted from any money due the CONTRACTOR the sum of **\$3500** per each calendar day exceeding the allotted time. This sum shall be considered and treated, not as a penalty, but as damage due the Contracting Agency from the CONTRACTOR by reason of added administration of the contract, including cost of engineering, inspection, supervision and other items which have caused an expenditure of funds resulting from the CONTRACTOR's failure to complete the work on the punch list and required cleanup.

108.71 WARRANTY INSPECTION

- A. The CONTRACTOR shall be responsible for scheduling and conducting a warranty inspection with the Owner and its representatives approximately one (1) month prior to the expiration of the warranty period. This shall also include a meeting prior to the warranty inspection.
- B. All warranty corrections identified during the warranty inspection shall be commenced prior to the Guarantee Bond expiration date. The CONTRACTOR shall be required to comply with all Federal, State and local laws, regulations and ordinances regarding safety and environmental issues as it applies to the warranty inspection. The warranty inspection shall include, but not limited to, the following: traffic control plan submission; approval and set up for the inspection; confined space entry; support staff as needed; provide access to the inspection site and all equipment, materials, and manpower required to conduct the warranty inspection.
- C. The cost of this inspection shall be considered incidental to the bid items in the contract. The CONTRACTOR's failure to perform the inspection shall not constitute waiver of warranty, and may necessitate the Owner to complete the warranty inspection and corrections, with costs incurred charged to the CONTRACTOR or against the Warranty Bond at the option of the Owner.

108.72 METHOD OF MEASUREMENT

- A. Submittals required by this section will not be measured for payment directly but shall be included as 10 percent of Bid Item No. 200.01 "Mobilization and Demobilization".

108.73 METHOD OF PAYMENT

- A. No direct payment will be made for CONTRACTOR costs relating to preparation and submission of schedules and reports and revisions thereto, the cost being considered as included in the Bid Item No. 200.01 "Mobilization and Demobilization".
- B. The CONTRACTOR's cost for Section 108 shall be included in Bid Item No. 200.01 "Mobilization and Demobilization", which shall be full compensation for all materials, equipment and labor required including, but not limited to, Preliminary Baseline Project

Schedule; review meetings; revisions as directed by the ENGINEER; Schedule Reports; Monthly Progress Schedules; Three Week Look Ahead; any required Time Impact Analysis; Remedial Project Schedules; including any and all other incidentals necessary to complete and comply with the work as described herein.

END OF SECTION 108

SECTION 109 – MEASUREMENT AND PAYMENT

109.06 PARTIAL PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

- A. Invoices may not be submitted for payment until the Project Baseline Schedule has been accepted and approved by the Engineer.
- B. Invoices may not be submitted for payment until the Interim Survey Progress Report has been submitted pursuant to Section 622.

109.07 ACCEPTANCE AND FINAL PAYMENT

DELETE PARAGRAPH B IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

- B. Final acceptance of the work by the Contracting Agency shall be withheld until the Contractor furnishes all certificates, guaranties, releases, certified payroll records, affidavits, approval letter of NPDES permit termination (NOT) from NDEP, etc., required by these specifications or the Special Provisions.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:

109.70 CONTRACTOR EVALUATION NOTIFICATION

- A. The City of Las Vegas Engineering Department has instituted a post construction process of Contractor Evaluation. This performance evaluation will encompass all aspects of project performance and responsiveness to all job related issues. These can and will include: adherence to schedule; expertise shown in field and management personnel; quality of the finished product; response to changes and project closeout. Additional items will include: compliance to Contract Documents; compliance with labor laws and Equal Opportunity Contracting Policy (EOCP); and overall cooperation of the Contractor and sub-contractors. This evaluation will be done with the input from all relevant City of Las Vegas Departments up to and including any outside consultants.
- B. Above average performance could result in a bonus payment to the Contractor of up to one-half of one percent (0.5%) of the final contract amount (not to exceed \$20,000.00).
- C. Substandard performance could result in possible temporary bidding suspension, lasting a maximum of twelve months, on future City of Las Vegas related projects beginning in the next annual quarter.
- D. Results will be sent via registered mail to the company Principals as recorded by the Nevada State Contractor's Board.

109.71 COMPENSATION FOR OWNER INITIATED TIME EXTENSIONS

- A. Any claim by the Contractor for additional compensation for time extensions to the Project Schedule caused by the Owner shall be subject to the requirements of this Section. The

parties agree that for the Owner initiated time extensions which the Owner agrees to pay, or is found liable for payment, shall be based on the unit price set forth herein. The unit price for additional compensation is composed of the allowance established by the Owner based upon the Contracting Agency's historical experience with the cost of Owner initiated time extensions plus the additional amount bid by the Contractor per day for the time extension. The unit price multiplied by the number of days that the Owner initiated time extension impacts the Project Schedule shall be the full compensation due the Contractor for all time extension related costs, both direct and indirect, connected to the Project, including, but not limited to, home and field office overhead, supervision costs, and opportunity costs, except traffic control costs which will be paid on a per day basis in accordance with Sections 624 and 625. The Traffic Control per day costs shall be calculated by dividing the lump sum amount by the original contract duration. Equipment standby costs shall be compensated at 50% of the hourly rate to be paid for each piece of idle equipment, which shall be calculated from the weekly rate divided by 40 with a maximum of 8 hours in any 24 hour period, as determined in the *Rental Rate Blue Book for Construction Equipment*, Volumes 1-3. Standby equipment rental rates will not include the estimated operating cost due to inactivity. Owner initiated time extensions shall mean the time extensions authorized by Time Impact Analysis (TIA), as set forth in Section 108.08 of the Standard Specifications and these Special Provisions.

- B. If the Owner initiated time extension for which the Contractor is seeking additional compensation is concurrent with (i) an excusable time extension as defined in Section 108.08, (ii) with a time extension which is beyond the control of the Owner, or (iii) with a time extension caused by the Contractor, the Contractor shall not be entitled to any additional compensation for that portion of time during which the time extensions are occurring concurrently. In no event shall the Contractor be entitled to any additional compensation on the basis that an early completion date in the Project Schedule was anticipated or planned for by the Contractor. If the Contractor experiences multiple concurrent Owner initiated time extensions which are not concurrent with any other time extensions, compensation will be paid for one Owner initiated time extension only based upon the bid price day per calendar day set forth in this Section.
- C. Any time extension costs incurred while performing additional work on a force account basis shall be considered as compensated for within the markups allowed in Subsection 109.03 "EXTRA AND FORCE ACCOUNT WORK." Owner initiated time extensions will not be added to extra work or force account markups.
- D. This is an allowance item that will be paid for the actual quantity used, and is not subject to price re-negotiation based on quantity variance from the bid quantity of days. The claim for additional compensation submitted by the Contractor shall be evaluated by the City and, if deemed valid, paid pursuant to this Section. Subsection 104.02 of the Standard Specifications does not apply to this item.
- E. In the case that the owner initiates a "stop work" on the project, the contract days will not be affected, per Subsection 108.06 of the Standard Specifications, and bid amounts for Owner Initiated Time Extension will not be paid. The Contractor will, however, be allowed compensation for actual costs associated with demobilization, remobilization, site security, traffic control, temporary pavement, including asphalt and concrete patches, and compliance with Section 637 "Pollution Control".

- F. The Owner initiated Time extension Allowance shall be \$500.00 per day. The Owner initiated Time extension Amount in Addition to Allowance will be paid for at the contract unit price per day and shall be in an amount as bid by the Contractor.
- G. Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
109.01	OWNER INITIATED TIME EXTENSION ALLOWANCE	DAY
109.02	OWNER INITIATED TIME EXTENSION AMOUNT IN ADDITION TO ALLOWANCE	DAY

END OF SECTION 109

SECTION 110 – WAGES, HOURS AND CONDITIONS OF EMPLOYMENT**ADD THE FOLLOWING SUBSECTION TO THIS SECTION:****110.70 NORMAL WORKING HOURS**

- A. The Contractor is advised that the normal working hours for City of Las Vegas employees will be **7:00 a.m. to 4:00 p.m.**, Monday through Friday except the following holidays: New Year's Day; Martin Luther King, Jr. Day; President's Day; Memorial Day; Independence Day; Labor Day; Nevada Day; Veteran's Day; Thanksgiving Day; Day After Thanksgiving; and Christmas Day.
- B. The Contractor shall pay for the overtime of all employees of the City and its designated representatives, who are requested by the Contractor to perform inspection or testing, or who as a result of the Contractor's operation, are required to perform inspections or testing beyond the normal hours of the established working day listed above. **Overtime rate for City employees and its designated representatives is \$110.00 per hour, with a three hour minimum. The three hour minimum shall not apply if it is a continuation of shift.**
- C. The Contractor shall not be required to pay for the overtime of employees of the City or its designated representatives who, as a result of a request by the Owner, are required to perform inspections or testing beyond the normal hours of the contract.
- D. The Contractor shall not be required to pay for the wages of the employees of the City or its designated representatives who are required to work beyond the normal working hours due to work phases that require night work under NDOT encroachment permits; however, work will be restricted to a normal eight hour shift.
- E. The City of Las Vegas construction project representative may not approve any portion of the work completed during his absence. The City will retain the right to insist on removal of work completed during inspector's absence.
- F. The Contractor will be required to pay for inspection of facilities not under the jurisdiction of the City of Las Vegas, performed outside of regular working hours. Payment will be at the current rates charged by the responding agency.

END OF SECTION 110

ADD THE FOLLOWING SECTION TO DIVISION I – GENERAL REQUIREMENTS**SECTION 170 – CONSTRUCTION CONFLICTS AND CONTINGENCIES****DESCRIPTION****170.01.01 GENERAL**

- A. Construction conflicts and contingency costs are those costs incurred due to alterations, deviations or additions to the plans and specifications, including increases in the quantity of any item or portion of work as deemed necessary by the Engineer for the proper completion and construction of the work as a whole.

MATERIALS**170.02.01 GENERAL**

- A. All materials shall conform to the requirements set forth in the USS, USD, Special Provisions, or as agreed to in writing by the Contractor and the Engineer.

CONSTRUCTION**170.03.01 GENERAL**

- A. The work shall include, but is not limited to, supplying all labor, material, equipment, and transportation necessary to repair, rebuild, remove, relocate, replace, construct or reconstruct any surface or subsurface improvements which are not shown on the plans and or otherwise addressed in the contract documents. Such work shall be performed in accordance with the USS, USD, Special Provisions and/or as directed by the Engineer.

METHOD OF MEASUREMENT**170.04.01 MEASUREMENT**

- A. Measurement for construction conflicts and contingencies will be in accordance with the applicable bid items and at the contract unit bid prices.

BASIS OF PAYMENT**170.05.01 PAYMENT**

- A. Full compensation for construction conflicts and contingencies will be paid under the appropriate contract unit price bid for the type of work completed. When the additional work is not covered by any unit bid price, payment will be as determined in Section 109.03 "Extra and Force Account Work" or by negotiated cost, agreed to in writing by the Contractor and the Engineer. Such payment shall be full compensation for all the labor, materials, and incidentals necessary to complete the work.

END OF SECTION 170

ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS**SECTION 200 – MOBILIZATION AND DEMOBILIZATION****DESCRIPTION****200.01.01 GENERAL**

- A. The item of mobilization and demobilization shall consist of preparatory work and clean up operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site, for the establishment of all offices, buildings and other facilities necessary for work on the project, as well as all other work and operations which must be performed, or costs incurred, not otherwise paid for prior to beginning work and final completion of work on the various items on the project site.
- B. The lump sum bid amount for mobilization and demobilization shall be determined by the Owner and shown on the bid schedule.

200.01.02 PROJECT SIGN

- A. Two project signs shall be provided by the Contractor for placement near the limits of the project. Sign details are included in Appendix A of these Special Provisions. The Contractor shall erect said signs at locations as approved by the Engineer. The signs shall be erected at such time as construction activity is visible to the public.
- B. The Contractor shall properly maintain said signs throughout the construction until final completion of the contract, or as directed by the Engineer. Upon completion of the project and at the direction of the Engineer, the Contractor shall remove and dispose of the project signs.
- C. The Contractor's cost for furnishing, installing, maintaining and removing these signs shall be included in the lump sum bid item for Mobilization and Demobilization and will not be measured or paid for separately.

200.01.03 DIGITAL IMAGE RECORDING

- A. Prior to initiating construction operations and prior to final acceptance, Contractor shall perform digital image recording of the entire project, its full length and width including any adjacent properties/structures that may be impacted by the construction. The Contractor shall also include or add as necessary, any areas to be disturbed for material storage, employee parking or equipment storage.
- B. The images provided in this section:
 - 1. Are intended for use as indisputable evidence in ascertaining the extent of any damage which may occur as a result of the Contractor's operations.
 - 2. Are for the protection of the Contractor and the Contracting Agency.
 - 3. Will be a means of determining whether and to what extent damage resulting from the Contractor's operations occurred during the Contract work.

- C. The video documentation shall be completed in digital format; it shall be a minimum resolution of 1920x1080 pixels, and at 60fps (frames per second). The actual date of recording shall be date-stamped within each frame of the video. Approval of the video must be obtained from the Engineer prior to the commencement of any clearing and grubbing operations.
- D. Video documentation may be supplemented by still images, date stamped with image location information, to provide additional detail when necessary.
- E. A DVD copy of the digital image recording shall be submitted to the Engineer, in the format compatible with standard DVD players.

BASIS OF PAYMENT

200.05.01 PAYMENT

- A. Partial payments for MOBILIZATION AND DEMOBILIZATION shall be made in accordance with the following schedule:
 - 1. The Contractor shall be entitled to twenty-five percent (25%) of the lump sum amount for mobilization and demobilization on their first pay request after the Notice to Proceed, provided the initial digital image recording has been submitted and accepted.
 - 2. When five percent (5%) of the original contract amount is earned from other bid items, up to fifty percent (50%) of the total lump sum amount for mobilization and demobilization will be paid.
 - 3. When twenty-five percent (25%) of the original contract amount is earned from other bid items, up to seventy-five percent (75%) of the total lump sum amount for mobilization and demobilization will be paid.
 - 4. With the submittal of the monthly schedule update, ten percent (10%) of the lump sum amount for mobilization and demobilization, divided by the number of calendar months for the project duration, will be paid.
 - 5. Upon completion of all work on the project any unpaid amount of the original contract lump sum amount for mobilization and demobilization, minus any deducted amounts for non-submittal of the monthly schedule update (see item #4 above), will be paid, provided the final digital image recording has been submitted and accepted.
- B. All payments will be made in accordance with Subsection 109.02, "Scope of Payment".
- C. Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
200.01	MOBILIZATION AND DEMOBILIZATION	LS

END SECTION 200

SECTION 201 – CLEARING AND GRUBBING**METHOD OF MEASUREMENT****201.04.01 MEASUREMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

The quantity of CLEARING AND GRUBBING will be measured per lump sum.

BASIS OF PAYMENT**201.05.01 PAYMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

The accepted quantity of CLEARING AND GRUBBING will be paid for at the contract unit price of lump sum and shall conform to the requirements of Subsection 201.05.01 of the Uniform Standard Specifications and shall include all materials, equipment, labor and disposal required to perform this work and all work as shown on the Plans, as specified herein and as directed by the Engineer.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
201.01	CLEARING AND GRUBBING	LS

END OF SECTION 201

SECTION 202 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS**CONSTRUCTION****202.03.02 REMOVAL*****DELETE PARAGRAPH H IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- H. In removing catch basins, and inlets, any live sewers connected to item shall be rebuilt and properly reconnected and a satisfactory bypass service shall be maintained during such construction operations. When abandoning catch basins, and inlets, they shall be thoroughly cleaned and existing pipe connections shall be plugged with concrete of the class and grade specified for structures. The portions of the structures shall then be removed to the required elevations and any necessary backfill shall be placed and compacted to specifications. All manholes shall be abandoned/removed in accordance with DCSWCS Section 3.18.2 a & c, whichever applies.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:**202.03.70 REMOVAL OF EXISTING TRAFFIC STRIPING AND MARKERS**

- A. All existing paint striping and markings to be removed from existing pavement to remain, shall be removed by sandblasting. A slurry seal emulsion shall be applied to the sand blasted areas to "blackout" the removed striping.

202.03.71 GRINDING OF EXISTING BITUMINOUS SURFACE (ROTOMILLING)

- A. In removing bituminous pavement by the rotomilling process, the work shall be accomplished with a machine designed to remove, profile and texture the remaining surface of the pavement in one (1) operation. The milling machine shall consist of a rotating powered mandrel drum studded with conical tungsten carbide tipped bits and shall produce a reasonable smooth textured surface satisfactory to the Engineer and shall be equipped with an effective means for controlling dust and other particulate matter created by the milling action.
- B. The machine shall be capable of accurately establishing profile grades (within plus or minus one quarter (1/4") inch) by referencing from the existing pavement or from an independent grade control. It shall have a positive means for controlling cross slope elevations. At the option of the Engineer, and if the pavement warrants it, the use of the averaging ski may be discontinued.

METHOD OF MEASUREMENT**202.04.01 MEASUREMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

The quantity of REMOVAL OF CONCRETE TRAPEZOIDAL CHANNEL AND TRANSITION will be measured by square yard.

The quantity of REMOVAL OF RIPRAP will be measured by square yard.

The quantity of REMOVAL OF GRAVEL MULCH will be measured by square yard.

The quantity of REMOVAL OF STORM DRAIN PIPE (LESS THAN 36 INCHES IN DIAMETER) will be measured by linear foot.

The quantity of REMOVAL OF CMP END SECTION will be measured by each.

The quantity of REMOVAL AND SALVAGE OF CHAIN-LINK FENCE will be measured by linear foot.

BASIS OF PAYMENT

202.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The accepted quantity of REMOVAL OF CONCRETE TRAPEZOIDAL CHANNEL AND TRANSITION will be paid for at the Contract unit price bid per square yard, which shall be full compensation for providing all labor, equipment, materials, and tools and for removal and disposal of the channel, transition, and associated concrete, reinforcing steel, cut-off walls, headwalls, metal safety grate, wingwalls, storm drain lateral headwalls, appurtenances, and incidental items in accordance with applicable provisions of Section 202 of the Standard Specifications, as specified, as shown on Drawings, and as required by Engineer. The price also includes the protection and repair or replacement, if damaged, of improvements to remain in place and saw cutting where indicated on the Drawings or at locations determined by Engineer.

The accepted quantity of REMOVAL OF RIPRAP will be paid for at the Contract unit price bid per square yard, which shall be full compensation for providing all labor, equipment, materials, and tools and for the removal and disposal of the riprap, grouted riprap, rock, caliche, cementitious materials, filter fabric, grout, PVC drain pipes, and all incidental and appurtenant obstructions in accordance with applicable provisions of Section 202 of the Standard Specifications. Existing improvements to remain but damaged or removed incidental to this bid item shall be replaced to original line and grade and will not be measured or paid for separately but will be considered as subsidiary to this item.

The accepted quantity of REMOVAL OF GRAVEL MULCH will be paid for at the Contract unit price bid per square yard, which shall be full compensation for providing all labor, equipment, materials, and tools and for the removal and disposal of the gravel mulch; for removing and disposing of all incidental and appurtenant obstructions; and for all work as shown on the Drawings, as specified, and as directed by the Engineer. Existing improvements to remain but damaged or removed incidental to this bid item shall be replaced to original line and grade and will not be measured or paid for separately but will be considered as subsidiary to this item.

The accepted quantity of REMOVAL OF STORM DRAIN PIPE (LESS THAN 36 INCHES IN DIAMETER) will be paid for at the Contract unit price bid per linear foot, which shall be full compensation for providing all labor, equipment, materials, and tools and for removal and disposal of existing pipe and concrete encasement including excavation and backfill in accordance with applicable provisions of Section 202 of the Standard Specifications, as specified, as shown on the Drawings, and as required by Engineer. Existing sections of pipe to remain in place, sidewalk, and curb and gutter damaged or removed incidental to this bid item shall be replaced to original line and grade and will not be measured or paid for separately but will be considered as subsidiary to this item.

The accepted quantity of REMOVAL OF CMP END SECTION will be paid for at the Contract unit price bid per each, which shall be full compensation for providing all labor, equipment, materials, and tools and for removal and disposal of existing end sections in accordance with applicable provisions of Section 202 of the Standard Specifications, properly removed and site of removal restored, as specified, as shown on the Drawings, and as required by the Engineer.

The accepted quantity of REMOVAL AND SALVAGE OF CHAIN-LINK FENCE will be paid for at the Contract unit price bid per linear foot, which shall be full compensation for providing all labor, equipment, materials, and tools and for removal and salvage of existing fence, properly removed and delivered to property owner's salvage location, and for removal and disposal of associated concrete, appurtenances, and incidental items, as specified, as shown on the Drawings, and as required by the Engineer. Price also includes removal and disposal of footings and posts as well as providing materials, labor, and equipment necessary to restore the fencing left in place to match in-kind conditions of the fencing prior to the removals. At Contractor's option and if approved by CITY, salvaged chain-link fence and hardware may be reused on the project where new fencing is to be installed as specified in Section 616 and as shown on the Drawings. Compensation for installing the salvaged chain-link fence will be paid for at the Contract unit price bid for installation of chain-link fence in accordance with Section 616. Fence posts shall not be reused. The salvaged fencing and hardware shall be approved by the Engineer, prior to installation, and if not approved shall be disposed of at no additional cost to the CITY.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
202.01	REMOVAL OF CONCRETE TRAPEZOIDAL CHANNEL AND TRANSITION	SY
202.02	REMOVAL OF RIPRAP	SY
202.03	REMOVAL OF GRAVEL MULCH	SY
202.04	REMOVAL OF STORM DRAIN PIPE (LESS THAN 36 INCHES IN DIAMETER)	LF
202.05	REMOVAL OF CMP END SECTION	EA
202.06	REMOVAL OF AND SALVAGE CHAIN-LINK FENCE	LF

END OF SECTION 202

SECTION 203 – EXCAVATION AND EMBANKMENT**DESCRIPTION****203.01.01 GENERAL*****ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:***

- B. The compacted subgrade shall be maintained at optimum moisture content until placement of an aggregate base course.
- C. It is expected that all excavation will require removal of various types of material. The cost for the excavation of all material encountered including, but not limited to, cemented soils and rock shall be considered as included in the unit prices bid for pay items requiring excavation and no additional compensation will be allowed.

CONSTRUCTION**203.03.01 ROADWAY*****ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:***

- E. It is expected that roadway, trench, channel, structure, drainage, and impoundment excavation will require removal of various types of material, including cemented soils and rock. The cost for the excavation of cemented soils and rock encountered shall be considered as included in the unit prices bid for pay items requiring excavation and no additional compensation will be allowed.

203.03.04 BLASTING***DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

- A. Blasting shall not be permitted.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:**203.03.70 OVER-EXCAVATION AND BACKFILL**

- A. Where over-excavation below the depths as shown on the plans or required by the specifications is necessary to remove unsuitable material, the Engineer may require the Contractor to remove the unsuitable materials and backfill to the finished graded section with Type I aggregate base, conforming to 3-inch size per subsection 704.03.03, compacted to a minimum of 90% of ASTM D1557 Modified Proctor and in accordance with the methods in the USS.
- B. Unless otherwise provided in the Special Provisions, over-excavation and backfill below the limits shown on the plans will be paid for as "Extra Work".

203.03.71 HAZARDOUS MATERIAL

- A. Hazardous material shall be defined as material or water contaminated with volatile organic compounds, inorganic non-metals, petroleum hydrocarbons or other contaminants as specified by the Nevada Division of Environmental Protection Agency (NDEP).
- B. The Contractor shall retain a Certified Environmental Manager (CEM) for making periodic inspection of the project for potential hazardous materials. In addition, the CEM will be available for inspection of the project as directed by the Engineer and/or NDEP should material be uncovered that may be potential hazardous material.
- C. When potential hazardous material is encountered with the project, the Contractor shall:
 - 1. Immediately contact the CEM, Engineer and City of Las Vegas Environmental Officer.
 - 2. Have the CEM perform the inspection of the potential hazardous material and if required perform the inspection for the removal and disposal of the hazardous material.
 - 3. Retain a certified firm to perform the required tests for hazardous materials and/or contaminants.
 - 4. If required, perform the removal and disposal of the hazardous materials as directed by the CEM, Engineer and/or City of Las Vegas Environmental Officer in coordination with NDEP.
 - 5. Submit a copy of the Waste Manifest(s) from contaminated or hazardous materials disposal.
- D. If encountered, investigation and removal/disposal of hazardous material will be paid for as "extra work", as approved by the Engineer.

METHOD OF MEASUREMENT**203.04.01 MEASUREMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

No direct measurement shall be made for excavation and embankment as such.

Over-excavation and backfill volumes will be measured by the average end area method of the over-excavated material in its original state. If for any reason it is impossible or impractical to measure quantities by average end areas, the Engineer will compute the quantities by a method which, in the Engineer's opinion, is best suited to obtain an accurate determination. This quantity will include both the cost for removing the unsuitable material and the cost to replace it with suitable backfill.

BASIS OF PAYMENT**203.05.01 PAYMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

Unless otherwise provided in the Special Provisions, no payment will be made for excavation and embankment as such. The cost thereof shall be considered as included in the prices bid for construction or installation of the items specified in Section 502 for which excavation and embankment are required.

The CEM retained by the Contractor will not be paid for directly, but will be included in the unit prices bid for pay items requiring excavation and no additional payment will be allowed.

Unless otherwise provided in the Special Provisions, dewatering will not be paid for directly and will be included in the unit prices bid for pay items requiring excavation and no additional payment will be allowed.

END OF SECTION 203

SECTION 206 – STRUCTURE EXCAVATION**DESCRIPTION****206.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- C. Where structure over-excavation below the depths as shown on the Plans or required by the Specifications is necessary to remove unsuitable material, the Engineer may require the Contractor to remove the unsuitable materials and backfill to the required grade with material conforming to Subsection 704.03.02, compacted to a minimum of 90 percent of ASTM D1557 Modified Proctor and in accordance with the methods in the USS.
- D. Unless otherwise provided in the Special Provisions, structure over-excavation and backfill below the limits shown on the Plans will be paid for as "Extra Work."
- E. If groundwater is encountered within the excavated area, dewatering shall be performed as specified in Section 270 "Dewatering."

METHOD OF MEASUREMENT***DELETE SUBSECTION 206.04.01, BLANK, AND REPLACE WITH THE FOLLOWING:*****206.04.01 MEASUREMENT**

No direct measurement shall be made for Structure Excavation and Backfill as such.

METHOD OF PAYMENT**206.05.01 PAYMENT*****REPLACE THE PARAGRAPH UNDER THIS SUBSECTION WITH THE FOLLOWING:***

Unless otherwise provided in the Special Provisions, no payment will be made for Structure Excavation and Backfill as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which Structure Excavation and Backfill is required.

END OF SECTION 206

SECTION 207 – STRUCTURE BACKFILL**MATERIALS****207.02.01 SELECTED BACKFILL*****REVISE PARAGRAPH A TO READ AS FOLLOWS:***

- A. Selected backfill shall be of a quality acceptable to the Engineer and shall consist of suitable material from the excavation complying to Table 1 and Table 2. It shall be free from sod, frozen earth, organic materials, rubbish, or debris. If the material does not comply with Table 1, it may be used only if approved by the Engineer.

METHOD OF MEASUREMENT***DELETE SUBSECTION 207.04.01, BLANK, AND REPLACE WITH THE FOLLOWING:*****207.04.01 MEASUREMENT**

No direct measurement shall be made for Structure Excavation and Backfill as such.

METHOD OF PAYMENT**207.05.01 PAYMENT*****REPLACE THE PARAGRAPH UNDER THIS SUBSECTION WITH THE FOLLOWING:***

Unless otherwise provided in the Special Provisions, no payment will be made for Structure Excavation and Backfill as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which Structure Excavation and Backfill is required.

END OF SECTION 207

SECTION 208 – TRENCH EXCAVATION AND BACKFILL**DESCRIPTION****208.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- F. Frequency of quality control field inspection and testing shall be in accordance with 203.05.02 Testing.
- G. Ponding and jetting will not be allowed on City of Las Vegas projects.

MATERIAL**208.02.08 CRUSHED ROCK*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- B. Unless otherwise shown in the plans, crushed rock will not be permitted as structural or trench backfill.

ADD THE FOLLOWING SUBSECTION TO THIS SECTION:**208.02.70 STRUCTURAL BACKFILL**

- A. Structural backfill shall consist of material conforming to subsection 207.02.02 “Granular Backfill” or subsection 207.02.01 “Selected Backfill”. Additionally, the backfill material shall be non-gypsiferous (solubility less than 4%), have an expansion potential less than 4%, shall be free of vegetation and debris and contain no rocks larger than four inches nominal diameter. Crushed rock will not be permitted as structural or trench backfill unless otherwise noted on the plans.

CONSTRUCTION**208.03.01 TRENCH EXCAVATION, GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- C. Trenching and shoring operations shall be conducted in accordance with 29 CFR (Code of Federal Regulations) Part 1926, Occupational Safety and Health Standards (OSHA) – Subpart P – Excavations (July 1, 1990).

208.03.03 MAXIMUM TRENCH WIDTH***DELETE PARAGRAPH “B” AND REPLACE WITH THE FOLLOWING:***

- B. Except when otherwise specified or ordered by the Engineer, the bottom of the trench shall be excavated uniformly to the grade or depth indicated on the drawings. The maximum

amount of open trench permitted in any one location shall be per Section 624 of these Special Provisions. Trench shall be considered open until backfilled to the top of subgrade. Trenches crossing streets shall be completely backfilled immediately after pipe, wire, or conduit installation.

208.03.12 PIPE BEDDING

ADD THE FOLLOWING TO THIS SUBSECTION:

- G. For precast reinforced concrete boxes, provide a minimum 2-inch sand leveling course (over native soil or 4 to 6-Inch Type II) as bedding.

208.03.21 CUTTING AND RESTORING STREET SURFACING

ADD THE FOLLOWING TO THIS SUBSECTION:

- Q. Pavement in the area of the trench excavation shall be sawcut.
- R. Cold mix patches will not be allowed.

METHOD OF MEASUREMENT

208.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

No direct measurement shall be made for trench excavation and backfill.

BASIS OF PAYMENT

208.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

Unless otherwise provided in the Special Provisions, no payment will be made for trench excavation and backfill as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items for which trench excavation and backfill is required.

END OF SECTION 208

ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS**SECTION 270 – DEWATERING****DESCRIPTION****270.01.01 GENERAL**

- A. This work shall consist of furnishing all materials, labor, equipment and supervision to design, install, operate, remove dewatering systems and to lower the water table sufficient to prevent ground water from entering excavations.
- B. The work shall also consist of, but is not necessarily limited to, the proper disposal of groundwater removed by a dewatering system **in accordance with local, state, and federal regulations**. Prior to discharging groundwater into the storm drain system, the Contractor shall be responsible for obtaining the groundwater discharge permit from the Nevada Division of Environmental Protection, comply with the conditions of the permit and pay all costs associated with the permit requirements such as permit fees, laboratory analysis and treatment of the discharge water, if required. The permit application can be downloaded at: ndep.nv.gov/BWPC. Sampling and laboratory analysis shall be completed by Nevada Certified Environmental Manager and Certified Laboratory.
- C. Dewatering shall conform to the requirements of Section 208 “Trench Excavation and Backfill” and Section 502 “Concrete Structures” unless otherwise specified herein.

MATERIALS**270.02.01 GENERAL**

- A. At or prior to the preconstruction conference, the Contractor shall submit the dewatering plan showing method of dewatering, piping locations, discharge points, sewer and storm drainage facilities utilized and estimated discharge quantities.

CONSTRUCTION**270.03.01 GENERAL**

- A. Dewatering for structures and pipelines shall commence when groundwater is first encountered and shall be continuous until such times as water can be allowed to rise in accordance with the following provisions. Dewatering shall be conducted such that no concrete footings or floors or pipelines are placed in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Water will not be allowed to rise in pipeline trenches or drained excavations until pipelines or facilities are backfilled or restrained to prevent flotation.
- B. The Contractor shall remove all dewatering equipment and materials at the completion of the work or as otherwise directed by the Engineer.

- C. The dewatering system shall be kept in operation until all work in the excavation is backfilled and properly compacted to a point three (3) feet above the existing water table elevation.
- D. The Contractor shall arrange for and provide all necessary utilities to operate the dewatering system.

270.03.02 POINT OF DISCHARGE

- A. The Contractor shall dispose of groundwater removed by the dewatering system into the storm drain system in accordance with local, state and federal regulations.

METHOD OF MEASUREMENT

270.04.01 MEASUREMENT

No direct measurement shall be made for Dewatering.

BASIS OF PAYMENT

270.05.01 PAYMENT

Unless otherwise provided in the Special Provisions, no payment will be made for Dewatering as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which Dewatering is required.

END OF SECTION 270

SECTION 302 – AGGREGATE BASE COURSES

DESCRIPTION

302.01.01 GENERAL

ADD THE FOLLOWING TO THIS SUBSECTION:

- B. Pursuant to NRS (SB236) the City of Las Vegas Department of Public Works provides for the use of recycled aggregate in public road construction projects. Substitution by the Contractor of recycled aggregate for new aggregate will follow the procedures in Sections 2.10 of the General Conditions and 105.03 of the Special Provisions and the following:
1. Recycled asphalt material will be considered only in the roadway pavement section.
 2. In order to encourage the use of recycled materials these substitutions will be considered to have demonstrable benefit to the City whether or not they result in a cost savings to the City or a reduction in Contract time.
 3. No substitutions will be considered unless submitted by the Contractor within 10 days of the Contract award date.
 4. Such substitutions will not be rejected by the City unless scientific evidence satisfactory to the City clearly indicates that the use of the recycled aggregate for construction compromises the soundness of the project.
 5. No additional Contract time or cost will be granted for these substitutions.

METHOD OF MEASUREMENT

302.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The quantity of TYPE II AGGREGATE BASE placed for the access road will be measured for payment by cubic yard, in place and complete.

Measurement does not include Type II aggregate used for channel, trench backfill for drainage structures, other underground facilities, and structures for which Type II is required or appurtenant.

BASIS OF PAYMENT

302.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The accepted quantity of Type II Aggregate Base used for access road will be paid for at the Contract unit price bid per cubic yard, which shall be full compensation for subgrade preparation, crushing, screening, mixing, hauling, placing, watering, compacting, and maintaining the access road as shown on the Drawings, as specified, and as directed by the Engineer.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
302.01	TYPE II AGGREGATE BASE	CY

END OF SECTION 302

SECTION 501 – PORTLAND CEMENT CONCRETE

DESCRIPTION

501.01.01 GENERAL

ADD THE FOLLOWING TO THIS SUBSECTION:

- C. All cement used on the work shall be standard brand Portland cement conforming to the "Specifications for Portland Cement" (ASTM C150), Type V, in accordance with requirements contained in Section 701 of the USS.

MATERIALS

501.02.03 ADMIXTURES

ADD THE FOLLOWING TO THIS SUBSECTION:

- Q. The use of calcium chloride shall not be permitted.

CONSTRUCTION

501.03.04 CLASSIFICATION AND PROPORTIONS

ADD THE FOLLOWING PARAGRAPH TO THIS SUBSECTION:

- F. Concrete shall be composed of cement, admixtures (when approved), aggregates, and water. These materials shall be as specified. The exact proportions in which these materials are to be used for different parts of the work shall be determined by the Contractor and submitted to the Engineer for review prior to use in the work. In general, the mix shall be so designed as to produce concrete capable of being deposited so as to obtain maximum density and minimum shrinkage and, where deposited in forms, to have maximum smoothness of surface. Mix designs where sand represents more than 41 percent of the total weight of fine and coarse aggregate shall not be permitted. The proportions shall be changed whenever necessary or desirable in the opinion of the Engineer. Concrete mixes shall be designed by a Registered Professional Engineer in the State of Nevada representing a qualified independent testing laboratory and approved in advance by the Engineer. Concrete mixing operations shall conform to ASTM C94. Water shall not be added to concrete after leaving the batch plant unless specifically authorized by the Engineer.

501.03.10 WEATHER LIMITATIONS

ADD THE FOLLOWING SUBPARAGRAPH TO "PARAGRAPH A, GENERAL" OF THIS SUBSECTION:

4. All exposed concrete surfaces shall be sprayed liberally with an evaporation retarder when the ambient air temperature is greater than 100 degrees F; or when the ambient air temperature is above 90 degrees F and the wind speed is above 20 mph; or as directed by the Engineer. Evaporation retarders shall be as listed in the Qualified

Products List established by the Nevada Department of Transportation. Spraying shall be per manufacturer's recommendation and shall occur immediately upon completion of the finish.

ADD THE FOLLOWING SUBPARAGRAPH TO "PARAGRAPH B, COLD WEATHER – GENERAL" OF THIS SUBSECTION:

7. Concrete shall not be placed on frozen ground, nor shall it be placed when atmospheric temperature is below 40 F and within 24 hours of the time that the concrete is to be placed, except with the written permission of the Engineer and only after such precautionary measures for the protection of the concrete have been taken as the Engineer may direct.

ADD THE FOLLOWING SUBPARAGRAPH TO "PARAGRAPH D, HOT WEATHER" OF THIS SUBSECTION:

9. When the temperature is 90 F or above, or is likely to rise above 90 F. within the 24-hour period after concrete placement; or when there is any combination of high air temperature, low relative humidity and wind velocity which would impair concrete strength or quality, follow the recommendations of ACI 305R and the following:
 - a. Keep concrete as cool as possible during placement and curing
 - b. Do not allow concrete temperature to exceed 90° F. at placement.
 - c. Prevent plastic shrinkage cracking due to rapid evaporation of moisture.
 - d. Dampen subgrade and forms with cool water immediately prior to placement of concrete.

Protect the concrete with temporary wet covering during any appreciable delay between placement and finishing.
 - e. Take appropriate precautions per ACI 305R when the actual or anticipated evaporation rate equals or exceeds 0.2 pounds per square foot per hour as determined from ACI 305R, Figure 2.1.4.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:

501.03.70 CORROSION PROTECTION REQUIREMENT

- A. Pipe, conduit, dowels and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there shall be a minimum of two inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement shall not be permitted.

501.03.71 PREPARATION OF SURFACES FOR CONCRETING

- A. Native material surfaces shall be thoroughly wetted by sprinkling, prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of

placing concrete thereon. The surface shall be free from standing water, mud and debris at the time of placing concrete.

- B. Concrete surfaces upon or against which concrete is to be placed, where the placement of the old concrete has been stopped or interrupted so that, in the opinion of the Engineer, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be leveled with a wooded float to provide a reasonably smooth surface. A surface consisting largely of coarse aggregate shall be avoided. The joint surfaces shall be cleaned of all laitance, loose or defective concrete, and foreign material.
- C. No concrete shall be placed until all form work, installation of parts to be embedded, and preparation of surfaces involved in the placing have been approved by the Engineer.

501.03.72 EXCLUSION OF WATER

- A. No concrete shall be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the work. No concrete shall be deposited under water without the explicit permission of the Engineer and then only in strict accordance with the Engineer's directions, nor shall the Contractor, without explicit permission from the Engineer, allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as to injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing groundwater, if required, shall be subject to the approval of the Engineer and shall be the responsibility of the Contractor. Said items shall be considered incidental to construction and no additional compensation shall be made.

501.03.73 TAMPING AND VIBRATING

- A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogenous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement.

501.03.74 CARE AND REPAIR OF CONCRETE

- B. The Contractor shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the Owner. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which becomes defective at any time prior to the final acceptance of the completed work, or which departs from the established line or grade, or which for any other reason does not conform to the specifications, shall be removed and replaced at the Contractor's expense.

END OF SECTION 501

SECTION 502 – CONCRETE STRUCTURES**DESCRIPTION****502.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- D. This work shall also include construction of concrete channels, headwalls, wingwalls, connection and transition structures, and cast-in-place or precast concrete box culverts. This shall include the construction of temporary head walls necessary to support the travel lanes and/or work adjacent to the excavation for the reinforced concrete box culvert and roadway.
- E. At the Contractor's option, cast-in-place concrete box culverts may be constructed in lieu of precast concrete box culverts.
- F. Precast reinforced concrete box culvert sections shall be monolithic and conform to ASTM C1577 (most current version), Precast reinforced concrete box culvert sections shall conform to the Contract Drawings and with the Nevada Department of Transportation (NDOT) Standard Drawings and Standard Specifications.
- G. The precast units scheduled for attachment to cast-in-place improvements shall be furnished with exposed No. 4 reinforcement steel on 12-inch spacings. The No. 4 reinforcement steel shall be cast a minimum of 18 inches into the pre-cast section and extended 18 inches into the cast-in-place improvements.

CONSTRUCTION**502.03.09 CONCRETE DEPOSITED UNDER WATER*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- G. It is anticipated that groundwater will be encountered on this project. In such case, the Contractor will dewater the excavated area and subbase for the concrete structures improvements in such a manner that the concrete will not be placed in any standing water.

ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:**502.03.70 TEMPORARY HEAD WALL**

- A. The Contractor may utilize the temporary head walls for support of the required travel lane(s) and/or work areas adjacent to open excavation. If the Contractor chooses to utilize temporary head walls, the Contractor shall provide the Engineer with design plans and calculations for such head walls and/or supports. The design plans shall be in detail, showing all information as required by the Engineer, and shall bear the seal of a Nevada Registered Engineer.

502.03.71 INSPECTION

- A. All RCB joints and lengths shall be 100 percent inspected. Inspection and Testing shall be performed by the Contractor during and after installation to ensure proper performance. Installation of bedding and backfill materials, as well as their placement and compaction, shall

adhere to the requirements of this and other applicable sections. Errors in line and grade, as well as any improper assembly or backfill techniques, shall be corrected prior to placing significant backfill or trench fill. Joints shall be installed per manufacturer's recommendations to prevent the infiltration of soil fines. Shallow cover installations shall be checked to ensure the minimum cover level is provided.

- B. Internal Video Inspection. Internal video inspection shall be performed by the Contractor a minimum of 30 days after final backfill has been placed and prior to final acceptance by the Contracting Agency. The line shall be cleaned and inspected per Subsection 601.03.07 "Video Inspection." Cracks in RCBs that are less than 0.10 inch in width are generally considered non-structural flaws and need not be repaired. Cracks that are equal to or exceed 0.10 inch in width shall require an evaluation by a Nevada licensed Professional Engineer provided by the Contractor. The Contractor's engineer shall provide a recommendation regarding removal or repair subject to approval by the Contracting Agency. RCB joints and length that do not meet the specification shall be repaired or RCB replaced at the Contractor's expense. All inspection results shall be submitted and approved by the Contracting Agency before final payment. Any replacement RCB shall also be subject to the same testing. All inspection and testing results shall be submitted to the Engineer for approval.

METHOD OF MEASUREMENT

502.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The quantity of 14-FOOT BY 7-FOOT REINFORCED CONCRETE BOX will be measured for payment by linear foot along the centerline of the box, in place and complete.

The quantity of RCB TRANSITION STRUCTURE will be measured for payment by each, in place and complete.

The quantity of 14-FOOT BY 7-FOOT CONCRETE RECTANGULAR CHANNEL will be measured by linear foot, in place and complete.

The quantity of OPEN CHANNEL TRANSITION STRUCTURE will be measured for payment by each, in place and complete.

Measurement for payment of RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 1+36.00 TO "CHAN" 2+56.00 will be on a lump sum basis, in place and complete.

Measurement for payment of RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 21+88.00 TO "CHAN" 23+15.00 will be on a lump sum basis, in place and complete.

BASIS OF PAYMENT

502.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The accepted quantity of 14-FOOT BY 7-FOOT REINFORCED CONCRETE BOX will be paid for at the Contract unit price bid per linear foot and shall include all materials, equipment, tools, and labor required including, but not limited to, removal of patches (temporary and permanent),

215 BELTWAY CHANNEL
DURANGO DR. TO GRAND MONTECITO PKWY.

Bid No. YY.XXXXX
CLVRev012215

temporary patches, permanent patches, all excavation, over-excavation and backfill, trench excavation, compaction and recompaction, dewatering, disposing of excess material, grading, scarification, shaping, shoring, subgrade preparation, bedding, drain backfill, drain rock, granular backfill, selected backfill, structural fill, trench backfill (granular, select or Controlled Low-Strength Material (CLSM), Type II Aggregate Base, access ladders, backer rod, bolted/slotted lid with reinforced manhole collar, bolts, cast-in-place connections and/or transitions, connections to RCB/RCP, concrete collars, concrete, contraction joints, curing compound, cutoff walls, dowels, epoxy dowels, epoxy, expansion joints, forming and curing concrete, gaskets, grout, joint filler, joint sealant, joint water proofing, manhole mounting, mortar, ready-mix flowable fill, reinforcing steel, removal of temporary steel piles, temporary closure wall (if applicable), temporary head walls, and video inspection costs; potholing to determine the location of existing utilities; protection and restoration, if damaged, of all existing facilities and improvements required to remain in place including survey monuments, landscaping and irrigation systems, except where provided for elsewhere in these Special Provisions; support and protection of all utilities, delivery, handling, installation, and placement; tie-in to existing concrete structures; tie-in to existing reinforced concrete box; and all other items necessary to complete the work as shown on the Plans, as specified, and as directed by the Engineer.

The accepted quantity of RCB TRANSITION STRUCTURE will be paid for at the Contract unit price bid per each, which shall be full compensation for constructing the transition structure including all materials, equipment, tools, and labor required including, but not limited to, all excavation, over-excavation and backfill, trench excavation, compaction and recompaction, dewatering, disposing of excess material, grading, scarification, shaping, shoring, subgrade preparation, bedding, drain backfill, drain rock, granular backfill, selected backfill, structural fill, trench backfill (granular, select or Controlled Low-Strength Material (CLSM), Type II Aggregate Base, backer rod, bolts, cast-in-place connections and/or transitions, concrete collars, concrete, contraction joints, curing compound, cutoff walls, dowels, epoxy dowels, epoxy, expansion joints, forming and curing concrete, gaskets, grout, joint filler, joint sealant, joint water proofing, mortar, ready-mix flowable fill, reinforcing steel, removal of temporary steel piles, temporary closure wall (if applicable), temporary head walls, and video inspection costs; potholing to determine the location of existing utilities; protection and restoration, if damaged, of all existing facilities and improvements required to remain in place including survey monuments, landscaping and irrigation systems, except where provided for elsewhere in these Special Provisions; support and protection of all utilities, delivery, handling, installation, and placement; tie-in to existing concrete structures; tie-in to existing reinforced concrete box; and all other items necessary to complete the work as shown on the Plans, as specified, and as directed by the Engineer.

The accepted quantity of 14-FOOT BY 7-FOOT CONCRETE RECTANGULAR CHANNEL will be paid for at the Contract unit price bid per linear foot, which shall be full compensation for constructing the channel including excavation, over-excavation and backfill, subgrade preparation, bedding, backfill, Type 2 aggregate base, shoring, forming, channel slabs and walls, transitions, RCP penetrations, concrete cutoff walls, concrete, reinforcing steel, grout, epoxy, joints (including premolded filler, preformed sealer, and tooled edges), channel ladder/steps with paint, connections to RCB/RCP, weep holes (including drain rock, geotextile fabric, and pipe), backfill, fly ash, Portland cement, mixing, transport, and compaction. The price shall include furnishing and placing all materials, performing all associated labor, and providing tools, equipment, and incidentals necessary to complete the work, as well as protecting and restoring, if damaged, all existing facilities and improvements required to remain in place, as stipulated in the Contract Documents and as directed by the Engineer.

The accepted quantity of OPEN CHANNEL TRANSITION STRUCTURE will be paid for at the Contract unit price bid per each, which shall be full compensation for constructing the transition

structure including excavation, over-excavation and backfill, subgrade preparation, bedding, backfill, Type 2 aggregate base, shoring, forming, channel slabs and walls, transitions, RCP penetrations, concrete cutoff walls, concrete, reinforcing steel, grout, epoxy, joints (including premolded filler, preformed sealer, and tooled edges), connections to RCB/RCP, weep holes (including drain rock, geotextile fabric, and pipe), backfill, fly ash, Portland cement, mixing, transport, and compaction. The price shall include furnishing and placing all materials, performing all associated labor, and providing tools, equipment, and incidentals necessary to complete the work, as well as protecting and restoring, if damaged, all existing facilities and improvements required to remain in place, as stipulated in the Contract Documents and as directed by the Engineer.

The Contract lump sum price paid for RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 1+36.00 TO "CHAN" 2+56.00 shall be full compensation for constructing the concrete channel with ramp including excavation, over-excavation and backfill, subgrade preparation, bedding, backfill, embankment, geotextile fabric, aggregate base, shoring, forming, concrete cutoff walls, concrete, steel wire mesh hardware cloth, reinforcing steel, grout, joints (including premolded filler, preformed sealer, pourable sealer, and tooled edges), weep holes (including drain rock, geotextile fabric, and pipe), backfill, and compaction, complete in place, as shown on the Drawings, as specified, and as directed by the Engineer.

The Contract lump sum price paid for RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 21+88.00 TO "CHAN" 23+15.00 shall be full compensation for constructing the concrete channel with ramp including excavation, over-excavation and backfill, subgrade preparation, bedding, backfill, embankment, geotextile fabric, aggregate base, shoring, forming, concrete cutoff walls, concrete, steel wire mesh hardware cloth, reinforcing steel, grout, joints (including premolded filler, preformed sealer, pourable sealer, and tooled edges), weep holes (including drain rock, geotextile fabric, and pipe), backfill, and compaction, complete in place, as shown on the Drawings, as specified, and as directed by the Engineer.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
502.01	14-FOOT BY 7-FOOT REINFORCED CONCRETE BOX	LF
502.02	RCB TRANSITION STRUCTURE	EA
502.03	14-FOOT BY 7-FOOT CONCRETE RECTANGULAR CHANNEL	LF
502.04	OPEN CHANNEL TRANSITION STRUCTURE	EA
502.05	RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 1+36.00 TO "CHAN" 2+56.00	LS
502.06	RECTANGULAR CONCRETE CHANNEL WITH RAMP "CHAN" 21+88.00 TO "CHAN" 23+15.00	LS

END OF SECTION 502

SECTION 505 – REINFORCING STEEL**MATERIALS****505.02.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- F. At selected locations as indicated on the Contract Drawings, reinforcing steel shall be galvanized (zinc coated), in accordance with ASTM A767 or epoxy-coated.
- G. At the expansion joint locations shown on the Contract Drawings or as directed by the Engineer, reinforcing steel shall be sprayed, coating the entire circumference of the bar, with a zinc-rich formulation conforming to ASTM A767.

METHOD OF MEASUREMENT**505.04.01 MEASUREMENT*****DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

No direct measurement shall be made for Reinforcing Steel.

BASIS OF PAYMENT**505.05.01 PAYMENT*****DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:***

Unless otherwise provided in the Special Provisions, no payment will be made for Reinforcing Steel as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which such Reinforcing Steel is required.

END OF SECTION 505

SECTION 601 – PIPE CULVERTS-GENERAL**DESCRIPTION****601.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- D. This work shall also consist of preparing utility final location information as described on the project Drawings and in Section 622 of these Special Provisions.

CONSTRUCTION**601.03.07 VIDEO INSPECTION*****ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION***

- H. The following paragraphs define the requirements for internal video inspection of storm drain facilities after installation.
1. The Contractor shall inspect the storm drain facility interior using a color closed circuit television (CCTV) camera and document the inspection on image with audio location and date information, image title information, and hard copy inspection logs. The CCTV inspection shall be performed after the installation has been completed.
 2. Field operator(s) of inspection equipment must have current National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Certification.
 3. Television Inspection Camera. Equipment shall be operative in 100 percent humidity conditions. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the storm drain facility.
 4. Digital Storage Medium. The inspection shall be recorded, stored and submitted on CD's (or DVD's) in high quality MPG format on CD -R/+R disks formatted for use with PC systems. The audio portion of the composite CD shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report.
 5. Footage Counter. A footage counter device, which measures the distance traveled by the camera in the storm drain facility, shall be accurate to plus or minus 2 feet in 1,000 feet.
 6. Video Tilting. Pan and tilt unit, with adjustable supports specifically designed and constructed for operation in connection with storm drain facility inspection.

7. Flow in Storm Drain Facility. During internal video inspections the Contractor shall provide temporary dry conditions in the storm drain facility unless otherwise agreed upon by the Engineer.

I. Inspection Methods for Internal Video:

1. Verbal Commentary. None required except to note operational problems such as camera failure, or restart of inspection.
2. Access. The Engineer shall have access to observe the monitor and all other operations at all times. The system of cabling employed to transport the camera and transmit its signal shall not obstruct the camera's view.
3. Inspection Rate. The camera shall be pulled through the storm drain facility in either direction, but all inspections at each location shall be in the same direction. Rate of travel shall be such that a comprehensive inspection/analysis may be performed but at no time shall exceed 30 feet per minute when recording.
4. Image Perspective. The camera image shall be down the center axis of the storm drain facility when the camera is in motion. The Contractor is required to provide a 360-degree view of the interior. Points of interest shall also be shown on the video and shall include, but not be limited to, all joints, defects, encrustations, mineral deposits, debris, sediment, any location determined not to be clean or part of a proper installation or defects in the materials.
5. Storm Drain Facility Identification. All inspection documentation shall include the location referenced to the project survey control specifically the pipe stationing.
6. Defect Coding. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) coding system, latest version, shall be used to document all defects visible on the image recordings.
7. Quality Control. The Engineer will review CD's or DVD's and logs to ensure compliance with the requirements listed in this specification and contract documents.
8. The Contractor shall be responsible for modifications to his equipment and/or inspection procedures to achieve report material of acceptable quality. No work shall commence prior to approval of the material by the Engineer. Once accepted, the report material shall serve as a standard for the remaining work.
9. Contractor shall maintain a copy of all inspection documentation (CDs, databases, and logs) for the duration of the work and warranty period.

ADD THE FOLLOWING SUBSECTION:

601.03.70 MARKER BALLS

- A. Marker balls shall be installed per local entity requirements.

METHOD OF MEASUREMENT

601.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

No direct measurement shall be made for video inspection and marker balls as such.

METHOD OF PAYMENT

601.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

Unless otherwise provided in the Special Provisions, no payment will be made for video inspection and marker balls as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which video inspection and marker balls are required.

END OF SECTION 601

SECTION 603 – REINFORCED CONCRETE PIPE**DESCRIPTION****603.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- C. This work shall also consist of providing storm drain connections for the storm drain and laterals as directed by the Engineer.

CONSTRUCTION**603.03.07 INSPECTION*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- E. Internal Video Inspection. Internal video inspection shall be performed by the Contractor a minimum of 30 days after final backfill has been placed and prior to final acceptance by the Contracting Agency. This inspection includes 360 degree taping of all storm drain lateral joints. The line shall be cleaned and inspected per Subsection 601.03.07 "Video Inspection."

METHOD OF MEASUREMENT**603.04.01 MEASUREMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

The quantity of 18-INCH REINFORCED CONCRETE PIPE (RCP) (CLASS III) will be measured for payment by linear foot, along the centerline of the pipe to the end section or inside face of structure.

The quantity of 24-INCH REINFORCED CONCRETE PIPE (RCP) (CLASS III) will be measured for payment by linear foot, along the centerline of the pipe to the end section or inside face of structure.

BASIS OF PAYMENT**603.05.01 PAYMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

The accepted quantities of (SIZE) REINFORCED CONCRETE PIPE (RCP) (CLASS III) will be paid for at the Contract unit prices bid per linear foot for RCP of the class and size specified, which shall be full compensation for trench excavation, furnishing and placing bedding and backfill material, Type II aggregate base, compaction, furnishing and placing pipe and jointing mortar, concrete collars, covering open ends of laterals with plywood, cut and join connections, dewatering of trench, shoring, disposal of excess excavated material, pipe penetration

connections to drainage facilities as shown on the Drawings, protection and restoration, potholing to determine location of existing utilities, temporary pavement, video inspection cost, related items of work not otherwise provided for, and for all labor, tools, and equipment necessary to complete the work as shown on the plans, as specified herein, and as directed by the Engineer.

Unless otherwise provided in the Special Provisions, no payment will be made for Internal Video Inspection as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which Internal Video Inspection is required.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
603.01	18-INCH REINFORCED CONCRETE PIPE (RCP) (CLASS III)	LF
603.02	24-INCH REINFORCED CONCRETE PIPE (RCP) (CLASS III)	LF

END OF SECTION 603

SECTION 609 – CATCH BASINS, MANHOLES AND INLETS**DESCRIPTION****609.01.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- B. This work shall also consist of preparing utility final location information as described on the project drawings and in Section 622 of these Special Provisions. The final adjustments and concrete collar for manholes shall be constructed after the final placement of pavement.

MATERIALS**609.02.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- F. Grout shall conform to ASTM C476 and shall have a minimum strength of 2000 psi. Fine grout shall be proportioned by volume of one part Portland cement and 2-1/4 to 3 parts sand. Coarse grout shall consist of one part Portland cement, 2-1/2 to 3 parts sand, and 1 to 2 parts coarse aggregate.
- G. Laboratory design mixes for grout, approved by a Licensed Professional Engineer in the State of Nevada, are acceptable in lieu of the above proportions and are required if the maximum strength is more than 2000 psi. Grout shall be of a fluid consistency with proper proportions of sand to gravel for pouring and pumping.
- H. All exposed steel shall be hot-dipped galvanized per section 715.
- I. At lined or T-locked manhole locations, concrete or polyethylene adjustment ring shall be coated after grouting with and approved anticorrosion mastic putty.
- J. The Contractor shall notify the Engineer of any non-standard or broken metal frames and covers.

CONSTRUCTION**609.03.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- I. Steps in drop inlets and manholes shall be installed per local entity requirements.

609.03.02 ADJUSTING CATCH BASIN, MANHOLE, AND INLET COVERS***ADD THE FOLLOWING TO THIS SUBSECTION:***

215 BELTWAY CHANNEL
DURANGO DR. TO GRAND MONTECITO PKWY.

Bid No. YY.XXXXX
CLVRev030618

- E. Frames, grates, and covers shall be match marked in pairs before removal and/or replacement. Covers shall fit into the frames without rocking. The integrity of the frames, grates, and cover are the responsibility of the Contractor.

METHOD OF MEASUREMENT

609.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The quantity of 48-INCH ACCESS MANHOLE will be measured for payment by each, constructed as a completed unit.

The quantity of NDOT TYPE 2 DROP INLET WITH CONCRETE APRON will be measured for payment by each, for each type and size as specified and as shown on the Drawings, constructed as a completed unit.

The quantity of NDOT TYPE 2 DROP INLET WITH CONCRETE APRON (DOUBLE GRATES) will be measured for payment by each, for each type and size as specified and as shown on the Drawings, constructed as a completed unit.

BASIS OF PAYMENT

609.05.01 PAYMENT

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

The accepted quantity of 48-INCH ACCESS MANHOLE will be paid for at the Contract unit price bid per each, which shall be full compensation for furnishing and placing all materials, including excavation, subgrade preparation, bedding, backfill, compaction, shoring, forming, grout, manhole steps, steel reinforcement, all frames and grate covers, concrete collars, adjusting covers to final grade, protection and restoration, if damaged, of all existing facilities, and for all labor, tools, equipment, and incidentals necessary to complete the work as shown on the Drawings and as directed by Engineer. Partial payment for manholes will not be made. Manholes will be measured for payment upon completion.

The accepted quantities of NDOT TYPE 2 DROP INLET WITH CONCRETE APRON and NDOT TYPE 2 DROP INLET WITH CONCRETE APRON (DOUBLE GRATES) will be paid for at the Contract unit prices bid per each, which shall be full compensation for furnishing and placing all materials, including excavation, subgrade, bedding, backfill, dewatering, compaction, shoring, forming, grout, steel reinforcement, all frames and grate covers including variously sized grates, protection bars and plates, constructing concrete aprons as applicable, protection and restoration, if damaged, of all existing facilities, and for all labor, tools, equipment, and incidentals necessary to complete the work as shown on the Drawings, as specified, and as directed by Engineer. Partial payment for drop inlets will not be made. Drop inlets will be measured for payment upon completion. Where shown on the Drawings, connections to storm drain pipes shall be included in the Contract unit price bid for each.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
609.01	48-INCH ACCESS MANHOLE	EACH
609.02	NDOT TYPE 2 DROP INLET WITH CONCRETE APRON	EACH
609.03	NDOT TYPE 2 DROP INLET WITH CONCRETE APRON (DOUBLE GRATES)	EACH

END OF SECTION 609

SECTION 616 – FENCING**DESCRIPTION****616.01.01 GENERAL*****ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:***

- D. Temporary fencing will be required in association with chain link fence installation to maintain the integrity of fencing around private properties until the new fencing is complete. Temporary fencing shall be considered incidental to the chain link fence item and no additional compensation will be allowed. Temporary fencing is to meet the requirements of this subsection and shall be installed prior to the removal of existing fencing and shall remain in place until the new fence is complete.

METHOD OF MEASUREMENT**616.04.01 MEASUREMENT*****ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:***

The quantities of 5-FOOT SINGLE SWING GATE (CHAIN-LINK) and 12-FOOT DOUBLE SWING GATE (CHAIN-LINK) will be measured for payment by each, in place and complete.

The quantity of 72-INCH CHAIN-LINK FENCE will be measured for payment by linear foot, in place and complete.

The quantity of POST AND CABLE RAILING will be measured for payment by linear foot, in place and complete.

BASIS OF PAYMENT**616.05.01 PAYMENT*****ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:***

The accepted quantities of 5-FOOT SINGLE SWING GATE (CHAIN-LINK) AND 12-FOOT DOUBLE-SWING GATE (CHAIN-LINK) will be paid for at the Contract unit prices bid per each, which shall be full compensation for furnishing gates, posts, hardware, locks, concrete, fence fabric, framing, grounding where shown, erecting and connecting to fence; for excavation, aggregate base materials, pipe, welding, backfill, and compaction; for installation of temporary gates until proposed gate is installed; and for all incidentals, appurtenances, labor, equipment, and materials necessary to install the gates in accordance with the manufacturer's recommendations, as specified, as shown on Drawings, and as directed by Engineer. At Contractor's option, chain-link gates and hardware that were removed and salvaged as specified in Section 202, may be reused on the project where new gates are to be installed, if approved by Engineer prior to installation. Gate posts shall not be reused.

The accepted quantity of POST AND CABLE RAILING will be paid for at the Contract unit price bid per linear foot, which shall be full compensation for furnishing and installing posts, post tops, corner brace, 1/4 inch chain, cable, clamps, turn buckles, threaded eye bars, bolts, nuts, washers, carabiner or snap hook, nonshrink grout, mountings, cable railing and pole mount, mounting plate, hardware, fiber core rope, pipe sleeves, reinforcement steel, incidentals and appurtenances and for all labor, tools, and equipment necessary to complete the work as specified, as shown on the Drawings, and as directed by Engineer.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
616.01	5-FOOT SINGLE SWING GATE (CHAIN-LINK)	EA
616.02	12-FOOT DOUBLE-SWING GATE (CHAIN-LINK)	EA
616.03	72-INCH CHAIN-LINK FENCE	LF
616.04	POST AND CABLE RAILING	LF

END OF SECTION 616

SECTION 621 – MONUMENTS**621.01.01 GENERAL**

DELETE PARAGRAPH "B" OF THIS SUBSECTION AND REPLACE WITH THE FOLLOWING:

- B. All monuments destroyed and/or damaged shall be installed by the Contractor in accordance with the Uniform Standard Drawings, and under the direct supervision of the Engineer. The Contractor shall coordinate his work with the Engineer.

METHOD OF MEASUREMENT**621.04.01 MEASUREMENT**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

No unit of measurement will be made for Monuments.

BASIS OF PAYMENT**621.05.01 PAYMENT**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

Unless otherwise provided in the Special Provisions, no payment will be made for Monuments as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which such Monument replacement is required.

END OF SECTION 621

ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS**SECTION 622 – CONSTRUCTION SURVEYING BY THE CONTRACTOR****DESCRIPTION****622.01.01 GENERAL**

- A. The Contractor shall, under supervision of a Professional Land Surveyor, registered in the state of Nevada, furnish and set construction stakes establishing locations, lines, and slope stakes for roadway, storm drain, drainage structures, sewer, laterals, and for all other improvements for project necessary to ensure conformance of work to lines, elevations, locations, and grades as shown on the Plans and in these Special Provisions. Any horizontal or vertical discrepancies shall be reported to Engineer prior to commencement of construction. Any revisions or changes approved by Engineer that affect lines, grades, elevations or locations of any improvement shall be indicated on As-Built (Record) Drawings.
- B. If necessary, the Contractor shall also perform and provide to the Engineer those items described in Subsection 203.04.01 of the USS. Any revisions or changes approved by the Engineer that affect the lines, grades, elevations or locations of any improvement shall be indicated on the As-Built (Record) Drawings.
- C. Contractor shall preserve property line and corner survey points. If their destruction is determined by Engineer to be unavoidable, and their replacement is not called for on the plans, Owner shall replace or pay for their replacement under this contract as determined by Engineer. Markers that are disturbed or destroyed by Contractor's operations without prior approval by the Engineer shall be replaced by Contractor at no additional cost to the Owner. Replacement shall be done only by a Nevada Professional Land Surveyor and in accordance with the USS. A record-of-survey for replacement of permanent survey monuments shall be submitted to Engineer for approval.
- D. When a permanent survey marker and/or monument is located within the construction area of any roadway, storm drain, drainage structures, sewer line or channel improvement, the Contractor shall adjust the cover or replace the monument as noted on the plans. The cost of replacement or adjustment of said monuments shall be included in the lump sum bid for Construction Survey. If monuments are to be installed as part of the work, they shall be placed in accordance with the USD numbers 239 through 243 and Section 621 of the USS.
- E. It is the intent for all monumentation called for within the Unified Development Code Appendix D to be placed within the project limits upon completion of the project regardless of the existence or non-existence of monumentation prior to construction. A record-of-survey for memorializing all set monuments shall be submitted to Engineer for approval.

MATERIALS**622.02.01 BLANK****CONSTRUCTION**

215 BELTWAY CHANNEL
DURANGO DR. TO GRAND MONTECITO PKWY.

Bid No. YY.XXXXX
CLVRev102518

622.03.01 GENERAL

- A. Prior to all work in this section, the Contractor shall carefully inspect all installed work and verify that all such work is complete to a point where this installation may properly commence.
- B. The Contractor shall verify that all work can be installed in accordance with all pertinent codes and regulations, Contract Drawings and referenced standards.
- C. The Contractor shall verify that there are no conflicts with existing utilities prior to the start of work.
- D. In event of a discrepancy, the Contractor shall immediately notify the Engineer in writing.
- E. Installation of work in areas of discrepancy shall not proceed until all such discrepancies have been fully resolved.
- F. After stakes and marks have been set, it shall be the responsibility of the Contractor to protect the stakes and marks. Should any of the stakes or marks be destroyed or disturbed by the Contractor's operations or otherwise, the costs of replacing said stakes or marks shall be paid by the Contractor.
- G. The Engineer, at his discretion, may periodically have survey work performed to verify conformance to the construction plans. Any nonconformity found to be the fault of the Contractor, or the Professional Land Surveyor, shall be corrected at no additional cost to the Owner.
- H. Upon completion of the project and as a condition for final payment authorization, the Contractor shall furnish to the Engineer a Record of Survey/monument tie map and a certification attested to by the Professional Land Surveyor that the work performed for this contract has been constructed to the lines and grades as described in the As-built (Record) Drawings. When requested, the Contractor shall also provide the Engineer with copies of all field notes, computations, and other related work performed by the Professional Land Surveyor.

622.03.02 FINAL ACCURACY

- A. No tolerance will be allowed for any Pedestrian Pathway or sidewalk identified on the plans to exceed a 2.00 percent max cross slope. If final slope in these situations is above 2.00 percent, then sidewalk shall be removed and replaced at the expense of the Contractor in accordance with USS Subsection 105.12.
- B. Surface Drainage Structures (including all concrete or asphalt gutters and drains) shall be installed within 0.05 feet horizontally and 0.05 feet vertically from the location taken from the project plans, and shall not vary more than 10 percent of the gradient shown on the Plans.
- C. Sanitary and Storm Drainage Sewer Systems shall be installed within 0.05 feet horizontally and 0.05 feet vertically of the exact location taken from the project plans. In addition, the

gradient of any 10-foot section of pipe shall not vary by more than 10 percent of the gradient shown the project Plans

- D. Field verification surveys may be conducted by the City of Las Vegas at any given time during construction progress to ensure compliance with positional accuracy requirements per NAC 625, the Contract Documents, and this Special Provision.

622.03.03 INSTALLED/EXPOSED UTILITY SURVEYING

- A. All measurements are to be made by the Surveyor who will be certifying the project as constructed.
- B. The contractor is responsible for coordinating with the Surveyor during construction and shall provide access to all underground sanitary sewer, storm drain, and reuse water facilities prior to being buried; allowing accurate horizontal and vertical measurements to be acquired by the Surveyor. In the event of any discrepancies identified by CLV and at no cost to CLV, the Contractor shall verify the location and measurements of any buried utilities.
- C. After construction of the approved plans and before backfilling, survey shall be conducted indicating the size, horizontal and vertical location, and configuration of all underground sanitary sewer, storm drain, and reuse water facilities constructed with this project. Utility final location information shall be described by coordinates which shall be based on the official horizontal and vertical control networks of the City of Las Vegas and be certified by a Nevada professional land surveyor to have positional certainties within ± 0.3 -ft.
- D. Survey measurements for all underground sanitary sewer, storm drain, and reuse water facilities constructed during the course of construction including but not limited to pipes, manholes, drop inlets, boxes, vaults and appurtenances shall be located in their entirety within public right-of-way or public utility easements. Measurements shall be taken at a minimum of 100-ft intervals, at all exposed angle points, deflections of the utility exceeding ± 0.5 -ft, at all points that enter/exit the public right-of-way or public utility easement, and sufficient measurements to accurately define curving layout.
- E. Potholes performed by the contractor prior to or during construction shall be surveyed indicating the size, location, burial depth, and configuration of the utility. Pothole location information shall be tied to the official horizontal and vertical control networks of the City of Las Vegas and be certified by a Nevada professional land surveyor.
- F. Utility final location information shall be submitted on paper and in electronic form, on a form specified by the City Surveyor. Submittal requirements and examples are included in Appendix E.
- G. Interim and final survey progress reports shall be submitted to the Engineer certifying sufficient survey measurements have been performed prior to backfilling as required by this section on a monthly basis.

METHOD OF MEASUREMENT

622.04.01 MEASUREMENT

Measurement for payment of CONSTRUCTION SURVEYING will be on a lump sum basis.

BASIS OF PAYMENT**622.05.01 PAYMENT**

The Contract lump sum payment for CONSTRUCTION SURVEYING shall be full compensation for all materials, equipment, and labor including, but not limited to, monuments, record of surveys, monumentation tie sheets, as-built drawings, utility final location information, property line markers, corner survey points, construction survey, and all other incidentals necessary to complete this work as described herein.

Monthly payments will be made in an amount equal to the percent of total contract complete multiplied times the lump sum price bid for construction surveying minus previous Construction Surveying monthly payments.

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
622.0001	CONSTRUCTION SURVEYING	LS

END OF SECTION 622

SECTION 624 - ACCOMMODATIONS FOR PUBLIC TRAFFIC**DESCRIPTION****624.01.01 GENERAL*****DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH FOLLOWING:***

- A. The work shall consist of providing safe and effective work areas and to warn, control, protect and expedite vehicular and pedestrian traffic through the construction zone. It shall be the sole responsibility of the Contractor to provide for the safety of the traveling public within the limits of the project.
- B. The work shall be performed in accordance with the MUTCD Latest Edition and as specified in these Special Provisions.

ADD THE FOLLOWING SUBSECTIONS:**624.01.70 SPECIAL TRAFFIC CONTROL, LANE RESTRICTIONS OR ACCESS ISSUES:**

- A. Refer to section 107.07 for traffic and access requirements and section 108.04 for limitations of operations.

624.01.71 TRAFFIC CONTROL PLAN (TCP):

- A. The Contractor shall submit 6 copies of the "**Traffic Control Plan (TCP)**" to the Contract Specialist for acceptance, **as required by ITB 8.03**.
 - 1. The TCP shall be submitted on 8-1/2-inch by 14-inch or 11-inch by 17-inch paper.
 - 2. Acceptance of the plan shall be a condition on the Contractor prior to beginning any Work requiring an approved Traffic Control Plan.
 - 3. For work in the Nevada Department of Transportation, (NDOT) right-of-way, the TCP must also be submitted to NDOT for their acceptance, as outlined in the NDOT encroachment permit.
 - 4. For work in Clark County right-of-way, the TCP must also be submitted to Clark County after it has received City of Las Vegas approval for Clark County acceptance prior to beginning the work.
- B. A TCP shall be required for each phase or segment of the construction.
 - 1. The TCP shall be submitted fourteen (14) calendar days prior to the start of the proposed work.
 - 2. The TCP shall be prepared in accordance with the requirements of the MUTCD, specifically Part VI, latest edition.
 - 3. The TCP for each phase of construction will be considered separately.
 - 4. Acceptance of the TCP applies only to a specific phase of construction as identified on the plan.

- C. There shall be no deviations from the approved TCP unless a revised TCP is submitted to and accepted by the Engineer. The submittal shall be made at least fifteen (15) working days prior to the need for the proposed revision.
- D. In the event a routine TCP deficiency, including maintenance of traffic control items, is not corrected within twenty four (24) hours after notification, **a deduction in the amount of two hundred dollars (\$200) per deficiency** shall be made from monies due the Contractor for each calendar day that the deficiency is allowed to remain, not as a penalty, but as liquidated damages.
- E. If, in the opinion of the Engineer, a TCP deficiency causes an unsafe condition that requires immediate correction, the Engineer will issue the Contractor a "Barricading Violation Notification" at which time the Contractor will have two hours to correct the noted violation.
 - 1. If the violation is not corrected within the two-hour time limit, the Contractor will be assessed \$200.00 per hour as liquidated damages until the violation is corrected.
 - 2. This condition may cause the Project to "Stop Work"; this will not be grounds for a time extension of the contract.
- F. As an absolute minimum for each phase of the construction, the Traffic Control Plan shall show placement and spacing of all the traffic control devices (including signs, markings, channelizing devices, lighting devices, flaggers, etc.) and their spacing within the following traffic control areas:
 - 1. Advance Warning Signs
 - 2. Transition Areas
 - 3. Buffer Spaces
 - 4. Work Areas
 - 5. Termination Areas
- G. Type B high-intensity warning lights are required on all warning signs within the advance warning and transitional areas of all traffic control and barricade setups. The Contractor shall provide Type C steady burn warning lights on channelizing devices within the transition areas of all night time traffic control and barricade setups.
- H. Additionally, the traffic control plans must clearly show the following minimum requirements:
 - 1. Method for protecting excavations, work sites and school zone crosswalks
 - 2. Method of barricading at intersections
 - 3. Driveway access plan
 - 4. Provisions for emergency vehicle access
 - 5. All set-up changes to accommodate different phasing of the work
 - 6. Lane widths and transitions
 - 7. 24-hour emergency telephone number
 - 8. Business Access Signs
 - 9. Sidewalk Closed / Cross Here Signs
 - 10. No Parking Signs
 - 11. Project Signs
 - 12. Fresh Oil Signs
 - 13. Duration of Traffic Control and Barricade Plan
 - 14. All Advance Warning Signs
 - 15. Placement of "Double Penalty in Work Zones" warning signs

- I. The above-described plan must conform to the Special Provisions contained herein, the latest revisions of the Manual on Uniform Traffic Control Devices (MUTCD) for all traffic control methods, devices and appurtenances.
- J. The Contractor shall begin placing the barricades in the direction of traffic. The Contractor shall remove the barricades in a direction opposing traffic.
- K. During construction the Contractor must coordinate with the RTC regarding specific dates of bus stop closures. Simultaneous closure of two or more sequential bus stops shall be minimized in duration and will only be allowed when necessary to maintain normal production levels for work items such as asphalt placement. The TCP shall show required signage and barricading associated with bus stop closures and all applicable requirements of the TCP shall apply to bus stop closures.

CONSTRUCTION

624.03.01 SPECIAL DETOURS

DELETE PARAGRAPH "A" AND REPLACE WITH THE FOLLOWING:

- A. Special detours shall be constructed as shown on the Traffic Control Plan prepared by the Contractor. Detour locations indicated on the Traffic Control Plan may be approximate only; the exact location shall be staked by the Contractor's surveyor.

ADD THE FOLLOWING PARAGRAPHS TO THIS SUBSECTION:

- G. It is the City of Las Vegas's policy that under no circumstances will travel on a temporary gravel surface be permitted for longer than fifteen (15) calendar days. Temporary gravel surfaces shall be graded, watered and maintained at all times to provide a smooth dust free traveled surface.
- H. All temporary detours and/or bypasses that are expected to be in service for more than fifteen (15) calendar days shall be hard surfaced with a minimum of 1-1/2 inches of AC pavement and maintained in a smooth and usable condition at all times for the duration of the detour and/or bypass.

624.03.02 FLAGGERS

ADD THE FOLLOWING TO THIS SUBSECTION:

- D. Proper advance warning signs shall be in place when flaggers are working and removed when work requiring flaggers is completed.
- E. Flaggers shall be used to assist trucks for safe ingress and egress whenever truck movements may interfere with safe passage through the work zone. The flaggers' first priority shall be to maintain the safe and efficient movement of the public traffic. In the event that a flagger is to flag at an intersection controlled by a stop sign they must bag the sign(s) prior to taking control of traffic. If a flagger is to flag at an intersection controlled by a traffic signal the traffic signal

must be turned off prior to taking control of traffic. Any changes to regulatory signs or changes to a traffic signal shall be reversed at the end of every workday, unless approved by the traffic engineer. Failure to do so could result in an order to stop work.

- F. The "Flagger Method" as outlined in Part VI of the MUTCD shall be used for all one lane, two-way traffic control.

ADD THE FOLLOWING SUBSECTIONS TO THIS SUBSECTION

624.03.70 TEMPORARY STRIPING

- A. The temporary traffic striping tape material shall conform to subsection 635.02.01 of the NDOT Standards. Placement of temporary pavement striping shall be by pilot line method and its use limited to fourteen (14) calendar days. The tape shall be four (4) inches wide and four (4) feet long and spaced every forty- (40) feet. The color of the tape shall match the color of the existing line. The double yellow line shall have two pieces of tape side by side with a four (4) inch space between, and spaced to the above increments.
- B. Painted temporary striping shall be 4-inches wide and shall be continuous or intermittent in accordance with the MUTCD. Painted temporary striping shall not be used on the final wearing course of the pavement.
- C. Existing pavement markings, either painted or raised pavement markers, which are not applicable and are within the transverse limits of the temporary travel lanes shall be removed to the satisfaction of the Engineer. Painting over existing markings will not be allowed.

624.03.71 TEMPORARY BRIDGES FOR VEHICULAR ACCESS

- A. Where necessary or required for the convenience of the traveling public or individual residents, businesses or schools, The Contractor shall provide temporary bridges over all unfilled excavations at all street, driveway and alleyway, crossings unless otherwise directed by the Engineer. The bridges shall remain in place until the excavations have been properly backfilled to the satisfaction of the Engineer.
- B. Temporary bridges for street crossings shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges or shall submit designs for approval by said authority as may be required. If plates are used, they must be capable of carrying the heaviest anticipated loads using the roadway, be properly anchored so as to prevent any transverse and/or any longitudinal shifting of the plate and must be certified by a structural engineer registered in the State of Nevada. Refer to the City of Las Vegas Trench Plate Requirements detail in Appendix "B".

624.03.72 PIPE LAYING OPERATIONS

- A. Pipe stored in the street rights of way within a barricaded work zone, with the approval of or at the direction of the Engineer, which is to remain one night or more shall be protected by

Barrier Rail. Type B high intensity warning lights will be installed on the barrier rail at intervals not exceeding 25 feet.

- B. During working hours, the Contractor shall have no more than three hundred (300) feet of open trench and/or structure excavation nor more than one half (1/2) of an intersection closed to vehicular traffic, except with specific written permission by the Engineer. During non-working hours, the Contractor shall have no more than one hundred (100) feet of open trench and/or structure excavation barricaded in accordance with these Special Provisions. Pedestrian access crossings suitably equipped with handrails shall be provided as directed by the Engineer. The cost of such crossings shall be included as a part of the traffic control bid item.

624.03.73 TRAFFIC CONTROL DEVICES

- A. Trained and knowledgeable traffic control personnel shall be utilized to insure proper set-up and maintenance of traffic control devices and to assist in the safe movement of vehicles through the traffic control zone.
- B. The Contractor from the public right-of-way shall remove all traffic control devices that are not in use or will not be used for a period greater than 24 hours. All traffic control devices that are determined by the Engineer to be unnecessary, confusing, or causing an unsafe condition, shall be removed by the Contractor from the public right-of-way immediately upon written notification by the Engineer. The Contractor shall not, at any time, use the sidewalk area to store unused barricades unless the sidewalk is closed and an approved barricade plan is provided for rerouting the pedestrians.
- C. The Contractor shall maintain all barricades and other traffic control devices in clean and effective condition. The Contractor shall replace poorly maintained devices immediately upon notification by the Engineer.
- D. The Contractor shall begin placing the barricades in the direction of traffic. The Contractor shall remove the barricades in a direction opposing traffic.
- E. **Temporary Stop Signs:** All temporary stop signs shall be installed in a semi-permanent manner in the ground or pavement surface in accordance with Standard Drawing Number 249 of the USD.

624.03.74 TRAFFIC CONTROL SUPERVISOR

- A. The Contractor shall designate a Traffic Control Supervisor who shall be responsible for initiating, installing and maintaining all traffic control devices as shown on the traffic and plans, as specified in the MUTCD, and revisions thereto, the USS, these Special Provisions or as directed by the Engineer. When traffic control devices are on the project site the designated Traffic Control Supervisor shall be available to the Engineer twenty-four (24) hours a day for the duration of the contract. The Traffic Control Supervisor shall be an employee of the Contractor and under the supervision of the Superintendent. The person so designated shall be certified as a worksite traffic control supervisor by the ATSSA. The name and qualifications of this person shall be submitted to the Engineer in accordance with subsection 100.02.02 "Contractor Submittals" of these Special Provisions.

- B. The Traffic Control Supervisor shall be capable of being on-site within thirty- (30) minutes of notification.
- C. The traffic control supervisor shall make at least four (4) inspections of all traffic control devices each calendar day as follows:
 - 1. Before beginning work
 - 2. At mid shift
 - 3. Half an hour after the end of the shift
 - 4. Once during the period of nonworking hours
- D. The Traffic Control Supervisor shall make a daily record of traffic control activities including a reference to the barricading in effect that day. The Project superintendent shall sign the daily record each day attesting to its accuracy. The Contractor shall submit these records to the Engineer on a weekly basis.

624.03.75 REQUIRED PROTECTION FOR OPEN EXCAVATION DURING WORKING AND NON-WORKING HOURS

- A. The following requirements apply to any open excavations where the difference in elevation between the pavement and the excavated area is greater than 6":
 - 1. Any open excavations, in the roadway or within eighteen (18) feet of the roadway, which does not provide a 4:1 (horizontal: vertical) slope between the edge of pavement and the bottom of the excavation, shall be protected with portable precast concrete traffic barrier rails and six (6) feet high non-climb fence. All portable precast concrete traffic barrier rails shall be butted tight and pinned in accordance with the requirements of the Nevada Department of Transportation's Standard Drawing R-8.3.3, entitled "Portable Precast Concrete Barrier Rail", which is hereby incorporated into the plans.
 - 2. Any open excavation further than eighteen (18) feet and less than three hundred (300) feet from any building or roadway, shall be, as a minimum, completely fenced with a six (6) foot high non-climb fence.
 - 3. Any open excavation beyond three hundred (300) feet of any building or roadway shall be protected with a three (3) foot high earth berm completely around the excavation. Type II Barricades with Type B high intensity warning lights shall be spotted around the top of the berm after daylight hours.
 - 4. Barrier rails and fencing may be required, during working hours, when determined by the Engineer, to be in the interest of public safety.
- B. The following requirements apply to any open excavations adjacent to a sidewalk where the difference in elevation between the back of the sidewalk and the excavated area is greater than 6 inches:
 - 1. The open excavation shall be protected, as a minimum, with a six (6) foot high non-climb fence.

METHOD OF MEASUREMENT

624.04.01 MEASUREMENT

Measurement for payment of TRAFFIC CONTROL AND MAINTENANCE will be on a lump sum basis.

BASIS OF PAYMENT

624.05.01 PAYMENT

DELETE THIS SUBSECTION IN ITS ENTIRETY AND INSERT THE FOLLOWING:

The Contract lump sum payment for TRAFFIC CONTROL AND MAINTENANCE shall be full compensation for all traffic control and maintenance work and shall include all labor, materials, and equipment necessary to provide measures to protect and maintain traffic 24 hours per day during the life of the Contract, including traffic control plan, temporary pavement, detours, the furnishing of such personnel, flaggers, traffic control supervisor including the furnishing of daily record of traffic control activities, barricades, signs, arrow boards, portable changeable message signs, temporary pavement markings and striping (paint and tape), barrier rails, non-climb fencing, flashers, bridges, plates, etc. as may be required to insure the safety of the traveling public in accordance with Sections 107, 624 and 625 and all other applicable sections of the USS, USD and these Special Provisions.

The value of the Traffic Control Supervisor's site inspections in accordance with Subsection 624.03.10, "Traffic Control Supervisor" will be considered to be 15 percent of the Traffic Control and Maintenance pay item. Submittal of the daily record of traffic control activities will be evidence that the Traffic Control Supervisor has made the required inspections. **Failure to submit the required daily record of traffic control activities will result in the proportional amount of this bid item not being paid as work not performed.**

Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
624.01	TRAFFIC CONTROL AND MAINTENANCE	LS

END OF SECTION 624

SECTION 625 – CONSTRUCTION SIGNS**MATERIALS****625.02.01 GENERAL*****ADD THE FOLLOWING TO THIS SUBSECTION:***

- C. Reflective sheeting shall be used on all work zone signs and channelizing devices.

CONSTRUCTION***ADD THE FOLLOWING SUBSECTIONS TO THIS SECTION:*****625.03.05 PORTABLE CHANGEABLE MESSAGE SIGNS**

- A. Portable Changeable Message Signs (PCMS) conforming to the MUTCD, Part 6, Section 6F.60 shall be used to advise the driver of road closures on streets with an 80-foot or greater right-of-way.
- B. The PCMS shall be placed far enough in advance of the closed street to allow traffic ample opportunity to detour around the disrupted area.
- C. The location and number of PCMS will be determined by the Engineer.
- D. Solar powered panels shall be used in residential areas.

625.03.06 ARROW DISPLAYS

- A. Arrow Displays conforming to the MUTCD, Part 6, Section 6F.61, Type B, shall be used to advise the driver of lane closures when so directed by the Engineer.
- B. The Arrow Displays shall be required at the beginning of the taper and placed behind the barricades in the closed lanes, as required by the approved traffic control plan and as directed by the Engineer.
- C. Solar powered panels shall be used in residential areas.

METHOD OF MEASUREMENT**625.04.01 MEASUREMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

No direct measurement shall be made for PORTABLE CHANGEABLE MESSAGE SIGN or ARROW DISPLAY.

BASIS OF PAYMENT**625.05.01 PAYMENT*****ADD THE FOLLOWING TO THIS SUBSECTION:***

Unless otherwise provided in the Special Provisions, no payment will be made for PORTABLE CHANGEABLE MESSAGE SIGN or ARROW DISPLAY as such. The cost thereof shall be considered as included in the price bid for TRAFFIC CONTROL AND MAINTENANCE.

END OF SECTION 625

SECTION 626 – FINAL CLEANUP**METHOD OF MEASUREMENT****626.04.01 MEASUREMENT**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

No unit of measurement will be made for FINAL CLEANUP.

BASIS OF PAYMENT**626.05.01 PAYMENT**

DELETE THIS SUBSECTION IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING:

Unless otherwise provided in the Special Provisions, no payment will be made for FINAL CLEANUP as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which such FINAL CLEANUP is required.

END OF SECTION 626

SECTION 637 - POLLUTION CONTROL

DESCRIPTION

637.01.01 GENERAL

ADD THE FOLLOWING TO THIS SUBSECTION

- D. Dust control work includes creating a Dust Control Mitigation Plan (DCMP), obtaining all necessary approvals for the DCMP, obtaining a Dust Control Permit for Construction Activities, payment of all fees associated with the project dust control, all work necessary to comply with the DCMP, Dust Control Permit, and the requirements of Section 94 of the Clark County Department of Air Quality Regulations, most recently adopted.
- E. Any fines or penalties levied by the Clark County Department of Air Quality and Environmental Management due to violations of the project Dust Control Permit requirements are the sole responsibility of the Contractor and shall be paid by the Contractor.
- F. The Contractor shall use all necessary Stormwater Runoff Best Management Practices (BMPs) performing the Work so as to not discharge stormwater runoff containing pollutants or sediment into the waters of the United States, including municipal separate storm sewer systems (MS4s) in violation of federal and state laws, rules, and regulations and the City's water pollution requirements.
- G. The Contractor shall:
 - 1. Comply with the provisions of Nevada Revised Statutes, Chapter 445A: Water Pollution Control and City of Las Vegas Municipal Code 14.18; and
 - 2. Adhere to all Federal regulations under 40 CFR 122.26(b)(14).
 - 3. Submit SWPPP Submittal Checklist found in Appendix D of these Special Provisions to the Owner's Representative. This checklist must be on file prior to the issuance of the Notice to Proceed for construction.
- H. All information and forms pertaining to Nevada's Stormwater NPDES Permitting Program can be found on the following website: <http://ndep.nv.gov/bwpc/storm01.htm>.
- I. The City, state and federal regulations identified above are hereby incorporated by reference as preconditions of this Contract. The Contractor shall familiarize itself with these regulations and practices, and is advised that prior to engaging in any construction activities, the Contractor shall submit a Notice Of Intent (NOI) to the Nevada Division of Environmental Protection. A Storm Water Pollution Prevention Plan (SWPPP) must be completed prior to submission of the NOI and must remain on the project site and be updated as necessary for the duration of the project. As applicant, the Contractor is responsible for insuring that all persons on the project site, including contractor and subcontractor personnel, abide by the conditions of the permit. As the applicant, the Contractor is responsible for supplying complete copies of the NOI and SWPPP to all project subcontractors.
- J. Upon completion of the project, the Contractor will need to permanently stabilize the

construction area and file a Notice Of Termination (NOT) with NDEP to terminate the permit. The Contractor shall provide a copy of the approval letter of termination from NDEP to the Owner. Receipt of this letter will be required prior to acceptance of Contractor's final payment request.

- K. Contractor shall apply for, pay for, and gain approval of the required permit from NDEP in a timely manner so as not to affect the project schedule. Contractor shall comply with the requirements of the permit and shall bear all associated costs. If the Owner suffers damages including but not limited to delays and fines as a result of the Contractor's failure to obtain a required permit or for non-compliance with the requirements of the permit, the Contractor shall reimburse the Owner for such damages and the Owner may withhold amounts equal to the damages from the Contractor's payments. Failure of the Contractor to obtain required permits in a timely manner shall not be justification for delay of the issuance of the Notice to Proceed by the Owner.
- L. Any fines or penalties levied by the City of Las Vegas, Nevada Division of Environmental Protection, U.S. EPA, or any local, state, or federal agency to violations of the project Stormwater Runoff Management requirements are the sole responsibility of the Contractor and shall be paid by the Contractor.

CONSTRUCTION

ADD THE FOLLOWING SUBSECTION TO THIS SECTION:

637.03.70 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PERMIT FOR CONTRACTOR'S STAGING AREAS

- A. The following applies to the Contractor's staging areas:

NDEP, Bureau of Water Pollution Control, has issued general permit NVR100000 that covers construction activities within the state of Nevada. The Contractor shall comply with the requirements of the general permit at no extra cost to the Owner. In order to be covered by the permit, the Contractor shall submit, at no extra cost to Owner, a Notice of Intent (NOI) and the required filing fee on the Internet at http://www.ndep.nv.gov/bwpc/storm_cont03.htm.
- B. Upon the completion of the construction, Contractor is responsible for permanently stabilizing the staging area, filing Notice of Termination (NOT), and obtaining approval of NOT with NDEP to terminate the permit.

METHOD OF MEASUREMENT

637.04.01 MEASUREMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

Measurement for payment of DUST CONTROL will be on a lump sum basis for all dust control activities specified and required to comply with Construction Activities Dust Control Handbook.

Measurement for payment of NPDES DISCHARGE PERMIT will be on a lump sum basis.

BASIS OF PAYMENT

637.05.01 PAYMENT

ADD THE FOLLOWING TO THIS SUBSECTION:

The Contract lump sum payment for DUST CONTROL shall include all permits, labor, materials, and equipment necessary to provide dust control for the entire duration of the project as described in the approved DCMP or as directed by the Engineer. Payments shall be divided evenly using the initial Contract duration, plus any additional contract time added by change order or as directed by the Engineer. When additional Contract time is added the remaining unpaid portion of the lump sum bid amount shall be divided evenly over the remaining Contract time by recalculating the prorated payment.

The Contract lump sum payment for NPDES Discharge Permit shall include all permits, labor, materials, and equipment necessary to carry out the Storm Water Pollution Prevention Plan (SWPPP) for the entire duration of the project as described in the permit and as directed by the Engineer and shall also include permanent stabilization of the construction area and staging area. Payments shall be divided evenly using the initial contract duration, plus any additional contract time added by change order or as directed by the Engineer. When additional Contract time is added the remaining unpaid portion of the lump sum bid amount shall be divided evenly over the remaining Contract time by recalculating the prorated payment.

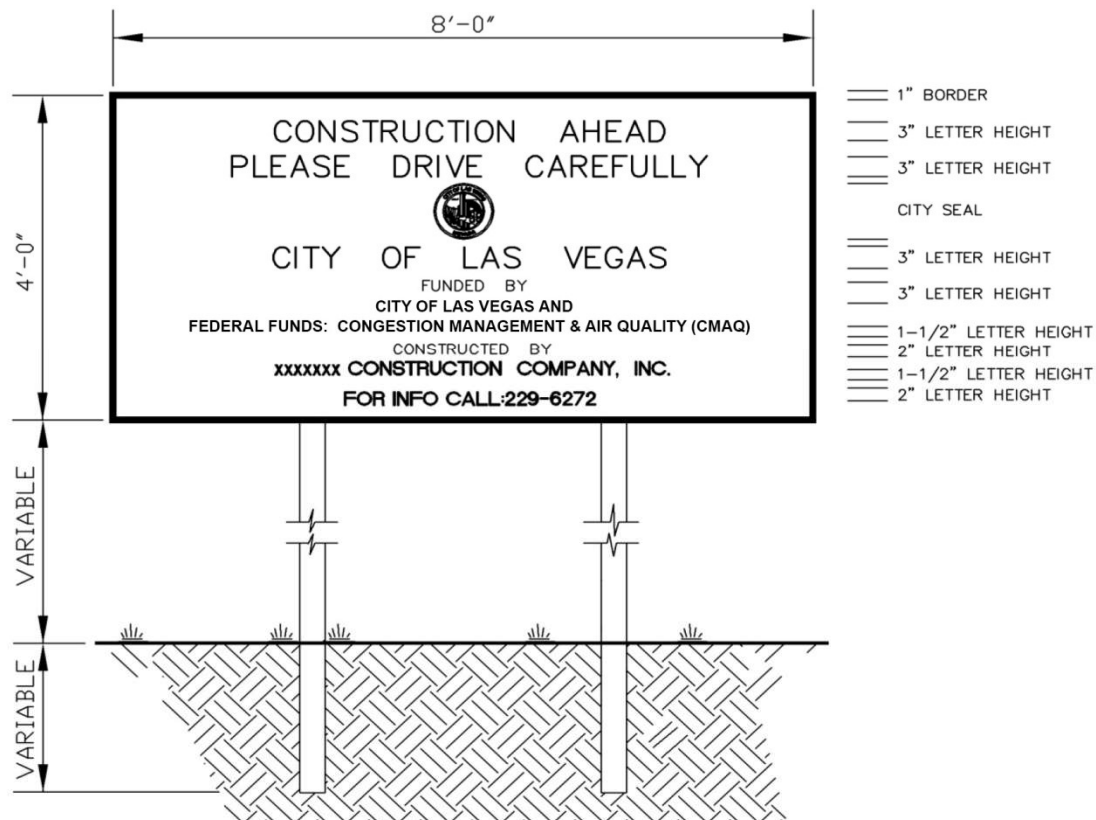
Payment will be made under:

<u>ITEM NO.</u>	<u>ITEM DESCRIPTION</u>	<u>UOM</u>
637.01	DUST CONTROL	LS
637.02	NPDES DISCHARGE PERMIT	LS

END OF SECTION 637

APPENDIX A – PROJECT SIGNS

Front of sign information for City of Las Vegas funded projects:



PROJECT SIGN

NOTES:

1. SIGN SHALL BE PAINTED WHITE WITH 1" BLACK BORDER. ALL LETTERING TO BE BLACK EXCEPT TOP ONE WHICH SHALL BE RED.
2. SIGN SHALL BE PLACED SO AS NOT TO OBSTRUCT SAFE STOPPING SIGHT DISTANCE AND SHALL NOT OBSTRUCT ANY PEDESTRIAN WAY.
3. FINAL SIGN LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

Back of sign information:

The hourly rates for this project are determined by the state of Nevada. Information on the rates can be obtained by calling the office of Labor commissioner at (702) 486-2650. Reference PWP# 07.1730.XXX.

El salario labor correspondiente por hora es determinado por Estado de Nevada. Informacion acerca los salarios puede ser obtenida llamando a la Comision laboral al (702) 486-2650. Numero PWP de referencia 07.1730.XXX.

===== 1" BORDER

===== 1-1/2" LETTER HEIGHT

APPENDIX B – CITY OF LAS VEGAS TRENCH PLATE REQUIREMENTS

Trench plates placed on City of Las Vegas right of way with speeds of 45 m.p.h. or greater shall be placed with one of the following options.

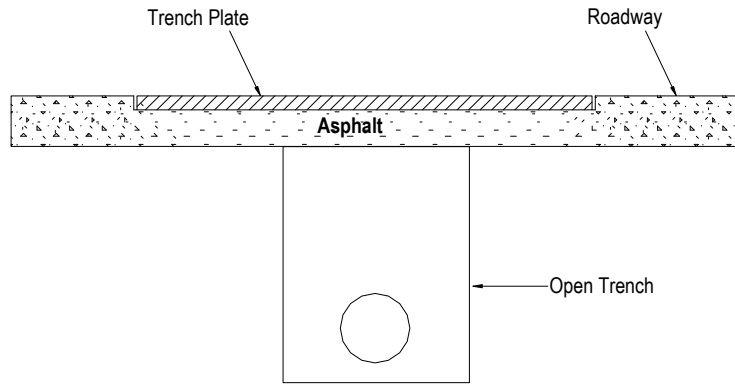
1. The surface of the roadway around the trench will be taken down to allow the plate to lay flush with the top of the roadway. Any voids will be filled with cold mix and compacted to ensure that the roadway has a smooth drivable surface. The integrity of the plate placement is the responsibility of the contractor, who must take necessary precautions to ensure anchoring, strength and side supports are adequate to prevent collapse and/or plate movement. (PROFILE VIEW OPTION #1)
2. The trench plates will be placed over the trench with at least 18 inches of cold mix placed around the trench plate on every side to ensure a smooth transition. When checked with a 12" straight edge, vertical deviations must be less than $\frac{3}{4}$ ". The integrity of the plate placement is the responsibility of the contractor, who must take necessary precautions to ensure anchoring, strength and side supports are adequate to prevent collapse and/or plate movement. There will be a buffer plate added to each side of the plate covering the trench within the travel lane to create a more drivable surface. The entire lane will be addressed, no half lane plating will be allowed. Bump Ahead signage will be placed in advanced of the plates. They will be placed in accordance with the M.U.T.C.D. and/or all Municipal Codes. (PLAN VIEW OPTION #2)

Trench plates placed on City of Las Vegas right of way with speeds of 40 m.p.h. or less shall be placed with one of the following options.

The trench plates will be placed over the trench with at least 18 inches of cold mix placed around the trench plate on every side to ensure a smooth transition. When checked with a 12" straight edge, vertical deviations must be less than $\frac{3}{4}$ ". The integrity of the plate is the responsibility of the contractor, who must take all necessary precautions to ensure anchoring, strength and side supports are adequate to prevent collapse and/or plate movement. The entire travel lane will be addressed, no half lane plating will be allowed. Bump Ahead signage will be placed in advanced of the plates. They will be placed in accordance with the M.U.T.C.D. and/or all Municipal Codes. (PLAN VIEW OPTION #2)

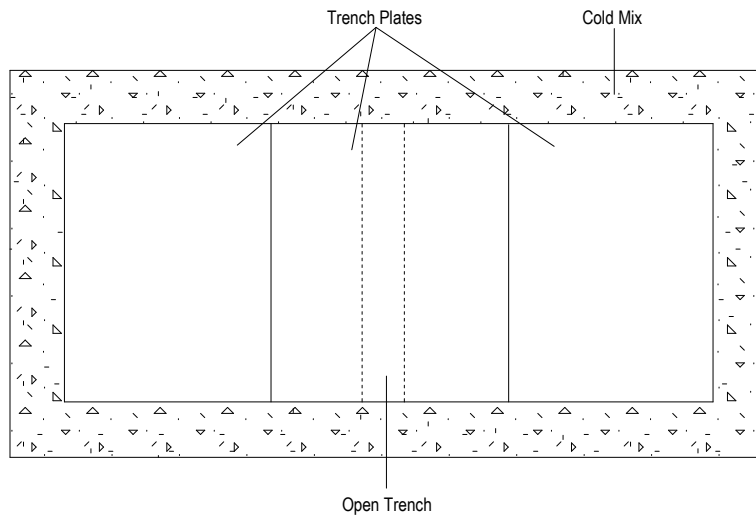
Appendix "B"

OPTION # 1



Profile View

Option #2



PLAN VIEW

APPENDIX C – SAMPLE PROJECT SCHEDULES

C-1

File Name:

Page: 1 of 1

Activity ID	Activity Name	OD	R/D	Activity % Complete	Start	Finish	Total Float
City of Las Vegas							
MS-100	Notice to Proceed (November 20, 2012)	0	0	0%	20-Nov-12		0
MS-110	Construction Duration (Calendar Days)	58	58	0%	20-Nov-12	16-Jan-13	0
SUB-120	Metal Fencing	5	5	0%	20-Nov-12	28-Nov-12	0
CON-100	Approve Work Area Plan	0	0	0%		20-Nov-12	0
CON-200	Salvage Parking Bumpers N&S Lots	2	2	0%	20-Nov-12	21-Nov-12	0
CON-210	Salvage Light Pole	1	1	0%	20-Nov-12	20-Nov-12	0
CON-220	Demo Existing Rolling Gate at NW	1	1	0%	20-Nov-12	20-Nov-12	0
CON-230	Demo West Parking Lot, Islands & Curbs	5	5	0%	20-Nov-12	28-Nov-12	0
CON-320	Rough in UG Electrical	10	10	0%	27-Nov-12	10-Dec-12	0
CON-240	Salvage Existing Vehicle Gate	1	1	0%	28-Nov-12	28-Nov-12	0
SUB-130	Concrete Mixes (Curbs, Figs, Sidewalks)	5	5	0%	29-Nov-12	05-Dec-12	0
APR-130	Concrete Mixes (Curbs, Figs, Sidewalks)	5	5	0%	06-Dec-12	12-Dec-12	0
CON-500	FRP Masonry Footings - North	3	3	0%	11-Dec-12	13-Dec-12	0
CON-560	Install Posts for Existing Clockwise from VG	10	10	0%	11-Dec-12	24-Dec-12	0
CON-570	Install Picket Panels clockwise - South	5	5	0%	18-Dec-12	24-Dec-12	0
CON-580	Install Picket Panels clockwise - West	5	5	0%	26-Dec-12	02-Jan-13	0
CON-590	Install Picket Panels clockwise - North	5	5	0%	03-Jan-13	09-Jan-13	0
CON-600	Install Picket Panels clockwise - East	5	5	0%	10-Jan-13	16-Jan-13	0
MS-130	Final Completion (January 16, 2013)	0	0	0%		16-Jan-13*	0

Start Date:

20-Nov-12

Finish Date:

16-Jan-13

Data Date:

20-Nov-12

Run Date:

01-Oct-13 16:18

Activity ID	BID	Activity Description	Orig	Early Start	Early Finish	Late Start	Late Finish	Total Float	% Comp	Preclosure	Successors	RESP	Budgeted Cost	Resource ID	Call ID
Total			30	01APR13	29MAY14	22APR13	29MAY14	0	0				4,013,000.00	1	
Milestones															
General															
2013 2014 SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC															
Working															
Substantial Completion Punchlist (Calendar Day) Final Completion															
Design / Procurement															
Design															
Submittals															
DES-40		Submit Bid Shop Occure Plan	5	01APR13	09APR13	11SEP13	17SEP13	117	0	MS-560	DES-550		0.00	MANPWR, EQUIP	1
DES-40		Submit Authorized Biologist	1	02APR13	22APR13	22APR13	22APR13	0	0	MS-560*	DES-550*		0.00		1
DES-120		Submit Concrete Quality Ctrl Plans	30	22APR13	31MAY13	07MAY13	17JUN13	11	0	MS-550*	DES-200*, DES-210		0.00		1
DES-450		Submit Air Quality Plan	30	22APR13	31MAY13	07MAY13	17JUN13	11	0	MS-550*	DES-470		0.00		1
DES-480		Submit NPDES Plan	30	22APR13	31MAY13	07MAY13	17JUN13	11	0	MS-550*	DES-480		0.00		1
DES-180		Submit Precast RC8	1	02APR13	22APR13	13MAY13	13MAY13	15	0	MS-550*	DES-130*, DES-240		0.00		1
DES-290		Submit Fencing Materials	20	22APR13	17MAY13	21MAY13	17JUN13	21	0	MS-550*	DES-200		0.00		1
DES-130		Submit Drainage Pipe RCP Plans	10	22APR13	03MAY13	14JUN13	27JUN13	39	0	DES-130*, MS-550*	DES-140*, DES-170		0.00		1
DES-140		Submit Concrete Mix Designs	20	22APR13	17MAY13	14JUN13	11JUL13	30	0	DES-130*	DES-170, DES-320		0.00		1
DES-150		Submit Interchange Falsework Plans	1	02APR13	22APR13	01AUG13	01AUG13	72	0	MS-550*	DES-190, FAB-170		0.00		1
DES-110		Submit Barricade & Traffic Control Phase 1	1	02APR13	22APR13	12SEP13	12SEP13	103	0	MS-550*, MS-560	DES-270		0.00		1
DES-380		Submit Retaining Wall Materials	30	22APR13	31MAY13	04OCT13	14NOV13	119	0	MS-550*	DES-400		0.00		1
DES-310		Submit Plant Mix Bituminous Materials	30	22APR13	31MAY13	07OCT13	19NOV13	120	0	MS-550*	DES-320		0.00		1
DES-410		Submit Retar Shop Drawings	15	22APR13	10MAY13	06OCT13	28OCT13	121	0	MS-550*	DES-420		0.00		1
DES-430		Submit Sanitary Sewer Materials	10	06MAY13	17MAY13	04SEP13	17SEP13	87	0	DES-130	DES-350, DES-440		0.00		1
DES-200		Submit Misc Construction Supplies	10	29MAY13	31MAY13	04JUN13	17JUN13	11	0	DES-120*	DES-200		0.00		1
DES-170		Submit Electrical Package Materials	15	29MAY13	07JUN13	12JUL13	01AUG13	39	0	DES-130, DES-140	DES-220		0.00		1
DES-350		Submit Aggregate Materials	10	29MAY13	31MAY13	28NOV13	09DEC13	135	0	DES-400, MS-550*	DES-320, DES-380		0.00		1
DES-320		Submit Signage and Signage Materials	30	02JUN13	12JUL13	09DEC13	17JAN14	125	0	DES-350, MS-550*	DES-240, DES-370		0.00		1
DES-370		Submit Landscape Irrigation Materials	10	15JUL13	28JUL13	17FEB14	28FEB14	155	0	DES-320, DES-350	DES-380		0.00		1

Sheet 1 of 5
 General Contractor - X Construction
 Road Construction Project
 1 - CLV Baseline - All Work

Activity ID	BID	Activity Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	% Comp	Predecessors	Successors	RESP	Budgeted Cost	Resource ID	Cal ID	2013 A SEP OCT NOV DEC JAN FEB MAR APR MAY JUNE	2014 JULY AUG
Approvals																	
DES-550		Approve Bus Stop Closure Plan	10/08APR13	18SEP13	01OCT13	01OCT13	01OCT13	117	0	DES-540	ST-A-1020		0.00		1		
DES-500		Approve Authorized Biologist	50/23APR13	01JUL13	22APR13	01JUL13	01JUL13	0	0	DES-490	GEN-1030, MS-510		0.00		1		
DES-240		Approve Precast RCB	10/23APR13	08MAY13	14MAY13	27MAY13	27MAY13	15	0	DES-160	FAB-180		0.00		1		
DES-190		Approve Interchange Followwork Subm	65/23APR13	22JUL13	02AUG13	31OCT13	31OCT13	73	0	DES-150	FAB-170		0.00		1		
DES-270		Approve Traffic Control Phase 1 Plan	10/23APR13	06MAY13	13SEP13	26SEP13	26SEP13	103	0	DES-110	ST-A-1000		0.00		1		
DES-260		Approve Drainage Pipe RCP Submittals	10/09MAY13	17MAY13	08OCT13	21OCT13	21OCT13	111	0	DES-130	FAB-150		0.00		1		
DES-420		Approve Precast Shop Drawings	20/13MAY13	07JUN13	26OCT13	25NOV13	25NOV13	121	0	DES-410	ST-A-1038		0.00		1		
DES-300		Approve Fencing Plans	10/20MAY13	31MAY13	18JUN13	01JUL13	01JUL13	21	0	DES-290	GEN-1000		0.00		1		
DES-440		Approve Sanitary Sewer Plans	10/20MAY13	31MAY13	18SEP13	01OCT13	01OCT13	97	0	DES-430	ST-A-1020		0.00		1		
DES-530		Approve Concrete Mix Designs	10/20MAY13	31MAY13	12NOV13	28NOV13	28NOV13	126	0	DES-140	ST-A-1039		0.00		1		
DES-280		Approve Misc Construction Supplies	10/03JUN13	14JUN13	18JUN13	01JUL13	01JUL13	11	0	DES-200	GEN-1000		0.00		1		
DES-470		Approve Air Quality Plan	10/03JUN13	14JUN13	18JUN13	01JUL13	01JUL13	11	0	DES-450	GEN-1000		0.00		1		
DES-480		Approve NPDES Plan	10/03JUN13	14JUN13	18JUN13	01JUL13	01JUL13	11	0	DES-460	GEN-1000		0.00		1		
DES-210		Approve Concrete Quality Control Plan	10/03JUN13	14JUN13	12NOV13	28NOV13	28NOV13	116	0	DES-120	ST-A-1039		0.00		1		
DES-400		Approve Retaining Wall Plans	10/03JUN13	14JUN13	15NOV13	28NOV13	28NOV13	119	0	DES-390	ST-A-1049		0.00		1		
DES-320		Approve Plant Mix Bituminous Plans	10/03JUN13	14JUN13	18NOV13	28NOV13	28NOV13	120	0	DES-310	ST-1005		0.00		1		
DES-360		Approve Aggregate Materials	10/03JUN13	14JUN13	12DEC13	28DEC13	28DEC13	138	0	DES-350	ST-A-1004		0.00		1		
DES-220		Approve Electrical Package Submittal	10/10JUN13	21JUN13	02AUG13	15AUG13	15AUG13	39	0	DES-170	DES-130		0.00		1		
DES-340		Approve Striping and Signage Plans	10/15JUL13	26JUL13	20JAN14	31JAN14	31JAN14	135	0	DES-330	ST-A-1009		0.00		1		
DES-380		Approve Landscape/Irrigation Plans	10/26JUL13	09AUG13	03MAR14	14MAR14	14MAR14	155	0	DES-370	FAB-190*		0.00		1		
Procurement																	
General																	
FAB-150		Fab/Del Drainage Pipe RCP Materials	10/20MAY13	31MAY13	22OCT13	04NOV13	04NOV13	111	0	DES-320*	ST-A-1002		0.00		1		
FAB-130		Fab/Del Electrical Package Materials	60/24JUN13	13SEP13	16AUG13	07NOV13	07NOV13	93	0	DES-220*	ST-A-1030		0.00		1		
FAB-170		Fab/Del Fomliner	20/23JUL13	19AUG13	01NOV13	28NOV13	28NOV13	72	0	DES-450, DES-190	ST-A-1049		0.00		1		
FAB-190		Fab/Del Landscape/Irrigation Materials	15/12AUG13	30AUG13	17MAR14	04APR14	04APR14	155	0	DES-380*	GEN-1040*		0.00		1		
Long Lead																	
FAB-190		Fab/Del Precast RCB Materials	50/07MAY13	15JUL13	28MAY13	05AUG13	05AUG13	15	0	DES-340	MS-510*, ST-E-110*, ST-E-300*		0.00		1		
Construction																	
General																	
Mobilization																	
General																	
GEN-1000	200 01	Mobilize	5/02JUL13	08JUL13	02JUL13	08JUL13	08JUL13	0	0	DES-280, DES-300, DES-470, DES-480	GEN-1010, GEN-1020*, MS-SH-100*, ST-A-1000, MS-520*	GC&SUB	20,500.00 \$ COST		1		
GEN-1020	201	Clear and Grub - Entire Project Duration	214*/02JUL13	25APR14	02JUL13	25APR14	02JUL13	0	0	GEN-1000*	SUB-CONT		500,000.00 MANPWR, HEAVY EQ, \$ COST		1		
GEN-1030	680	Install Biological Controls (TBD)	10/02JUL13	15JUL13	02JUL13	15JUL13	02JUL13	0	0	DES-300	MS-510*	SUB-CONT	41,000.00 MANPWR, HAND, \$ COST		1		
GEN-1040	212	Install Misc Landscape throughout project	15/02SEP13*	20SEP13	07APR14	25APR14	25APR14	135	0	FAB-190*	MS-520	SUB-CONT	61,500.00 MANPWR, SMALL EQ, \$ COST		1		
Overhead Signs																	
GEN-1180	624	Traffic Control Set-Up	3/03APR14	07APR14	03APR14	07APR14	07APR14	0	0	MS-510	GEN-1190*	SUB-CONT	12,300.00 MANPWR, HAND, \$ COST		1		
GEN-1190		Excavate	4/08APR14	11APR14	08APR14	11APR14	11APR14	0	0	GEN-1180*	GEN-1010*	SUB-CONT	16,400.00 MANPWR, EXCAVATOR, \$ COST		1		
GEN-1010	627	Overhead Signage	10/14APR14	25APR14	14APR14	25APR14	25APR14	0	0	GEN-1000, GEN-1190*, MS-510	MS-520*	SUB-CONT	41,000.00 MANPWR, CRANE / L, \$ COST		1		
															Traffic Control Set-Up		
															Excavate		
															Overhead Signage		

Sheet 2 of 5

Activity ID		BID	Activity Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	% Comp	Predecessors	Successors	RESP	Budgeted Cost	Resource ID	Cal ID	2013 A SEP OCT NOV DEC JAN FEB MAR APR MAY JUN											
Stage 1																												
Milestones																												
General																												
MS-SI-100	Start Stage 1			0	02JUL13	07FEB14	02JUL13	07FEB14	0	0	GEN-1000*	MS-SI-110*, SI-A-1020, SI-B-1010*, MS-SI-101*		0.00		1												
MS-SI-110	Stage 1 Duration			159*	02JUL13	07FEB14	02JUL13	07FEB14	55	0	MS-SI-100*			0.00		1												
MS-SI-101	Complete Stage 1			0		07FEB14		23APR14	55	0	MS-SI-110*, SI-A-1019*, SI-B-1019, SI-E-090	MS-S20		0.00		1												
Stage 1A																												
Milestones																												
SI-A-100	Start Stage 1A			0	27SEP13	07FEB14	27SEP13	07FEB14	0	0	SI-B-1005*, SI-B-2005	SI-A-1000*, SI-A-1020		0.00		1												
SI-A-1019	Complete Stage 1A			0		07FEB14		23APR14	55	0	SI-A-1009*	MS-SI-101*		0.00		1												
Construct Road A																												
SI-A-1000	Set Traffic Control	624		1	27SEP13	27SEP13	27SEP13	27SEP13	0	0	DES-270, GEN-1000, SI-A-100*	SI-A-1002, SI-A-1010, SI-A-1020, SI-A-1026	SUB-CONT	4,100.00	MANPWR, HAND, \$ COST	1												
SI-A-1060	Layout and Survey	622		5	30SEP13	04OCT13	30SEP13	04OCT13	0	0	SI-A-1000*	SI-A-1010*	SUB-CONT	20,500.00	MANPWR, HAND, SU, \$ COST	1												
SI-A-1010	Demo and Removals	202		9	02OCT13	14OCT13	02OCT13	14OCT13	0	0	SI-A-1000, SI-A-1060*	SI-A-1020*	GC	36,800.00	MANPWR, BACKHOE, \$ COST	1												
SI-A-1020	Relocate utilities west side of Road A			17	02OCT13	24OCT13	02OCT13	24OCT13	0	0	DES-440, DES-550, SI-A-1000, SI-A-1060*	SI-A-1020*	SUB-CONT	75,000.00	MANPWR, BACKHOE, \$ COST	1												
SI-A-1050	Build up embankment	630		9	02OCT13	14OCT13	02OCT13	14OCT13	0	0	SI-A-1000*	SI-A-1020*	SUB-CONT	50,000.00	MANPWR, SCRAPER, \$ COST	1												
SI-A-1002	ELB Storm Drainage - PH1	502		15	15OCT13	04NOV13	15OCT13	04NOV13	0	0	FAB-150, MS-SI-100, SI-A-1000, SI-A-1060*	SI-A-1003, SI-A-1030*, SI-A-1032*	SUB-CONT	75,000.00	MANPWR, EXCAVATO, \$ COST	1												
SI-A-1026	Structure Ex and Backfill for RW#8 Flg	640		3	26OCT13	26OCT13	21NOV13	26NOV13	19	0	MS-SI-100, SI-A-1000, SI-A-1020*	SI-A-1039*	GC	12,300.00	MANPWR, EXCAVATO, \$ COST	1												
SI-A-1012	ELB Storm Drainage - PH2	502		15	26OCT13	18NOV13	26OCT13	18NOV13	0	0	SI-A-1002*	SI-A-1022, SI-A-1030*, SI-A-1032*	SUB-CONT	61,500.00	MANPWR, FORKLIFT, \$ COST	1												
SI-A-1039	FP/S Footing RW#8	640		3	30OCT13	01NOV13	26OCT13	28NOV13	19	0	DES-210, DES-420, SI-A-1000, SI-A-1060*	SI-A-1030*	SUB-CONT	12,300.00	MANPWR, FORKLIFT, \$ COST	1												
SI-A-1049	FP/S Retaining Wall #8	640		4	04NOV13	07NOV13	26NOV13	04DEC13	19	0	DES-400, FAB-100, SI-A-1000, SI-A-1060*	SI-A-1059*	SUB-CONT	16,400.00	MANPWR, FORKLIFT, \$ COST	1												
SI-A-1030	Adjustments to Utilities - PH1	630		12	08NOV13	25NOV13	08NOV13	25NOV13	0	0	SI-A-1039*	SI-A-1039*	SUB-CONT	49,200.00	MANPWR, BACKHOE, \$ COST	1												
SI-A-1059	Roadway Embankment RW#8	203		5	08NOV13	14NOV13	05DEC13	11DEC13	19	0	SI-A-1043*	SI-A-1003	SUB-CONT	20,500.00	MANPWR, MISC HEA, \$ COST	1												
SI-A-1032	ELB Storm Drainage - PH3	502		15	12NOV13	02DEC13	14NOV13	04DEC13	2	0	SI-A-1012*	SI-A-1022*	GC	61,500.00	MANPWR, EXCAVATO, \$ COST	1												
SI-A-1040	Adjustments to Utilities - PH2	609		12	26NOV13	11DEC13	26NOV13	11DEC13	0	0	SI-A-1010*	SI-A-1003*	SUB-CONT	49,200.00	MANPWR, BACKHOE, \$ COST	1												
SI-A-1022	UG Electrical and Phone	623		5	03DEC13	09DEC13	05DEC13	11DEC13	2	0	SI-A-1002, SI-A-1012, SI-A-1032*	SI-A-1004*	SUB-CONT	20,500.00	\$ COST	1												
SI-A-1003	Sub-grade	402		10	12DEC13	25DEC13	12DEC13	25DEC13	0	0	SI-A-1003, SI-A-1012, SI-A-1040*, SI-A-1059	SI-A-1004*, SI-A-1013*	SUB-CONT	41,000.00	MANPWR, MISC HEA, \$ COST	1												
SI-A-1004	Base Course	302		10	26DEC13	06JAN14	26DEC13	06JAN14	0	0	DES-360, SI-A-1003*	SI-A-1005, SI-A-1014*	SUB-CONT	41,000.00	MANPWR, LOADER, \$ COST	1												
SI-A-1013	Install FA Rail	618		15	26DEC13	15JAN14	13JAN14	31JAN14	12	0	SI-A-1003*	SI-A-1009	GC	61,500.00	MANPWR, HAND, CR, \$ COST	1												
SI-A-1014	Spray and Tack	402		2	06JAN14	10JAN14	06JAN14	10JAN14	0	0	SI-A-1004*	SI-A-1005*	SUB-CONT	8,200.00	MANPWR, TACK TRU, \$ COST	1												
SI-A-1005	AC Pave	402		5	13JAN14	17JAN14	13JAN14	17JAN14	0	0	DES-320, SI-A-1004, SI-A-1014*	SI-A-1009, SI-A-1015*	SUB-CONT	20,500.00	MANPWR, PAVER, R, \$ COST	1												
SI-A-1015	Cure AC			14	13JAN14	31JAN14	20JAN14	02FEB14	2	0	SI-A-1005*	SI-A-1009*	SUB-CONT	57,400.00	\$ COST	2												
SI-A-1009	Temp Stripes and Sign	634		5	03FEB14	07FEB14	03FEB14	07FEB14	0	0	DES-340, SI-A-1005, SI-A-1013, SI-A-1015*	SI-A-1019*, SI-A-1026, SI-A-1089*	SUB-CONT	20,500.00	MANPWR, HAND, \$ COST	1												
SI-A-1089	Pour Signal Foundations	623		5	10FEB14	14FEB14	10FEB14	14FEB14	0	0	SI-A-1009*	SI-A-1089*	SUB-CONT	20,500.00	MANPWR, HAND, MI, \$ COST	1												
SI-A-1099	Cure Signal Foundation	623		14	15FEB14	28FEB14	17FEB14	02MAR14	2	0	SI-A-1009*	SI-A-1109*	SUB-CONT	57,400.00	\$ COST	2												
SI-A-1109	Install Signal Assembly	623		10	03MAR14	14MAR14	03MAR14	14MAR14	0	0	SI-A-1099*	SI-A-1119*	SUB-CONT	41,000.00	MANPWR, CRANE, H, \$ COST	1												
SI-A-1119	Wiring Signal	623		10	17MAR14	28MAR14	17MAR14	28MAR14	0	0	SI-A-1109*	SI-A-1069*	SUB-CONT	41,000.00	MANPWR, HAND, \$ COST	1												
SI-A-1069	Street Lighting (TBD)	627		10	31MAR14	11APR14	31MAR14	11APR14	0	0	DES-130, DES-140, MS-S20, SI-A-1039	MS-S20, SI-B-1059*	SUB-CONT	41,000.00	MANPWR, CRANE, B, \$ COST	1												
Stage 1B																												
Milestones																												
SI-B-1010	Start Stage 1B			0	02JUL13		02JUL13		0	0	GEN-1000*, MS-SI-100*	SI-B-1000, SI-B-1020		0.00		1												
SI-B-1019	Complete Stage 1B			0		17OCT13		25APR14	136	0	SI-B-1009*, SI-B-2009	MS-SI-101		0.00		1												

Activity ID	BID	Activity Description	Orig. Est. Start	Early Start	Early Finish	Late Start	Late Finish	Total Float	% Comp.	Predecessors	Successors	RESP	Budgeted Cost	Resource ID	Cal ID	2013	2014
Construct Road E North																	
Stationing FFE - 28+00 to 34+00																	
S1-B-1020	202	Demol and Removals	10/02/2013	15/07/13	02/08/13	15/07/13	15/07/13	0	0	S1-B-1010	S1-B-1003, S1-B-1029, S1-B-2002, S1-B-1020, S1-B-2003	GC	41,000.00	MANPWR, BACKHOE, \$ COST	1		
S1-B-1000	624	Self Traffic Control	3/02/2013	04/07/13	11/07/13	15/07/13	15/07/13	7	0	S1-B-1010	S1-B-1003, S1-B-1029, S1-B-2003	SUB-CONT	12,300.00	MANPWR, HAND, \$ COST	1		
S1-B-1029	640	Structure Exc and Backfill for RWY7 Ptg	3/02/2013	18/07/13	16/08/13	15/07/13	15/07/13	0	0	S1-B-1000, S1-B-1020	S1-B-1039	GC	12,300.00	MANPWR, EXCAVATOR, \$ COST	1		
S1-B-1039	640	FPS Fencing RWY7	3/16/2013	23/07/13	19/08/13	19/08/13	23/07/13	0	0	S1-B-1029	S1-B-1049	GC	12,300.00	MANPWR, FORKLIFT, \$ COST	1		
S1-B-1049	640	FPS Retaining Wall #7	4/24/2013	26/07/13	24/08/13	26/07/13	26/07/13	0	0	S1-B-1039	S1-B-1099	GC	16,400.00	MANPWR, FORKLIFT, \$ COST	1		
S1-B-1099	203	Roadway Embankment RWY7	5/30/2013	05/08/13	30/08/13	05/08/13	05/08/13	0	0	S1-B-1049	S1-B-1003	SUB-CONT	20,500.00	MANPWR, MISC HEA, \$ COST	1		
S1-B-1003	203	Sub-grade	10/05/2013	19/08/13	06/09/13	19/08/13	19/08/13	0	0	S1-B-1000, S1-B-1020, S1-B-1099	S1-B-1013*	SUB-CONT	41,000.00	MANPWR, MISC HEA, \$ COST	1		
S1-B-1004	302	Base Course	10/13/2013	26/08/13	13/09/13	26/08/13	26/08/13	0	0	S1-B-1003	S1-B-1004, S1-B-1014, S1-B-2001*	SUB-CONT	41,000.00	MANPWR, LOADER, \$ COST	1		
S1-B-1013	640	Install FA Rail	10/20/2013	02/09/13	03/09/14	14/09/14	14/09/14	119	0	S1-B-1003*	S1-B-1009	GC	41,000.00	MANPWR, HAND, CR, \$ COST	1		
S1-B-1014	402	Spray and Tack	2/27/2013	28/08/13	18/09/13	19/09/13	19/09/13	16	0	S1-B-1004	S1-B-1005	SUB-CONT	8,200.00	MANPWR, TACK TRU, \$ COST	1		
S1-B-1005	402	AC Pave	5/20/2013	26/09/13	20/09/13	26/09/13	26/09/13	0	0	S1-B-1004, S1-B-1014, S1-B-1009*	S1-A-100*, S1-B-1006, S1-B-1007	SUB-CONT	20,500.00	MANPWR, PAYER, R, \$ COST	1		
S1-B-1015	402	Cure AC	14/27/2013	10/09/13	03/09/14	16/09/14	16/09/14	126	0	S1-B-1005*	S1-B-1007	SUB-CONT	57,400.00	\$ COST	2		
S1-B-1009	62	Temp Stripe and Sign	5/11/2013	17/09/13	17/09/13	21/09/14	21/09/14	91	0	S1-B-1005, S1-B-1013, S1-B-1012*	S1-B-1011*, S1-B-1019*	SUB-CONT	20,500.00	MANPWR, HAND, \$ COST	1		
S1-B-1011	623	Pour Signal Foundations	5/18/2013	24/09/13	24/09/13	24/09/14	28/09/14	91	0	S1-B-1009*	S1-B-1012*	SUB-CONT	20,500.00	MANPWR, HAND, MI, \$ COST	1		
S1-B-1012	623	Cure Signal Foundation	14/25/2013	07/10/13	03/10/14	16/10/14	16/10/14	129	0	S1-B-1011*	S1-B-1116	SUB-CONT	57,400.00	\$ COST	2		
S1-B-1116	623	Install Signal Assembly	10/08/2013	21/10/13	17/10/14	28/10/14	28/10/14	91	0	S1-B-1012*	S1-B-1017	SUB-CONT	41,000.00	MANPWR, CRANE, H, \$ COST	1		
S1-B-1017	623	Wiring Signal	10/22/2013	05/11/13	31/10/14	11/11/14	11/11/14	91	0	S1-B-1116*	S1-1056	SUB-CONT	41,000.00	MANPWR, CRANE, B, \$ COST	1		
S1-B-1059	627	Street Lighting (TBD)	10/14/2014	25/04/14	14/05/14	25/04/14	25/04/14	0	0	S1-A-1069*, S1-B-1009, S1-B-1017		SUB-CONT	41,000.00	MANPWR, CRANE, B, \$ COST	1		
Stationing FFE - 34+00 to 36+50																	
S1-B-2001		Excavation	5/27/2013	02/09/13	27/09/13	02/09/13	02/09/13	0	0	S1-B-1004*	S1-B-2002*	SUB-CONT	20,500.00	MANPWR, EXCAVATOR, \$ COST	1		
S1-B-2002		Storm Drainage	3/03/2013	05/09/13	03/09/13	05/09/13	05/09/13	0	0	S1-B-1009, S1-B-1012, S1-B-2001*	S1-B-2003, S1-B-2012*	SUB-CONT	12,300.00	\$ COST	1		
S1-B-2012	640	Backfill	1/05/2013	06/09/13	06/09/13	06/09/13	06/09/13	0	0	S1-B-2003*	S1-B-2005*	SUB-CONT	4,100.00	MANPWR, LOADER, \$ COST	1		
S1-B-2003		Sub-grade	3/06/2013	11/09/13	09/09/13	11/09/13	11/09/13	0	0	S1-B-2002*, S1-B-2005*	S1-B-2004*, S1-B-2013*	SUB-CONT	12,300.00	MANPWR, MISC HEA, \$ COST	1		
S1-B-2004	302	Base Course	3/11/2013	13/09/13	11/09/13	13/09/13	13/09/13	0	0	S1-B-2003, S1-B-2014*	S1-B-2005, S1-B-2014*	SUB-CONT	12,300.00	MANPWR, LOADER, \$ COST	1		
S1-B-2014	402	Install FA Rail	5/12/2013	18/09/13	17/09/13	17/09/14	23/09/14	15*	0	S1-B-2003*	S1-B-2009	GC	20,500.00	MANPWR, HAND, CR, \$ COST	1		
S1-B-2005	402	Spray and Tack	2/10/2013	17/09/13	17/09/13	17/09/13	17/09/13	0	0	S1-B-2004*	S1-B-2005*	SUB-CONT	8,200.00	MANPWR, TACK TRU, \$ COST	1		
S1-B-2015	402	AC Pave	2/18/2013	19/09/13	18/09/13	19/09/13	19/09/13	0	0	S1-B-2004, S1-B-2014*	S1-A-100, S1-B-1065*, S1-B-2003, S1-B-2015*	SUB-CONT	8,200.00	MANPWR, PAYER, R, \$ COST	1		
S1-B-2015	402	Cure AC	14/26/2013	03/10/13	10/09/14	23/09/14	23/09/14	202	0	S1-B-2005*	S1-B-2007*	SUB-CONT	57,400.00	\$ COST	2		
S1-B-2009	632	Temp Stripe and Sign	2/14/2013	07/10/13	24/09/14	25/09/14	25/09/14	144	0	S1-B-2005, S1-B-2013, S1-B-2015	S1-B-1019	SUB-CONT	8,200.00	MANPWR, HAND, \$ COST	1		
Stage 1C																	
General																	
S1-E-050		Start Stage 1E	0/02/2013		06/06/13			113	0	MS-S1-100	S1-E-170*, S1-E-300*		0.00				
S1-E-060		Complete Stage 1E	0	19/09/13		25/09/14		113	0	S1-E-160*, S1-E-205, S1-E-305, S1-E-333	MS-S1-101		0.00				
Construct Box Culvert Freeway																	
Stationing MFU Line 4+00 to 16+50																	
S1-E-170	502	Prep for RCB	3/03/2013	06/07/13	06/07/13	11/07/13	11/07/13	113	0	S1-E-060*	S1-E-160, S1-E-201	SUB-CONT	20,000.00	MANPWR, MISC HEA, \$ COST	1		
S1-E-180	502	Excavate for culvert	16/08/2013	28/07/13	12/08/13	02/08/14	02/08/14	113	0	S1-E-170	S1-E-110, S1-E-180*	SUB-CONT	75,000.00	MANPWR, EXCAVATOR, \$ COST	1		
S1-E-190	502	Fill grade and bedding for RCB	16/15/2013	06/08/13	27/08/13	17/08/14	17/08/14	119	0	S1-E-160*	S1-E-110*	SUB-CONT	75,000.00	MANPWR, BLADE, G, \$ COST	1		
S1-E-110	502	Set 15' x 9' RCB culvert	6/30/2013	06/08/13	03/09/14	10/09/14	10/09/14	113	0	FAB-180*, S1-E-160, S1-E-180*	S1-E-120, S1-E-190, S1-E-200*	GC	30,000.00	CITY, MANPWR, HAND, C, \$ COST	1		
S1-E-200	502	Install Manhole 8+00	5/31/2013	06/08/13	10/09/14	14/09/14	14/09/14	158	0	S1-E-110*	S1-E-210*	GC	25,000.00	MANPWR, MISC LUG, \$ COST	1		
S1-E-210		Install Maint Access Opening 11+30	5/31/2013	06/08/13	10/09/14	14/09/14	14/09/14	158	0	S1-E-200*	S1-E-220*	SUB-CONT	25,000.00	MANPWR, BLADE, R, \$ COST	1		
S1-E-220	502	Install Manhole 12+00	5/31/2013	06/08/13	10/09/14	14/09/14	14/09/14	158	0	S1-E-210*	S1-E-230	GC	25,000.00	MANPWR, MISC LUG, \$ COST	1		

Sheet 4 of 5

Activity ID	BID	Activity Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	% Comp	Predecessors	Successors	RESP	Budgeted Cost	Resource ID	Cal ID	2013 A SEP OCT NOV DEC JAN FEB MAR APR MAY JUN	2014 JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN
ST-E-120	502	Install Junction Structure 3-59 to 4-11	15/07AUG13	15/07AUG13	13/JAN14	31/JAN14	11/3	0	ST-E-110	ST-E-130*	GC	75,000.00	MANPWR, HAND, \$ COST	1	1	Install Junction Structure 3-59 to 4-11	
ST-E-130	502	Install Confluence Structure 3-59 to 4-11	15/07AUG13	17/SEP13	03/FEB14	21/FEB14	113	0	ST-E-120*	ST-E-200*	GC	75,000.00	MANPWR, EXCAVATO, \$ COST	1	1	Install Confluence Structure 3-59 to 4-11	
ST-E-200	502	Install Junction Structure 14-17	15/18SEP13	08/OCT13	24/FEB14	14/MAR14	113	0	ST-E-130*, ST-E-220	ST-E-190, ST-E-240*	GC	75,000.00	MANPWR, HAND, \$ COST	1	1	Install Junction Structure 14-17	
ST-E-240	502	Install Transition Structure 17-40	15/09OCT13	29/OCT13	17/MAR14	04/APR14	113	0	ST-E-200*	ST-E-190*	GC	75,000.00	MANPWR, EXCAVATO, \$ COST	1	1	Install Transition Structure 17-40	
ST-E-190	502	Backfill RCB	15/30OCT13	18/NOV13	07/APR14	25/APR14	113	0	ST-E-110, ST-E-230, ST-E-240*	ST-E-060*	SUB-CONT	75,000.00	MANPWR, LOADER,, \$ COST	1	1	Backfill RCB	
Stationing 18-19 to 21-40																	
ST-E-201	502	Prep for RCB	2/08JUL13	08/JUL13	12/FEB14	13/FEB14	157	0	ST-E-170	ST-E-202, ST-E-400	SUB-CONT	8,200.00	MANPWR, MISC, HEA, \$ COST	1	1		
ST-E-202	502	Excavate for culvert	3/10JUL13	12/JUL13	14/FEB14	18/FEB14	157	0	ST-E-201	ST-E-203*, ST-E-204, ST-E-401	SUB-CONT	20,000.00	MANPWR, EXCAVATO, \$ COST	1	1		
ST-E-203	502	Fine grade and bedding for RCB	5/17JUL13	23/JUL13	21/FEB14	27/FEB14	157	0	ST-E-202*	ST-E-204*	SUB-CONT	20,500.00	MANPWR, BLADE, G, \$ COST	1	1		
ST-E-204	502	Set 12' x 4' RCB culvert 18-19 to 18-59	1/24JUL13	24/JUL13	28/FEB14	28/FEB14	157	0	ST-E-202, ST-E-203*	ST-E-205, ST-E-214	GC	4,100.00	QTY, MANPWR, HAND, C, \$ COST	1	1		
ST-E-214	502	Set 15' x 9' RCB culvert 19-19 to 21-40	6/25JUL13	01/AUG13	03/MAR14	10/MAR14	157	0	ST-E-204	ST-E-205, ST-E-224*	GC	24,600.00	QTY, MANPWR, HAND, C, \$ COST	1	1		
ST-E-224	502	Install Confluence Structure 18-19	15/25JUL13	14/AUG13	03/MAR14	21/MAR14	157	0	ST-E-214*	ST-E-205, ST-E-234*	GC	61,500.00	MANPWR, EXCAVATO, \$ COST	1	1		
ST-E-234	502	Install Transition Structure 21-40	15/15AUG13	04/SEP13	24/MAR14	11/APR14	157	0	ST-E-224*	ST-E-205*	GC	75,000.00	MANPWR, EXCAVATO, \$ COST	1	1	Install Transition Structure 21-40	
ST-E-205	502	Backfill RCB	10/05SEP13	18/SEP13	14/APR14	25/APR14	157	0	ST-E-204, ST-E-214, ST-E-224, ST-E-234*	ST-E-060	SUB-CONT	50,000.00	MANPWR, LOADER,, \$ COST	1	1	Backfill RCB	
Stationing 21-40 to 48-40																	
ST-E-300	502	Prep for RCB	3/02JUL13	04/JUL13	15/JAN14	17/JAN14	141	0	ST-E-050*	ST-E-301*, ST-E-300	SUB-CONT	20,000.00	MANPWR, MISC, HEA, \$ COST	1	1		
ST-E-301	502	Excavate for culvert	15/03JUL13	23/JUL13	16/JAN14	05/FEB14	141	0	ST-E-300*	ST-E-302*, ST-E-303*	SUB-CONT	100,000.00	MANPWR, EXCAVATO, \$ COST	1	1		
ST-E-302	502	Fine grade and bedding for RCB	15/10JUL13	30/JUL13	23/JAN14	12/FEB14	141	0	ST-E-301*	ST-E-303*	SUB-CONT	100,000.00	MANPWR, BLADE, G, \$ COST	1	1		
ST-E-303	502	Set 12' x 6' RCB culvert	15/17JUL13	09/AUG13	30/JAN14	19/FEB14	141	0	FAB-1807, ST-E-301*, ST-E-302*	ST-E-304*, ST-E-305*	GC	100,000.00	QTY, MANPWR, HAND, C, \$ COST	1	1		
ST-E-304	502	Backfill RCB	5/02AUG13	08/AUG13	17/FEB14	21/FEB14	141	0	ST-E-303*	ST-E-305*	SUB-CONT	30,000.00	MANPWR, LOADER,, \$ COST	1	1		
ST-E-313	502	Install Maint Access Opening 30-40	15/09AUG13	29/AUG13	24/FEB14	14/MAR14	141	0	ST-E-303*, ST-E-304	ST-E-305, ST-E-323*	SUB-CONT	100,000.00	MANPWR, BLADE, R, \$ COST	1	1	Install Maint Access Opening 30-40	
ST-E-323	502	Install Transition Structure 48-40	15/30AUG13	19/SEP13	17/MAR14	04/APR14	141	0	ST-E-313*	ST-E-305*, ST-E-333*	GC	61,500.00	MANPWR, EXCAVATO, \$ COST	1	1	Install Transition Structure 48-40	
ST-E-333	502	Install Confluence Structure 48-74	15/20SEP13	10/OCT13	07/APR14	25/APR14	141	0	ST-E-323*	ST-E-060	GC	100,000.00	MANPWR, EXCAVATO, \$ COST	1	1	Install Confluence Structure 48-74	
ST-E-305	502	Backfill Structures	7/20SEP13	30/SEP13	17/APR14	25/APR14	149	0	ST-E-313, ST-E-303*	ST-E-060	SUB-CONT	28,700.00	MANPWR, LOADER,, \$ COST	1	1	Backfill Structures	
Stationing 48-40 to 50-40																	
ST-E-400	502	Prep for RCB	2/10JUL13	11/JUL13	07/APR14	08/APR14	193	0	ST-E-303*, ST-E-300	ST-E-401	SUB-CONT	8,200.00	MANPWR, MISC, HEA, \$ COST	1	1		
ST-E-401	502	Excavate for culvert	2/24JUL13	25/JUL13	09/APR14	10/APR14	193	0	ST-E-400, ST-E-301, ST-E-401*	ST-E-402*, ST-E-403	SUB-CONT	8,200.00	MANPWR, EXCAVATO, \$ COST	1	1		
ST-E-402	502	Fine grade and bedding for RCB	2/31JUL13	01/AUG13	16/APR14	17/APR14	193	0	ST-E-401*	ST-E-403*	SUB-CONT	8,200.00	MANPWR, BLADE, G, \$ COST	1	1		
ST-E-403	502	Set 8' x 6' RCB inlet culvert	2/07AUG13	08/AUG13	23/APR14	24/APR14	185	0	ST-E-401, ST-E-402*	ST-E-404*	GC	8,200.00	QTY, MANPWR, HAND, C, \$ COST	1	1		
ST-E-404	502	Backfill RCB	2/08AUG13	09/AUG13	24/APR14	25/APR14	185	0	ST-E-403*	ST-E-060	SUB-CONT	8,200.00	MANPWR, LOADER,, \$ COST	1	1		

APPENDIX D – SWPPP CHECKLIST

**LAS VEGAS VALLEY STORMWATER QUALITY MANAGEMENT PROGRAM
CONSTRUCTION PERMIT SUBMITTAL CHECKLIST**

(Applies to all Grading, Site Development, Building, and Encroachment Permits and plans including Final, Parcel, Subdivision, Site Drainage and Erosion and Sediment Control Plans)

Owner / Operator (applicant) Information

Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____ Phone: _____

Project Name: _____

Project Address/Location: _____

Signature: _____ Date: _____

Total area of land disturbance = _____ acres, _____ square feet (must match permit application).

If the area of land disturbance is one acre or more, the applicant must submit a copy of their Notice of Intent (NOI) to Nevada Division of Environmental Protection (NDEP) to be regulated under Stormwater General Permit NVR100000 and submit a copy of the receipt for payment of the annual fee or the letter of authorization from NDEP (address attached). Once payment has been received by NDEP, the applicant is immediately covered under the State's permit.

- ☐ 1. Copy of NOI attached
☐ 2. Copy of receipt or letter of authorization attached

By submitting a copy of the NOI and the receipt or authorization from NDEP, the applicant acknowledges that they are aware of the requirements set forth in the State's General Permit and have developed and will implement a site specific Stormwater Pollution Prevention Plan (SWPPP). The applicant further acknowledges that they are aware of the Las Vegas Valley Construction Site BMP Guidance Manual and the required performance standards set forth in Section 3.2 of the manual. To ensure compliance with these performance standards, the applicant shall submit a completed Performance Standards Compliance Checklist, indicating the BMPs that implement standards 1 – 12. It is recommended that the applicant also attach a copy of the checklist to their SWPPP.

- ☐ Copy of Performance Standards Compliance Checklist completed (see reverse side)

Yes No Were calculations required for sizing of diversion channels and/or sediment retention basins? If the answer is yes, pursuant to NRS 625.565, a Nevada Registered Professional Engineer must review and stamp plans, such as grading plans and reports that require engineering calculations.

☐ ☐

In addition to the submittal requirements specified above and in the ordinances, the following shall be included as a set of standard notes to be depicted on all site plans that disturb one acre or larger:

- ☐ Standard notes from Section 3.5 of the Las Vegas Valley Construction Site BMP Guidance Manual on design plans

To submit a Notice of Intent (NOI), contact:

Nevada Division of Environmental Protection
Bureau of Water Pollution Control
901 South Stewart Street
Suite 4001
Carson City, NV 89701-5249
Phone: (775) 687-9429
Fax: (775) 687-4684
Web: <http://ndep.nv.gov/bwpc/index.htm>

LAS VEGAS VALLEY STORMWATER QUALITY MANAGEMENT PROGRAM CONSTRUCTION PERMIT SUBMITTAL CHECKLIST

The checklist that follows identifies the BMPs that can be used at construction sites to meet each of the Performance Standards of the Las Vegas Valley Construction Site BMP Guidance Manual (BMP Guidance Manual). You must select at least one BMP for each performance standard to meet the minimum requirements. Please refer to the BMP Guidance Manual to assist you in selecting BMPs for your site. It is the responsibility of the person who fills out this checklist to ensure that the BMPs selected are included in the contract bid documents and implemented at the site. If your project or site has characteristics that make meeting a performance standard infeasible or inapplicable (e.g. size of site, slope of site), please explain these characteristics at the bottom of the form.

Performance Standard	Check if Selected	BMPs	Comments
1. Schedule construction and minimize clearing and grading	☐ PL-1 Site Design ☐ PL-2 Scheduling ☐ PL-3 Phased Construction ☐ PL-4 Topsoil Reuse ☐ EC-3 Protect Trees/Vegetation ☐ Other or N/A (explain)		
2. Stabilize disturbed areas	☐ EC-1 Erosion Control Mats ☐ EC-2 Mulching ☐ EC-7 Dust Control ☐ EC-12 Surface Roughening ☐ SPC-6 Revegetation ☐ Other or N/A (explain)		
3. Protect slopes	☐ EC-9 Diversion Dikes ☐ EC-4 Pipe Slope Drains ☐ EC-12 Surface Roughening ☐ EC-7 Dust Control ☐ EC-1 Erosion Control Mats ☐ SPC-6 Revegetation ☐ SPC-1 Organic Filler Barriers ☐ SPC-2 Sand Bag Barrier ☐ SPC-3 Gravel Filler Berms ☐ Other or N/A (explain)		
4. Design conveyance for non-erosive velocities	☐ EC-9 Diversion Dikes ☐ SPC-4 Check Dams ☐ EC-11 Outlet Protection ☐ Other or N/A (explain)		
5. Protect waterways, natural drainages and storm drains	☐ PL-1 Site Design ☐ EC-9 Diversion Dikes ☐ EC-3 Protect Trees/Vegetation ☐ SPC-1 Organic Filler Barriers ☐ SPC-2 Sand Bag Barriers ☐ SPC-3 Gravel Filler Berms ☐ SPC-6 Silt Fence ☐ SPC-8 Temporary Stream Crossing ☐ EC-11 Outlet Protection ☐ SPC-7 Storm Drain Inlet Protection ☐ Other or N/A (explain)		

Performance Standard	Check if Selected	BMPs	Comments
6. Install sediment traps / retain eroded sediments on-site	☐ SPC-4 Check Dams ☐ SPC-1 Organic Filler Barrier ☐ SPC-2 Sand Bag Barrier ☐ SPC-3 Gravel Filler Berm ☐ SPC-6 Silt Fence ☐ SPC-9 Temporary Sediment Traps ☐ SPC-8 Temporary Sediment Basins ☐ Other or N/A (explain)		
7. Remove accumulated sediment	☐ Use Standard Note No. 5 ☐ Other or N/A (explain)		
8. Control site entrances and exits	☐ EC-5 Stabilized Site Entrance ☐ EC-8 Construction Road Stabilization ☐ SPC-11 Entrance/Exit The Wash ☐ GH-6 Road Sweeping/Trackout Cleaning ☐ Other or N/A (explain)		
9. Manage materials and wastes	☐ GH-2 Solid Waste Management ☐ GH-5 Spill Containment Plan ☐ Other or N/A (explain)		
10. Manage equipment and vehicles	☐ GH-3 Equipment Maintenance Procedures ☐ GH-4 Designated Washdown Area ☐ Other or N/A (explain)		
11. Stabilization of inactive disturbed areas	☐ PL-4 Topsoil Reuse ☐ EC-2 Mulching ☐ EC-7 Dust Control ☐ SPC-6 Revegetation ☐ Other or N/A (explain)		
Explanation why performance standard(s) cannot be met:			

APPENDIX E – UTILITY FINAL LOCATION SURVEYS



CITY OF LAS VEGAS
DEPARTMENT OF PUBLIC WORKS
SURVEY SECTION

*Specifications for Performing
Utility Final Location Surveys
for Capital Improvement Projects*

*All data to be incorporated into the City of Las Vegas
GRID (GeoReferenced Infrastructure Database)*

Version 1.0
Revised September 22, 2015

333 N Rancho Drive, 8th Floor ▪ Las Vegas, NV 89106 ▪ (702) 229-6217

THIS PAGE LEFT BLANK INTENTIONALLY

TABLE OF CONTENTS

1	INTRODUCTION	6
1.1	Purpose	6
1.2	Scope	6
1.3	Electronic Files.....	6
2	FIELD PROCEDURES	6
2.1	Overview.....	6
2.2	Coordinate System	6
2.3	Accuracy.....	7
2.4	Contractor Coordination.....	7
2.5	Minimum Points of Measurement.....	7
2.6	Manholes	7
2.7	Junction Structures	8
2.8	Drop Inlets	8
2.9	Vaults.....	9
2.10	Pullboxes	9
2.11	Pipes.....	9
2.12	Conduits.....	10
2.13	Direct-Buried Cables.....	10
2.14	Reinforced Concrete Boxes (RCB).....	11
2.15	Concrete Encasements.....	11
2.16	Pipe Casings.....	11
2.17	Precast Duct Bank	12
2.18	Conduit Bundle	12
3	SUBMITTALS.....	13

3.1	Overview.....	13
3.2	Schedule.....	13
3.3	Surveyor's Certificate	13
3.4	Progress Markup.....	13
3.5	Data Table	13
4	DATA TABLE.....	14
4.1	Overview.....	14
4.2	File Format.....	14
4.3	File Naming.....	14
4.4	Project Information.....	14
4.5	Data Fields.....	14
4.6	Migration of Point Data.....	14
4.7	Point ID.....	15
4.8	Northing	15
4.9	Easting.....	15
4.10	Elevation	15
4.11	Survey Date	15
4.12	Facility ID	15
4.13	Facility Type.....	15
4.14	Utility	16
4.15	Status	17
4.16	Geometry	17
4.17	Size.....	19
4.18	Material	20
4.19	Horizontal Reference	20
4.20	Vertical Reference	21

4.21	Remarks	21
5	TYPICAL SURVEY SCENARIOS.....	22
5.1	Overview.....	22
5.2	Sanitary Sewer Manhole	22
5.3	Sanitary Sewer Lateral.....	22
5.4	Storm Drain Junction Structure	23
5.5	Curbside Drop Inlet	23
5.6	Area Drain Drop Inlet	23
5.7	RCB Run.....	23
5.8	Conduit Run.....	24
5.9	Fire Hydrant Lateral	24
6	EXHIBITS	24
6.1	Exhibit 1	25
6.2	Exhibit 2	27
6.3	Exhibit 3	30
6.4	Exhibit 4	33
6.5	Exhibit 5	35

1 INTRODUCTION

1.1 Purpose

In an ongoing effort to better facilitate the installation and maintenance of underground assets the City of Las Vegas has instituted a monumental program to accurately and comprehensively map underground utilities. This utility mapping benefits future design, construction safety and asset management. This effort also serves to satisfy the requirements of NRS 455.125 which mandates the City to have accurate knowledge as to the location of its sanitary sewer and storm drain facilities to improve the safety of future excavations. Utility Final Location Surveys as described by this document fulfill these needs in the interest of City of Las Vegas Capital Improvement Projects.

1.2 Scope

This document has been prepared to specify the correct procedures and deliverables to satisfy the Utility Final Location Survey requirements contained in Special Provisions section 622 as pertaining to City of Las Vegas Capital Improvement Projects. A Utility Final Location Survey (UFLS) is a field location survey of installed and exposed underground utility facilities carried out while the excavations are still open. These surveys are to only be performed under the direct supervision of a Nevada Professional Land Surveyor. The term "Final Location Survey" was created to specifically distinguish these surveys from what has been typically submitted as "as-builts" or "record drawings."

1.3 Electronic Files

To obtain a copy of this document, as well as all electronic files referenced in this document, please contact the City of Las Vegas Survey Section:

survey@lasvegasnevada.gov

(702) 229-6217

2 FIELD PROCEDURES

2.1 Overview

A Utility Final Location Survey (UFLS) should be regarded as a topographic survey of the underground utilities. The same standard of care afforded surveys performed for engineering design or construction staking is to be applied.

2.2 Coordinate System

The survey will be based on the horizontal and vertical survey control as indicated on the approved plans for the project. If horizontal coordinates are not labeled on the approved plans, please contact the City Surveyor for this information. Please do not rely solely on CAD files provided by the engineer for coordinate information.

2.3 Accuracy

A UFLS requires location data to be accurate to within 0.3' horizontally and vertically relative to the project control. The surveyor is responsible to use appropriate methodology to ensure all measurements meet this tolerance regardless of environmental conditions. It should be expected that City of Las Vegas survey personnel will perform spot check measurements on every project.

2.4 Contractor Coordination

The survey measurements necessary for a UFLS require the field surveyor to be on site while the facilities are still exposed. The contractor is responsible for coordinating with the surveyor during construction and shall provide access to all utilities prior to backfilling. It is strongly recommended for the contractor to pre-arrange for survey as they would for inspection. It is also suggested that whenever possible the surveyor distinctively marks the facilities with paint while performing the measurements to give the contractor instant confirmation the survey was complete before starting backfill.

2.5 Minimum Points of Measurement

Depending on the facility being located specific points of measurement are essential for proper mapping. This requires both the best possible identification and knowledge of the complete space occupied by these utilities. These minimum location horizontal location points are described for each type of facility in the sections that follow. The data for each point will be added to the Data Table described later in this document.

Notes:

- Box-shaped structures shall be located in sequential order around their extents
- Linear facilities shall be located in sequential order along its alignment (whenever possible), at all points of geometry, at all points identifying specific components of the pipeline, and all special location points as described later in this document
- Long tangents between such points shall be located at minimum 100' intervals or deflections exceeding 0.5'
- Curved sanitary sewer shall be located at a minimum of 25' intervals
- Curved storm drain pipes and RCBs shall be located at a minimum of 50' intervals

2.6 Manholes

In the interest of these surveys "manhole" refers to cylindrical stand-alone structures such as Type I storm drain manholes or Type SD-1 sewer manholes and cylindrical access structures connected to vaults, junction structures or RCBs.

Horizontal Location Points	Horizontal Sizes or Dimensions	Vertical Location Points	Vertical Sizes or Dimensions
Centerline or Extents (of base)	Nominal inside diameter (of base)	(None)	(None)

Notes:

- In the interest of these surveys the term manhole should not be used to describe any rectangular or box-shaped structure
- Only the portion of the manhole structure below the cone, the manhole base (a.k.a. barrel or riser), is expected to be surveyed
- All connecting pipes shall be located as separate facilities

2.7 Junction Structures

In the interest of these surveys "junction structure" refers to box-shaped access/connection structures used in gravity utilities (sewer, storm drain).

Horizontal Location Points	Horizontal Sizes or Dimensions	Vertical Location Points	Vertical Sizes or Dimensions
Extents	(None)	Top	(None)

Notes:

- In the interest of these surveys the term junction structure should not be used to describe any junction structure should not be used to describe any pressure pipe or conduit/cable facilities (see "Vaults" below)
- Junction structures will almost always be constructed in combination with at least one access manhole; these access manholes should be surveyed as their own separate facility (see "Manholes" above)
- Engineering plans may also refer to a junction structures as a junction boxes, diversion structures, transition structures, vaults or manholes
- In the interest of these surveys transition structures used to join or divert RCBs shall also be considered junction structures
- All connecting pipes or RCBs shall be located as separate facilities

2.8 Drop Inlets

"Drop inlet" refers to a below ground rectangular box structure used to collect surface water runoff. The water enters these structures either through a curb opening or grates, or a combination of both.

Type	Horizontal Location Points	Horizontal Sizes or Dimensions	Vertical Location Points	Vertical Sizes or Dimensions
Curb Inlets & Combo Inlets	Back of Curb (at each end)	(None)	Top of Curb	(None)
Grate Inlets & Trench Drains	Extents of Box (outside face)	(None)	Top of Grate	(None)
Beehive	Centerline	Inlet Pipe Diameter	Rim	(None)

Notes:

- Combo inlets allow water to enter through a combination of curb openings and grates
- Grate inlets as mentioned above are drop inlets without a curb component
- All connecting pipes shall be located as separate facilities

2.9 Vaults

In the interest of these surveys "vault" refers to large access/connection box structures for pressure utilities (water, gas) and conduit/cable utilities (electric, telephone, cable TV, fiber optic).

Horizontal Location Points	Horizontal Sizes or Dimensions	Vertical Location Points	Vertical Sizes or Dimensions
Extents of Box (outside face)	(None)	Top of Box	Exterior Height

Notes:

- In the interest of these surveys the term vault should not be used to describe any gravity utility facilities (see "Junction Structures" above)
- Vaults will sometimes be constructed in combination with an access manhole structure; these access manholes should be surveyed as their own separate facility (see "Manholes" above)
- Engineering plans may also refer to vaults as manholes
- All associated pipes, conduits, cables, valves, pumps, etc. shall be located as separate facilities

2.10 Pullboxes

"Pullbox" refers to small connection box structures for conduit/cable utilities (electric, telephone, cable TV, fiber optic).

Horizontal Location Points	Horizontal Sizes or Dimensions	Vertical Location Points	Vertical Sizes or Dimensions
Extents of Box (outside face)	(None)	Top of Box	Exterior Height

Notes:

- Engineering plans may also refer to pullboxes as junction boxes or handholes
- All associated conduits and cables shall be located as separate facilities

2.11 Pipes

In the interest of these surveys the term "pipe" refers to all fluid or gas conveyances except for RCBs.

Shape	Horizontal Reference	Vertical Reference	Sizes or Dimensions
Round	Centerline	Top of Pipe	Diameter
Arch	Centerline	Top of Pipe	Width (Span) x Height (Rise)
Elliptical	Centerline	Top of Pipe	Height (Rise) x Width (Span)

Notes:

- In the case of arch or elliptical shaped pipes the shape shall be indicated in the "Remarks" field of the data table, otherwise all pipes are assumed to be round
- Facilities undetermined as to being pipes or conduits shall be considered pipes for purpose of these surveys
- Pressure utility (water, gas, force main, reuse water, etc.) pipes 4" in diameter and larger shall have each elbow fitting located at with two points, one at each connection between fitting and pipe

2.12 Conduits

In the interest of these surveys "conduit" refers to a pipe or tube used for protecting electrical wiring or cables.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
Centerline	Top	Conduit Diameter

Notes:

- All conduits are assumed to be round
- Facilities undetermined as to being pipes or conduits shall be considered pipes for purpose of these surveys
- Wherever conduits are concrete encased only the exterior of the encasement needs to be located, not the individual conduits
- All individual conduits must be located outside of any concrete encasement

2.13 Direct-Buried Cables

"Direct-buried cable" refers to electrical wiring or cable installed underground without conduit protection. Most direct-buried cables are for communication utility purposes.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
Centerline	Top	Cable Diameter

Notes:

- Wherever direct-buried cables are concrete encased only the exterior of the encasement needs to be located, not the individual cables

- All individual direct bury cables must be located outside of any concrete encasement

2.14 Reinforced Concrete Boxes (RCB)

"Reinforced concrete box" (almost exclusively referred to as "RCB") indicates a enclosed rectangular-shaped concrete pipe. RCBs can be either cast-in-place or precast concrete.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
Centerline or Side	Top or Flowline	Width (Span) x Height (Rise)

Notes:

- Connected access manhole structures should be surveyed as their own separate facility (see "Manholes" above)
- Transition structures connecting RCBs are to be located as separate facilities (see "Junction Structures" above)
- Double-barrel RCBs (two connected side-by-side chambers) should be referenced in the "Remarks" field of the Data Table
- All connecting pipes shall be located as separate facilities

2.15 Concrete Encasements

"Concrete encasement" refers to protective cast-in-place concrete surrounding pipes, conduits or cables. This term does not include precast duct banks.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
CL or Either Side	Top	Measured Outside Width and Height (cross-section)

Notes:

- Due to the inconsistency of concrete encasement construction alignments and cross-sectional dimensions can be afforded a one foot tolerance
- Encasements constructed around pipes only need to be located at its beginning and ending points and at all changes to its general cross-section dimensions; the locations of the pipe (or pipes) being protected will determine its alignment
- Encasements constructed around conduits or cables shall be located at all points necessary to determine its horizontal and vertical alignment, as well as any changes to its general cross-section dimensions

2.16 Pipe Casings

"Pipe casing" refers to a protective pipe, either placed or re-purposed, containing pipes, conduits and/or cables. This term should not include concrete encasements or precast duct banks.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
CL	Top	Pipe Diameter

Notes:

- Pipe casings are to be located as would any other pipe
- Pipe casing are to be considered separate facilities from the pipes, conduits and/or cables they are protecting
- The interior facilities shall be located wherever possible

2.17 Precast Duct Bank

"Precast duct bank" refers to prefabricated concrete enclosures designed to protect electrical wiring or cables

Horizontal Reference	Vertical Reference	Sizes or Dimensions
CL or Either Side	Top	Measured Outside Width and Height (cross-section)

Notes:

- Precast duct banks shall be located at all points necessary to determine its horizontal and vertical alignment, as well as any changes to its cross-section dimensions

2.18 Conduit Bundle

"Conduit bundle" is a term specifically devised for these surveys to refer to a group of conduits running in a consistent arrangement. A single conduit is surveyed to locate the entire bundle as opposed to locating each conduit individually. This surveyed conduit is referred to as the "controlling" conduit for the bundle.

Horizontal Reference	Vertical Reference	Sizes or Dimensions
Centerline (of controlling conduit)	Top (of controlling conduit)	(Listed in the "Remarks" field of the Data Table)

Notes:

- The controlling conduit shall be located at all points necessary to determine the conduit bundle's horizontal and vertical alignment, as well as all points where the configuration (number, sizes, arrangement) of the conduit bundle changes
- A group of conduits not placed in a consistent arrangement are to be located separately
- Information regarding the sizes of all conduits in the bundle and the arrangement of all conduits relative to the controlling conduit is to be indicated in the "Remarks" field of the Data Table

3 SUBMITTALS

3.1 Overview

Each survey submittal package will consist of three components: A "Surveyor's Certificate", a "Progress Markup", and an Excel "Data Table." Each of these items is described below.

3.2 Schedule

The survey data is to be submitted in portions or in its entirety as directed. If the survey data is to be delivered in multiple submittals, the points included in the first submittal are not to be included in any subsequent submittals. Each point is to be submitted just once.

3.3 Surveyor's Certificate

Upon each submittal a Surveyor's Certificate document shall be prepared to accompany the actual survey data. This document shall contain the following information:

- The name and license number of the Professional Land Surveyor in responsible charge
- The submittal date
- The plan sheets comprising the "Progress Markup"
- The file name and modified date of the "Data Table" Excel file
- The name of the construction company requesting the survey
- The survey completion date
- A statement of compliance to all applicable regulations
- A statement of positional accuracy

A sample Surveyor's Certificate is provided at the end of this document as "Exhibit 1."

3.4 Progress Markup

Upon each submittal "Progress Markups" shall be provided. These markups consist of 11x17 hardcopies of sufficient sheets contained in the approved plans to demonstrate all surveyed utilities included in that particular submittal, and only that submittal. All surveyed utilities shall be marked using a yellow highlighter. Each sheet shall be "wet stamped" by the Professional Land Surveyor in responsible charge. Adjacent to the surveyor's validated seal shall be in distinct and legible red ink the term "U.F.L.S."

3.5 Data Table

The "Data Table" is the primary deliverable for a Utility Final Location Survey. It contains all coordinate and attribute information relating to each surveyed point. The format and contents of the Data Table is explained in detail by the next section of this document.

4 DATA TABLE

4.1 Overview

The data table is the primary deliverable for a Utility Final Location Survey. It contains all coordinate and attribute information relating to each surveyed point.

4.2 File Format

The data table is a Microsoft Excel spreadsheet template (.xlsx) file to be provided by the City. This file is compatible with Microsoft Excel version 2007 and above. If a template file compatible with an earlier version of Excel is required please contact the City Surveyor to have the appropriate file provided. The structure and formatting of the template file should not be altered.

4.3 File Naming

The provided template should be saved as a new file named specifically for each deliverable. The file name shall be formatted as follows:

(Project Number)-UFLS-(Deliverable Number).xlsx

Examples: **H12345-UFLS-1.xlsx**
 H12345-UFLS-2.xlsx

4.4 Project Information

Within the appropriate fields at the top of the spreadsheet enter the information for the project number, project name, survey firm name, name and license number of the PLS of record.

4.5 Data Fields

The 15 data fields should be populated for each surveyed point. All fields other than the "Facility ID" and "Remarks" fields should have a value for each point. A detailed description pertaining to each field is listed below.

4.6 Migration of Point Data

The commonly used fields pertaining to point ID, northing, easting and elevation can be populated through a standard "copy & paste" operation through the following steps:

1. The conventional point data needs to be exported to a comma-separated values file if not already existing in that format
2. The file should then be renamed to have a ".csv" file extension if not already
3. The file will now open in Microsoft Excel automatically through standard double-clicking on the file name
4. Once opened in Excel the appropriate data can be selected and copied to the standard clipboard
5. With the file created specifically for the Utility final Location Survey opened in Excel, the data can be pasted into the appropriate fields

4.7 Point ID

The "Point ID" field designates a point ID for the surveyed point. Point ID's are not to be reused for the duration of the project. Point ID's shall be distinct from any labeled control point numbers contained within the approved plans. Point ID's shall be comprised of numbers only; no alpha or special characters.

4.8 Northing

The "Northing" field designates the Northing coordinate of the surveyed point per the project coordinate system as designated by the survey control contained within the approved plans. These values should be shown to a minimum precision of two decimal places.

4.9 Easting

The "Easting" field designates the Easting coordinate of the surveyed point per the project coordinate system as designated by the survey control contained within the approved plans. These values should be shown to a minimum precision of two decimal places.

4.10 Elevation

The "Elevation" field designates the elevation value of the surveyed point per the project vertical datum as designated by the survey control contained within the approved plans. These values should be shown to a minimum precision of two decimal places.

4.11 Survey Date

The "Survey Date" field indicates the date the surveyed point was acquired in the field.

4.12 Facility ID

The "Facility ID" field is used to designate unique numbers to multiple facilities which located within close proximity of one another and possess the same or similar characteristics. This information is necessary to relate the individual surveyed points correctly (i.e., to "connect the dots"). An example would be multiple intertwining conduits, or two opposing sewer laterals that connect to the sewer main relatively close together. The ID can be in any form (e.g., arbitrary numbers, lot numbers, plan designated manhole numbers, etc.)

4.13 Facility Type

The "Facility Type" field is used to indicate what is specifically being located. Possible facility types and acceptable data table codes are shown below.

Facility Type	Code
STRUCTURES	
Manhole Base/Barrel/Riser	MHB
Manhole Cover/Lid/Chimney	MHC
Vault	VLT
Junction Structure	JS
Drop Inlet	DI

Pullbox	PB
LINEAR FACILITIES	
Pipe	P
Reinforced Concrete Box	RCB
Conduit	C
Direct-Buried Cable	DBC
Concrete Encasement	CE
Pipe Casing	PC
Precast Duct Bank	DB
Conduit Bundle	CB

Terminology notes:

- “Manholes” refer to cylindrical stand-alone structures such as Type I storm drain manholes or Type SD-1 sewer manholes and cylindrical access structures connected to vaults or junction structures. In the interest of these surveys the term manhole should not be used to describe any box-shaped structure.
- “Vaults” refer to large access/connection box structures for pressure utility (water, gas) and conduit/cable utility (electric, telephone, cable TV, etc.) facilities. In the interest of these surveys, the term vault should not be used to describe any gravity utility facilities.
- “Junction Structures” refer to access/connection box structures for gravity utility (sewer, storm drain) facilities. In the interest of these surveys, the term junction structure should not be used to describe any conduit/cable utility facilities.
- “Conduit Bundles” refer to a group of conduits running in a consistent arrangement with one surveyed point locating the entire bundle as opposed to locating each conduit individually. When designating a conduit bundle the information pertaining to size, material and relative location of each conduit in the bundle must be included within the “Remarks” field of the data table. The particular conduit being located by the surveyed point must also be identified. As an alternative to putting this information in the “Remarks” field, a separate document containing a diagram or field notes containing this information may be included with the submittal and a reference to the document noted in the “Remarks” field.

4.14 Utility

The “Utility” field is used to indicate the utility system of the facility being located. Possible utilities and acceptable data table codes are shown below. A designation of “Unknown” shall be used with existing facilities only.

Utility	Code
Cable TV	TV
Electric	E
FAST	FAST
Fiber Optic	FO

Irrigation	IRR
Natural Gas	G
Reclaimed Water	RW
Sanitary Sewer	SS
Storm Drain	SD
Telephone	T
Water	W
Unknown	UNK

4.15 Status

The "Status" field is used to indicate the construction and service status of the particular facility being located. Status descriptions and acceptable data table codes are shown below.

Status	Description	Code
New	New facilities constructed per the current project	N
Existing	Existing facilities previously constructed and not known to be abandoned-in-place	E
Abandoned-in-Place	Existing facilities previously constructed and known to be abandoned-in-place (and will not be removed by the current project)	A

4.16 Geometry

The "Geometry" field is used to indicate the point of geometry, points identifying specific components of a linear facility, or special location points. Linear facilities shall be located in sequential order along its alignment whenever possible. Structures shall be located in sequential order around its extents. Possible values and acceptable data table codes are shown below.

Description	Code
POINTS OF GEOMETRY	
Point on Tangent	POT
Point of Curvature	PC
Point on Curve	POC
Point of Tangency	PT
Angle Point (Horizontal or Vertical)	AP
Corner	COR
Intersection	INT
Beginning	BEG
Ending	END
Centerline	CL
COMPONENT POINTS	
Cap Fitting	CAP
Plug Fitting	PLUG

Tee Fitting	TEE
Wye Fitting	WYE
Cross Fitting	CROSS
Elbow Fitting	ELB
Reducer Fitting	REDUC
Valve	VLV
Meter	MTR
Pump	PUMP
Hydrant	HYD
SPECIAL LOCATIONS	
Connection to Structure	CONN
Change in Size	CIS
Change in Material	CIM
Change in Configuration	CIC
Limits of Excavation	LOE

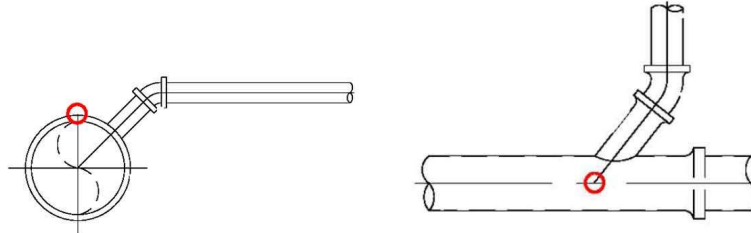
Notes:

- "Beginning" and "Ending" shall only be used to describe curbside drop inlets, concrete encasements, pipe casings, precast duct banks and conduit bundles
- "Connection to Structure" refers to any connection between a pipe or conduit and a structure (e.g., a connection between a sewer main and a sewer manhole or a connection between a conduit and a pullbox)
- "Change in Configuration" is used for Conduit Bundles at locations where the conduit make-up or its arrangement changes
- "Limits of Excavation" refers to the point the facility enters or exits the excavation (i.e. the point the facility disappears into the wall of the trench or edge of the hole). In the interest of this location description, the term "excavation" refers to the complete excavation area, not just what was exposed that particular day. This term should only be used to describe existing facilities.
- All pipe connection fittings shall be located both horizontally and vertically at the centerline intersection of the pipes. In the case of connections of two or more different sized pipes this location should always land at the top of the largest pipe as shown in the following diagrams pertaining to standard wye fitting used to connect a sewer lateral.

Tee Fitting	TEE
Wye Fitting	WYE
Cross Fitting	CROSS
Elbow Fitting	ELB
Reducer Fitting	REDUC
Valve	VLV
Meter	MTR
Pump	PUMP
Hydrant	HYD
SPECIAL LOCATIONS	
Connection to Structure	CONN
Change in Size	CIS
Change in Material	CIM
Change in Configuration	CIC
Limits of Excavation	LOE

Notes:

- "Beginning" and "Ending" shall only be used to describe curbside drop inlets, concrete encasements, pipe casings, precast duct banks and conduit bundles
- "Connection to Structure" refers to any connection between a pipe or conduit and a structure (e.g., a connection between a sewer main and a sewer manhole or a connection between a conduit and a pullbox)
- "Change in Configuration" is used for Conduit Bundles at locations where the conduit make-up or its arrangement changes
- "Limits of Excavation" refers to the point the facility enters or exits the excavation (i.e. the point the facility disappears into the wall of the trench or edge of the hole). In the interest of this location description, the term "excavation" refers to the complete excavation area, not just what was exposed that particular day. This term should only be used to describe existing facilities.
- All pipe connection fittings shall be located both horizontally and vertically at the centerline intersection of the pipes. In the case of connections of two or more different sized pipes this location should always land at the top of the largest pipe as shown in the following diagrams pertaining to standard wye fitting used to connect a sewer lateral.



4.17 Size

The "Size" field is used to indicate the size or dimension as needed for the specific facility being located. To differentiate whether the measurement unit used is decimal feet or inches, decimal feet shall always be displayed as a decimal ("6.0" for 6 feet) and inches displayed as just a whole number ("6" for 6 inches.) Only nominal (or standard) sizes as indicated on the plans should be listed for new facilities. Nominal or measured sizes are both acceptable for existing pipes and conduits which are physically accessible, and estimated sizes are acceptable for those that are not accessible. A suffix code will be shown after the number to identify the type of dimension as shown below.

Size Description	Code
Nominal (Standard) Inside Diameter	N
Measured Outside Diameter	M
Estimated Outside Diameter	E
Measured Width	W
Measured Height	H
Measured Width x Measured Height	(Width)X(Height)M
Nominal Inside Width x Nominal Inside Height (RCBs)	(Width)X(Height)N
Measured Pipe Connection Fittings (Tees, Wyes, Crosses)	(Pipe 1 Dia.)X(Pipe 2 Dia.)M
Nominal Pipe Connection Fittings (Tees, Wyes, Crosses)	(Pipe 1 Dia.)X(Pipe 2 Dia.)N
Not Applicable	NA

Terminology notes:

- "Nominal" refers to the manufacturer's listed size or "standard" size for a facility, but may not match any particular dimension exactly
- "Measured Outside Diameter" refers to direct field measurements of the outside diameter of a pipe
- "Estimated Outside Diameter" refers to an estimated or "eyeballed" outside diameter of a pipe where access is not available to perform a direct measurement
- "Not Applicable" should be used for all points where sizes or dimensions are not required

4.18 Material

The "Material" field is used to identify the material of the facility being located. New facilities require material descriptions to same level of detail as indicated on the plans. New "water-quality" sanitary sewer pipes shall be described as C900 or C905.

NEW FACILITIES (Partial List)	
Material Description	Code
PVC	PVC
Water Quality PVC (C900)	C900
Water Quality PVC (C905)	C905
Reinforced Concrete Pipe	RCP
Ductile Iron Pipe	DIP
Corrugated Metal Pipe	CMP
Vitrified Clay Pipe	VCP

Existing facilities shall be described (at a minimum) per the values and data table codes shown below.

EXISTING FACILITIES	
Material Description	Code
Concrete	CONC
Metal	MTL
Plastic	PLAS
Asbestos Cement Pipe	ACP
Corrugated Metal Pipe	CMP
Vitrified Clay Pipe	VCP

Note:

- The color and/or coating (galvanized, wrapped, rusty, etc.) of all existing facilities described as metal or plastic shall be indicated in the "Remarks" field.

4.19 Horizontal Reference

The "Horizontal Reference" field is used to indicate the horizontal location of the measurement relative to the facility. Possible values and acceptable data table codes are shown below. A value of "Not Applicable" should be used for all points where a horizontal reference does not apply.

Horizontal Reference Description	Code
Centerline	CL
(Directional reference) Side	NS, NES, ES, SES, SS, SWS, WS, NWS
Extents	EXT
Not Applicable	NA

Terminology notes:

- "Centerline" refers either the horizontal centerline of a linear facility or the centerline of a circular manhole structure
- "(Directional reference) Side" refers to either side of a rectangular shaped linear facility (RCB, concrete encasement, etc.). The directional reference can be either cardinal directions (north, east, etc.) or intermediate directions (northeast, southeast, etc.) depending on what is most appropriate.
- "Extents" refers to the outside horizontal extents of a structure.
- "Not Applicable" refers to a measurement without a specific horizontal reference

4.20 Vertical Reference

The "Vertical Reference" field is used to indicate the vertical location of the measurement relative to the facility. Possible values and acceptable data table codes are shown below.

Vertical Reference Description	Code
Top	TOP
Flowline	FL
Top of Operating Nut	TON
Flange Surface	FLANGE
Not Applicable	NA

Terminology notes:

- "Top" can refer top of pipe, top of concrete encasement, top of concrete junction structure, top of vault, etc.
- "Top of Operating Nut" refers to operating nuts for both pressure system control valves (gate, ball, butterfly, etc.) and fire hydrants
- "Flange Surface" refers to the top flange surface on a vertical pipe riser (e.g., the flange surface a fire hydrant would bolt up to)
- "Not Applicable" refers to a measurement without a specific vertical reference (e.g., a measurement acquired to locate the base of a manhole)

4.21 Remarks

The "Remarks" field is used to add any additional information not contained in the other fields. Mandatory uses of the "Remarks" field include:

- Indicating the color of existing metal or plastic pipes
- Describing the location point and configuration of a bundle of conduits

Optional uses of the "Remarks" field include:

- Identifying a photo associated with the surveyed point. Any photo files shall be named as follows:

(Project Number)-(Point Number)-Photo(1,2,3...)

Examples: H12345-527-Photo1.jpg
H12345-527-Photo2.jpg
H12345-692-Photo1.jpg

- Identifying a separate document associated with the surveyed point, such as a field sketch. Any document files shall be named as follows:

(Project Number)-(Point Number)-Doc(1,2,3...)

Examples: H12345-527-Doc1.pdf
H12345-527-Doc2.pdf
H12345-692-Doc1.pdf

- Adding any relevant information that helps to describe an unusual circumstance

5 TYPICAL SURVEY SCENARIOS

5.1 Overview

During the course of performing these surveys certain situations will be encountered repeatedly. Typical shot locations and Data Table values for these scenarios are described below.

5.2 Sanitary Sewer Manhole

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
1		MHB	SS	N	POC	48N	CONC	EXT	NA
2		MHB	SS	N	POC	48N	CONC	EXT	NA
3		MHB	SS	N	POC	48N	CONC	EXT	NA
4		P	SS	N	CONN	8N	SDR	CL	TOP
5		P	SS	N	CONN	8N	PVC	CL	TOP
6		P	SS	N	CONN	8N	PVC	CL	TOP

5.3 Sanitary Sewer Lateral

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
7	1	P	SS	N	WYE	8N X 4N	PVC X C900	CL	TOP
8	1	P	SS	N	ELBOW	4N	C900	CL	TOP
9	1	P	SS	N	POT	4N	C900	CL	TOP
10	2	P	SS	N	WYE	8N X 4N	PVC X PVC	CL	TOP

11	2	P	SS	N	ELBOW	4N	PVC	CL	TOP
12	2	P	SS	N	POT	4N	PVC	CL	TOP

5.4 Storm Drain Junction Structure

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
13		JS	SD	N	AP	NA	CONC	EXT	TOP
14		JS	SD	N	AP	NA	CONC	EXT	TOP
15		JS	SD	N	AP	NA	CONC	EXT	TOP
16		JS	SD	N	AP	NA	CONC	EXT	TOP
17		P	SD	N	CONN	48N	RCP	CL	TOP
18		P	SD	N	CONN	48N	RCP	CL	TOP
19		P	SD	N	CONN	36N	RCP	CL	TOP

5.5 Curbside Drop Inlet

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
20		DI	SD	N	BEG	NA	CONC	TBC	TBC
21		DI	SD	N	END	NA	CONC	TBC	TBC
22		P	SD	N	CONN	18N	RCP	CL	TOP

5.6 Area Drain Drop Inlet

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
23		DI	SD	N	AP	NA	CONC	EXT	TOP
24		DI	SD	N	AP	NA	CONC	EXT	TOP
25		DI	SD	N	AP	NA	CONC	EXT	TOP
26		DI	SD	N	AP	NA	CONC	EXT	TOP
27		P	SD	N	CONN	18N	RCP	CL	TOP

5.7 RCB Run

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
28		RCB	SD	N	POT	12X8N	RCB	NS	TOP
29		MHB	SD	N	CL	48N	CONC	CL	NA
30		P	SD	N	CONN	36N	RCP	CL	TOP
31		P	SD	N	POT	36N	RCP	CL	TOP
32		RCB	SD	N	POT	12X8N	RCB	NS	TOP

5.8 Conduit Run

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref	Remarks
33	1	C	E	E	POT	3M	PLAS	CL	TOP	GREY
34	2	C	E	E	POT	3M	PVC	CL	TOP	GREY
35	1	C	E	E	PC	3M	PVC	CL	TOP	GREY
36	2	C	E	E	PC	3M	PVC	CL	TOP	GREY
37	1	C	E	E	POC	3M	PVC	CL	TOP	GREY
38	2	C	E	E	POC	3M	PVC	CL	TOP	GREY
39	1	C	E	E	PT	3M	PVC	CL	TOP	GREY
40	2	C	E	E	PT	3M	PVC	CL	TOP	GREY
41	1	C	E	E	POT	3M	PVC	CL	TOP	GREY
42	2	C	E	E	POT	3M	PVC	CL	TOP	GREY

5.9 Fire Hydrant Lateral

Point ID	Facility ID	Facility Type	Utility	Status	Geometry	Size	Material	Horz Ref	Vert Ref
43		P	W	N	TEE	8N X 6N	PVC	CL	TOP
44		P	W	N	VLV	6N	NA	CL	TOP
45		P	W	N	ELB	6N	PVC	CL	TOP
46		P	W	N	HYD	6N	NA	CL	FLANGE

6 EXHIBITS

6.1 Exhibit 1

Sample Surveyor's Certificate

Surveyor's Certificate

I, Alan R. Riecki, a Professional Land Surveyor licensed in the State of Nevada certify that:

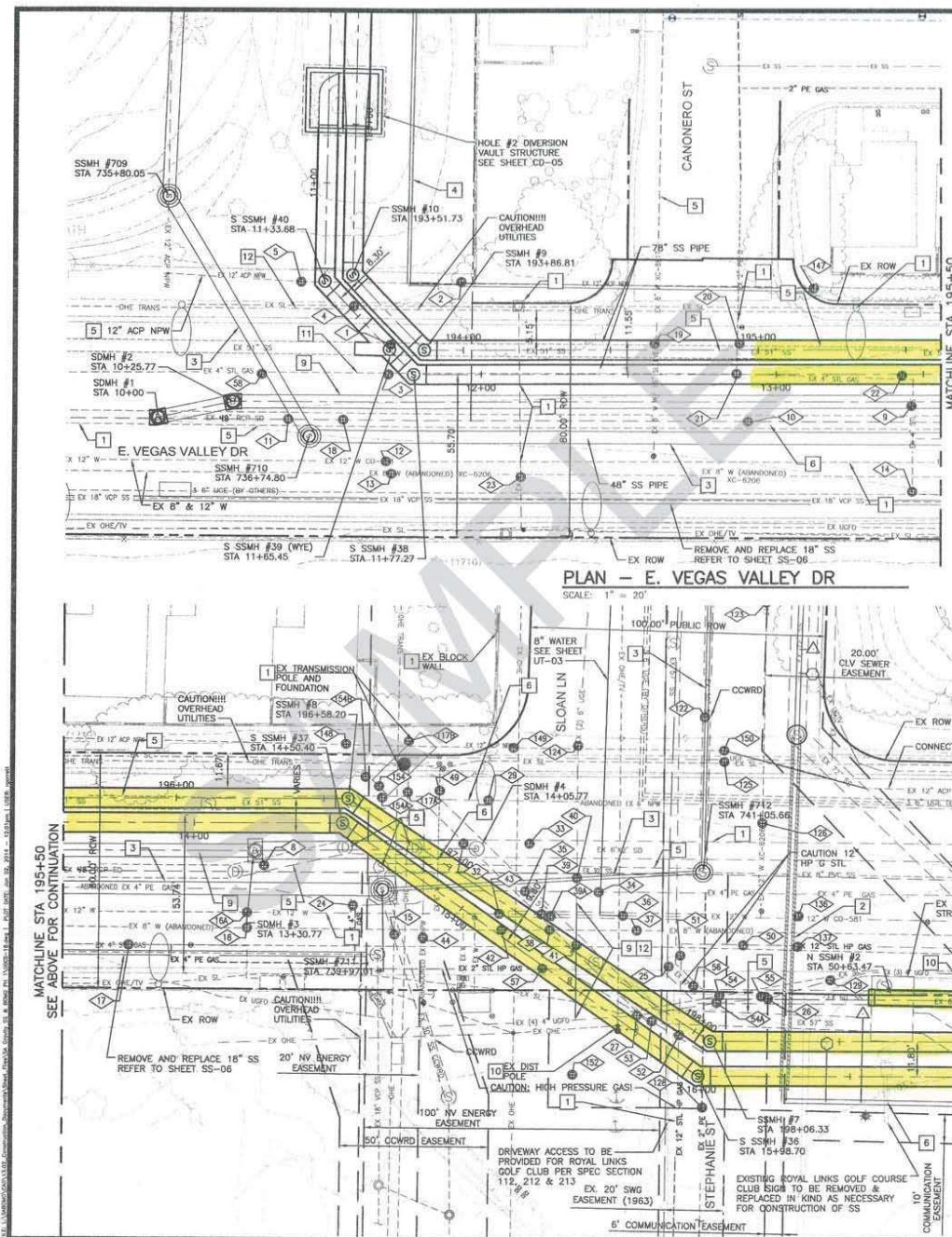
1. The Utility Final Location Survey Progress Submittal dated 5/14/15 File name _____ last modified _____ and indicated in whole or in part on CLV drawing number 307V-1074 Sheets C-4 thru C-6, represents the result of a survey conducted under my direct supervision at the instance of ABC Construction.
2. The survey was completed on 5/12/15.
3. This survey complies with the City of Las Vegas Special Provisions section 622 and applicable state statutes in effect on the date that that the survey was completed.
4. The survey is based upon the City of Las Vegas Horizontal and Vertical control as indicated on the approved plans, and positional accuracies meet or exceed +/- 0.3' horizontally and vertically.



Alan R. Riecki, PLS
Nevada Certificate #12469

6.2 Exhibit 2

Sample Progress Markup



(Sample continues on previous page)

SEE BELOW FOR CONTINUATION

U.F.L.S.

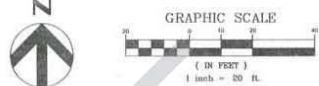
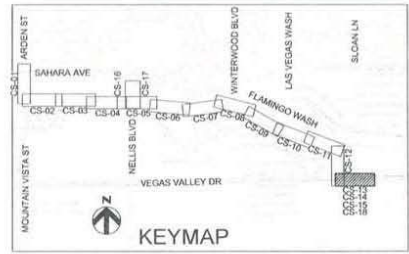
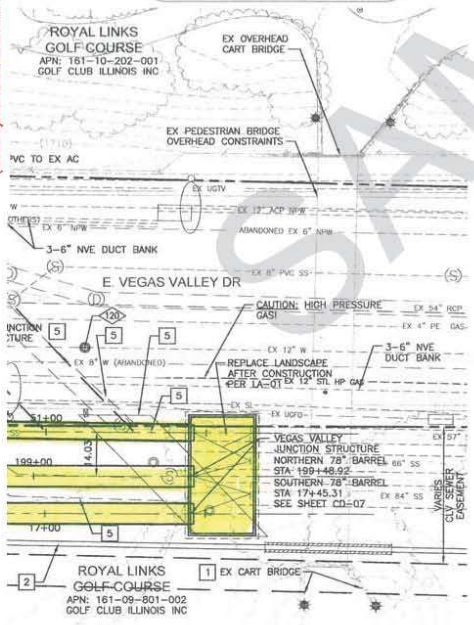


Riecki
9-2-15

CAUTION:
HIGH PRESSURE GAS!
CALL SOUTHWEST GAS AT 702-651-2111
FOR STANDBY WHEN EXCAVATING OVER
OR NEAR HIGH PRESSURE GAS LINES

REFER TO UT SHEETS FOR
VEGAS VALLEY RELOCATIONS

NOTE: CONTRACTOR MUST COORDINATE WITH NV
ENERGY 3 WEEKS PRIOR TO EXCAVATING NEAR
ANY EXISTING NV ENERGY FACILITY. REFER TO
SPECIFICATIONS FOR CONTRACT INFORMATION.



- CONSTRUCTION NOTES:**
1. PROTECT IN PLACE.
 2. REFER TO CN SHEETS FOR 18" NPW (PVC) - CLV.
 3. REFER TO SS SHEETS FOR GRAVITY SEWER LINE - COWID.
 4. REFER TO CW SHEETS FOR 12" NPW (PVC) - COWID.
 5. ABANDON EX PER SPEC. SEE CR SHEETS.
 6. REMOVE & REPLACE AS REQUIRED FOR CONSTRUCTION OF NEW PIPELINE. SEE CR AND/OR UT SHEETS.
 7. MAINTAIN SD FLOWS THROUGHOUT CONSTRUCTION.
 8. MAINTAIN FIRE PROTECTION THROUGHOUT CONSTRUCTION.
 9. REFER TO UT SHEETS FOR INFRASTRUCTURE RELOCATIONS.
 10. EXISTING TRANSMISSION POWER POLE TO BE PROTECTED IN PLACE. ALL WORK MUST BE COORDINATED WITH NV ENERGY FOR SHORING AND/OR BRACING AS SPECIFIED IN THE CONSTRUCTION SPEC.
 11. NOT USED.
 12. CONTRACTOR TO COORDINATE RELOCATION OF EXISTING DISTRIBUTION ELECTRICAL LINES WITH NV ENERGY PRIOR TO CONSTRUCTION, INCLUDING RELOCATIONS TO BE COMPLETED BY NV ENERGY DISTRIBUTION. REFER TO UT SHEETS.

- GENERAL NOTES:**
1. CONTRACTOR SHALL SUBMIT DRAWINGS BEFORE CONSTRUCTION TO SHOW HOW EXISTING PIPES SPANNING A TRENCH WILL BE SUPPORTED DURING EXCAVATION AND BACKFILL.
 2. CUTV ALL SS PIPES PRIOR TO ABANDONMENT IN ACCORDANCE WITH DCSWCS AND SPECIFICATIONS.
 3. FINISHED GRADE BY OTHERS PROVIDED FOR INFORMATION PURPOSES ONLY.
 4. MH RIM ELEVATIONS ARE PROVIDED FOR COST PURPOSES ONLY. ALL MH RIMS & COVERS MUST BE ADJUSTED TO MATCH FINISHED GRADE AT TIME OF CONSTRUCTION.
 5. REMOVE AND REPLACE EX LANDSCAPING IN KIND AT ROYAL LINKS GOLF COURSE.
 6. REFER TO THE COWID LV WASH PLANS FOR PROPOSED IMPROVEMENTS ALONG THE FLAMINGO WASH CORRIDORS AND IN THE DESERT ROSE GOLF COURSE.
 7. ALL EXISTING SURFACE IMPROVEMENTS REMOVED FOR PIPELINE INSTALLATION SHALL BE REPLACED IN KIND.
- SEE SHEET G-08 FOR POTHOLE SCHEDULE DATA
- * FIELD VERIFIED

UTILITY COORDINATION NOTES

1. NOT USED
2. COORDINATE WITH NVE TRANSMISSION AND DISTRIBUTION FOR MINIMUM VERTICAL CLEARANCE AND REQUIREMENTS FOR ACTIVITIES BELOW AND ADJACENT TO POWER LINES.

EXISTING UTILITY NOTE

EXISTING UTILITIES SHOWN HEREIN ARE APPROXIMATE ONLY AND MAY NOT SHOW ALL EXISTING FACILITIES WITHIN THE PROJECT AREA. CONTRACTOR MUST FIELD VERIFY AND POTHOLE EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO BEGINNING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE PROTECTED IN PLACE DURING CONSTRUCTION.

CLARK COUNTY WATER RECLAMATION DISTRICT

CCWRD PROJECT CONTROL NO. IS 8878.13

SIGNATURE ON THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR OR AN APPROVAL OF ANY VIOLATION OF CLARK COUNTY WATER RECLAMATION DISTRICT RULES, REGULATIONS, OR DESIGN AND CONSTRUCTION STANDARDS. THE APPROVAL OF THESE DRAWINGS DOES NOT GUARANTEE CAPACITY IN THE DISTRICT'S COLLECTION OR TREATMENT SYSTEM.

APPROVED FOR CONSTRUCTION

Don Meade
Las Vegas Valley Water District
Engineering Services Manager
Date 8/16/14 Project No. 122171

Call before you Dig
avoid water, gas, electric, and other underground utilities.

Call 811

1-800-227-2690
1-702-455-7544

CALL BEFORE YOU DIG
TO AVOID OVERHEAD

FAST

Call before you dig
UnderGround.

1-702-432-5300

REVISIONS	NO. DATE	DESCRIPTION	BY

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT MANAGEMENT
CITY ENGINEER: DAVID BOWERS, P.E., P.T.O.E.
PROJECT MANAGER: KRISTINA SWALLOW, P.E.
DESIGNED BY: JAM
CHECKED BY: JAM
DATE: 11/14/13

SAHARA-ARDEN SEWER REPLACEMENT AND BOMO FORCE MAIN - PHASE 1
VEGAS VALLEY DRIVE ENLARGED PLAN

SHEET: **CS-18**
43 of 105

DRAWING NO. **122171**

6.3 Exhibit 3

Sample Data Table

Point ID	Northing	Easting	Elevation	Survey Date	Facility ID	Facility Type	Utility	Status
1	625641.89	270339.03	0.00	6/15/2015		MHB	SS	N
2	625639.95	270339.00	0.00	6/15/2015		MHB	SS	N
3	625639.90	270335.34	0.00	6/15/2015		MHB	SS	N
4	625641.84	270335.56	2049.26	6/15/2015		P	SS	N
5	625642.07	270317.33	2049.71	6/15/2015		P	SS	N
6	625656.97	270339.20	2049.71	6/15/2015		P	SS	N
7	625672.81	270339.30	2049.79	6/15/2015	1	P	SS	N
8	625675.94	270343.24	2049.22	6/15/2015	1	P	SS	N
9	625678.78	270346.18	2048.99	6/15/2015	1	P	SS	N
10	625673.91	270346.04	2049.06	6/15/2015	2	P	SS	N
11	625673.88	270345.75	2049.08	6/15/2015	2	P	SS	N
12	625673.91	270343.20	2049.24	6/15/2015	2	P	SS	N
13	625673.81	270342.83	2049.23	6/15/2015		JS	SD	N
14	625666.32	270342.77	2049.20	6/15/2015		JS	SD	N
15	625666.34	270345.68	2049.08	6/15/2015		JS	SD	N
16	625658.89	270342.64	2049.13	6/15/2015		JS	SD	N
17	625638.94	270342.61	2049.15	6/15/2015		P	SD	N
18	625635.29	270342.70	2048.73	6/15/2015		P	SD	N
19	625635.23	270343.22	2048.63	6/15/2015		P	SD	N
20	625658.77	270343.24	2048.66	6/15/2015		DI	SD	N
21	625658.73	270363.90	2047.79	6/15/2015		DI	SD	N
22	625641.92	270339.13	2049.22	6/15/2015		P	SD	N
23	625659.18	270339.37	2048.98	6/15/2015		DI	SD	N
24	625672.76	270339.36	2049.14	6/15/2015		DI	SD	N
25	625618.91	270348.33	2049.27	6/15/2015		DI	SD	N
26	625618.84	270338.66	2049.56	6/15/2015		DI	SD	N
27	625618.98	270329.04	2049.73	6/15/2015		P	SD	N
28	625618.95	270319.50	2050.06	6/15/2015		RCB	SD	N
29	625618.86	270309.74	0.00	6/15/2015		MHB	SD	N
30	625619.00	270300.35	2050.63	6/15/2015		P	SD	N
31	625619.01	270290.63	2050.75	6/15/2015		P	SD	N
32	625619.01	270280.97	2050.87	6/15/2015		RCB	SD	N
33	625605.20	270272.46	2050.45	6/18/2015	1	C	E	E
34	625604.92	270281.96	2050.34	6/18/2015	2	C	E	E
35	625604.95	270291.58	2050.24	6/18/2015	1	C	E	E
36	625604.82	270301.08	2050.14	6/18/2015	1	C	E	E
37	625604.69	270310.65	2049.93	6/18/2015	1	C	E	E
38	625604.55	270320.24	2049.69	6/18/2015	1	C	E	E
39	625604.40	270329.79	2049.44	6/18/2015	2	C	E	E
40	625604.30	270339.18	2049.12	6/18/2015	2	C	E	E
41	625619.25	270345.48	2049.38	6/18/2015	2	C	E	E
42	625619.32	270339.44	2049.57	6/18/2015	2	C	E	E
43	625619.29	270335.94	2049.62	6/18/2015		P	W	N
44	625619.34	270329.84	2049.74	6/18/2015		P	W	N
45	625619.34	270326.34	2049.84	6/18/2015		P	W	N
46	625619.38	270320.27	2050.04	6/18/2015		P	W	N

[illegible]

6.4 Exhibit 4

Sample Field Note Form

[illegible]

PROJECT NUMBER _____

DATE _____

NOTEKEEPER _____

JOB SHEET _____ OF _____

FIELD NOTES

UTILITY FINAL LOCATION SURVEY

[illegible]

6.5 Exhibit 5

Sample Field Data Code Sheet



City of Las Vegas
Department of Public Works
Survey Section

FIELD DATA CODES
UTILITY FINAL
LOCATION SURVEY

FACILITY TYPE

STRUCTURES	
Manhole Base/Barrel/Riser	MHB
Manhole Cover/Lid/Chimney	MHC
Vault	VLT
Junction Structure	JS
Drop Inlet	DI
Pullbox	PB

LINEAR FACILITIES

Pipe	P
Reinforced Concrete Box	RCB
Conduit	C
Direct-Buried Cable	DBC
Concrete Encasement	CE
Pipe Casing	PC
Precast Duct Bank	DB
Conduit Bundle	CB

MATERIAL

NEW FACILITIES (Partial List)

PVC	PVC
Water Quality PVC (C900)	C900
Water Quality PVC (C905)	C905
Reinforced Concrete Pipe	RCP
Ductile Iron Pipe	DIP
Corrugated Metal Pipe	CMP
Vitrified Clay Pipe	VCP

Existing Facilities

Concrete	CONC
Metal	MTL
Plastic	PLAS
Asbestos Cement Pipe	ACP
Corrugated Metal Pipe	CMP
Vitrified Clay Pipe	VCP

UTILITY

Cable TV	TV
Electric	E
FAST	FAST
Fiber Optic	FO
Irrigation	IRR
Natural Gas	G
Reuse Water	RW
Sanitary Sewer	SS
Storm Drain	SD
Telephone	T
Water	W
Unknown	UNK

STATUS

New	N
Existing	E
Abandoned-in-Place	A

**HORIZONTAL
REFERENCE**

Centerline	CL
North Side	NS
East Side	ES
South Side	SS
West Side	WS
Northeast Side	NES
Southeast Side	SES
Southwest Side	SWS
Northwest Side	NWS
Extents	EXT
Not Applicable	NA

GEOMETRY

POINTS OF GEOMETRY

Point on Tangent	POT
Point of Curvature	PC
Point on Curve	POC
Point of Tangency	PT
Angle Point (Horz or Vert)	AP
Corner	COR
Intersection	INT
Beginning	BEG
Ending	END
Centerline	CL

COMPONENT POINTS

Cap Fitting	CAP
Plug Fitting	PLUG
Tee Fitting	TEE
Wye Fitting	WYE
Cross Fitting	CROSS
Elbow Fitting	ELB
Reducer Fitting	REDUC
Valve	VLV
Meter	MTR
Pump	PUMP
Hydrant	HYD

SPECIAL LOCATIONS

Connection to Structure	CONN
Change in Size	CIS
Change in Material	CIM
Change in Configuration	CIC
Limits of Excavation	LOE

**VERTICAL
REFERENCE**

Top	TOP
Flowline	FL
Top of	
Operating Nut	TON
Flange Surface	FLANGE
Not Applicable	NA

SIZE

Nominal (Standard) Inside Diameter	N
Measured Outside Diameter	M
Estimated Outside Diameter	E
Measured Width	W
Measured Height	H
Measured Width x Measured Height	(Width)X(Height)M
Nominal Width x Nominal Height (RCBs)	(Width)X(Height)N
Measured Pipe Fittings (Tees, Wyes, Crosses)	(Pipe 1 Dia.)X(Pipe 2 Dia.)M
Nominal Pipe Fittings (Tees, Wyes, Crosses)	(Pipe 1 Dia.)X(Pipe 2 Dia.)N
Not Applicable	NA

APPENDIX F – NATIONWIDE PERMIT 7 FROM US ARMY CORPS OF ENGINEERS

APPENDIX G – CLARK COUNTY ENCROACHMENT PERMIT

APPENDIX H – NDEP 401 PERMIT

**APPENDIX X – CONSTRUCTION QUALITY PROGRAM
AND SECTIONS 111-117**



CONSTRUCTION QUALITY PROGRAM

City of Las Vegas Department of Public Works
City Engineer Division
Quality and Independent Assurance

Version 2.0

January 2, 2018

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Table of Contents

1 PURPOSE	4
1.01 Key Quality System Components.....	4
2 FEDERALLY FUNDED CITY OF LAS VEGAS PROJECT REQUIREMENT OVERVIEW	6
2.01 Policy (23 CFR 637.205)	6
2.02 Quality Assurance Program (23 CFR 637.207)	6
2.03 Laboratory and Sampling and Testing Personnel Qualification (23 CFR 637.209)	7
2.04 References	7
2.05 Revisions to This Manual	7
2.06 Definitions	8
3 ORGANIZATION	13
3.01 Internal Organization Chart	13
3.02 Contract Level Organization – Onsite Inspection	14
4 RESPONSIBILITIES	15
4.01 General	15
4.02 Quality Assurance Responsibilities On the Contract.....	15
4.03 Position Descriptions	16
4.04 Contract Inspection and Testing.....	18
5 CONSTRUCTION MANAGEMENT SELECTION	20
6 CONTRACT RECORD SETUP	20
6.01 Contract Records (Hard Copy Files)	20
7 SUBMITTALS	20
7.01 Materials	21
8 QUALITY SYSTEM INSPECTION AND TESTING INTERACTION	22
8.01 Quality Control Relations.....	23
8.02 Contractor’s Quality Control	23
8.03 QA Construction Inspector Responsibilities	24
8.04 Pre-Activity Meetings.....	24
8.05 Activity (QC) Cards.....	26
8.06 Activity Advance Notification	30
8.07 Unexpected Activity Notification	30
8.08 Contractor Log Interaction.....	31
9 INSPECTION RECORDS	31
9.01 General.....	31
9.02 Daily Inspection Report	31
9.03 Weekly Manpower and Equipment Report.....	33
9.04 Non-Compliance Report.....	34
9.05 Contractor Deficiencies	34
10 QUALITY ASSURANCE OF QUALITY CONTROL TESTING	36
10.01 General.....	36
10.02 Verification in the Field.....	37
10.03 Dispute Resolution	37
11 ACCEPTANCE OF WORK.....	37

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

12 QUALITY ASSURANCE TESTING REPORTS	38
12.01 Final Reporting	39
13 INDEPENDENT ASSURANCE	39
13.01 The Construction Management Division Independent Assurance (IA) program.....	39
13.02 IA Protocol	40
13.03 General Responsibilities of the Independent Assurance Inspector	40
13.04 IA Audit Categories	41
13.05 IA Split Sampling	41
13.06 Visual Audits of Field Testing Procedures	47
13.07 Contract Quality Administration Audits.....	47
13.08 Laboratory Audits	48
13.09 IA Inspection Auditing.....	48
13.10 Authorized Material Source Auditing	51
14 INDEPENDENT ASSURANCE FILES AND RECORDS.....	49
APPENDICES	51
TABLE 1	

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

REVISIONS

Revisions in the manual are indicated as bold and underlined

[illegible]

City of Las Vegas Department of Public Works, Nevada Construction Quality Program

1 PURPOSE

- A. The manual only addresses the construction quality and independent assurance. It does not contain the Construction Management Policies and Procedures.
- B. The City of Las Vegas Public Works, City Engineer Division has developed this manual for Performing Quality Construction to establish and document the Quality and Independent Assurance.
- C. This manual is the permanent reference detailing the program and defining policies, elements, activities, and guidelines to assure that the materials and workmanship in all construction projects conform reliably to the requirements for the approved plans and specifications.
- D. It has been developed in part using the criteria contained in Federal Regulation 23 CFR 637B-Quality Assurance Procedures for Construction as a guideline and other documents associated with Departments of Transportation.
- E. The Quality Control (QC), Independent Assurance (IA), and Quality Assurance (QA) personnel must adhere to this manual's procedures and intent.
- F. When applying City of Las Vegas Public Works policy to the Quality Assurance of construction contracts, the proper application of engineering experience and judgment is extremely important.
- G. Before attempting to apply these instructions and guidelines, the City Project Representative must have a thorough understanding of all Contract Documents, including the plans, special provisions, Uniform Standard Specifications, and other contract requirements.

1.01 Key Quality System Components

- A. The Quality System is broken down into the following key components or categories:
 - 1. Quality Control (QC) by the contractor:
 - a. Qualified Laboratories and Testing Personnel: The Contract Documents, and specifically the Special Provisions, requires that all Quality Control testing personnel on the Contract possess NAQTC or WAQTC and ACI Certification (as required) and that all Quality Control testing on the Contract are AASHTO R18 AMRL/CCRL accredited including companies and/or contractor ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077. The testing method accreditation is required for both field and laboratory testing.
 - b. The contractor must perform the QC in accordance with the contract documents, primarily sections 105 and 111 through 117. These specifications include testing and inspection with required documentation.
- B. Quality Assurance (QA) by the Engineer
 - 1. The Engineer performs oversight of the Contractor Quality Control by using QA inspectors and testers. The testing is performed at a lower frequency than the contractor for verification of the QC process testing.
 - a. Qualified Laboratories and Testing Personnel: The Consultant contract requires that all Quality Assurance testing personnel on the Contract

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

possess NAQTC, WAQTC, and/or ACI Certification and that all Quality Assurance testing companies and or contractors on the Contract are AASHTO R18, AMRL/CCRL accredited including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077. The testing method accreditation is required for both field and laboratory testing.

- b. City of Las Vegas Public Works further implements the Statement of Qualifications process for pre-qualification of Service Providers for Construction Contract Administration and Quality Assurance Inspection and Testing. This process assures personnel and laboratories working as Quality Assurance on the Contracts meet the same requirements.

C. Independent Assurance by the Engineer through an independent method

- 1. Qualified Laboratories and Testing Personnel: All Independent Assurance testing personnel must possess NAQTC, WAQTC, and/or ACI Certification and if IA testing is to be performed, that all companies be AASHTO R18, AMRL/CCRL accredited including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077. The testing method accreditation is required for both field and laboratory testing.
- 2. This function is to ensure that both QC and QA technicians are using the correct methods and correlate using split-samples. IA verifies that the laboratories and personnel are accredited and certified. There are also at least two documentation audits performed and one site audit of each tester/inspector.

D. Material Source Program

- 1. City of Las Vegas Public Works maintains this category of the Quality System to monitor material sources.
- 2. At the Contract Administration level, this category is important in determining the extent of Quality Control and Assurance involvement at the source of the materials. There are two (2) levels a material supplier may obtain:
 - a. Qualified Source: This assures the quality of the material through acceptance sampling, testing, and inspection performed by Quality Assurance or designated Representatives. This is performed annually and the source posted on the Interagency Quality Assurance Committee (IQAC) website for qualified sources. The QC testing on the project and at the source does not change; these source names are used in order to obtain materials without the use of a long submittal process. Testing and inspection is required by the contractor.
 - b. Authorized Source: This level assures the quality of the material through inspection and verification of the qualified Material Source Quality Control Plan and its application and/or inspection of the source facility. For Federally funded projects, these sources will be considered as qualified, not authorized. Testing and inspection at the facility by the contractor will be required.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2 FEDERALLY FUNDED CITY OF LAS VEGAS PROJECT REQUIREMENT OVERVIEW

The City of Las Vegas program utilizes City procedures dovetailed into the Federal NS 23 CFR 637B Requirements which allows for one manual.

2.01 Policy (23 CFR 637.205)

- A. The City Engineer provides the appropriate oversight to ensure that the City's quality assurance program is being implemented as approved. At a minimum the oversight shall cover:
 - 1. Materials sampling and testing issues,
 - 2. Construction inspection issues covering the specific attributes which reflect the quality of the finished product, and
 - 3. City capabilities – maintaining an adequate qualified staff to administer the Independent Assurance, Quality Assurance program and qualified laboratories.

2.02 Quality Assurance Program (23 CFR 637.207)

- A. The City's acceptance program provides a level of inspection to adequately assess the specific attributes which reflect the quality of the finished product. Acceptance inspection includes inspection of the component materials at the time of placement or installation, as well as the workmanship and quality of the finished product.
- B. Samples used in the acceptance decision are acquired as close as possible to where the material is incorporated into the project.
- C. The City QA controls the verification sampling locations and timing until immediately prior to sampling.
- D. When using non-authorized sources, the rate of testing is higher. This may be due material of questionable quality and wider ranges of test results, including failing tests.
 - 1. QC Testing Frequencies are noted in the Special Provisions. No reduction in tests will be permitted.
 - 2. QA testing frequencies are a minimum 10% for non-structural items and 30% for specialized and structural items. Section 10.02 details items required to have QA testing increased to 30% of QC.
 - 3. IA Testing and inspection frequencies are 13.05 (S).
- E. When contractor's tests are used in the acceptance decision and the City and contractor test results are not within tolerance range, the frequency of verification testing shall be increased until the issue is resolved.
- F. After the sampling is complete, the City will obtain the contractor's test data as soon as it is available, however no later than the time indicated on the testing turn-around as noted in the contract documents. The City's test results will not be given to the contractor until after the contractor results are received.
- G. The City reviews the contractor's source documentation as part of the City's quality assurance program.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- H. Test results are not to be discarded unless it is known that the sampling or testing was flawed. It may be appropriate to perform additional testing when the quality of the material is in question.
- I. Project materials are to be used in the Independent Assurance (IA) program, (material sources are also checked by IA as well) the IA samples shall be split between IA, QA, and QC by the QC within close proximity to the same location as the samples used in the acceptance decision.
- J. Observations of sampling and testing procedures are included as part of an IA system to evaluate sampling and testing personnel and ensure that test procedures is performed correctly.
- K. When using the project approach for IA, the frequency shall be approximately 10 percent of the required frequency of the tests used for QA.
 - 1. In general, the basis of acceptance is the QC data as verified and validated by QA. Therefore, QA tests a minimum 10% of the required QC testing with IA testing 10% of the QA frequency. The QA testing is increased to 30% of QC for specialized and structural items. Section 10.02 details items required to have QA testing increased to 30% of QC.
 - 2. The verification is accepted after statistical validation of the data, in accordance with ASTM D4460 and C670.
 - 3. The City uses visual inspection and/or the manufacturer's certification as a basis for accepting small quantities of non-critical material only if the material cannot be field tested.

2.03 Laboratory and Sampling and Testing Personnel Qualification (23 CFR 637.209)

- A. All test procedures used in the acceptance decision shall be in the scope of accreditation for the consultant laboratory.
 - 1. All laboratories that are utilized on the project must be R-18 AASHTO accredited and meet the requirements of ASTM D3666, D3740, and C1077.
 - 2. All testing personnel must be NAQTC, WAQTC, and/or ACI certified in the test methods for which they are performing.

2.04 References

- A. The manual uses the Uniform Standard Specifications ("Blue Book") and special provisions as the basis for contract administration instructions and guidelines.

The manual contains many references to other publications and documents, including other City of Las Vegas Public Works manuals and publications. However, CLVPW has made a concerted effort to minimize any repetition of information found in other publications.

2.05 Revisions to this Manual

- A. New or revised specifications may affect the current manual guidelines for contract administration. As specifications, practices, procedures, and policies change, subsequent revisions will be made to this manual and summarized in table form.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2.06 Definitions

Term	Definition
Authorized Materials List	A list generated by the Owner, Engineer, Contracting Agency, Agency or their designated representative which contains materials that are Authorized for incorporation into the work with prior written submittal of product name and manufacture only. The period of Authorization is indefinite, contingent upon continued execution of the Quality Control Plan with the Engineer's review.
Acceptance Testing (AT)	Sampling and testing, to determine the degree of compliance with contract requirements.
Acceptance Inspection (AI)	Inspection to determine the compliance with the contract requirements
Bid Number	The bid number is the unique identifier, generated by the Finance/Purchasing Department, used to file all documents during the construction phase.
Consultant	An engineering firm hired to perform Construction Management/Administrative services for City of Las Vegas
Contract	The agreement between the Contractor and City of Las Vegas. All facets of the agreement under which the Contractor is performing.
Critical Activities	A series of work activities on the Project, which according to the Schedule are the controlling or critical factor for completion of the Project. These activities are put in order of precedence to demonstrate their direct impact on other portions of the work. Only one item of work may be considered the Critical Activity at any point in time. Synonyms are Critical Item, Controlling Item
Critical Path Method	A method of Project Scheduling used on all City of Las Vegas Public Works Projects to document the sequence work activities used by the Contractor specifically linked together showing interdependence.
Control Measures	All actions taken to assure that materials are in compliance with specifications, including, but not limited to submittal, testing, inspection, documentation, quantifying for testing and payment, As-Built drawings, material tracking, etc. The Contractor, Owner, and/or Owners' representative will perform independent Control Measures to assure that all elements of the project are within specifications.
Control Procedures	All Control Measures shall be detailed in Control Procedures within the Quality Control Manual of the Contractor. Two types of Control Procedures are required in the Manual; Administrative Procedures and

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Term	Definition
	Activity Specific Procedures.
Hold Point	A stage of Construction which requires QA inspector to verify Contractor's workmanship.
Inspection	A control measure utilizing visual and manual methods to determine the quality of workmanship, material, or finished products. Inspections shall determine if all verifiable parts, practices, and products are in compliance with the Contract Documents. All inspections shall be documented, and any deviations from Contract Documents shall be noted therein.
Independent Assurance (IA)	Independent Assurance Acceptance shall be considered as all Control Measures taken by the Engineer, or their designated representative, to independently assure that Quality Assurance and Quality Control measures comply with Quality Assurance Program.
Lot	One day's production, regardless of quantity produced. One day's production shall be considered as one continuous production run within one working day by the Source or Contractor from which the finished product was produced. Examples of a Lot are as follows: one "heat" or one continuous pouring from a caldron for reinforcing steel, one day's production of a particular mix design of Asphalt Cement Concrete regardless of tonnage quantity, one "batch" of Portland Cement, one day's production of a particular mix design of Portland Cement Concrete, etc. Lots by the above definition may be divided into separate lots upon request from the Contractor and with the approval of the Engineer. Lots may be composed of several sub-lots as provided by specification.
Material	A material is a raw or composite of several raw substances used in the Work, or Products.
Non-Contracted Construction	Work, which will be dedicated to the City upon successful completion, however, the City, is not the first party of the contract for the construction of the work.
Oversight	All daily inspection, supervisory oversight, and normal worker performance verification checks performed by the Contractor's supervisory personnel during production of the work. Oversight shall be documented as part of a functional Quality Control Plan.
Pre-Activity Meeting	A meeting to coordinate the quality control, quality assurance, work planning, scheduling, and other details for a specific activity prior to its start. This formal meeting shall resolve all outstanding issues regarding

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Term	Definition
	submittals, testing requirements, elevation controls, work plans, etc.
Project	In this manual, Project shall be considered to be identical in meaning with the Contract. It shall reference the specific job-site of the Contract.
Project Number	This Number is issued for all construction projects by the City Engineer Division of City of Las Vegas Public Works for internal cost accounting. Many Project Numbers have more than one Contract to complete. For the purposes of this manual, reference is made only to the specific Contract project and the relevant Project Number for that project.
Owners Representative	Any of the following individuals: City Engineer, Program Manager, Construction Manager, Construction Management Supervisor, Project Manager, Construction Project Representative, and Consultant Project Manager.
Construction Management Supervisor	When the words Project Manager stand alone within this manual it shall mean City of Las Vegas's Construction Management Supervisor position. Other "Project Managers" are referenced in this manual, and shall be specifically referred to as: Consultant Project Manager, Contractor Project Manager, or Engineering Project Manager
Qualified Materials List	A list generated by the Engineer, or their designated representative, which contains materials, requiring an abbreviated submittal prior to incorporation into the work. The period of Qualification will typically be one year.
Quality	Quality is obtained if the stated requirements are adequate, and if the completed project conforms to the requirements. Quality in the constructed project is obtained by conscientious application of a thoroughly planned Quality Control System implemented through quality-control procedures.
Quality Assurance (QA)	A sampling and testing program that will provide assurance that the materials and workmanship incorporated into the construction project are in conformance with the contract specifications. The main elements of a QA plan are the AT, and IA. The governing agency responsible for assuring contractor contract testing/inspecting compliance. All Control measures taken by the Owner, Engineer, Contracting Agency,

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Term	Definition
	or their designated representative to verify that Quality Control measures, materials, workmanship, etc. comply with Contract Documents and the related Quality Control Plan(s).
Quality Control	A) Quality Control is the planned and systematic actions necessary to provide adequate confidence that the construction of the project complies with the Contract Documents. B) Qualified contractor designee responsible for informing Quality Assurance and scheduling/verifying contract inspectors. C) Quality Control shall be all measures taken by the Contractor and/or the Source to assure that materials, workmanship, etc. are in compliance with specification.
Responsible Person in Charge (RPC)	The primary Representative of the Contractor, generally the Superintendent. This individual has specific duties required by the contract.
Source Inspection	AT of manufactured and prefabricated materials at locations other than the job site generally at the manufactured location.
Testable Quantity	The amount of work, material, construction quantified by the units used for determination of testing frequency. Testing units and payment units may be different, for the purposes of this document. All Quantities shall be Testable Quantities.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

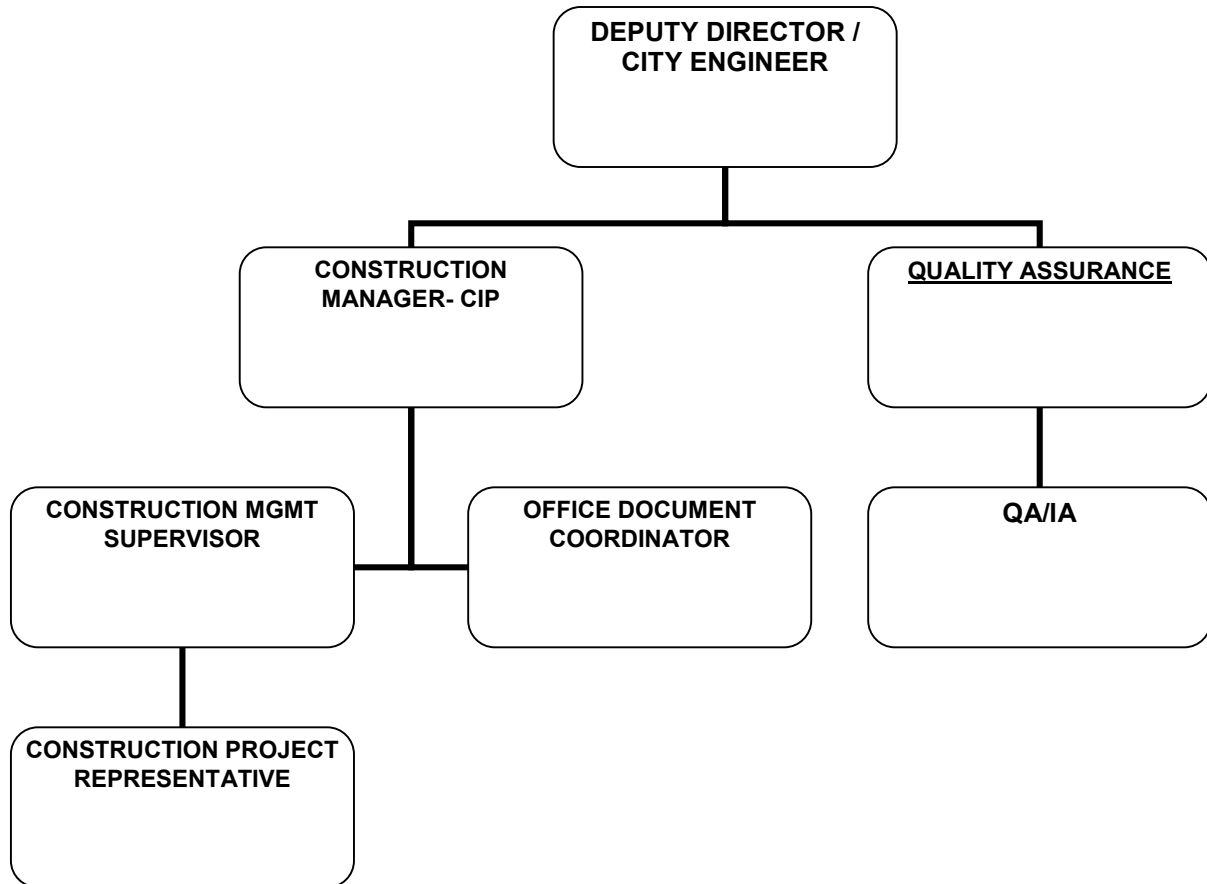
Table of Acronyms

<i>Acronym</i>	<i>Description</i>
AAP	AASHTO Accreditation Program
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACIA	American Construction Inspectors Association
AMRL	AASHTO Materials Reference Laboratory
ASTM	American Society for Testing and Materials
CCRL	Cement and Concrete Reference Laboratory
IQAC	Inter-Agency Quality Assurance Committee
MUTCD	Manual on Uniform Traffic Control Devices
NAQTC	Nevada Alliance for Quality Transportation Construction
NDOT	Nevada Department of Transportation
OSHA	Occupational Safety and Health Administration
RTC	Regional Transportation Commission of Southern Nevada
RFCD	City of Las Vegas Regional Flood Control District
USACE	United States Army Corp of Engineers
WAQTC	Western Alliance for Quality Transportation Construction

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

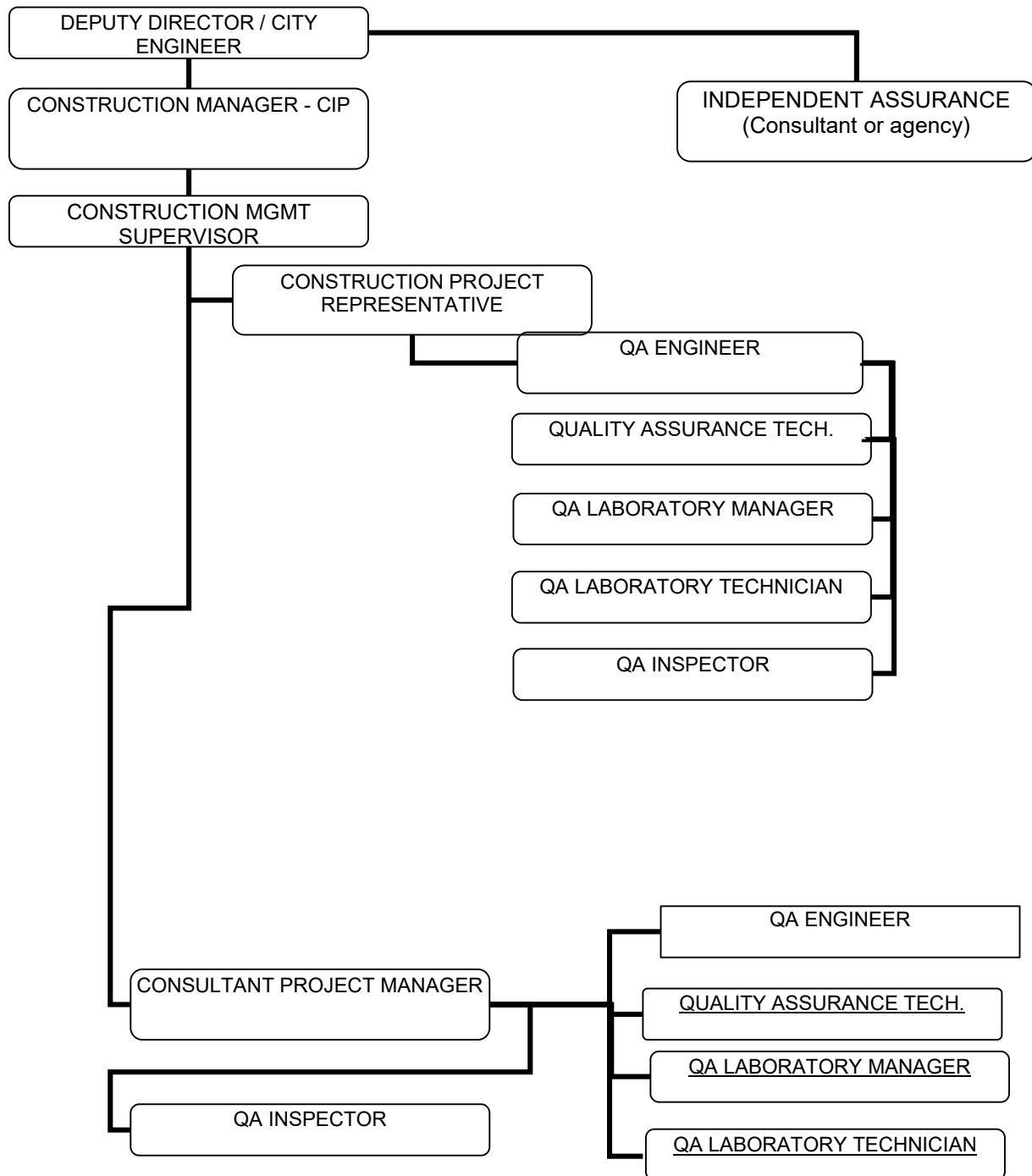
3 ORGANIZATION

3.01 Internal Organization Chart



City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

3.02 Contract Level Organization – Onsite Inspection



City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

4 RESPONSIBILITIES

4.01 General

- A. The Capital Project Management (CPM) Section of the City Engineer Division is responsible for the quality and independent assurance of construction contracts assigned to the Department of Public Works which ensures compliance of the contractor Quality Control (QC).
- B. The CPM Section provides for the quality construction through contract administration, and uniformity in construction project materials testing and inspection. Responsibilities include, but not limited to, the following:
 - 1. Managing QA construction inspection and QA testing
 - 2. Reviewing project documentation for completeness and accuracy
 - 3. Managing the Independent Assurance testing and inspection program Providing technical support regarding construction methods and techniques
 - 4. Training field personnel (informal on-the-job and formal)
 - 5. Developing construction specifications
 - 6. Participating in construction-related research
 - 7. Oversight of the field tester qualification program
 - 8. Develop field test methods and revise, as necessary
 - 9. Coordination of the Interagency Quality Assurance Committee

4.02 Quality Assurance Responsibilities

- A. Inspect, sample and test soils, aggregates, asphaltic concretes, Portland cement concretes, and other materials in accordance with the Contract Documents. Provide the results of such sampling and testing and inspection reports to the Construction Management Supervisor.
- B. Attend progress meetings, job conferences, and other meetings related to Project material testing when requested.
- C. Acquire samples for laboratory testing and receive samples which are furnished at the Project site by Contractor and witnessed by the owner or the owner's representative.
- D. Review Contractor's Quality Control daily testing results and inspection reports to ensure they are complete, timely and within the scope of the Contract specifications.
- E. Report to the Construction Management Supervisor if it is believed that any work is unsatisfactory, faulty, defective or does not conform with the Contract Documents, or does not meet the requirements of any material inspections. This includes tests or approvals required, and advising the Construction Management Supervisor when they believe any of the work should be corrected or rejected or shall be uncovered for inspection, or requires special testing.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- F. Keeps a daily diary or log book recording the quality assurance field testing and inspection on the project site and specific observations.
- G. The QA testing companies and/or contractor shall be an AASHTO R18, AMRL/CCRL accredited including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077. The accreditation is required for both field and laboratory testing.
- H. Receive, review, and analyze samples, catalogue data, laboratory tests of materials and other data which the Contractor submits as a joint sample in accordance with the Contract Documents. Maintain a QA log of lab testing submittals, and test results.
- I. Prepare and provide a monthly Quality Assurance report that reflects an analysis of all material tests performed and the QA/QC for ratio of required tests. The monthly Quality Assurance report shall be stamped by a Nevada Licensed Professional Engineer.
- J. All testing technicians/inspectors performing Quality Assurance testing shall be NAQTC/WAQTC/ACI certified for the tests they perform.

4.03 Position Descriptions

- A. Specific functions performed by each individual are contained throughout this manual and are not defined in the brief descriptions below.
- B. This portion of the manual is not intended to define all of the functions performed by a position.
- C. Each individual shall be responsible for reading this manual and understanding all of the details of their assigned functions.
- D. City Engineer / Deputy Director of Public Works (DPW)
 - 1. The City Engineer leads the program to deliver quality infrastructure products and services. The City Engineer does the following:
 - a. Establishes the Division's and Section's direction, definition, policies, and objectives.
 - b. Develops and uses performance measures to determine program efficiency and effectiveness.
 - c. Construction Manager – CIP and Construction Management Supervisor Coordination with other Divisions, Departments, and Agencies
 - d. Must be a Nevada P.E.
- E. Construction Manager – CIP (CMCIP)
 - 1. The Construction Manager - CIP, under the general direction of the City Engineer, is the primary supervisor for construction and administration of all City of Las Vegas Public Works contracts. The Construction Manager must also be a Nevada P.E.
 - 2. On complex or sensitive construction issues, Construction Manager – CIP shall report to and consult with the City Engineer.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- F. Construction Management Supervisor (CMS) / Engineering Project Manager / Project Engineer.
1. The Construction Management Supervisor primary responsibility is to administer assigned construction Contracts on a day-to-day basis and reports to the Construction Manager - CIP.
 2. The Construction Management Supervisor must thoroughly study the assigned Contracts, becoming familiar with all its facets.
 3. These duties include, but are not limited to:
 - a. Analyzing the plans, estimate, and preliminary quantity calculations, and determine if the estimated quantities cover all work items contemplated.
 - b. Oversight and supervision of Quality Assurance Consultants on Contracts
 - c. Oversight and supervision of Consultant staff on Contracts
 - d. Identify major discrepancies and taking appropriate action
 4. Once assigned, the CMS will remain assigned to the Contract until its completion, including the completion of all Contract documents and administrative matters.
- G. Construction Project Representative (CPR) performs dual roles within the organization as defined below:
1. In this capacity, the Construction Project Representative will be required to perform all functions of the Construction Management Supervisor (under-fill) in their absence.
 2. This is a generic title used throughout this manual to label each of the three distinctions of Inspector, Construction Management inspection, Augmentation inspector, and Consultant Inspectors.
 3. Generally, the CPR is the “first line of defense” after the Contractor QC within our organization.
 4. The CPR also acts as the primary liaison between the Contractor, the public, and City of Las Vegas.
 5. The CPR’s are authorized to inspect and/or test all work performed and materials furnished for the assigned Contract(s).
 6. Such inspections may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. The CPR must thoroughly study the assigned Contracts and becoming familiar with all its facets.
 7. The CPR’s are not authorized to alter or waive provisions of the Contract or to issue instructions contrary to the Contract.
 8. The augmentation inspector is used as a label for CPR who is an employee of a Consultant contracted to provide an individual to perform the CPR function.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

9. Augmentation Inspectors are utilized as an extension of City of Las Vegas staff and answer directly to the City of Las Vegas's assigned CPR or CMS on a day-to-day basis.

H. Consultant Project Manager

1. The Consultant Project Manager is an employee of a Consultant firm contracted to perform Contract Administration functions on a specific Contract. This position is the lead for the Consultant team and becomes the Primary Contact for the Contract.
2. The Consultant Project Manager will be assigned many of the tasks typically associated with the Construction Management Supervisor and Construction Project Representative.
3. The instances when the Consultant Project Manager acts with this authority are specifically identified within this manual.

Normally, a peer-to-peer relationship exists between the CMS and the Consultant Project Manager. However, in the absence of the Construction Management Supervisor, the Consultant Project Manager shall regard the CPR as the Project Manager and shall contact them with Contract issues.

4.04 Contract Inspection and Testing

- A. This category of the Quality System assures the workmanship of materials incorporated into the City of Las Vegas Public Works Contract through inspection and testing.
- B. Quality Control (QC): All of the functions of the Contractor to assure, test, and document that the work is in compliance with the Contract Documents and the Quality Control for the Contractor called out therein.
 1. Ultimately, the Contractor has responsibility for the quality of all materials and workmanship on any Contract, including but not limited to all aspects of testing, inspection, and submittals.
 2. The contractor and material source must conform to the Quality Control Program version format indicated in the contract documents.
 3. QA and QC verification testing shall not use split samples, however shall be tested at the same approximate location and time.
- C. Quality Assurance (QA): The Construction Management Section or their representative performs Quality Assurance in the form of oversight, testing and inspection to verify the effectiveness and accuracy of the Contractors Quality Control. Additionally, the Quality Assurance performs analysis on Quality Control data and assesses compliance with the materials and workmanship. This is performed using validation forms from the verification testing.
- D. Independent Assurance (IA): This function is to ensure that both QC and QA are using the correct methods and correlate using split-samples.
 1. IA verifies that the laboratories and personnel are accredited and certified. There are also at least two documentation audits performed.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2. The Independent Assurance lab and its testers are not associated with the project testers, which are under the supervision of the Contractor or City of Las Vegas. This assures an independent check on the testing procedures.
- E. The key elements of Quality Assurance by the City are qualified testers, timeliness and documentation.
 - F. The Quality Assurance shall verify that all items have been submitted, tested, inspected, accepted, and that each step listed was conducted in the appropriate time frame to control work as it progresses.
 - G. The Quality Assurance shall verify tracking the usage of all materials on the Contract. Retention of all Quality Assurance Documentation shall be as required until completion of the Contract, at which time the documentation shall be prepared for imaging by City of Las Vegas. For FHWA projects, all records must be submitted in the original form, no duplicates are permitted.
 - H. The Contractor Quality Control, Owner Quality Assurance and Independent Assurance testing personnel on the Contract possess NAQTC, WAQTC, and/or ACI Certification and that all testing companies and/or contractor are AASHTO R18, AMRL/CCRL accredited including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077. The accreditation is required for both field and laboratory testing.
 - I. Quality Assurance Testing Engineer (Professional Engineer)
 1. The Quality Assurance Testing Engineer works for an AASHTO R18, AMRL/CCRL accredited laboratory including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, and C 1077. The accreditation is required for both field and laboratory testing. This laboratory shall be contracted by City of Las Vegas or its consultant to perform Quality Assurance Testing.
 2. As the Professional Engineer registered in Nevada over the Quality Assurance Testing Technician and the Quality Assurance Laboratory Technician, the Quality Assurance Testing Engineer is in responsible charge of this work.
 3. The Quality Assurance Testing Engineer oversees the proper conduct and reporting of all testing performed for Quality Assurance on the Contract.
 4. Advise the Construction Manager – CIP or designee of any violation subject to the following for testing and/or inspection:
 - a. NAC 625.550 Licensee employed by governmental agency: Notification to Board of certain conduct by another licensee. ([NRS 625.140](#)) Any person licensed pursuant to this chapter who is employed by any governmental entity shall notify the Board in writing when:
 - 1) Another licensee has submitted substantially incomplete plans (*test data as well*) to the governmental entity;
 - 2) The governmental entity has, on three or more occasions, rejected plans (*test data*) submitted by another licensee for the same project; or
 - 3) Another licensee has failed to respond in a timely manner to correspondence from the governmental entity.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

J. Quality Assurance Testing Technician (QATT)

1. The Quality Assurance Testing Technician performs field and laboratory testing of materials incorporated into the work.
2. The Quality Assurance Testing Technician is required to be NAQTC, WAQTC, and/or ACI certified in the area in which they are performing testing.

5 CONSTRUCTION MANAGEMENT SELECTION

- A. On or about the time of Advertisement, a Construction Management Supervisor (CMS) is designated and a determination made as to whether or not a Consultant will be retained to administer the contract.
- B. The Construction Manager - CIP (CM-CIP) will evaluate manpower and work loading to make this determination.
- C. CLVPW may retain engineering consultants to administer construction projects. When a consultant performs the duties of a CMS or CPR, the responsibilities are identical, except a consultant cannot do the following:
 1. Obligate funds
 2. Authorize payment on behalf of CLVPW
- D. Should it be determined that a consultant is needed to help manage a Federally funded project, one of the following will occur:
 1. For consultant fees estimated to be \$25,000 or greater, consultant selection will be made using a Request for Statement of Qualifications (RSOQ) process following all applicable Federal guidelines if Federal funding is to be used to pay for the consultant fees. This process will be performed by the Purchasing & Contracts Division of the Finance Department and the Construction Management Section of the Public Works Department.

6 CONTRACT RECORD SETUP

6.01 Contract Records (Hard Copy Files)

- A. The Construction Management Section is the custodian of records for all Contracts after award of bid to the end of the project warranty period.
- B. The CPR is responsible for maintaining a complete file of all Contract documents during the active life of each Contract.
- C. These files shall be maintained in the Construction Management office until the contract close-out has been completed.

7 SUBMITTALS

- A. The contract documents instruct the contractor for the proper submission and contents of a material submittal for review.
- B. The Contractor Responsible Person in Charge (RPC) shall attest that the content of the submitted materials has been reviewed against the Contract Documents, and that the materials are in compliance.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- C. The contract will include the submission of resumes and qualifications of the Contractor's personnel to ensure those individuals meet or exceed the requirements of the positions they will hold for the Contract special provisions section 113. Failure to meet minimum requirements for a position will be grounds for rejection of that individual in the position assigned.

Submitted materials that are to be evaluated as "Or Equal" or "Substitution" shall be reviewed for accuracy and sufficiency of back-up documents so that the CPR Design Project Manager can determine whether the material qualifies as an "Or Equal" or "Substitution."

7.01 Materials

- A. There are three (3) basic categories of material sources that may be utilized. Defined below are the general description of the category and the minimum Submittal content. Determine which category the Contractor is submitting and use the appropriate details.
- B. The Contractor shall clearly state on the Submittal if the Material(s) is currently listed on the Authorized Source List or the Qualified Products List.

1. Authorized Source List Materials

- a. An Authorized Source list cannot be used on federally funded projects. They will not be considered to be authorized thus the contractor must include the source testing as a part of their contract.

2. Qualified Products List Materials

- a. This category of Material comes from a Source which has demonstrated to the Inter-Agency Quality Assurance Committee that the Material meets the minimum "Blue Book" specifications.
- b. The Inter-Agency Quality Assurance Committee (IQAC) is responsible to periodically review the Material for continued compliance.
- c. Ensure that the Special Provisions for the Contract do not place additional requirements on the material prior to approval for Contract use.
- d. The Submittal shall include copies of the most recent test data approved by the Inter-Agency Quality Assurance Committee.
- e. These materials DO NOT receive special treatment in regard to Quality Assurance and Quality Control, Onsite and Plant testing frequencies. They must be tested in accordance with the Quality Control Frequency Table in the contract documents.

3. Certified Materials

- a. In general, a Certificate of Compliance will be acceptable as a Submittal for the given material provided that the materials and that the certification is current and include test for the lot. The certification must include the tests for the lot.
- b. Following is a partial list of construction materials that may be accepted based on Certificates of Compliance. This list is not all-inclusive and is subject to change:

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 1) Traffic Control Items
- 2) Sign Materials
- 3) Striping
- 4) Guideposts/Object Markers
- 5) Signal and Lighting
- 6) Irrigation Systems
- 7) Landscaping
- 8) Water Line Systems
- 9) Pipes and Drains
- 10) Engineering Fabrics
- 11) Polymer Concrete
- 12) Precast Concrete
- 13) Cattleguards
- 14) Guardrail
- 15) Barrier Systems
- 16) Structural Steel
- 17) Paint, Stain and Graffiti Coating
- 18) Miscellaneous Metals
- 19) Fencing

C. Qualified Products List (QPL)

1. When the City of Las Vegas uses the NDOT QPL it shall be listed in the contract special provisions. The City's Construction Project Representative will be responsible for collection and verification of material certifications prior to installation.

8 QUALITY SYSTEM INSPECTION AND TESTING INTERACTION

- A. All efforts by City of Las Vegas, Consultant, and Augmentation personnel shall be considered Quality Assurance (QA).
- B. Quality Assurance ensures that the Contractor Quality Control (QC) performs their duties diligently, documents their efforts, and produces a quality product for the public.
- C. All efforts by the Contractor's personnel to execute the Contract are to be considered QC. However, the Contractor is only required to document those efforts specifically named in the Contract Documents.
- D. It is the responsibility of the Owners Representative, as Quality Assurance to oversee Quality Control performance, documentation, and effectiveness. This includes in-progress inspection and testing and the final inspection request from the Contractor.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- E. The Contractor QC may be used for acceptance only if the QA verifies the QC testing with IA oversight, in accordance with ASTM D4460 and C670.

8.01 Quality Control Relations

- A. The Owners Representatives and the Contractor's personnel shall make every effort to work together to expedite the prosecution of the Contract.
- B. The work is to be done without violating the terms and conditions of the contract or sacrificing the quality of work or materials.
- C. No instructions for means and methods shall be given to the Contractor. Limit Instructions to the scope of the plans and specifications, such as interpretations of plans and specification requirements. However, it is appropriate to advise of a flaw that may cause a delay or extra work by the contractor.
- D. Resolve misunderstandings with the Contractor's employees promptly. It is the Contractor's responsibility to provide the Agency with a quality product.
- E. It is up to the Quality Control personnel to give instruction to the Contractor's personnel and provide acceptable solutions when there is a question about the quality of materials, method of construction, or workmanship on the Contract.
- F. Quality Assurance does not abdicate the acceptance responsibility; Contractor Quality Control is an extension, a first layer, to ensure a quality project by placing the first line of quality at the contractor level.
- G. The QA inspector has full stop work authority of the contractor if they, as determined by the contract, repeatedly fail to comply with the contract specifications.
- H. If at all possible, the contractor shall not be allowed to proceed "at their own risk" as that, by definition, is not quality control. If the material is placed at risk, the contractor shall be notified that no payment will be made for the material.
- I. Differences of opinion may occur between the Contractor's employees and those of the Owners Representative about the contract, interpretation of the specifications, quality of work, and measurement and payment of items.

The Owners Representative will try to resolve any of the above issues promptly and fairly within the scope of the Contract documents. If disagreements cannot be satisfactorily resolved, the Owners Representative will refer the matter to an immediate supervisor.

8.02 Contractor's Quality Control

- A. The Contractor is required by specification to implement Quality Control as stated in contract Special Provision Sections 105, and 111 through 117. The contractor testing must conform to the frequency as required in the contract documents.
- B. Familiarity with these specifications for the Contractor's Quality Control is fundamental to performing Quality Assurance testing.
- C. During the course of construction the Quality Assurance tester is to perform routine oversight and document the work operations and Quality Control functions.
- D. It shall be considered appropriate and normal for the Quality Assurance Inspector to "point out" potential issues that may or may not jeopardize the quality of the work, issues

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

that may affect the productivity of the work, or any other related issues that affect the execution of the Contract.

- E. The Quality Assurance Inspector shall interact directly with the responsible person-in-charge, Quality Control Inspector and Foreman in this regard.
- F. If the Contractor does not correct an issue prior to Quality Assurance acceptance, the Quality Assurance Inspector shall document the issue as a Deficiency on the appropriate Activity Card or issue a Non-Compliance Report for those issues not covered by an Activity Card. The CMS shall be immediately notified.
- G. The contractor Quality Control may be used for acceptance only if the Quality Assurance verifies through validation the Quality Control testing and with confirmation of Independent Assurance, in accordance with ASTM D4460 and C670.

8.03 QA Inspector Responsibilities

- A. Inspectors have two important responsibilities. The first and primary responsibility is to confirm that the contractor's work and site activities conform to the plans and specifications. The second responsibility is to document the contractor's work.
- B. Under the supervision of the Construction Manager or designee, inspectors are authorized to inspect all work performed and materials furnished. Inspections may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the work materials. Inspectors are not authorized to direct contractor operations. However, an inspector communicates with the contractor and other project personnel to reduce misunderstandings relating to the interpretation of the plans and specifications.
- C. Inspection overview of duties includes but is not limited to:
 - 1. Observing, inspecting and documenting the contractor's workmanship, materials, and methods for conformance with the plans and specifications
 - 2. Interpreting the plans and specifications
 - 3. Documenting inspection and testing operations in the daily construction report
 - 4. Measuring work and materials for payment
 - 5. Observing construction operations for compliance with safety regulations, traffic control requirements, and construction-related government regulations
- D. The Inspector interacts with the contractor on a continual basis. There are two main activities that aid in the project construction process; pre-activity meetings and the use of activity cards.

8.04 Pre-Activity Meetings

- A. A pre-activity meeting is conducted by the contractor in order to get all persons that are involved in a construction activity to communicate the actions that will occur. This aids in the coordination of the inspection, testing, equipment allocation, and other pertinent activities.
- B. The Contractor is required, but not limited, to conduct Pre-Activity Meetings for each of the following scenarios:
 - 1. The first time a crew (Contractor and/or Subcontractor) begins work on any item

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2. When the Contractor elects to change Quality Control Coordinators
3. When the Contractor elects to change Foreman
4. When the crew has not conducted this activity for a significant period of time

C. Planning Pre-Activity Meetings

1. The Contractor Quality Control Manager is responsible for planning each Pre-Activity Meeting. They must coordinate with the Quality Assurance Inspector to assure that all items being inspected and tested by Quality Control have been addressed.
2. The Quality Control Manager will need to address any work operation which may impact the progress and quality of the work.
3. Examples of work operations which may adversely affect quality could be any of the following:
 - a. No plan for a back-up generator
 - b. The only generator on the job-site malfunctions, concrete has been placed and no vibrators are working, thus the quality of the placement is in jeopardy.
 - c. Back-up concrete mix design
 - d. The day of placement the batch plant is down, the Contractor scrambles to find a supplier, and the only available mix has not received Submittal approval, thus the quality of the placement is in jeopardy.
4. The examples above are typical of when planning could help avoid potentially detrimental effects to the quality of the work.
5. The Quality Control Manager, with the coordination of the Quality Assurance Inspector, shall foresee as many such instances as possible and greatly reduce the chances of poor quality work.
6. The Quality Control Manager shall generate a Pre-Activity Agenda in written form.

D. Pre-Activity Meeting Attendees

1. Generally, the Pre-Activity Meeting shall be open to any interested party or as required by the contract. Review the contract for required attendees.
2. Conducting Pre-Activity Meetings
 - a. The Quality Control Manager is responsible for assuring that the Pre-Activity Meeting is conducted.
 - b. The meeting itself must be conducted in advance of work being performed. For routine items, the meeting may be conducted immediately prior to work commencing.
 - c. During the Pre-Activity Meeting, Quality Control shall address all items affecting the quality of the work.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- d. The Owners Representative will be allowed to contribute during the meeting, adding additional discussion points that may be necessary.
- 3. Pre-Activity Meeting Minutes
 - a. The Quality Control Manager is responsible for generating minutes to each Pre-Activity Meeting.

The Owners Representative shall have the responsibility to review the Meeting Minutes and comment as necessary. At a minimum, distribution shall be all those in attendance and to file.

8.05 Activity (QC) Cards

1. The Contractor is required to document all Control Measures taken by their Quality Control staff. The Activity Card has been developed to simplify and standardize this documentation. The most current card form is in the contract documents. Refer to Exhibit "D" for sample of "Advance Notification Card" and Exhibit "E" for sample of "Activity Card."
2. To ensure that Quality Control has properly documented their efforts, noted all deficient work, and agreed to Quality Control quantities, Quality Assurance Inspectors must use the activity cards that are initiated by the Contractor, .
3. The following Section by Section descriptions of Activity Card interaction are based on the Activity Card Form found in the contract documents. This card originates from the contractor.

- a. Top of Form

- 1) The top of the Form has Contract Information including Project Name, Contract Day, and Report Number. The Contractor is required to complete this information.

- b. **Section 1 – Actual Work Performed**

- 1) The contractor will list the work that was performed that requires inspection.
- 2) When Quality Control fails to identify deficiencies, but has performed and documented a successful inspection in the work, the following steps shall be taken.
 - a) Document the deficient work on the Activity Card.
 - a) Document Quality Control's failure to identify the deficient work.
- 3) A note is made in Section 2 - Deficient Items, Cleared or New on the Activity Card, as well. Clearly describe Quality Controls failure to perform.
- 4) If the failure will take more than a brief description to define, write "See remarks" here and complete your comments in Section 5 - Remarks.
- 5) The Quality Control Inspector is required to track this Deficiency through the balance of the system, log and resolution.
- 6) A Deficiency needs be noted whenever it is not corrected on the same day. Even if the Contractor plans to work the Deficient area the following

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

day, circumstances may change the plan and the work may not be completed until some future date.

- 7) Small items of Deficiency may be resolved by the Contractor after the formal Inspection.
- 8) A small item can be reviewed upon correction. A remark, indicating that a minor item was found and corrected, will suffice without having to record and track a Deficiency. This action is solely at the discretion of the Quality Assurance Inspector due to the myriad of circumstances that could be in effect.

c. **Section 2 - Deficiency Check**

1. The Quality Control Manager will perform a routine check of outstanding Deficiencies to verify if any exist for the Activity covered by this card.
2. If a Deficiency is outstanding, a remark as to the Type of Deficiency Description would be included.
3. If no Deficiencies are outstanding, the Quality Control Representative would have initialed and dated that portion of this Section.
4. The Quality Control Inspector is required to verify that any outstanding Deficiencies are addressed.

d. **Section 3 - Inspection Items**

1. Several Inspections related issues are addressed in the Section and are broken down into the two (2) categories as follows:
 - a) Onsite Inspections
 - 1) Upon completion of the work, the Quality Control Inspector shall perform inspection(s) of the relevant portion of the work. Checklist inspection forms are to be used by the Contractor.
 - 2) Generally, individual line items shall be indicated for each area of work by the contractor that requires inspection signoff. e.g. forms, reinforcement, placement. Specifically when Hold Points demand review of the work at a specific point in time.
 - 3) A hold point is a point where the construction must stop to await inspection by Quality Assurance.
 - 4) Hold points may be given as an attachment in the Special Provisions and discussed in the pre-construction meeting. The Contractor may elect to lump some items together for a single inspection point, e.g. forms and reinforcement inspection concurrently. Discussions about Inspection points, Hold Points, and line items for inspection shall have been discussed at the Pre-Activity Meeting.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 5) If disputes arise, the Quality Control Manager shall conduct another Pre-Activity Meeting for resolution.
- 6) For work that does not have an example, the contractor must develop their own for approval by the Engineer.
- 7) When an inspection is completed and the work found to be acceptable, the Quality Control Inspector will initial and date the appropriate line item and forward to the Quality Assurance Inspector for concurrence.
- 8) The Quality Assurance Inspector shall initial and date Section 3 adjacent to the inspection item for the work being reviewed.

b) Offsite Inspection

- 1) Offsite or Batch Plant Inspection shall also be recorded in this section of the Activity Card by the contractor. If the Contractor is required to perform the Inspection, they must ensure that documentation is tracked.
- 2) Generally, this line item is a prompt for the Quality Control Manager to log the Offsite Inspection and track the documentation from the appropriate Quality Control Inspector.

e. **Section 4 - Testing and Sampling Items**

1. The Contractor is required to test specific materials onsite and offsite. Which materials to be tested are defined in Table 1 located in the approved construction documents.
2. The Quality Assurance Inspector shall review the testing results individually to ensure "pass/fail" criteria have been met. The Quality Control Technician is required to report test results to the Quality Assurance Inspector prior to leaving the Contract site for each testing event.
3. Typically this reporting will be conducted in person. There are two categories of testing:
 - a. Onsite Testing
 - 1) Documentation of onsite testing is accomplished through the Activity Card Section 4 - Testing Requirements and attachment of test results.
 - 2) Each item being tested will have one (1) line item in Section 4. The Testable Quantity associated with the testing, as addressed above, will also be documented here.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 3) The Quality Assurance Inspector is required to verify that Quality Control Representatives have completed this Section of the Activity Card.
- 4) Generally, documentation of testing is performed by the Quality Control Technician. However, the Quality Control Inspector or Manager may take responsibility for this item.

b. Offsite Testing

- 1) When sampling is performed in conjunction with an Offsite Inspection, Quality Control must document the samples in Section 4 - Testing Requirements of the Activity Card.
 - 2) This line item is a tracking mechanism to assure that the samples taken during Offsite Inspections are logged, tracked and filed in accordance with the Quality Control.
 - 3) The Quality Assurance Inspector shall review Contract Quality Control Files on a weekly basis to assure that all Offsite Testing is being tracked properly.
 - 4) Particular attention must be paid to Offsite Testing by the Quality Control and Quality Assurance Representatives.
 - 5) The Inspection report generated at the Offsite Inspection will need to be reviewed closely to assure that sampling was or was not conducted.
4. Whenever materials are sampled onsite for QC, QA, or IA Laboratory Testing, a line item shall be added by Quality Control to this Section. The purpose of the sample line item is to log and track these samples until the testing results are returned from the laboratory.
 5. The Quality Assurance Inspector shall review Contract Quality Control Files on a weekly basis to assure that all samples are being tracked properly.
 6. The QA inspector needs to ensure that the QC or QA test results that were part of an IA sampling are submitted promptly to the IA representative.
 7. In addition to having the individual tests recorded, it is essential that Testable Quantities be documented. Traditionally, construction materials were quantified for payment only.
 8. The Contractor shall be required to measure and the QA is required to verify, and then reach an agreement on Testable Quantities daily.
 9. The Contractor is required to document Testable Quantities on the Activity Card. The calculations should be attached to the Activity Card.
 10. Independent measurement or witnessing the measurements and calculations may be used for verification. Additionally, both the Planned

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

and Actual number of tests taken shall be completed in Section 4 - Testing Requirements.

11. The Actual number of tests to be performed is the sum of the Testable Quantity divided by the Testing Frequency (See Table 1).

f. Section 5 - Remarks

1. Use as applicable to document remarks or notes related to the Activities performed on this Card.

g. Section 6 – Q.A. Sign Off

1. The Quality Assurance Inspector is required to initial and date this Section of the Activity Card once the Contractor has completed the event.
2. Quality Assurance “sign off” is limited as it does not represent acceptance of the work performed, but is a verification that Quality Control Testing/ Inspection was performed, Testable Quantities are representative of the work.
3. Should the Quality Assurance Inspector be in disagreement with the statement for a given day, they may add any comments necessary in Section 7 - Remarks to explain.
4. The Contractor would be required to record, track and address the comments as a Deficiency.

8.06 Activity Advance Notification

- A. The Contract Documents require that there be advanced notification to Quality Assurance. The Advance Notification allows the Owners Representative time to schedule all necessary Quality Assurance inspection and testing.
- B. The Quality Assurance Inspector shall initial directly on the Card that the notification was received. When Short Notice was given, include the date and time notification was presented.

8.07 Unexpected Activity Notification

- A. Circumstances sometimes dictate that work be performed with less than twenty-four (24) hours Advance Notice. It is City of Las Vegas’s position to allow such activities when possible.
- B. The primary factor limiting such an allowance would be the availability of Quality Assurance Inspectors or Technicians.
- C. When Inspection and/or testing cannot be accommodated within the short time frame, the activity would not be allowed.
- D. Quality Control personnel are required to note Unexpected Activity activities on the Advance Notification Card. Quality Assurance personnel are required to ensure that it has been noted, or note it themselves.
- E. It is the intent, in allowing short notice, to accommodate those unforeseen circumstances that can happen on the job. It is NOT the intent to allow the Contractor to habitually violate the twenty-four (24) hour requirement.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- F. Should the Contractor habitually give short notice, contact the Project Manager to resolve the issue.

8.08 CONTRACTOR LOG INTERACTION

- A. The Contractor Quality Control Manager will review and log individual items as they occur.
- B. The Quality Assurance Inspector is required to ensure weekly that logging is conducted properly.
- C. The Contractor Quality Control Manager is required to keep and maintain each Log with the current status of each item on the Log.
- D. The individual items on the Log shall be numbered sequentially and clearly identify the content.
- E. Copies of the individual items shall be kept in the file system in the same sequential order as the Log Number indicates for ease in retrieval. These logging and filing rules apply to each of the Logs listed below:
 - 1. Submittal Log
 - 2. Pre-Activity Meeting Log
 - 3. Activity Card Log
 - 4. Material Tracking Log
 - 5. Deficiency Log
 - 6. Sample Log

9 INSPECTION RECORDS

9.01 General

- A. All QA Inspectors, including Augmentation and Consultant staff, shall complete a “Daily Inspection Report” for each day the employee works on a Contract.
- B. One Inspection Report shall be generated for each Contract inspected during that day.
- C. Construction Project Representatives (CPR) shall complete a Daily Inspection Report when performing inspection duties on a Contract or to document any delays, weather events, etc.
- D. Records shall be given to the CMS not less than weekly. Project Managers may require more frequent submissions.
- E. The CMS has the responsibility to review the reports from each inspector. The CMS shall ensure the reports are complete, accurate and submitted on time.

9.02 Daily Inspection Report

- A. “Daily Inspection Reports” are to be factual in nature; personal feelings and/or opinions shall not be included.
- B. The following information shall be included, when appropriate, in each “Daily Inspection Report” an example of which is in Exhibit “A”. These items do not cover each and every

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

possible condition; however, they are intended to provide each Quality Assurance Inspector with guidance to capture adequate information to prepare concise and accurate daily reports.

1. Contract Header
 - a. Contract Name (as described in the contract documents)
 - b. Bid Number and Contract Number
 - c. Contractor
 - d. Superintendent
 - e. Contract hours (not inspector hours)
2. Contract Information
 - a. Day and Date (i.e. Friday, December 28, 2004)
 - b. Report Number (sequential)
 - c. Contract Day number
 - d. Temperature (minimum and maximum in Fahrenheit)
 - e. Weather remarks (rain, wind, snow, etc.)
3. Subcontractors
 - a. List each subcontractor
 - b. Onsite or not
 - c. Hours worked
4. Visitors -
 - a. List each visitor to the site, utility representatives, citizens you may have had discussions with, contractor management personnel not normally onsite, etc.
 - b. Hours onsite
5. Traffic Accidents, Utility Breaks, Contract Delay
 - a. Check boxes that apply
 - b. For any "YES" box has been checked, insert comments in Section G explaining the "YES."
6. Traffic Control Status
 - a. Note any changes in traffic control set-ups, special maintenance performed, correction notices issued and time corrected.
7. Work being performed
 - a. Activities –
 - 1) Who performed the activity, prime contractor crew or subcontractor?

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 2) Where the activity occurred.
- 3) What work is being performed?
- 4) When did it occur, giving the duration and any relevant specific times?
- 5) Quality Assurance and/or Quality Control functions on this activity.
- b. Schedule –
 - 1) Scheduled work not being performed.
 - 2) Work available, but not scheduled, which could have been performed.
 - 3) Activities started but not progressing.
 - 4) Delays caused by City of Las Vegas, utilities, or by third parties.
- c. Measurements
- d. Pay Quantities
8. Quality or Independent Assurance Inspector or Tester presence –
9. List any time off site, annual leave, meeting time, office time
10. Utility Issues –
 - a. Relocation work ongoing, by whom, for what, any specifics.
11. Conversations –
 - a. List any conversations with persons relevant to the Contract, including property owners, supervisors, contractors, utility, or Engineer.
12. Quality Assurance Inspectors Name
 - a. Printed name

9.03 Manpower and Equipment Report

- A. Whenever multiple QA inspectors are working on the same Contract and completing this form for different portions of the work, it is necessary to coordinate to eliminate duplication of information and information being missed.
- B. The assigned CMS must ensure that the daily reports are completed and formatted properly so that a comprehensive list of Manpower and Equipment can be generated which accurately represents the Contractor's and Subcontractor's, efforts.
- C. When applicable, the Consultant Project Manager shall be responsible for assuring completion of this form and coordination between Quality Assurance Inspectors on Contracts administered by Consultant.
- D. The general Contract information shall be completed on the first working day of the week.
- E. Each day the QA inspector will complete that day's information.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- F. The QA inspector will not wait until the end of the week to compile the entire form. The CMS is responsible to verify timeliness of form completion.

9.04 Non-Compliance Report (NCR)

A. General

1. An NCR is any documented item that has demonstrated to not be in conformance to the contract specifications. It is a deficiency and must be indicated on the deficiency log.
2. Non-Compliance Reports may be generated by any Engineers Representative on the Non-Compliance Report Form.

B. Generating Non-Compliance Report

1. Once an Initial Issue arises that the Contractor is unwilling or unable to correct immediately, the Engineers Representative shall generate a Non-Compliance Report.
2. The Non-Compliance Report shall include:
 - a. Contract information, Name, Number, Bid Number
 - b. Relevant specifications
 - c. Full description of the initial issue
 - d. Actions taken to verbally notify the Contractor
3. The Contractor must sign each Non-Compliance Report form to acknowledge receipt, even if the Contractor does not agree with its content.
4. If a Contractor refuses to sign the form, this refusal shall be noted on the form. The form shall then be immediately sent by certified mail to the home office address of the Contractor.
5. Non-Compliance Reports will require a formal written response by the contractor. With respect to materials, the contractor's response must be reviewed and approved by a Nevada P.E.

C. Non-Compliance Report Tracking

1. On-site Logging
 - a. The Owners Representative who generated the Non-Compliance Report shall be responsible for ensuring that the Contractor has logged it into the Quality Control Deficiency Log.
2. A remark shall be made on the relevant Activity Card stating that a Non-Compliance Report was issued.

9.05 Contractor Deficiencies

- A. Deficiency is the generic term used to define all deficient work related issues raised on the Contract.
- B. Most deficiencies are minor in nature and can be remedied in the field.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- C. Regardless of the “importance” of the issue, all deficient work is tracked through the Contractor’s Deficiency Log.
- D. Any Quality Assurance Construction Representative or Quality Control Construction Representative may initiate a deficiency.
- E. Quality Control must record and track deficiencies through the Activity Card and Deficiency Log processes. Quality Assurance may utilize the same processes or may issue a Non-Compliance Report to document deficient items.
- F. Failed test results shall be indicated on the deficiency log.
- G. Recording Deficiencies
 - 1. The QC Inspector has two ways in which to record a deficiency, through the Non-Compliance Report or through the Activity Card.
 - 2. When the Activity Card process is used, take the following steps:
 - a. Verbally notify the responsible Quality Control Inspector for the item of work that a deficiency item has been found.
 - b. Determine if the deficiency is correctable prior to subsequent work being affected.
 - c. Allow the Contractor as much time as possible to correct the deficient work.
 - d. Once it becomes apparent that the work will not be completed by the end of the day, locate the Activity Card for the item and record the deficiency thereon.
 - 3. Deficiency Log
 - a. Regardless of by whom or how a deficiency was originally documented, Quality Control is required to track it and the Deficiency Log is the location to record the tracking process.
 - b. The QA inspector is responsible for ensuring that Quality Control records all deficiencies in the log. A minimum of weekly review of the Activity Cards and the Deficiency Log must be recorded in the QA Inspector’s Daily Inspection Report.
- H. Deficiency Response
 - 1. The Contractor is required to respond to each deficiency issued. This response must be in a written form.
 - 2. The Contents of the response shall include:
 - a. Clearly identified the steps being taken or to be taken to rectify the initial issue
 - b. A time frame for achieving full compliance
 - 3. In some instances, the Contractor may submit a response which asks to allow the work to remain in place. In these instances the Project Manager, with the guidance of the Construction Management Supervisor, will be the authority for

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

what is allowed to remain. A written recommendation from a Contractor Professional Engineer, licensed in the State of Nevada for the relevant type of work must accompany any response for work to remain in place.

I. Clearing a Deficiency

1. Letter of acceptance

- a. When the particular deficiency is not minor in nature, a deficiency response would be generated
- b. The Project Manager will use the standard City of Las Vegas Public Works letter format to generate the response.

2. Recording on the deficiency log

- a. The QA Inspector is required to ensure that
- b. QC notes the response on the Deficiency Log.

10 QUALITY ASSURANCE OF QUALITY CONTROL TESTING

10.01 General

- A. Under the supervision of the CPR, QA Testers are authorized to inspect or test materials incorporated or to be incorporated into the work.
- B. Testers may test materials fabricated at commercial material sites or fabrication facilities.
- C. Because test results are the deciding factor in accepting or rejecting work or material, accurate test results are important.
- D. The QA Tester must maintain testing equipment in good condition. When testing equipment requires repair, replacement, or calibration, the Tester must inform the laboratory manager.
- E. Testing procedures must conform to the specified test methods, and documentation must be complete and accurate.
- F. For federally funded projects and non-authorized sources. The QA Inspector shall also review the material source documentation for compliance to the contract specifications which includes the testing frequency in accordance to Table 1.
- G. Test material shall not be discarded until after final acceptance unless it is known that it was flawed.

10.02 Verification in the Field

- A. In general, verification of QC Test Results shall occur at the contract site and laboratory independently on a minimum one QA test to every ten QC tests, with a minimum of one per day for each type of accumulative material. The exception is for higher risk items. The frequency for QA on the following items is 30% of QC:
 1. All material for Roadway Arterials equal to and greater than 80 feet in width
 2. Concrete for bridge structures
 3. Channel, drop inlet or culvert concrete vertical walls greater than five feet in height and length greater than 15 feet

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

4. Backfill materials within five feet of, and under general concrete structures
- B. A splitter shall not be used for the QA and QC samples. They are to be sampled separately by QA and QC at the same time and approximate location. This protocol is designed to test for the material, not the tester.
- C. The timing and location of the testing shall be controlled by QA until just prior to testing. The test results are given the same day verbally to the QA Inspector as to the disposition of the results with a hard copy attached to the activity card (field tests only).
- D. If the QC test passes, the work may continue. If it fails, more testing by the contractor will be required after re-working the area.
- E. If the QA test fails and the QC test passes, both must re-test in the same area that failed. If failure occurs from both, the area is to be re-worked and re-tested. If a pass by QC and a fail by QA or visa-versa continues for that area, an independent assurance inspector responds and observes both testing processes for assurance compliance and performs 3-way split samples.
- F. If this problem appears to be a trend, the QA testing shall be increased until a consistency exists.

10.03 Dispute Resolution

- A. If verification cannot be obtained, an immediate review of the results shall be requested by the Project Manager.
- B. The Project Manager shall investigate the test data and forward requests, which warrant further investigation to the QA Supervisor.
- C. If a dispute remains or the circumstances continue, the Project Manager may require more testing or use a third party to determine the problem. Third party testing may be proposed under the following conditions:
 - a. The third party shall be a separate laboratory, meeting the minimum qualifications set forth for materials testers and laboratories on the project and not performing any additional work for the Engineer, Contractor, Subcontractors, and/or Suppliers on or for the project.
 - b. The third party shall be agreed to by both the Contractor and the Engineer.
 - c. Costs for the third party testing shall be as follows:
 - i. Initial test for the disputed work shall be paid for by the Contractor.
 - ii. For each instance of conflict if the third party's test results reflect Engineer results, Contractor shall pay for any additional testing performed by the third party after the initial test.
 - iii. For each instance of conflict if the third party's test results reflect the Contractor results, the Engineer shall pay for any additional testing performed by the third party after the initial test.

11 ACCEPTANCE OF WORK

- A. Acceptance of materials will be based on whether or not the Project Manager was able to verify the Contractor Quality Control based on both testing and inspection. The

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

acceptance is also based on compliance with the requirements of Independent Assurance.

- B. If the QA is not able to verify the QC test data, both parties are required to attempt to reach a consensus for acceptance criteria within the Contract specifications which may require more testing. When consensus cannot be achieved by both parties, third party resolutions will be required pursuant to 10.03 Dispute Resolution.

12 QUALITY ASSURANCE TESTING REPORTS

- A. The contract special provision Section 112 states that the Contractor shall be responsible for coordinating the monthly quality control summaries at the end of each calendar month and submitting to the QA within 5 working days after each calendar month. However, the timing may be altered by the Engineer for convenience of the Engineer or Contractor. The summary must be reviewed for compliance.
- B. The report layout must be approved by the City prior to the initial submittal.
- C. The monthly report shall include a summary of the QA testing performed during the contractor reporting period that includes the frequency of testing as required in this manual and the backup documentation for all tests performed.
- D. The ratio of QA to QC testing must be incorporated in the QA monthly report.
- E. The CPR or CMS shall review the summary and check for short falls in testing, sampling, or quantities and have been identified, quantified, and acknowledged.
- F. QA deficient items shall be acknowledged and documented in the QA deficiency log. Resolution actions to be taken shall be clearly stated in the log. A material resolution shall be reviewed and stamped by the Nevada P.E. who has responsible charge.
- G. A Professional Engineer shall certify that all field and laboratory testing was performed correctly, and that the corresponding data is accurate.
- H. The certification shall be attached to the monthly submittal.
- I. Additional P.E. stamped letters shall accompany the monthly summary to indicate a P.E. level review and acceptance of the information provided by outside laboratories.
- J. The QA report may be submitted on media as follows:
 - 1. CD-Rom
 - 2. Spectraquest test report printouts
 - 3. Other word processor documents
 - 4. Or any combination
- K. The summary shall be submitted in the following format:
 - 1. Cover letter generated by the QA Team.
 - 2. P.E. stamped cover letter stating review and approval of the test summary.
 - 3. Field Test Result Summary that shall indicate all field test procedures and results performed during the reporting period. Items and tests shall be summarized by type.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

4. Field Density Test Result Summary indicating all pertinent information generated during all field density testing.
 5. Laboratory Test Result Summary that shall indicate all laboratory test procedures and results performed during the reporting period. Items and tests shall be summarized by type.
 6. Laboratory Concrete Break Result Summary facilitating brief analysis of critical concrete strength data. Items shall be summarized by cylinder set numbers.
 7. Laboratory Aggregate and Soils Result Summary indicating all gradation test procedures performed during the reporting period.
 8. Testable Quantity Summary that shall indicate total month and to-date counts of tests performed relative to the testable quantities and to-date testable quantities.
- L. The monthly QA summary report shall attach a copy of the most current AASHTO R-18 and AASHTO tests accreditation status for the laboratories referenced in the report from the AASHTO web site. The accreditation shall include the tests used on the project and attach the printout of the AASHTO web page. Additionally, the QA summary report shall include documentation of compliance with ASTM D3666, D3740, and C1077.
- M. The report shall also attach a list of the certified technicians that were working at the referenced laboratories or in the field for the project during that report period.
- N. All validation reports shall be included.

12.01 Final Reporting

- A. A final QA summary report shall be generated in accordance with Section 12 and shall not be submitted until such time as all discrepancies and non-conformances have been resolved.
- B. At the timing as specified in the contract, or at a minimum monthly, all original Contractor, Consultant and Engineer testing and inspection documents must be transferred, consolidated and stored by the Engineer for a minimum of 5 years. They shall include all field inspection/testing and laboratory typed and hand written forms, letters, notes, and results. Storing of copies is prohibited.

13 INDEPENDENT ASSURANCE

13.01 The Construction Management Section Independent Assurance (IA) Program

- A. There are two roles in City of Las Vegas for IA. Provide documented conformance of the program. It involves a separate and distinct schedule of QC and QA validation and verification.
1. At a minimum, validation shall consist of the following:
 - a. Document review technician, laboratory testing equipment inspection
 - b. Comparison of test results
 - c. The observation of sampling & testing procedures

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2. Verification of the Contract Quality inspection, testing, and documentation. This coincides with the contractor specification documents 105.19 Independent assurance sampling.

13.02 IA Protocol

- A. The FHWA allows for two different auditing protocols:

1. Project

- a. The project approach requires testing to be performed on the project for a frequency of 1% of the required QC testing for each test method used on the project except for those items listed in Section 10.02(A), 1-4. Items listed in Section 10.02(A), 1-4 shall be tested at 3% of the required QC testing for each test method.

2. System

- a. The system approach requires a list of personnel that have tested each method within a year of being used on a project. The qualification of the tester may use a project and/or AASHTO Materials Reference Laboratory (AMRL) proficiency sample.

- b. A list of testing personnel are posted on the internet website:

<http://pwgate.co.clark.nv.us/IQAC/qaqc.asp>

- B. IA protocol will be determined on a project by project basis.

13.03 General Responsibilities of the Independent Assurance Inspector

- A. The IA unit is responsible for auditing by:

1. Performing testing and random visual laboratory audits as well as directs the 3-way splitting of the material samples.
2. Maintaining testing consistency throughout the Project by verifying that testing procedures, that are required per the contract, are utilized and performed correctly by QA and QC testing personnel.
3. Verifying that all testing personnel possess the necessary NAQTC, WAQTC, and/or ACI qualifications.
4. The NAQTC/WAQTC certifications may not be available for many of the AASHTO, ASTM or other methods. Thus it is permitted to review the AASHTO documentation and technician certifications for these test methods.
5. Performing inspections on QA and QC companies to verify that equipment meets the requirements of the test methods and are in good working condition.
6. To verify that the laboratory is AASHTO accredited including AASHTO R-18 and that the test methods performed are listed on the accreditation. The field test equipment shall be added to the R-18 procedure. Additionally, the IA shall include documentation of compliance with ASTM D3666, D3740, and C1077.
7. Review project QC and QA contract documentation.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 8. Random inspection to verify that the QC and QA are functioning properly.
- B. FHWA Area Engineers may collaborate in sampling and testing.

13.04 IA Audit Categories

- A. There are five (5) separate categories of inspection:
 - 1. IA Split Sampling (System or Project approach)
 - 2. IA Contract Audit
 - 3. IA Laboratory Audit (System or Project approach)
 - 4. IA Inspection Audit
 - 5. Material Source

13.05 IA Split Sampling

- A. The IA Inspector is responsible for administering the 3-way split sample program among the various lab personnel. This involves supervising the sampling, splitting (performed by QC), distribution of the samples, collecting and reporting the results of the tests and the observation of the testing.
- B. All of the QA and QC testing personnel will be observed by the IA inspector who is certified in the same method. The testing process is documented as a part of the final report.
- C. The IA inspector shall coordinate with the CPR for the timing and location of the sampling.
- D. The Independent Assurance (IA) split sampling and testing program uses visual observation of the test methods and testing to verify that the technician and laboratory are qualified.
- E. The sample encompasses all three test laboratories, IA, QA, and QC. The various forms shall be used to document the reliability of the results of field sampling, testing and laboratory testing.¹
- F. The IA lab and its testers are not associated with the project testers, which are under the supervision of the Contractor or CLV Construction Management. This assures an independent check on the testing procedures.
- G. When an IA lab tests a sample, the test results are not to be used to determine the quality and acceptability of the materials and workmanship. The value is used to determine if the technicians and laboratories agree. The importance is not in the acceptability of the test value, but that the values are in agreement within the standard inter-lab tolerance as established by the test method precision statements or as stated in the contract.
- H. The testing of material must use the same laboratory and field technician. If the technician is changed, another IA split is required for the QC or QA, depending on which laboratory is affected.

¹ The difference in the reporting forms is that CLVPW uses the statistical procedure method in ASTM D4460 and C670. NDOT uses its own non ASTM method.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- I. Changing QC personnel without proper notification and IA approval may lead to non-payment on any items installed before approval of new personnel.
- J. The following selected materials will be split, sampled and tested per CLVPW test methods as indicated on Table 1 or for an NDOT project, NDOT methods. A log shall be maintained of technicians with each test. The decision of testing the material is based on the need to re-certify the technician for a particular expired test. For each test method, the test shall be observed and equipment verified of equipment calibrations. The material selection is based on the NDOT and/or CLVPW test method requirement for the system based Independent Assurance technician website posting. The FHWA projects, where appropriate, require the NDOT test methods. The system based approach is described in the Section 14 of this manual. The test types are as follows:
 - 1. Soils and Aggregate, or Aggregates for Plantmix Bituminous Surface, or UTACS or Concrete Aggregates
 - a. Sieve Analysis
 - 1) CLVPW: AASHTO T27 & T11
 - 2) NDOT: NDOT T206
 - b. Specific Gravity and Absorption of Coarse Aggregate
 - 1) CLVPW: AASHTO T85
 - 2) NDOT: NDOT T111
 - c. Specific Gravity and Absorption of Fine Aggregates
 - 1) CLVPW: AASHTO T84
 - 2) NDOT: NDOT T493
 - d. Plastic Index, Liquid and Plastic Limits (Three Point Method)
 - 1) CLVPW: AASHTO T89 T90
 - 2) NDOT: NDOT T210 T211 T212
 - e. Laboratory Maximum Density (Proctor)
 - 1) CLVPW/NDOT: AASHTO T180, NDOT T108 (Proctor)
 - f. Aggregate Base Nuclear Density
 - 1) CLVPW: AASHTO T191 or T310
 - 2) NDOT: NDOT T102 or T103
 - g. Sand Equivalent
 - 1) CLVPW: ASTM D2419
 - 2) NDOT: NDOT T227
 - h. Fractured face
 - 1) CLVPW: NDOT T230
 - 2) NDOT: NDOT T230

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- 2. Concrete Aggregates
 - a. Cleanliness Value
 - 1) CLVPW: Calif 227
 - 2) NDOT: NDOT T228
- 3. Concrete
 - a. Slump
 - 1) CLVPW: ASTM C143
 - 2) NDOT: NDOT T438
 - b. Unit weight
 - 1) CLVPW: ASTM C138
 - 2) NDOT: NDOT T435
 - c. Two each 7 day Compression Tests
 - 1) CLVPW: ASTM C31 & ASTM C39
 - 2) NDOT: NDOT T428 and ASTM C39
 - d. Air Content - Volumetric
 - 1) CLVPW: ASTM C173
 - 2) NDOT: NDOT T431
- 4. Plantmix Bituminous Surface or UTACS
 - a. Extraction of Bitumen
 - 1) CLVPW: AASHTO T164
 - b. Theoretical Maximum Specific Gravity
 - 1) CLVPW: AASHTO T209
 - 2) NDOT: NDOT T325
 - c. Bulk Specific Gravity (Paraffin)
 - 1) CLVPW: AASHTO T275
 - 2) NDOT: NDOT T336
 - d. Bulk Specific Gravity (Vacuum)
 - 1) CLVPW: AASHTO T331
 - 2) NDOT: N/A
 - e. Mechanical Analysis of Extracted Aggregate
 - 1) CLVPW: AASHTO T30
 - 2) NDOT: NDOT T206

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

- f. Asphalt Binder Content of Hot-Mix Asphalt by the Ignition
 - 1) CLVPW: AASHTO T309
 - 2) NDOT: NDOT T761
 - g. Quantitative Extraction of Bitumen
 - 1) CLVPW: AASHTO T164
 - 2) NDOT: N/A
 - h. Plantmix Nuclear Density
 - 1) CLVPW/NDOT: NDOT T335
5. Other samples that are determined by the City's designated representative as appropriate for the project.
- K. Unless directed by the IA inspector, the QC, QA and IA shall use the same test methods, including any options that are within the method. Any optional portion of the method shall be discussed prior to any testing.
 - L. The split sample shall be acquired at the same locations as regular project samples or in the case of the System Approach, the project or other location as selected by the Engineer.
 - M. The QC tester shall sample in the presence of and at the locations indicated by the IA inspector.
 - N. The QC and QA labs may not use the split sample to satisfy frequency requirements of their regular project.
 - O. The sample shall be large enough per the appropriate sampling method so that each lab will have enough material for testing.
 - P. The results of all three labs will be reviewed; however, the focus shall be on the IA and QC comparison.
 - Q. The IA to QA comparison is necessary to meet the City of Las Vegas standards.
 - R. IA Testing Frequency for the "Project Approach"
 - 1. The CLVPW IA 3-way split testing frequency shall be a minimum 10% of the required QA testing. At no time shall the IA testing frequency be less than 1% of the required QC frequency, or one per project, per material.
 - S. IA Testing Frequency for the "System Approach"
 - 1. The 3-way split testing is based on the technician and laboratory including equipment to be verified per each method.
 - 2. The qualification for each is one year from the time of testing for the approved method used on a project.
 - T. Sample Preparation
 - 1. Using an approved method, the QC shall 3-way split the sample with the QA tester and the IA inspector present. Thus each portion is representative of the original sample and is similar to other portions as possible.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

2. Carefully obtaining and preparing split samples allows for correlating testing.
3. The IA shall take possession and deliver the sample to the QA and QC laboratory.
4. The IA shall use of the custody of the sample form and sample tag. The sample containers shall be sealed using packing tape with the signature of the IA representative across the tape onto the container for instant recognition of material tampering.
5. The IA inspector shall continually retain custody of the samples from the time they are taken until they are delivered to the QC and QA.

U. Reporting Procedures

1. The QA and QC companies must report the results of the tests performed to the IA inspector.
 - a. When the IA inspector receives all reports, they will submit the results on a single form for comparative purposes to the CLVPW Quality Assurance Supervisor within 7 days after receipt of the QC and QA report which will include all data.
2. The noted forms may be altered for the particular contract. If a consultant is designated as the IA, their corporate forms may be used only if they contain the same information and similar format. The CLVPW logo must be posted at the top left. The consultant may post a logo below and name.

V. Tolerances and Corrective Action

1. When split samples vary more than the allowable tolerances shown in Table 1 IA Audit Tolerances, confirm that testers are following proper testing procedures.
2. If all three samples do not agree, perform another 3-way split and repeat the process and continue this procedure until the problem is resolved.
3. If laboratories cannot meet allowable tolerances with the additional audits, then the Quality Assurance Supervisor will notify the Construction Management Supervisor for further action.
4. An alternative method of determining acceptable tolerance is checking the D2S Limit shown in the Test Method. The D2S Limit is given in most ASTM and AASHTO Test Methods as the "Acceptable Range of Two Test Results".
5. The Table 2 input form, per the City of Las Vegas method, uses the D2S tolerance as a range that IA, QA and QC must reside.
6. The Table 2, per the NDOT method, considers the NDOT value as correct; the "correct" point is then surrounded by the tolerance.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Table 2 - IA Audit Tolerances

Test	Control	Tolerance (Plus or Minus)
Sieve Analysis	Percent Passing 3" to 1" sieves	7%
	Percent Passing 3/4" to 3/8" sieves	6%
	Percent Passing No. 4 Sieve	5%
	Percent Passing No. 8 to No. 16 sieves	4%
	Percent Passing No. 20 to No. 50 sieves	3%
	Percent Passing No. 60 to No. 200 sieves	2%
Fractured Face	Percent Fractured Faces	7%
Sand Equivalent	Sand Equivalent Value	4%
Fine or Coarse Bulk SG	Bulk Spec Gravity (BSG) Value (AASHTO Tolerance)	0.033
Fine or Coarse Bulk SG SSD	BSG Saturated Surface Dry Value (AASHTO Tolerance)	0.028
Fine or Coarse Apparent SG	Apparent SG Value (AASHTO Tolerance)	0.028
Coarse Percent Absorption	Percent Absorption Value	0.25
Fine Percent Absorption	Percent Absorption Value	0.33
Atterberg Limits	Plasticity Index	3
Density	Calculated Maximum Density	3 lbs/cu.ft.
Slump	Slump of Concrete	1 inch
Air Content	Percent of Air in Concrete	0.5%
Unit Weight	Pounds per cubic foot	1.5 lbs
Compressive Strength	Pounds per square inch (ACI)	14% of average
T.M.D. (Rice)	Density	2 lbs/cu.ft.
Ignition Oven or extracted	Bitumen Ratio	0.3%
Soils Nuclear Density	Density direct transmission - AASHTO T310 (wet density avg all soil)	1.0 pcf
	Density direct transmission - AASHTO T310 (Moisture Content avg all soil)	1.0 pcf
Bituminous Nuclear Density	Density direct transmission - ASTM D2950 Backscatter	4.9 pcf

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

W. Records

1. The CLV CM Section maintains the original records. The final report shall contain the following:
 - a. QA Supervisor Cover Letter
 - b. Audit report form
 - c. Inspector reports
 - d. Mix design (where applicable)
 - e. Test results
 - f. Certifications

13.06 Visual Audits of Field Testing Procedures

- A. The IA shall randomly perform visual field audits of sampling and testing procedures and documentation to verify the accuracy of field methods.
- B. Review the validation documents for the verification of the QC tests retained by QA.
- C. Audits shall include the inspection of any or all of the following:
 1. Sampling procedures
 2. Sample splitting procedures
 3. Sample preparation
 4. Testing procedures
 5. Calculations
 6. Reports
 7. Equipment use and procedures
 8. Files
- D. If corrective action is necessary, discuss the audit with the individual(s) whose testing is being audited and with the QA Inspector before leaving the job site or laboratory.
- E. Report the audit on Independent Assurance Inspection form Visual Audit Reporting.
- F. A follow-up audit is required for any failing or unsatisfactory audit, visual or procedural, to verify conditions have been corrected.

13.07 Contract Quality Administration Audits

- A. The IA Consultant has primary responsibility for oversight of this program.
- B. Contract Audits are a continual validation of the Contractor's QC and City of Las Vegas Public Works' QA documentation as it applies to each Contract. The frequency of audit is a minimum of two per project.
- C. Scheduling

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

1. The IA inspector shall coordinate with the contract CLVPW site inspector for the time and date to review both of the QC and QA documentation and submit the QA audit report and QC Contract Administration Audit Form. Refer to Exhibit "E" for sample of QC Audit form and Exhibit "F" for sample Administration Audit form
2. The audit is performed at the contractor's office. The QA inspector may be present. The QA will be audited at the same time or the time as specified by the QA inspector.

13.08 Laboratory Audits

- A. The CLVPW Independent Assurance unit or designated Consultant has primary responsibility for oversight of this program.
- B. Laboratory Audits are verification of accredited laboratories. Laboratory verification shall include, but is not limited to, Technician Training, Qualification and Certification and Laboratory Qualification and Accreditation status.
- C. The IA unit shall determine frequency of program verification through audits. The minimum frequency is one per project.
- D. The laboratories are also inspected on a six month rotation.
- E. The IA Inspector will perform the laboratory audit as a part of the contract administrative audit.
- F. The IA inspector shall evaluate the contractor QC and CLVPW (or representative) QA laboratory and field equipment by confirming that it has been calibrated per the AASHTO AMRL-CCRL calibration frequency requirements for accreditation and verify that each method is listed on the accreditation document.
- G. The inspector shall review the equipment and laboratory documentation for proper method procedure and format. This will normally be performed during the laboratory audit at the beginning of the project and recorded on the audit form.
- H. Scheduling
 1. The IA inspector shall coordinate with the laboratory for the time and date of the inspection.

13.09 IA Inspection Auditing

- A. The IA inspector has the reporting responsibility of ensuring through random inspections that the construction is in compliance with plans and specifications.
 1. The QA inspector has oversight of the project acceptance of the QC inspection activity card.
 2. The QA inspector may need to inspect a critical item at 100% of QC while other aspects require less oversight, depending on the trust level of the contractor.
 3. The IA randomly selects a component of the construction and checks for compliance after QA and QC have performed their inspection.
 4. An inspection report is then issued of the observation. If the IA inspector observes a critical aspect of the project that is not in compliance and needs to be

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

rectified in an urgent manner, the IA inspector will advise the QA inspector of such.

5. If there is no response, both the Construction Management Supervisor and QA Supervisor will be notified for further action.
6. A report is then issued of the IA non-compliance and sent by the QA Supervisor to the Construction Manager, and Construction Management Supervisor.

13.10 Authorized Material Source Auditing

For Federally Funded projects, material authorized sources are not allowed.

14 INDEPENDENT ASSURANCE FILES AND RECORDS

- A. Keep all original IA test worksheets and reports on file in the QA Section office, and forward all copy reports to the CLVPW Supervising Construction Management Inspector.
- B. Files
 1. The QA Section files shall be organized by the project number. The file cabinet drawer shall be solely used for the IA auditing with sections designated as follows:
 - a. IA Material Audits
 - b. Contract Quality Administration Audits
 - c. Laboratory and field Audits
- C. At the end of one year of a project completion, and/or laboratory audit date, the files shall be compiled and transferred to the City division for scanning into the archives. The only exception is if the project is in litigation.
- D. IA will use City of Las Vegas approved forms.

City of Las Vegas Department of Public Works, Nevada
Construction Quality Program

Appendices

Appendix	Title
A	DAILY REPORT
B	PRE-ACTIVITY MEETING AGENDA
C	ADVANCE NOTIFICATION CARD
D	ACTIVITY CARD
E	QUALITY CONTROL (QC) AUDIT FORM
F	QUALITY ASSURANCE (QA) AUDIT FORM



City of Las Vegas-Const Management

DAILY REPORT

333 N. Rancho Dr.
Las Vegas, NV 89106

Phone: (702)229-5373 Fax: (702)382-3901

No. 008

COMPANY: Las Vegas Paving

DATE: 3/9/2016

REPORT PERIOD: Daily

DAY: Wednesday

PROJECT: Las Vegas Bike Lanes

JOB: CM-003(179)

TEMPERATURE: 60 - 70

PRECIPITATION: None

SKY: Clear

WIND: 10-20

ACTIVITY

Day 10 of 150 calendar days.

Issues:

200.01 - Mobilization and Demobilization - LV Paving has mobilized equipment to the Elkhorn Rd. Location.

613.01- Concrete "L" Type Curb & Gutter - LV Paving has placed forms and poured concrete for the curb & gutter at:
1 - Elkhorn Rd. & Unicorn NE Corner - 42 LF.

QC inspection have been performed by LVP.

613.02 - Concrete Sidewalk- LV paving has installed forms and poured concrete at the following locations along Elkhorn Road (ER). Testing for concrete has been taken by LV P and Nova. QC inspection have been performed by LVP.

1 - E R & Decatur Blvd, SE Corner - (37 x 6.5), 241 SF.

2 - E R. and Unicorn, NEC -(42 x5.5), 220 Sf.

3 - ER & Leon, NWC and NEC - (26 x 5) + (13 x 5), 195 SF.

Total sidewalk poured 656 SF.

613.03 - Detectable Warning Panels - LV Paving has installed 11 panels at the locations described above for sidewalk pours.

624.01 - Traffic Control and Maintenance - LV Paving has installed a Traffic Control setup on Elkhorn Rd. from Decatur Blvd - Jones Blvd.

EQUIPMENT

Hours	Source	Units	Type	Work Area	Description
8 Hrs.	LV PAVE	1	WORK/PU TRUCK	ER	Ford F550
Hoe Ram mounted on a Skid Steer / New Holland .	LV PAVE	1	HOE RAM	ER	New Holland
	LV PAVE	1	WORK/PU TRUCK	ER	Chevy 3500
	LV PAVE	1	WORK/PU TRUCK	ER	Ford F350
	LV PAVE	1	FRONT LOADER	ER	Kawasaki 60ZW
	LV PAVE	1	VACTOR TRUCK	ER	PeterBuilt/HV56
Traffic Control Maintenance	LV PAVE	1	WORK/PU TRUCK	ER	Isuzu NPR HD

FIELD FORCE LABOR

Category	Source	Supv.	Frmn.	Jrny.	Appr.	Work Area	Remarks
Concrete Crew	LV PAVE	1	1	8	1	ER	1-Apprentice Flagger 1- laborer 2 - Masons
Geo-Tech Tester	LV PAVE			1		ER	
Grade Checker	LV PAVE			2		ER	
Operator	LV PAVE			1		ER	
Traffic Control	LV PAVE			1		ER	Traffic control and Maintenance 4 times a day.
Totals:		1	1	13	1		



City of Las Vegas-Const Management

DAILY REPORT

333 N. Rancho Dr.
Las Vegas, NV 89106

Phone: (702)229-5373

Fax: (702)382-3901

No. 008

MATERIALS DELIVERED

Time	Material Name	Quantity	Remarks	Ticket No	Description	Location
2 pm	613.01	42	1 - Elkhorn Rd .& Unicorn NE Corner - 42 LF.		"L" C & G	ER
2 pm	613.02	656	1 - E R & Decatur Blvd, SE Corner - (37 x 6.5), 241 SF.		Sidewalk	ER
			2 - E R. and Unicorn, NEC -(42 x5.5), 220 Sf.			
			3 - ER & Leon, NWC and NEC - (26 x 5) + (13 x 5), 195 SF.			
			Total sidewalk poured 656 SF.			
2 pm	613.03	9	1 - E R & Thom Blvd., NWC - 1		Warn Panel	ER
			2 - E R & Bradley, NWC ,SWC and SEC - 3.			
			3 - ER & Jeannette, SEC - 1			
			4 - ER & Leon, NWC and NEC - 2			
			5 - EF & Boyd NEC 1.			
			6 - ER & RainbowBlvd. NWC - 1			

Certified By:City of Las Vegas-Const Management

Date: 10/27/2016

Signed: _____
Oscar M. Bermudez

PROJECT NAME:		DATE:	
Bid Number:			
PRE-ACTIVITY MEETING AGENDA			
Attendees			
Name	Signature	Initials	Organization
Materials			
Submittal Number	Material Description	Status and Exceptions	
Mix Designs			
Mix ID	Type Of Material	Status and Exceptions	
Outstanding Deficiency Check			
Review of Plans and Spec			
Contract Plans		UDACS	
Special Provisions		NDOT	
Standard Specs		Other	
Control Measures			
Type of Inspection/Testing	Responsible Party's Name		Frequency
Traffic Control			
General Item Inspections			
Specific Inspections			
Specific Inspections			
Specific Inspections			
Testing			
Testing			
Testing			
Extra Care Items			
Name	Material Type	Responsible Party	
"What to do if something goes wrong"			
"Ways to maintaln proper notification"			

Bid Number:

Project Name:

Contractor:

Date : 3/26/2018 10:45

For Work On (Date) :

Advance Notification Card

Bid Item No.	Brief Description of Work	Activity Location	Inspection? (X if yes)	Type of Testing / Inspection	Amount of Testing	Time for Testing / Inspection

Unexpected Activity Notification
(Give Verbal Notification Immediately)

ACTIVITY CARD

PROJECT:

CONTRACT DAY:

OF

DATE:

BID NO.:

CARD NO.:

Section 1 - Actual Work Performed

Type of Work Performed

Location

Section 2 - Deficiency Check

No deficiencies exist or have occurred:

QC Initials:

Date:

QC has verified that deficiencies are outstanding and are listed by Item/Materials below:

Type of Deficiency Description (use remarks for additional info)

Deficiency Log ID #

QC Initial & Date

Section 3 - Inspection Items

The following items will be signed off by the Contractor prior to the requested time for inspection by QA

Material Description

QC Initials/Date

QA Initial/Date

Time Requested for QA

Section 4 - Testing & Sampling Items

Bid Item No.	Description	Unit	Quantity	Unit Price	Total Price
1	...	...	...	...	...
2	...	...	...	...	...
3	...	...	...	...	...
4	...	...	...	...	...
5	...	...	...	...	...
6	...	...	...	...	...
7	...	...	...	...	...
8	...	...	...	...	...
9	...	...	...	...	...
10	...	...	...	...	...
11	...	...	...	...	...
12	...	...	...	...	...
13	...	...	...	...	...
14	...	...	...	...	...
15	...	...	...	...	...
16	...	...	...	...	...
17	...	...	...	...	...
18	...	...	...	...	...
19	...	...	...	...	...
20	...	...	...	...	...
21	...	...	...	...	...
22	...	...	...	...	...
23	...	...	...	...	...
24	...	...	...	...	...
25	...	...	...	...	...
26	...	...	...	...	...
27	...	...	...	...	...
28	...	...	...	...	...
29	...	...	...	...	...
30	...	...	...	...	...
31	...	...	...	...	...
32	...	...	...	...	...
33	...	...	...	...	...
34	...	...	...	...	...
35	...	...	...	...	...
36	...	...	...	...	...
37	...	...	...	...	...
38	...	...	...	...	...
39	...	...	...	...	...
40	...	...	...	...	...
41	...	...	...	...	...
42	...	...	...	...	...
43	...	...	...	...	...
44	...	...	...	...	...
45	...	...	...	...	...
46	...	...	...	...	...
47	...	...	...	...	...
48	...	...	...	...	...
49	...	...	...	...	...
50	...	...	...	...	...
51	...	...	...	...	...
52	...	...	...	...	...
53	...	...	...	...	...
54	...	...	...	...	...
55	...	...	...	...	...
56	...	...	...	...	...
57	...	...	...	...	...
58	...	...	...	...	...
59	...	...	...	...	...
60	...	...	...	...	...
61	...	...	...	...	...
62	...	...	...	...	...
63	...	...	...	...	...
64	...	...	...	...	...
65	...	...	...	...	...
66	...	...	...	...	...
67	...	...	...	...	...
68	...	...	...	...	...
69	...	...	...	...	...
70	...	...	...	...	...
71	...	...	...	...	...
72	...	...	...	...	...
73	...	...	...	...	...
74	...	...	...	...	...
75	...	...	...	...	...
76	...	...	...	...	...
77	...	...	...	...	...
78	...	...	...	...	...
79	...	...	...	...	...
80	...	...	...	...	...
81	...	...	...	...	...
82	...	...	...	...	...
83	...	...	...	...	...
84	...	...	...	...	...
85	...	...	...	...	...
86	...	...	...	...	...
87	...	...	...	...	...
88	...	...	...	...	...
89	...	...	...	...	...
90	...	...	...	...	

Sequential
Test Nos

Description of Test

Quantity of
Material to be
Tested

Testing Frequency

Required
Quantity of
Tests

Actual Tests
Performed

Section 5 - Remarks

Section 6 - Q.A. Sign-Off

QA Representative Verification of QC Performance and Quantities

Initials:

Date:

This "sign-off" does not represent acceptance of work performed but is a verification that QC testing/inspection was performed and testable quantities are representative of the work.

		Quality Control Audit									
		QC Procedures					COMPLIANT				
Date of Audit:	00-Jan-00	Bid Number:	Contractor	comment ONLY	Compliance	Non-Compliance	Not Applicable	QC Inspection:	0		
Audit By:	0	Project Name:	0					QC Lab:	0		
Audit No:	0	RPC:	0					COMMENTS			
Section 111 General											
Section 111.01 Personnel and certifications											
	Is the Foreman the inspector?					X					
	Demerits for QC non-compliance							\$ 100 Demerits			
Section 112 Contractor Quality Control Administration											
Section 112.04 Documentation Process											
Section 112.04.01 File Maintenance											
	Protected in a manner to prevent damage, deterioration, or loss?					X					

QC Administration Audit Form
 EXAMPLE

 Quality Assurance Administration Audit										COMPLIANT		COMPLIANT	
Date of Audit:	00-Jan-00	Bid Number:	Contractor	comments QC Compliance - C QC Non-Compliance Not Applicable QA Comments ONLY QA Compliance - C QA Non-Compliance Not Applicable	QC Inspection:	0	Project Engineer:	0	QA Lab:	0			
Audit By:	0	Project Name:	0		QC Lab:	0	County Rep:	0	QA Inspection:	0			
Audit No:	0	RPC	0		QC COMMENTS		QA COMMENTS						
Section 112.06 Material Delivery & Tracking Procedure													
QA	Demerits for QC non-compliance				\$ 2000 Demerits								
Section 112.11 QC Auditing Procedures													
	Are internal audits documented monthly for projects over 90 calendar days in length?				X			X					
	Are the testing and inspection forms being used?				X				X				
Section 114.04.03 Activity Cards													
	Section 4: Testing and Sampling Requirements				X			X					
Section 114.08 Inspection Reports													
	Does it appear that there is written evidence of observation of the Quality Control and Quality Assurance tests performed with narrative documentation of the observation					X			X				
	Review all field and lab test data					X		X					
QA	Demerits for QC non-compliance				\$ 600 Demerits								

QA Administration Audit Form

EXAMPLE

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Aggregate and Backfill Materials

Spec Section		Description	Proctor AASHTO T180*	R-Value AASHTO T190	Sieve AASHTO T27* & T11*	PI AASHTO T89 & T90*	Solubility AWWA 4500E and 3500-NaD	Compression Samples Per RTC 704.03.07	Field Density			
									Riding Equipment	Walk Behind Equipment		
203 Excavation & Embankment	203.02.02	Drainage Excavation (Subgrade)	1/Type		1 / 1000 yd ³				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.02.03	Channel Excavation (Subgrade)	1/Type		1 / 1000 yd ³				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.02.04	Borrow	1/Type	1/Type	1 / 1000 yd ³				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.02.05	Selected Borrow	1/Type	1/Type	1 / 1000 yd ³				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.03.01	Roadway (Subgrade)	1/Type		1 / 1000 lf				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.03.10	Selected Material	1/Type	1/Type	1 / 1000 lf				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.03.15	Foundation (Subgrade)	1/Type		1 / 500 yd ³				1 / 500 ft ² / Lift	1 / 100 ft ² / Lift		
	203.03.18	Compaction, Dirt Embankment	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³				1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
	203.03.19	Compaction, Rock Embankment	Due to Material Properties an Engineering Report Documenting Compactive Effort is Required (See Special Provisions)									
	203.03.73	Compacted Fill (Detention Basin)	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³				1 / 10,000 yd ³ Per Type		1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift
206 Structure Excavation	206.01.01 206.03.01	Structure Excavation	1/Type		1 / 1000 yd ³			1 / 500 ft ² / Lift	1 / 100 ft ² / Lift			
207 Structure Backfill	207.02.01	Selected Backfill	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³		1/Source	1 / 500 ft ² / Lift	1 / 250 ft ² / Lift			
	207.02.02	Granular Backfill	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³		1/Source	1 / 500 ft ² / Lift	1 / 250 ft ² / Lift			
208 Trench Excavation & Backfill	208.02.02	Selected Backfill	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³		1/Source	1 / 100 lf / Lift				
	208.02.03	Granular Backfill	1 / 10,000 yd ³ Per Type		1 / 1000 yd ³		1/Source	1 / 100 lf / Lift				
	208.02.04	Sand Backfill			1 / 1000 yd ³		1/Source					
	208.02.05	Type II Aggregate Base (Trench)	Sampling Per Section 704						1 / 100 lt / Lift			
	208.02.06	Drain backfill										
	208.02.07	Type I and II CLSM (Flowable Fill)	Aggregate Sampling Per Section 704						1/300 yd ³ /Day			
	208.02.09	Type III CLSM (BAF)							1/300 yd ³ /Day			
301 Selected Material	301.02.01	Select Subbase	1/Type	1 / Type	1 / 1000 yd ³		1/Source		1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		
302 Aggregate Base Course	302.02.01	Type II / I Aggregate Base	Sampling Per Section 704						1 / 5000 ft ² / Lift	1 / 1000 ft ² / Lift		

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Aggregate and Backfill Materials - Continued

Spec Section		Description	Proctor AASHTO T180*	Sieve AASHTO T27* & T11*	PI AASHTO T89* & T90*	Sand Equivalent ASTM D2419*	Cement Content NDOT T239	Compressive Strength NDOT T237	Field Density	
									Riding Equipment	Walk Behind Equipment
304 Cement Treated Base	304.02.01	Cement Treated Base	Per Special Provisions	1 / 2000 Ton				1 / Day	1 / 5000 ft²	1 / 1000 ft²
Spec Section		Description	Proctor AASHTO T180*	R-Value AASHTO T190	Sieve AASHTO T27* & T11*	PI AASHTO T89* & T90*	Fractured Faces NDOT T230	So.I Sulfates AWWA 4500E and 3500-NaD	LA Abrasion ASTM C131 (500 Rev)	Oil Content by Extraction AASHTO T164
704 Base Aggregates	704.03.02	Drain Backfill			1 / 1000 yd³				1 / Source	
	704.03.03	Type I Aggregate Base	1 / 10,000 yd³ Per Type	1 / Type	1 / 1000 yd³				1 / Source	
	704.03.04	Type II Aggregate Base	1 / 10,000 yd³ Per Type	1 / Type	1 / 1000 yd³		1 / Source	1 / Source		
	704.03.05	Type III Aggregate	1 / 10,000 yd³ Per Type		1 / 1000 yd³			1 / Source		
	704.03.06	Crushed Rock			1 / 1000 yd³		1 / 1000 yd³	1 / Source	1 / Source	
	704.03.07	CLSM Aggregate (Type I, II, & III)			1 / 1000 yd³					
	704.03.08	Aggregates for PC Treated Base	1 / Type		1 / 1000 yd³			1 / Source		
	704.03.09	Shouldering Material			1 / 1000 yd³					
	704.03.10	Agg. Base with RAP and Concrete	1 / 2,000 yd³ Per Type	1 / Type	1 / 1000 yd³		1 / Source	1 / Source	1/2000 yd³	

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Asphalt Cement Pavement Products and Surfaces

Spec Section		Description	Material Sampling	Prime Coat	Tack Coat	Field Density		Surface Tolerances		Binder
						Field Density Mat Testing	Field Density Joint Testing			
400 Asphalt Rubber Pavement	400.01	Asphalt Rubber Pavement Surface	Per Sec 401	Manufacturer Certificate of Compliance		1 / 5000 ft ² / Lift / Day	1 / 400 lf / Lift / Day	Per Special Provisions		Manufacturer Certificate of Compliance
	Spec Section		Description	Rice AASHTO T209*	Oil Content by Extraction AASHTO T164	Sieve AASHTO T30*	Marshall Stability & Flow AASHTO T209	TSR AASHTO T283	Air Void Content AASHTO T269	Coldfeed Sample
401 Plantmix Bituminous Pavements	401.03.12	Plantmix Bituminous Pavement Sampling and Testing	1 / 750 Tons / Day				1 / Day	1 / 750 Tons / Day		Manufacturer Certificate of Compliance

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Asphalt Cement Pavement Products and Surfaces - Continued

Spec Section		Description	Material Sampling	Prime Coat	Tack Coat	Field Density		Surface Tolerances	Binder	
						Field Density Mat Testing	Field Density Joint Testing			
402 Plantmix Bituminous Surface	402.03	Plantmix Bituminous Surface	Per Sec 401	Manufacturer Certificate of Compliance		1 / 5000 ft ² / Lift / Day	1 / 400 lf/ Lift / Day	Per Special Provisions		Manufacturer Certificate of Compliance
Spec Section		Description	Material Sampling	Field Density				Surface Tolerances		
				Mat Testing		Joint Testing				
404 Hot Plantmix Recycled Bit. Pavement	404.03	Recycled Bituminous Surface	Per Sec 401		1 / 5000 ft2/ Lift / Day		1 / 400 lf/ Lift / Day		Per Special Provisions	
Spec Section		Description	Sampling							
405 - 407 Tack, Prime, Seal Coat	405 -407	Tack, Prime, Seal Coat Surface Treatment	Manufacturer Certificate of Compliance							
Spec Section		Description	PMM Application Rate RTC 413.03.06	Oil Content by Extraction AASHTO T164	Sieve AASHTO T30	Yield Verification	Surface Tolerances	Binder	PMM Sample	Cold Feed
413 Plantmix Gap-Graded Surface (UTACS)	413.03.06	Ultra Thin Asphalt Cement Surface (UTACS)	2 / Day Min.	3 / Day	3 / Day	Twice / Day (Mid Day and End of Shift)	See Special Provisions	Manufacturer Certificate of Compliance	Manufacturer Certificate of Compliance	3 / Day
Spec Section		Description	Sieve AASHTO T27* & T11*	Methylene Blue AASHTO TP57	Fine Agg Angularity AASHTO T304	Fractured Faces AASHTO T335	LA Abrasion ASTM C131 (500 Rev)	Elongation @ 5:1 ASTM D4791	Soundness ASTM C88	
705 Aggregates Bituminous Courses	705.03	Plantmix Base and Surface Agg.	1 / 750 Tons / Day				1 / Source			
Spec Section		Description	Sieve AASHTO T27* & T11*	Fractured Faces ASTM D5821	Methylene Blue AASHTO TP57	Uncompacted Void Content AASHTO T304	Sand Equivalent AASHTO T176	LA Abrasion ASTM C131 (500 Rev)	Elongation @ 3:1 ASTM D4791	Soundness ASTM C88
705 Aggregates for UTACS	705.03.08	UTACS Coarse and Fine Aggregate	3 / Day	1 / Day	1 / Day	1 / Day	1 / Source			

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Portland Cement Concrete Pavement, Materials, and Structures

Spec Section		Description	Slump ASTM C172*	Unit Weight and Yield ASTM C138*	Air Content Pressure Method	Concrete Compression	Concrete Beams Nev T442		Plant Inspection	Aggregate Sampling
409 Portland Cement Concrete Pavement	409.00.00	Portland Cement Concrete Pavement	1 / 300 yd³ / Day				1 / 750 yd³ / Day		Continuous	1 / 500 yd³ / Day
Spec Section		Description	Slump ASTM C172*	Unit Weight and Yield ASTM C138*	Air Content Pressure Method	Concrete Compression			Unauthorized Sources	
									Plant Inspection	Aggregate Sampling
501 - 502 Portland Cement Concrete and Structures	501.02.04	Portland Cement Concrete	1 / 100 yd³ / Day						Continuous	1 / 500 yd³ / Day
	502.01.01	Portland Cement Concrete	1 / 100 yd³ / Day						Continuous	1 / 500 yd³ / Day
Spec Section		Description	PCC Testing	Tests for Popouts ASTM C330	Freezing and Thawing ASTM C666	Dry Unit Weight ASTM C567	Unit Weight & Cement Factor ASTM C138	Air Content Vol. Method (Lw Concrete)	Unauthorized Sources	
									Plant Inspection	Aggregate Sampling
504 Lightweight Concrete	504.02.03	Lightweight Portland Cement Concrete	Section 501	1 / 100 yd³ / Day	1 / 100 yd³ / Day	1 / 100 yd³ / Day	1 / 100 yd³ / Day	1 / 100 yd³ / Day	Continuous	1 / 500 yd³ / Day
Spec Section		Description	Submittal							
505 Reinforcing Steel	505.02.02	#4 Bars and Larger	Mill Certification							
Spec Section		Description	Gradation Visual	LA Abrasion (500 Rev) ASTM C131	Bulk Specific Gravity ASTM C127					
610 Rip- Rap	610.02.04	RipRap	1 / Shipment	1 / Source	1 / Source					
Spec Section		Description	Field Density Subgrade & Aggregate base		Portland Cement Concrete Refer to Section 501					
613 Curb, Sidewalk, Gutter, & Driveway	Varies	Curbs	1 / 100 lf / Day		1 / 100 yd³ / Day					
		Sidewalk	1 / 100 lf / Day		1 / 100 yd³ / Day					
		Driveways / Spandrels	1 / 250 ft² / Day		1 / 100 yd³ / Day					

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Portland Cement Concrete Materials and Structures - Continued

Spec Section		Description	Sieve AASHTO T27* & T11*	Fractured Faces NDOT T230	LA Abrasion ASTM C131 (100 & 500)	Soundness Sodium Sulfate AASHTO T104	Clay Lumps AASHTO T112	C.V. Cal Trans 227	Organic Impurities ASTM C40	Bulk Specific Gravity
706 Aggregates for Portland Cement Products	706.03.01	Coarse Aggregate	1 / 500 yd ³	1 / 500 yd ³	1 / Source	1 / Project	1 / Project	1 / 500 yd ³		1 / Source
	706.03.02	Lightweight Aggregate	1 / 500 yd ³					1 / 500 yd ³	1 / Source	1 / Source
		Description	Sieve AASHTO T27* & T11*	Sand Equivalent ASTM D2419*	Soundness Sodium Sulfate AASHTO T104	Organic Impurities ASTM C40	Lightweight Pieces AASHTO T113			Bulk Specific Gravity
	706.03.03	Fine Aggregate	1 / 500 yd ³	1 / 1000 yd ³	1 / Project	1 / Source	1 / 500 yd ³			1 / Source
	706.03.04	Grout and Mortar Sand	1 / 500 yd ³			1 / Source				1 / Source
Spec Section		Description	Submittal							
713 Reinforcement	713.03.01	Deformed Steel Bars	Mill Certification							
		Spiral Reinforcement	Mill Certification							

Table 1
CLV Materials Testing and Sampling Frequencies - Nov 2017
Notes:

General Notes

- Note 1: The Engineer may request additional testing not to exceed a maximum of 10% of the required testing for any type performed.
- Note 2: Refer to project special provisions for concrete sampling and testing requirements on placement quantities less than 3 yd³/ day and less than 50 yd³/ week.
- Note 3: The specified density testing frequencies are based on a per lift basis. For example an embankment fill of 7500 ft² per lift requires a min of 2 tests per lift.
- Note 4: Soluble Sulfate testing is required on soil in contact water lines, concrete structures, metal pipe, and fittings.

* For federal projects, testing methods listed in the latest NDOT approved version of the City of Las Vegas Construction Quality Program may be used. For projects within NDOT right of way, NDOT test methods are required.

ADD THE FOLLOWING SECTION:**SECTION 111 – CONTRACTOR QUALITY CONTROL ADMINISTRATION – GENERAL
CONTRACTOR PROGRAM****111.01 GENERAL**

- A. The Contractor Quality Control Program includes the following Sections:
1. Section 111 - Contractor Administration and Quality Control-General Contractor Program
 2. Section 112 - Contractor Quality Control Administration
 3. Section 113 – Contractor Quality Control Organization and Qualification of Laboratories and Technicians
 4. Section 114 – Contractor Quality Control Procedures
 5. Section 117 - Contractor Quality Control Testing
- B. Program Documents: A written program does not have to be submitted if the Contractor performs the administration, and testing in accordance with this and other referenced sections. The only submittal required for approval for the quality control program itself is the personnel qualifications as listed in Section 113, "Contractor Quality Control Organization and Qualification of Laboratories and Technicians."
- C. The project requires a Quality Control Coordinator (QCC) separate from the Responsible Person-in-Charge (RPC). The QCC and RPC shall be located on-site full-time. The description of these positions are in Subsection 113.02 "Organization." The contractor shall submit, for approval by the Engineer, an organization chart indicating the position numbers and the persons responsible.

111.02 SUBCONTRACTOR QUALITY CONTROL PROGRAMS

- A. In the event a Subcontractor has a Quality Control Program, the Subcontractor Quality Control (QC) Program shall provide, at a minimum, the requirements set forth in this specification, tailored to the Subcontractor scope of work. The only point of contact for the Engineer is the Prime Contractor. Therefore, the Responsible Person-in-Charge (RPC) shall be on-site during any subcontractor work.

111.03 DEFINITIONS GENERAL

- A. The definitions given herein shall not be construed to modify the definitions given in Section 101, "Definitions and Terms," unless specifically stated:
1. Authorized Materials List: A list generated by the Engineer containing materials "Authorized" for incorporation into the work. Contractor may select materials from this list for submittal by using only the product name and manufacturer. The period of Authorization is indefinite, contingent upon continued execution, by the Material Source, of the Quality Control Program that has been approved by the Contracting Agency.
 2. Control Measures: All actions taken to ensure that materials are in compliance with specifications, including but not limited to submittal, testing, inspection, documentation, quantifying for testing and payment, As-Built drawings, and material

Bid No. YY.XXXXXX
CLVRev041218

- tracking. The Contractor shall perform independent Control Measures from the Engineer's Quality Assurance to ensure that all elements of the project are within specifications.
3. Inspection: A control measure utilizing visual and manual methods shall be used to determine the quality of workmanship, material, or finished product. Inspections shall determine if all verifiable parts, practices, and products are in compliance with the Contract Documents. All inspections shall be documented, and any deviations from Contract Documents shall be noted therein.
 4. IQAC Materials List: A source list generated by the Interagency Quality Assurance Committee (IQAC), which contains materials requiring an abbreviated submittal prior to incorporation into the work. The period of Qualification will typically be one year or as indicated on the IQAC. Materials on the IQAC list that are removed by IQAC before or during a project shall not be incorporated into the work. This does not eliminate the testing that is to be performed at the project site or of that to a non-authorized source.
 5. Lot: One day's production, regardless of quantity produced. One day's production shall be considered as one continuous production run within one working day shift by the Source or Contractor from which the finished product was produced.
 - a. Examples of a Lot are as follows:
 - 1) One "heat" or one continuous pouring from a caldron for reinforcing steel.
 - 2) One day's production of a particular mix design of Asphalt Concrete regardless of tonnage quantity.
 - 3) One "batch" of Portland Cement or Asphalt Cement (binder).
 - 4) One day's production of a particular mix design of Portland Cement Concrete.
 - b. Lots may be composed of several sub-lots as provided by specification.
 6. Qualified Source: A Source that has been tested by the Contractor and approved for acceptance by the Engineer.
 7. Oversight: The Contractor's supervisory personnel shall perform all daily, supervisory oversight, and normal worker performance verification checks during production of the work. Oversight shall be documented.
 8. Pre-Activity Meeting: A meeting to coordinate the quality control, quality assurance, and work planning for a specific activity prior to its start. This formal meeting shall resolve all outstanding issues regarding submittals, inspection, testing requirements, elevation controls, safety, and work plan.
 9. Quality Assurance (QA): Quality Assurance shall be all Control measures taken by the Engineer to verify that the Contractor Quality Control measures, materials, and workmanship comply with Contract Documents.
 10. Independent Assurance (IA): Independent Assurance verifies that Engineer's and Contractor's Quality Assurance and Quality Control measures comply with the Contracting Agency procedures and Contract Documents.
 11. Quality Control (QC): Quality Control shall be all measures taken by the Contractor to ensure that materials and workmanship are in compliance with the specification.
 12. Testable Quantity: The amount of work, material, or construction shall be quantified

by the units used for the determination of testing frequency. Testing units and payment units may be different. For the purposes of this document all quantities shall be testable quantities.

13. Source: Material manufacturing locations outside of or within the project limits. Locations outside of the limits are named "Off-Site Sources"; while within the project limits are named "On-Site Sources."
14. Submittal: A submittal is a document that is transmitted to the Engineer in order to seek approval of a material or procedure, or as indicated in the Contract Documents.

111.04 SCOPE

- A. This section establishes the specifications and references detailing the Contracting Agency Quality Assurance program and defining policies, elements, activities, and guidelines to ensure that the materials and workmanship in all construction projects conform reliably to the requirements for the approved plans and specifications. It has been developed in conformance with the criteria contained in Federal Regulation 23 CFR 637B, *Quality Assurance Procedures for Construction*.
- B. The Quality Assurance Program represents the Contracting Agency's recognition of its responsibility and commitment to ensure a high level of confidence in the materials, material sources, field and laboratory test results reported by Quality Control laboratories, and field testing personnel performing testing activities on projects. The Contractor is expected to be familiar with all aspects of the testing, technician training, and Laboratory Qualification Program relating to their duties.

111.05 OVERVIEW

- A. Federal Regulation 23 CFR 637B allows the traditional approach of Contracting Agency performed Quality Assurance sampling and testing for acceptance and the option of using material source or Contractor Quality Control sampling and testing results for acceptance, provided adequate verification is in place. In conformance with these regulations, the Contracting Agency Quality Assurance Program was created implementing a schedule of activities to cover construction installation, laboratory operations, testing personnel competency, source production inspection, and Material Source Quality Program with the goal of using the Contractor data for verified acceptance. The Quality Assurance program provides for four areas of assurance:
 1. Area 1: Qualifying Laboratories and Testing Personnel.
 - a. This ensures that technical personnel are capable of performing the tests properly and that the applicable testing qualifications have been met. This level also ensures that testing laboratories are properly accredited.
 2. Area 2: Independent Assurance Program (IA).
 - a. This ensures that the QA and QC functions of the program conform to their respective Quality Special Provision sections and 23 CFR 637B. Additionally, the IA is responsible for the verification of the qualification/certification of testing personnel along with accreditation of laboratories used in the Quality Control/Quality Assurance Programs.

3. Area 3: Material Source Quality Program.
 - a. Option 1: Qualified Source - This ensures the quality of the material through acceptance sampling and testing performed by the Contractor.
 - b. Option 2: Authorized Source - This level ensures the quality of the material through inspection and verification of the material source QC Plan and its application and/or inspection of the source facility itself by the Engineer. The Contractor performs Quality Control testing of materials placed from the Authorized Source at the project location. For **federally funded** projects, there are no Authorized Material Sources. The Contractor is required to test the material source as per Table I, Appendix X. If there is no test or frequency in Table A refer to applicable requirements in the USS.
4. Area 4: Construction Inspection and Testing Program.
 - a. Ensures the workmanship of materials incorporated into the project through testing by Contractor QC with Quality Assurance and inspection by the Engineer.
 - b. The Quality Program allows for the use of QA validated Quality Control (QC) test results as part of the acceptance decision. The program also allows for the use of test results obtained by outside agencies and laboratories in the acceptance decision provided they meet the following:
 - 1) Qualified personnel through qualified laboratories have performed the sampling and testing.
 - 2) The quality of the material has been validated by verification sampling and testing.
 - 3) The appropriate Quality Assurance Auditing activities have been conducted in a satisfactory manner.

111.06 QC RESPONSIBILITY

- A. The Contractor has the responsibility for the quality of all material properties and workmanship. This specification is intended to quantify the minimum requirements for acceptance of materials and establish a minimum standard for the control of quality within a project. The Contractor shall use this specification, as a minimum, for the basis of their Quality Control.
- B. The Contractor's Quality Control shall provide evidence that all items have been submitted, tested, inspected, and accepted. Further, the Contractor shall track the usage of all materials on the project. The Contractor shall document each of these aspects independently as required herein regardless of testing, Quality Control measures, and/or Quality Assurance measures historically performed by any agency. Any testing, Quality Control measures, or Quality Assurance measures, which are performed by an agency, will not be considered as part of the Organization's Quality Control. Compliance with the frequency of testing and Quality Control measures required in this specification shall be independent of any compliance measures taken by any agency.
- C. The Contractor is required to measure and reach agreement on "testable quantities" with the Engineer daily. "Partial" quantities and "Completed" quantities for payment purposes only, shall be agreed upon by both parties, and shall not include in part or in whole any

- materials which will require subsequent testing prior to acceptance.
- D. Control of Subcontractors: The Contractor has responsibility for all Quality Control Measures required for all subcontractors.
 - E. Control of Material Sources: Materials produced at a Source, shall have Quality Control Measures performed by the Contractor in accordance with the Contractor's Quality Control.
 - F. Control of Elevation and Grade: The Contractor is responsible for the proper material placement for vertical and horizontal control after the Engineer has established the initial controls as indicated in the Contract.

111.07 ACCEPTANCE

- A. The Engineer will provide Quality Assurance for the verification of the Contractor Quality Control for the acceptance of the construction materials and installation.
- B. The Engineer verification may be performed on a reduced frequency.
- C. The acceptance is also based upon the program compliance and is subject to the demerits listed in section 105.74), "Payment for Contractor Quality Control Program."

111.08 CONTRACTOR CONTRACT ADMINISTRATION – GENERAL

- A. The Contractor may have internal administration of the Contract that is not contained in this section. This section only specifies those Contract Document processes that are submitted to the Engineer for Quality Control Purposes.

111.09 ORGANIZATION – GENERAL

- A. The minimum organization staffing and qualifications are described in Section 113, "Contractor Quality Control Organization and Qualification of Laboratories and Technicians" The Contractor shall submit for approval by the Engineer an organization chart indicating the position numbers and the persons responsible.

END OF SECTION 111

ADD THE FOLLOWING SECTION:**SECTION 112 – CONTRACTOR QUALITY CONTROL ADMINISTRATION****112.01 GENERAL**

- A. The administration of the Contractor Quality Control (CQC) shall comply with the minimum requirements as established in this section. This section includes descriptions of all the Control Measures that are applicable to the QC documentation process. A written program does not have to be submitted if the Contractor performs the administration in accordance with this and other referenced sections. The only submittal required is the personnel qualifications as listed in Section 113 “Contractor Quality Control Organization and Qualification of Laboratories and Technicians”. All documents that are required through the course of the work shall be submitted to the Engineer.

112.02 ADMINISTRATIVE OUTLINE

- A. The Contractor shall incorporate the following outline for Quality Control administration.

112.03 ORGANIZATIONAL PROCESSES

- A. The Contractor shall develop his minimum organizational structure, lines of communication, and reporting functions based on the minimum position descriptions as indicated in Subsection 113.02. “Organization.” The organizational structure is based on the partnering approach for conflict resolution; therefore, Quality Control issues shall be addressed at the lowest level possible.
- B. The descriptions of the positions are generalizations of requirements. Additional requirements for a given individual may be further defined in other Special Provisions to the Contract.
- C. The description sheets will suffice for an organization structure.

112.04 GENERAL DOCUMENTATION PROCESS

- A. The Contractor is responsible for the execution and maintenance of the project file system, which shall be maintained in a location approved by the Engineer.
- B. The Contractor has the responsibility for documenting the construction process. All documentation and records generated at the field level shall be provided through the RPC or the designee. Prior to transmitting to the Engineer, the RPC shall review the following for Contract compliance:
1. Records generated by the Contractor laboratory or an outside laboratory
 2. Records generated by the QCC.
 3. Records generated by Material Sources

C. MAINTENANCE

1. The maintenance of the documentation shall comply with the following:
 - a. Be legible, identifiable, and retrievable.
 - b. Protected in a manner to prevent damage, deterioration, or loss.
 - c. Readily available for review within 4 hours.
 - d. Retain documents until transmitted to the Engineer at substantial completion.
 - e. Also, submit on a monthly basis, all records and laboratory and field tests data to the Engineer either in a paper document or PDF files on a CD/DVD media.

D. PROJECT FILING SYSTEM

1. The RPC or designee shall identify, with approval of the Engineer, the central location for filing and storage of all project documentation locations throughout the duration of the project.
2. The project file system shall include, where appropriate, the following:
 - a. Notification, Activity Cards with test results and QC reports attached, and Log
 - b. Pre-activity meeting agenda/minutes.
 - c. Deficiency Reports and Log.
 - d. Sample Reports and Log.
 - e. Certifications and Materials Tracking Log.
 - f. Submittals and Log.
 - g. Hotmix Log.
 - h. Concrete Log.
 - i. Audits.
 - j. QC Summaries.
 - k. QC Final Summary.

E. SUBMITTAL

1. Submittal tracking shall be performed by the RPC or designee. Submittals that are specification substitutions shall be so identified with written justification.
2. Copies of submittals shall be filed in the RPC office throughout the review process.
3. Copies of approved submittals shall reside in the project file.
4. A person qualified to review the material being submitted shall review and approve the QC Submittal content and verify against specifications. Personnel qualifications are to be submitted for approval by the Engineer.
5. Logging and Submission Process – The RPC or designee shall take the following steps:
 - a. Generate a Submittal Cover Sheet.
 - b. Log the submittal into the submittal log.
 - c. Review the submittal for compliance with the Contract Documents.
 - 1) If the submittal is not in compliance with the Contract Documents, return to submitting representative for correction.
 - d. Initial the log for review and transmit the submittal to the Engineer for approval.
6. Reviewing Returned Submittals - The RPC or designee shall take the following steps:

- a. Log the submittal as returned.
- b. Determine the status of the submittal:
 - 1) "No exceptions taken":
 - a) Forward copy to the RPC for distribution.
 - b) Forward a copy to the Submitting Representative, if other than the RPC.
 - c) After Final Filing, no additional action shall be required.
 - 2) "With Corrections Noted":
 - a) Verify that the corrections are clear.
 - b) Forward copy to the RPC.
 - c) Forward a copy to the Submitting Representative, if other than the RPC.
 - d) After Final Filing, no additional action shall be required.
 - 3) "Amend and Resubmit":
 - a) Return the Submittal to the individual who generated the Submittal initially.
 - b) These Submittals shall require "Revision" and shall be resubmitted using the same initial log ID number. The Revision number shall progress sequentially for each additional "Resubmit."
 - c) Note that a Revision is pending on the Submittal Log.
 - 4) "Rejected":
 - a) Return the Submittal to the Submitting Representative, and inform them that a New Submittal is required.
 - b) These Submittals shall be given a new log ID number and treated as a new Submittal.
 - c) File a copy of the Submittal regardless of Status in the Submittal File.

F. DEFICIENCY TRACKING AND RESOLUTION

1. This subsection shall define the procedures required to accurately identify, track, and resolve project deficiencies:
 - a. Deficient Work - Deficient work is defined as work that is not in accordance with Contract Documents. An item of work may remain a Deficiency (and not be escalated to Non-Compliance) provided it can be readily corrected "in the field" by the project level personnel. For example, field soils density test below specification requirements.
 - b. Non-Conforming Work (non-compliance) - Non-compliant work is defined as work that has a Deficiency which cannot be readily corrected "in the field," and/or shall require that a decision be made by personnel with an "authority" level higher than that which is available daily on the project site. For example, concrete compressive strengths being below specification, or Field soils density test being below specification and no longer accessible.
 - c. Informational Tests - In order to control failing Quality Control inspections by the Engineer and/or testing, the Contractor may perform "informational testing." The Contractor shall explain how informational testing shall be utilized prior to requesting any acceptance inspection and/or testing from Engineer. Informational testing may be performed by the Contractor to determine the amount of effort necessary to provide work that complies with

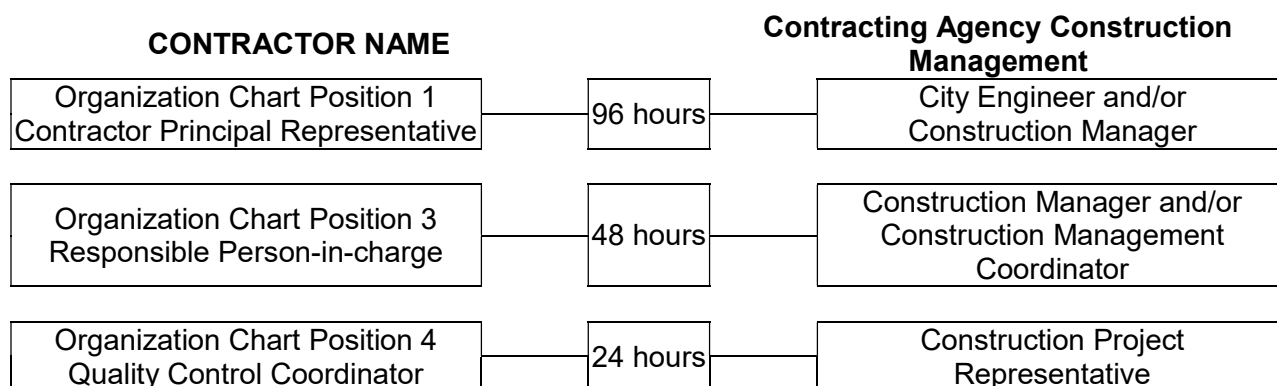
the Contract Documents. However, the informational testing that is performed shall be in addition to the minimum testing required by the Contract Documents. Passing informational test(s) which represent the work being performed may be submitted as part of the minimum testing required by the Contract Documents and approved Quality Control Program, only if the Engineer was given proper advance notification of the testing. Informational testing not counting toward the minimum testing required by the Contract Documents is not required to be submitted to the Engineer as part of the Quality Control documentation but shall be made available for review at the Engineer's request.

- d. Tracking Responsibility - The RPC shall review all Activity Cards daily for New and Resolved Deficiencies. Resolutions shall be approved by the Engineer:
 - 1) When New Deficiencies are found that were resolved on the same day, do not log them on the Deficiency Log. (No further action shall be required for these items.)
 - 2) When New Deficiencies are found that are not Resolved on the same day, log them on the Deficiency Log including the following information:
 - a) Sequential Deficiency Log ID Number
 - b) Reference QC Activity Card Number
 - c) Date of Deficiency
 - d) Material ID Number
 - e) Written description of the deficiency
 - f) QC Initials
 - 3) When Resolutions are found on the Activity Card, log them on the Deficiency Log including the following information:
 - a) Reference Activity Card Number on which the Resolution occurred.
 - b) Date of Correction
 - c) Written Description of the remitted action per conflict resolution chart
 - d) QC Initials
 - 4) The personnel responsible for identifying deficiencies at the project level may be any one of the following, but not limited to QA Representatives, QCC, Technician(s), RPC, and Foreman.
 - 5) Documentation and logging of deficiencies shall be provided by the RPC or designee.
 - 6) The RPC or designee is responsible for transferring deficiencies from the log to the applicable Activity cards.
 - 7) The RPC is responsible for tracking deficiencies.
 - 8) The RPC is responsible for deficiency resolution documentation. Following the resolution, the corrective action and resolution shall be documented on the deficiency log and the deficiency noted as corrected.
- e. Deficiency Reporting - The Contractor shall as a minimum take the following actions to report Deficiencies:
 - 1) Weekly Review.
 - 2) Before the Weekly Progress Meeting, review the Deficiency Tracking Log for outstanding Deficiencies.

- 3) Generate a summary of outstanding deficiencies including status of each.
- 4) Deliver the Summary at the Weekly Progress Meeting.
- f. Deficiency Resolution - This program does not allow a resolution to be initiated by the Engineer. The Engineer will review resolutions initiated by the Contractor and where engineering properties or design are involved, the Contractor shall have the resolution reviewed by a Nevada Professional Engineer at the Contractor's expense. The Engineer has the right to not approve the resolution and/or propose a documented resolution after review of the Contractor's proposal.

112.05 CONFLICT RESOLUTION PROCESS

- A. Conflict resolution shall be accomplished in a partnering method in that there shall be levels of authority, time frames of resolution, and a correspondence between the Contractor and QA employees as outlined in the chart below. Every effort shall be made to resolve conflicts at the lowest possible level.
- B. The example chart depicts the resolution process for "deficient and non-compliant work":



- C. The above chart is used as a process to follow whenever there is disagreement between Contractor Quality Control and Engineer Quality Assurance test results. Third party testing may be proposed under the following conditions:
 1. The third party shall be a separate independent laboratory, meeting the minimum qualifications set forth for laboratories on the project and not performing any additional work for the Engineer, Contractor, Subcontractors, and/or Suppliers on or for the project.
 2. The third party shall be agreed to by both the Contractor and the Engineer.
 3. Costs for the third party testing shall be as follows:
 - a. Initial test for the disputed work shall be paid for by the Contractor.
 - b. For each instance of conflict if the third party's test results reflect Engineer results, Contractor shall pay for any additional testing performed by the third party after the initial test.
 - c. For each instance of conflict if the third party's test results reflect the Contractor results, the Engineer shall pay for any additional testing performed by the third party after the initial test.

112.06 CERTIFICATION AND MATERIAL DELIVERY AND TRACKING PROCEDURE

- A. Logs shall be established for the purpose of tracking materials that are delivered to or generated from the project. The logs shall be executed and maintained by the RPC or designee and shall remain in the project file system at all times when not in use. The accompanying certifications shall be filed and numbered relative to the log.
- B. The RPC or designee shall be responsible for generating and completing delivery-tracking documentation. There may be instances where activity foremen shall complete the log.
- C. The documentation of the lot, or other identifiable information, relative to the item and the date of installation documented by the RPC or designee shall serve as evidence of the location of the delivered material upon incorporation into the project. For non-authorized sources, the required tests per lot shall be attached to the certificate. The RPC shall:
 - 1. Complete the Materials Delivery documentation.
 - 2. Track materials until incorporation into the work.
 - 3. Ensure that all materials are noted on the Materials Tracking Log.
 - 4. Resolve certification problems.
- D. When a certification is not presented with the delivery, the RPC shall obtain the document prior to material installation.
- E. The logs shall be executed and maintained in the project file system at all times when not in use.
- F. The sample log ID number shall be the Contract project sequential number, not an independent numbering system supplied by the laboratory. A separate column may be added for a cross-reference if a laboratory number is needed.

112.07 ACTIVITY CARDS AND CONTROL MEASURES

- A. The RPC shall ensure that the QC Activity Cards are in conformance with the procedures in Section 114, "Contractor Quality Control Procedures," and shall establish the guidelines and processes utilized with respect to Notification and QC Activity Cards. The RPC is responsible for verifying all documentation on the QC Activity and Notification Cards is in compliance with this program before being presented to the QA Representatives for "sign-off" and closeout of the activity.
- B. Tracking Responsibility
 - 1. The RPC shall be responsible for logging and tracking deficiencies on the QC Activity Card. Constant comparison against the deficiency log shall ensure no deficiency is left unresolved.
 - 2. The RPC shall document deficiencies that are new or have been cleared for each item relative to each activity. Every effort shall be made to resolve deficiencies as soon as possible. No work shall proceed that will negatively affect the resolution.
 - 3. Section 2 of the QC Activity Card is used for documenting existing deficiencies associated with the activity listed in Section 1 of the QC Activity Card. If no deficiencies exist or occur for the activity, the RPC shall check-off and initial this

section. If deficiencies do exist, the lower area of this section shall be completed. Each material number shall be verified against outstanding deficiencies.

C. Testing Identification Responsibility

1. The RPC utilizing the QC testing frequencies as specified in Table I, Appendix X shall verify the test methods, frequency of the tests, and the planned number of tests to be taken for each material used in the respective activity as designated by the author of the Activity Card.
2. The tests are subject to a testing turn-a-round time as designated in Table B, Appendix X. Check the box on the table for which tests are performed either in-house or contracted. This form is to be submitted at the beginning of the project. A deduction will be made to the contract and monthly work completion estimate of \$100 per day demerit per test method when they are submitted after the durations shown in Table B.
3. The QCC, in the appropriate space provided on the QC Activity Card, shall document the actual number of tests taken on each material. The activity card must indicate the actual quantity of tests and the testing frequency.
4. The Quantity of Material to be tested is the numerical amount of material actually available or "ready" for testing shown in units defined in Table I relative to the frequency of the material and based on the stationing information documented on the card. For example, the testable quantity of Type II grade for compaction from Station 0+00 to Station 10+00, given a width of 30 feet, would be 30,000 square feet (SF). Given this example and using Table I, the minimum number of tests required for this item would be 6 total tests based on the required frequency of 1 test per 5,000 SF.
5. The RPC or designee shall verify all necessary calculations to ensure the number of tests performed meet the required number. All minimum test numbers calculated shall be rounded up.
6. In the event that multiple lifts of material are represented or given that the testable quantity shown on the QC Activity Card is not readily identifiable with documented stations and dimensions, appropriate documentation and/or calculations shall be provided on the QC Activity Card to facilitate easy verification of the testable quantity. This process allows the technician to show documentation for the entire amount of material represented without documenting repetitive entries.
7. The RPC shall generally arrive at total quantities for each activity by documenting pertinent information such as stations, widths, and other miscellaneous dimensions at the beginning of the activity and comparing them against dimensions at the end of the activity. If situations arise where RPC or QCC cannot be present during all operations and would not be able to derive total quantities, the QCC shall retrieve the information from the activity Foreman and forward it to the RPC. The Materials Tracking Logs shall also be utilized in this respect.
8. The QC Activity Cards shall reflect certain bid item payment quantities. However, the Contractor shall not use them for compilation of the monthly pay estimate or for bid item payment tracking. This is due to the difference between the pay item unit of measurement and the testable quantity unit of measurement shown in the QC table(s), and also given that payable activities may take place without the presence of a QC Activity Card. (No testing or inspection)
9. The test numbering shall be sequential for the entire project. If a test number is missing, it needs to be accounted for by the RPC or the testing consultant.

112.08 DAILY REPORTING

- A. The Quality Control Activity cards with the inspection forms and daily reports attached plus any field tests shall be used to satisfy the requirements of this subsection. The Quality Control Activity card, completed and signed off, shall serve as the daily summary of activities on the project for the relative item(s). This shall include the transfer of any deficiency items to the tracking log.

112.09 MONTHLY REPORTING

- A. The RPC shall be responsible for coordinating the monthly quality control summaries at the end of each calendar month and submitting to the QA within the time period allowed by agreement between the Engineer and Contractor after each calendar month. This shall include a summary of the quality control performed during the reporting period that includes the frequency of testing for each material type in accordance with Table I or other agency tables.
- B. The RPC shall generate a cover letter. The cover letter shall attest that the summary has been reviewed, that any short falls in testing, sampling, or qualities have been identified, quantified, and acknowledged. Deficient items shall be acknowledged and state that resolution actions are contained in the letter and/or being resolved. A material resolution shall be reviewed and stamped by the Nevada P.E. who has responsible charge.
- C. A Nevada Professional Engineer shall certify that all field laboratory testing was performed correctly, and that the corresponding data is accurate as required by NAC 625.612. This certification shall be attached to the monthly submittal. Additional P.E. stamped letters shall accompany the monthly summary to indicate a P.E. level review and acceptance of the information provided by outside laboratories.
- D. The report may be submitted on media as follows:
1. CD-Rom in a PDF format.
 2. Spectraquest test report printouts.
 3. Other word processor documents.
 4. Or any combination.
- E. The summary shall be submitted in the following format:
1. Cover letter generated by RPC and/or QCC.
 2. P.E. stamped cover letter stating review and approval of the test summary.
 3. Field Test Result Summary that shall indicate all field test procedures and results performed during the reporting period. Items and tests shall be summarized by type. The associated daily field reports for inspections and testing shall be attached behind this summary.
 4. Field Density Test Result Summary indicating all pertinent information generated during all field density testing. The associated daily field reports for test results shall be attached behind this summary.
 5. Laboratory Test Result Summary that shall indicate all laboratory test procedures and results performed during the reporting period. Items and tests shall be summarized by type. Individual test results shall be attached behind this summary.

6. Laboratory Concrete Break Result Summary facilitating brief analysis of critical concrete strength data. Items shall be summarized by cylinder set numbers. Individual Concrete Break Results for each set of samples shall be attached behind this summary.
 7. Laboratory Aggregate and Soils Result Summary indicating all gradation test procedures performed during the reporting period. Individual test results shall be attached behind this summary.
 8. Deficiency log.
 9. Testable Quantity Summary that shall indicate total month and to-date counts of tests performed relative to the testable quantities and to-date testable quantities.
- F. The monthly QC summary report shall attach a copy of the most current AASHTO accreditation status for the laboratories referenced in the report from the AASHTO web site. The report shall also attach a list of the NAQTC certified technicians that were working at the referenced laboratories or in the field for the project during that report period.

112.10 FINAL REPORTING

- A. A final summary report shall be generated in accordance with Subsection 112.09 and shall not be submitted until such time as all discrepancies and non-conformances have been resolved as well as a compliant close-out audit.

112.11 QC AUDITING PROCEDURES

- A. For projects that have calendar days to complete greater than 90 days, the RPC is responsible for informal internal audits at a frequency of once per week. The RPC shall perform formal written audits on a monthly basis. QCC shall formally document monthly audits with results given to the Engineer. Formal audits shall be filed and maintained with jobsite files.
- B. Specific items or topics of the program that will be evaluated are:
1. Advanced Notification Cards Logs - 24-hour notice being given.
 2. Pre-Activity Meetings Logs.
 3. Activity Cards Logs - accurate, correct, and complete on a daily basis.
 4. Materials tracking log.
 5. Sampling and Testing completed with tracking information and results.
 6. As-built's are being updated monthly.
 7. QC documentation and overall program is being implemented effectively.
 8. Documentation for resolution of Deficiencies/Non-Conformances Logs correct and complete.
- C. Written documentation of the audit shall be a checklist format with space provided for comments.
- D. Items that are found to require corrective measures shall be noted in the remarks section of the audit form. The RPC shall ensure corrective measures are taken and comply with the program. A follow-up audit limited to items that need correcting shall occur within one week.

- E. Failure to submit monthly written documentation will result in the Progress Payment being withheld until this documentation is provided and accepted by the Engineer.

112.12 BLANK

112.13 BLANK

112.14 SAMPLE RETENTION

- A. All samples are to be retained until the project is complete. The sample size shall be such that the required testing could be performed. The Contractor QCC shall be responsible for ensuring the sample is of the appropriate size and that it is stored properly at a location approved by the Engineer.

END OF SECTION 112

ADD THE FOLLOWING SECTION:

**SECTION 113 – CONTRACTOR QUALITY CONTROL ORGANIZATION AND
QUALIFICATION OF LABORATORIES AND TECHNICIANS**

113.01 GENERAL

- A. This section describes the minimum Contractor Quality Control Organization indicating chain of command and position descriptions. Depending on the size of the project, all of the positions may not be required. The contractor must submit the organization to the Engineer for approval. The information shall be submitted to the Engineer and approved prior to the beginning of the work.
- B. The Contractor Quality Control material sampling shall be obtained from an NAQTC qualified person. The Contractor shall not accept material samples from a subcontractor or material supplier unless the Contractor NAQTC technician observes and documents the sampling.
- C. The Qualifications, Scope of Work and Responsibilities, Communication, and Reporting for each position are related to the execution of the Project Quality Control Program only. Other roles, responsibilities, and reporting requirements may be required by the Engineer in the Contract specification. This Program does not address those roles or responsibilities, nor is it intended to diminish their intent.

113.02 ORGANIZATION

- A. The minimum chain of command positions are titled as follows:
 - 1. Position 1 - Contractor Principal Representative.
 - 2. Position 2 - Professional Engineer (PE).
 - 3. Position 3 - Responsible Person-in-Charge (RPC).
 - 4. Position 4 - Quality Control Coordinator (QCC).
 - 5. Position 5 - Quality Control Testing Technician.
 - 6. Position 6 - Quality Control Laboratory Technician.
- B. Suggested formats for providing the information to submit to the Engineer are shown in Tables 1 through 6 later in this section, which reference the position titles.
- C. Qualifications and experience requirements are provided for each QC position. The minimum experience requirements for selected positions are as follows:
 - 1. The Responsible Person-in-Charge (RPC) shall be a quality control project manager level having a minimum of 8 years experience in construction managing the type of construction implemented on the Contract. The RPC shall have the ability to read and understand construction Drawings and Specifications. The RPC shall have stop work authority.
 - 2. For the testing QC Laboratory, the Professional Engineer who is in responsible charge of the testing shall be a Nevada State licensed Civil Professional Engineer, with a minimum of 5 years experience in construction materials. The field testing technicians shall be NAQTC and/or ACI Concrete Field Technician Grade I certified

and the Laboratory testing technician shall be NAQTC and/or ACI Concrete Laboratory Testing Technician Level 1 certified.

3. The Quality Control Coordinator (QCC) is a quality control administrator that ensures that the documents are coordinated to all levels of the project with a minimum of 2 years of experience in this type of work or have evidence in the resume of the ability to coordinate documents. The QCC shall have the same qualifications as the Quality Control Testing Technician, the ability to read and understand construction Drawings and Specifications.
- D. Resumes of all RPC, QCC, PE, inspection, and material testing personnel shall be submitted.
 - E. The Contractor shall verify that qualifications of each employee match those required by the position that individual will hold and will be valid for the duration of the project. If personnel will require recertification during the Contract duration, the Contractor shall indicate those personnel and the process for ensuring that the recertification is accomplished.
 - F. The Contractor shall complete the Position Description Form (Tables 1 through 6) for each position including: Name, Signature, Discipline, Employer, Stop-Work Authority, Certifications, and Title as applicable and submit to the Engineer for approval. Work shall not proceed until approved by the Engineer. One form will be used per position per individual. The form will include all disciplines of work and the related certifications for which the individual is qualified.
 - G. The testing staff utilized for a specific item of work may be comprised of any individual that has demonstrated competence and completed the appropriate form. Only technicians with appropriate certifications and work experience will be used for that item of work.
 - H. The acceptance of the work is by the Engineer or his designated representative.

113.03 LABORATORIES

- A. All laboratories, whether primary or subcontracted shall be AASHTO R18, AMRL/CCRL accredited including ASTM D 3666 (Asphalt Concrete and Aggregates), D 3740, C1077, effective June 1, 2012.
- B. For laboratories with multiple facilities, the Contractor shall identify the location of the lab providing the service. This lab is project specific for the actual work that will be performed.
- C. Separate laboratories may be used in conjunction with the Primary QC Laboratory. Prior to their use, the Contractor shall provide a submittal for each QC Laboratory. The approved submittal will then be added to QC program as an amendment.
- D. With the exception of "chemical testing" (i.e. binder, cement), QC Laboratory reviewing personnel in responsible charge are required to be Professional Engineers, registered in

the State of Nevada, regardless of whether the QC Laboratory utilized is primary or secondary.

Table 1 - Contractor Principal Representative

	Position Number	Position Title	Stop-Work Authority
	1	Contractor Principal Representative (CPR)	Yes
	Name:		
1	Scope of Work and Responsibilities: Perform corporate oversight for the Quality Control. Determine course of action for Quality Control at highest level of Conflict Resolution process. Quality Control related issues within the Organization.		
2	Communication - Provide direct access for the following individuals: RPC Quality Control Coordinator Professional Engineer		
3	Communication protocol:		
	To Whom	What	When
	CLV	QC Conflicts	Resolve within One Week
	QC Professional Engineer	After QC Resolutions	1 Day

Table 2 - Quality Control Professional Engineer

	Position Number	Position Title	Stop-Work Authority
	2	Professional Engineer (PE)	Yes
	Name:		
1	Scope of Work and Responsibilities: In responsible charge over Quality Control Testing, both field and laboratory testing. Signature for all testing reports. Liaison for the Prime Contractor for Materials and testing related issues. Provide consultation to Prime Contractor as requested. Aid in providing resolution in material deficiencies.		
2	Maintain open and effective communication with the following individual on a twice weekly basis: Testing Technician (Field & Lab) Source / Plant Inspector (when an employee of Engineer)		
3	Maintain open and effective communication and testing oversight with the following individuals on a daily basis: RPC		
4	Have direct access to the following individual: Contractor Principal Representative RPC		
5	Communication protocol:		
	To Whom	What	When
	RPC	QC Conflicts - Investigation	Resolve Within 1 day of Test Completion or 3 days for other material issues
	RPC or designee	Monthly Report of Field and Lab Results	At time of Pay Estimate
		Final Report of Field and Lab Results	Within 2 weeks from "Substantial Completion"
		Deficiencies in Lab Test Results	Immediately upon completion of testing
	QC Technician	After Resolution	1 hour

Table 3 - Responsible Person in Charge (RPC)

	Position Number	Position Title	Stop-Work Authority
	3	Responsible Person in Charge (RPC)	Yes
	Name:		
1	Scope of Work and Responsibilities: Expedite Conflict Resolution. Educate Lead / Foreman of responsibilities to the QC Program. Generate or advise QC coordinator to review and forward Materials Submittals. Measurement and reporting of daily quantities.		
2	Maintain open and effective communication and testing oversight with the following individual on a daily basis: Principal Representative		
3	Have direct access to the following individual: Principal Representative Professional Engineer		
4	Communication - Provide direct access for the following individual: Quality Control Coordinator Testing Technician (Field & Lab)		
5	Communication protocol:		
	To Whom	What	When
	QCC	QC Conflicts - Investigation	Resolve within 1 day
	Foreman	Materials Delivery and Quantities	Log Daily

Table 4 - Quality Control Coordinator (QCC)

	Position Number	Position Title	Stop-Work Authority
	4	Quality Control Coordinator (QCC)	Contractor Option
	Name:		
1	Scope of Work and Responsibilities: Schedule inspection with the Engineer Dispatch Testers. Generate, close, and maintain file system for Activity Cards. Generate, close, and maintain file system for Advance Notification Cards. Generate, track, and maintain all Logs. Perform the Administration for all Quality Control documentation. Perform routine audits of Quality Control and documentation. Review materials submittals for compliance with Contract Documents. Review materials Testing Technician test results. Receive, Log, and Schedule sampling of Materials Delivery and Quantities. Measurement, Calculation, and reporting of Testable Quantities. Report deficiencies.		
2	Maintain open and effective communication with the following individuals on a twice weekly basis at a minimum: Professional Engineer		
3	Maintain open and effective communication and testing oversight with the following individuals on a daily basis: RPC Testing Technician (Field & Lab)		
4	Have direct access to the following individuals: Contractor Principal Representative Quality Assurance Coordinator		
5	Communication - Provide direct access for the following individuals: RPC Quality Control Technician		
6	Communication protocol:		
	To Whom	What	When
	RPC	Activity Card Close-out	Daily
		Advanced Notification Cards	Prior to Days Work
		Generation of Activity Card	Daily
		Deficiencies	Immediately
		Materials Delivery Log	Daily
		Sample Log and Scheduling of Samples for Materials Delivered	Daily
		Deficiency Log	Daily
		Monthly QC Reports	With Monthly Pay Estimate
		Final QC Report	End of Construction
		QC Resolutions	1 Hour
		Activity Cards	Prior to Days Work
		QC Conflicts	Resolve within 2 Hours
		QC Resolutions	1 Hour

Table 5 - Quality Control Field Testing Technician

	Position Number	Position Title	Stop-Work Authority													
	5	Quality Control Field Technician (QCFT)	Contractor Option													
	Name:															
1	Scope of Work and Responsibilities: This individual is the “support” for the Quality Control Coordinator. Verifies conformance of materials through testing. Advisor to Quality Control Coordinator in regard to testing. Responsible for accurately testing, sampling, and reporting of results for construction materials. Responsible for identifying deficient or non-compliant work, as related to testing. Responsible for notifying Quality Control and Quality Assurance of status of work, as related to testing.															
2	Maintain open and effective communication and testing oversight with the following individuals on a daily basis: RPC Professional Engineer Quality Assurance Coordinator Engineers Inspector															
3	Have direct access to the following individual: Quality Control Coordinator Quality Assurance Coordinator															
4	Communication - Provide direct access for the following individuals: Quality Control Coordinator Quality Control Lab Technician															
5	Communication protocol: <table border="1"> <tr> <th>To Whom</th><th>What</th><th>When</th></tr> <tr> <td rowspan="3">QCC</td><td>Test results</td><td>Attach to Activity Card at the end of the Event.</td></tr> <tr> <td>Deficiencies</td><td>Immediately upon failing test or observation</td></tr> <tr> <td>Informational Testing</td><td>Before performing informational tests</td></tr> <tr> <td>RPC</td><td>Test Results</td><td>Attach to Activity Card at the end of the Event.</td></tr> </table>			To Whom	What	When	QCC	Test results	Attach to Activity Card at the end of the Event.	Deficiencies	Immediately upon failing test or observation	Informational Testing	Before performing informational tests	RPC	Test Results	Attach to Activity Card at the end of the Event.
To Whom	What	When														
QCC	Test results	Attach to Activity Card at the end of the Event.														
	Deficiencies	Immediately upon failing test or observation														
	Informational Testing	Before performing informational tests														
RPC	Test Results	Attach to Activity Card at the end of the Event.														

Table 6 - Quality Control Laboratory Testing Technician

	Position Number	Position Title	Stop-Work Authority
	6	Quality Control Laboratory Technician (QCLT)	Contractor Option
	Name:		
1	Scope of Work and Responsibilities: This individual is the "support" for the Professional Engineer. Verifies conformance of materials and work through testing. Advisor to Quality Control Coordinator in regard to testing. Responsible for accurately testing, sampling, and reporting of results for construction materials. Responsible for identifying deficient or non-compliant material, as related to testing. Responsible for notifying Quality Control and Quality Assurance of status of work, as related to testing.		
2	Maintain open and effective communication and testing oversight with the following individuals on a daily basis: Quality Control Coordinator Professional Engineer		
3	Have direct access to the following individual: Quality Control Coordinator Quality Assurance Coordinator Professional Engineer		
4	Communication - Provide direct access for the following individual: Quality Control Coordinator Professional Engineer		
5	Communication protocol:		
	To Whom	What	When
	QCC	Test results	Immediately
		Deficiencies	Immediately Upon Failing Test or Observation
	Professional Engineer	Test results	Immediately
		Deficiencies	Immediately Upon Failing Test or Observation

END OF SECTION 113

ADD THE FOLLOWING SECTION:**SECTION 114 – CONTRACTOR QUALITY CONTROL PROCEDURES****114.01 GENERAL**

- A. Contractor Quality Control shall follow the Contractor Quality Control Program to ensure that materials and workmanship incorporated into the work meet the requirements of the Standard Specification, Special Provisions, and all other Contract Documents. (Add CLV manual)
- B. Oversight and test results shall be documented in accordance with the Quality Control Program requirements in Section 112, "Contractor Quality Control Administration". Test results shall be evaluated and the acceptance determined by the Engineer.
- C. The Quality Control personnel shall be qualified as required in Section 113, "Contractor Quality Control Organization and Qualification of Laboratories and Technicians," or as stated in other Contract Documents.
- D. Process oversight and testing of items under construction shall be performed for work activities as required in the Contract Documents and at the frequency referenced in the specifications and these special provisions. This includes, but is not limited to, qualification tests, factory fabrication and manufacturing tests, material tests, verification tests, pre-operational checks/tests, installation oversight, and construction oversight.
- E. A combination of testing and process oversight shall be performed in a systematic manner to ensure the specific requirements for control of the process and quality of the item are being achieved throughout the duration of the process.
- F. Modifications, repairs, or replacement of items subsequent to final acceptance shall be re-inspected and/or retested to verify compliance with requirements set forth in the Contract Documents.

114.02 BLANK**114.03 ORGANIZATION**

- A. The organization is based on Section 113, "Contractor Quality Control Organization and Qualification of Laboratories and Technicians," that identifies the minimum levels for communication and delegation for the Quality Control program.
- B. The Responsible Person-in-Charge (RPC) shall have the experience to manage the type of construction implemented in the Contract Documents and have the ability to read and understand construction drawings and specifications.
- C. The Contractor Quality Control Coordinator (QCC) shall have the experience to observe, document, instruct, and in general ensure that the work is installed as designed and all testing requirements have been met as stated in the Contract Documents.

114.04 INSPECTION PROCESS**A. Pre-Activity Meeting**

1. Prior to the start of any new work activity, a meeting shall be conducted with all persons involved. Each activity of work shall have a procedure approved by the Engineer containing descriptions of the processes, which address the requirements for material testing and inspection for the particular activity.
2. It is encouraged that the information outlined below be relayed during the daily course of the project and through any periodic progress meetings to reduce the number of time consuming meetings. However, formal Pre-Activity Meetings shall be held prior to the beginning of a new activity or prior to restarting an activity that has been delayed or stopped.
3. It is intended that the Pre-Activity Meeting be held at the actual location of the work.
4. The Pre-Activity Meeting shall be held within one week of the first item of work on the shift that the actual work shall begin. When working a multi-jurisdictional project such as with NDOT, 2 days' advance notice is required prior to the meeting being held.
5. The meetings shall be held to discuss all Quality Control and operational aspects of proposed activities. All activities may not necessitate meetings. Extenuating circumstances may dictate the need for meetings on general and common activities.
6. The meetings may be held under special requests made by the Engineer and shall also be held in the event of major personnel changes with respect to the project such as a Project Manager for the Engineer or the Contractor.
7. The RPC shall facilitate the meetings at the project level.
8. Documentation of the meetings shall be provided by the RPC in the form of written documentation. A copy of the documentation shall be provided to the Engineer within one shift of the meeting.
9. The meetings shall accomplish the verification of the following items:
 - a. Description.
 - b. Ensure that all submittals are approved.
 - c. Review Plans, Specifications, and Procedures that apply.
 - d. List materials.
 - e. List any mandatory procedures (i.e., Manufacturers' specifications).
 - f. Review Deficiencies in prior related work and note.
 - g. Verify that no outstanding deficiencies exist for work that led up to this activity.
 - h. Discussion of acceptance criteria.
 - i. Particular items of interest to the Engineer; QA's expectations.
 - j. List Control Measures and responsible parties, Review of Frequency of Control Measures.
 - k. Discussion of off-site and on-site QC responsibilities.
 - l. Discuss "What do we do when something goes wrong?"
 - m. Traffic Control and Safety Issues and Notification to the Public.
 - n. Reminder that the public comes first.
 - o. Items requiring QC.
 - p. Itemize frequency of inspection and testing.
 - q. Provide list of required inspections to the Engineer
 - r. Define any revision of Contract Specification protocol and documentation approved by the Engineer.

10. The following individuals are required to attend the Pre-Activity Meeting for work that they perform:
 - a. Responsible Person in Charge
 - b. Quality Control Coordinator
 - c. Quality Assurance Inspector
 - d. Responsible activity foreman
 - e. Owner Project Representative

- B. Advance Notification Cards
 1. The Contractor shall utilize the Advance Notification Cards to schedule all activities.

- C. Quality Control Activity Card Process
 1. QC Activity Cards will not be required when activities do not necessitate testing or inspection to be performed on the item.
 2. The RPC is responsible for verifying all documentation on the QC Activity Card is in compliance with this program before being presented to the QA Representatives for “sign-off” and closeout of the activity.
 3. The testing staff utilized for this project can be comprised of any of the technicians with appropriate certification. The RPC shall use the following guidelines for QC Activity Card identification and logging:
 - a. QC Activity Card shall be issued a sequential number to uniquely identify it with the activity.
 - b. QC Activity Card generated and filed shall be logged on the QC Activity card Log as described in Section 112, “Contractor Quality Control Administration.”
 4. QC Activity Card Section 1 – Actual Work Performed
 - a. Used to document the actual work performed for the activities listed. Locations shall be listed to correlate with the type of work performed.
 5. QC Activity Card Section 2 – Deficiency Check
 - a. Used for documenting existing deficiencies associated with the activity listed in QC Activity Card Section 1 above. If no deficiencies exist or occur for the activity, the Technician shall check-off and initial this section. If deficiencies do exist, the Technician shall complete the lower area of this section. Each material number shall be verified against outstanding deficiencies.
 6. QC Activity Card Section 3 – Inspection Items
 - a. Used for documenting tests associated with the activities listed in QC Activity Card Section 1 above, and for documentation of QA verification testing.
 - b. Each tested material utilized during the activity shall be entered. The completion of the “QC Initial/Date” section by the RPC shall serve as documentation of the Quality Control performed. There shall be instances where the QCC fills out the QC Activity Card but does not initial the QC Activity Card. In these cases, the QCC shall require the particular activity Foreman, or subcontractor Foreman/Supervisor, to initial the QC Activity Card. Electrical items shall always be initialed by the activity Foreman.
 - c. Inspections and testing to be performed are listed in Table I, Appendix X.
 - d. The next section “QA Initial/Date” shall be utilized for QA’s documentation of verification of the inspections listed within the section.
 - e. The RPC, QCC, and/or Foreman shall give a minimum one-day advance notice to QA of required inspections to be performed by Engineer. The time

that the material will be ready for inspection by the QA shall be documented in the "Time Requested for QA" section. There shall be circumstances when the work conducted has not reached a hold point for QA inspection and therefore a time cannot be determined. In these cases, this section shall have the estimated completion date of the work reaching the hold point.

7. QC Activity Card Section 4 – Testing and Sampling Items
 - a. Used for documenting field tests associated with the activities listed in Activity Card Section 1 and Section 2 above.
 - b. All tests shall be separated based on "Bid Item No." and the numbering for the range of tests taken on each Bid Item need to be documented in the "Sequential Test Nos.". Special attention shall be made to continue the sequential numbering from the last occasion testing was performed on these particular Bid Items. All tests taken throughout the entire project shall be numbered sequentially based on Bid Item No.
 - c. The RPC or QCC shall indicate the "Description of Test" performed. Descriptions shall be kept constant for the tests throughout the project.
 - d. The "Quantity of Material to be Tested" is the numerical amount of material actually available or "ready" for testing. The amount shall be followed by the appropriate unit (square feet, cubic yard, linear feet, etc.). Calculations shall be shown to justify the number entered, for instance, when there may be multiple lifts of trench backfill tested and documented.
 - e. The "Testing Frequency" shall be determined by Table I, Appendix X and indicated by the RPC.
 - f. The "Required Quantity of Tests" shall be calculated by dividing the "Quantity of Material to be Tested" by the "Testing Frequency". All minimum test numbers calculated shall be rounded up.
 - g. The final column, "Actual Tests Performed" shall be completed by the RPC or QCC and shall indicate the actual amount of tests performed during the shift covered by the QC Activity Card for each Bid Item.
 8. QC Activity Card Section 5 – Remarks
 - a. Used for documentation of miscellaneous information associated with the activities listed on the card. This section shall also be used to document formulas used to calculate the number of tests required.
 9. QC Activity Card Section 6 – Quality Assurance Sign-Off
 - a. Used for documentation of the QA sign-off of the QC work performed associated with the activity listed. Upon sign-off, a copy of the QC Activity Card with applicable test and inspection observation reports results shall be delivered to RPC.
- D. Sampling and Testing
1. All sampling and testing shall be performed in accordance with Table I, Appendix X.
 2. All density testing locations shall be clearly identified by paint marking on the grade at the time the testing is performed. All trench walls or structural backfill shall have lift thickness marked in paint. This requirement will aid in the correlation testing by Quality Assurance.
- E. Final Inspection and Testing
1. Final inspection(s) and tests shall be performed to demonstrate and verify functional operation and conformance to the Contract requirements of the products,

subsystems and systems constructed, fabricated, manufactured, and installed by the Contractor or its subcontractors and suppliers for the Project in accordance with the Contract Documents.

2. Prior to final inspection(s) and tests, a review of the deficiencies identified during the in-process inspections and tests shall be performed by the RPC to verify that corrective action has been completed, verified, and documented. The final inspection or test shall demonstrate the conformance of the item to specified requirements.

F. Material Sources

1. On-site delivery of material items furnished by suppliers to be incorporated into the work shall be jointly inspected upon receipt by the Contractor's Quality Control personnel and the Engineer to verify conformance to specified requirements. Source inspection of items fabricated or manufactured specifically for the Project shall be performed jointly as required by the Contract Documents.
2. The Engineer may conduct additional independent Quality Assurance and/or Independent Assurance (IA) inspection/testing and source inspections as deemed necessary. The Engineer or Engineer's representative shall coordinate these inspections and tests as required.

114.05 FIELD PROBLEM IDENTIFICATION AND REPORTING PROCESS

A. The following procedure outlines the identification and reporting of a deficiency:

1. If a problem is observed by a Non-Quality Control Personnel:
 - a. Locate the Quality Control Coordinator.
 - b. Inform the Quality Control Coordinator of the Deficiency and any additional information details special circumstance.
2. If a problem is observed by a Testing Technician:
 - a. Your testing indicates deficient work:
 - 1) Record all testing data.
 - 2) Locate Quality Control Coordinator.
 - 3) Provide detail of Deficiency to Quality Control Coordinator.
 - b. You observed deficient work:
 - 1) Locate Quality Control Coordinator.
 - 2) Provide detail of Deficiency to Quality Control Coordinator.
3. If a problem is observed by the Quality Control Coordinator:
 - a. Gather information from anyone with knowledge of the deficiency.
 - b. Notify and discuss deficiency with QA Inspector to identify possible resolution.
 - c. Quality Control Coordinator to provide possible solution, QA agrees with proper solution.
 - d. If the deficiency requires a decision by personnel with an "authority" level higher than that which is available daily on the project, then it is considered non-compliant work and will need direction that is approved by the Engineer.
 - e. If resolution cannot be achieved within that day, one of two courses of action needs to be taken as follows:
 - 1) If resolution can be achieved the following day:
 - a) Verify that the resolution was performed and that all aspects of work are now in compliance with Contract Documents.
 - b) If it is not in compliance, Notify QA immediately.

- 2) If resolution cannot be achieved the following day, note in the remarks any portion of the Activity Card that has a Deficiency pending. Notify the RPC of the deficiency for tracking purposes.
- f. If work is now in compliance, note resolution in deficiency area of Activity Card, with written description of resolution, making notes in remarks which detail the resolution process then:
 - 1) Notify QA Inspector of Resolution.

114.06 DEFICIENCY TRACKING RESPONSIBILITY

- A. The RPC or QCC shall be responsible for logging and tracking deficiencies on the QC Activity Card. Constant comparison against the deficiency log shall ensure no deficiency is left unresolved.
- B. The RPC shall document deficiencies that are new or have been cleared for each item relative to each activity. Every effort shall be made to resolve deficiencies as soon as possible.
- C. Section 2 of the QC Activity Card is used for documenting existing deficiencies associated with the activity listed in Section 1 of the QC Activity Card. If no deficiencies exist or occur for the activity the RPC shall check-off and initial this section. If deficiencies do exist, the lower area of this section shall be completed. Each material number shall be verified against outstanding deficiencies.

114.07 TESTING IDENTIFICATION RESPONSIBILITY

- A. The RPC, utilizing Table I, Appendix X, shall identify the test methods, frequency of the tests, and the planned number of tests to be taken for each material used in the respective activity as explained in Section 112, "Contractor Quality Control Administration."
- B. The planned number of tests to be taken shall be documented on the Advanced Notification Card. The actual number of tests taken on each material shall be documented by the RPC in the appropriate space provided on the QC Activity Card. There may often be a large difference between the planned number of tests and actual number of tests taken. There may also be instances where a large number of planned tests were documented on the Advanced Notification Card and no actual tests were taken, given the probability of the cancellation of activities.
- C. The "Quantity of Material to be Tested" is the numerical amount of material actually available or "ready" for testing shown in units defined in Table I, Appendix X or related Agency testing of this program relative to the frequency of the material and based on the stationing information documented on the card. For example, the testable quantity of Type II grade for compaction from Station 0+00 to Station 10+00, given a width of 30 feet would be 30,000 square feet (SF). Given this example and using Table I, Appendix X, the minimum number of tests required for this item would be 6 total tests based on the required frequency of 1 test per 5,000 SF.

- D. The RPC shall perform all necessary calculations to ensure the number of tests performed meet the required number. All minimum test numbers calculated shall be rounded up.
- E. In the event that multiple lifts of material are represented or given that the testable quantity shown on the QC Activity Card is not readily identifiable with documented stations and dimensions, appropriate documentation and/or calculations shall be provided on the QC Activity Card Section 5 to facilitate easy verification of the testable quantity. This process allows the technician to show documentation for the entire amount of material represented without documenting repetitive entries.
- F. The RPC shall generally arrive at total quantities for each activity by documenting pertinent information such as stations, widths, and other miscellaneous dimensions at the beginning of the activity and comparing them against dimensions at the end of the activity. If situations arise where RPC cannot be present during all operations and would not be able to derive total quantities, the RPC shall retrieve the information from the activity Foreman. The Materials Tracking Logs shall also be utilized in this respect.
- G. The QC Activity Card shall reflect certain bid item payment quantities. However, the Contractor shall not use them for compilation of the monthly pay estimate or for bid item payment tracking. This is due to the difference between the pay item unit of measurement and the testable quantity unit of measurement shown in the QC table(s), and also given that payable activities may take place without the presence of a QC Activity Card. (No testing or Inspection.)

114.08 REPORTING

- A. Daily Reporting
 - 1. The QC Activity Cards with the inspection forms, daily reports, and any field tests attached shall be used to satisfy the requirements of Daily Reporting
- B. Monthly Reporting
 - 1. The RPC shall be responsible for coordinating the monthly quality control summaries at the end of each calendar month and submitting to the QA within the time period allowed by agreement between the Engineer and Contractor after each calendar month.
 - 2. The RPC shall generate a cover letter stamped by the Nevada Professional Engineer who has responsible charge of reviewing attached material. The cover letter shall attest that the summary has been reviewed, that any short falls in testing, sampling, or qualities have been identified, quantified, and acknowledged. All deficiencies shall be acknowledged including their status on being resolved.
 - 3. The report may be submitted on media as follows:
 - a. CD-Rom in a PDF format.
 - b. Spectraquest test report printouts.
 - c. Other word processor documents.
 - d. Or any combination.
 - 4. The summary shall be submitted in the following format:
 - a. Cover letter generated by RPC and/or QCC.
 - b. P.E. stamp on the cover letter stating review and approval of the test summary.

- c. Field Test Result Summary that shall indicate all field test procedures and results performed during the reporting period. Items and tests shall be summarized by type. The associated daily field reports for inspections and testing shall be attached behind this summary.
 - d. Field Density Test Result Summary indicating all pertinent information generated during all field density testing. The associated daily field reports for test results shall be attached behind this summary.
 - e. Laboratory Test Result Summary that shall indicate all laboratory test procedures and results performed during the reporting period. Items and tests shall be summarized by type. Individual test results shall be attached behind this summary.
 - f. Laboratory Concrete Break Result Summary facilitating brief analysis of critical concrete strength data. Items shall be summarized by cylinder set numbers. Individual Concrete Break Results for each set of samples shall be attached behind this summary.
 - g. Laboratory Aggregate and Soils Result Summary indicating all gradation test procedures or other testing performed during the reporting period. Individual test results shall be attached behind this summary.
 - h. Deficiency log.
 - i. Testable Quantity Summary that shall indicate total month and to-date counts of tests performed relative to the testable quantities and to-date testable quantities.
 - j. A copy of the most current AASHTO accreditation status for the laboratories referenced in the report from the AASHTO web site. The report shall also attach a list of the NAQTC certified technicians that were working at the referenced laboratories or in the field for the project during that report period.
- C. Final Reporting
- 1. A final summary report shall be generated in accordance with Subsection 112.09 and shall not be submitted until such time as all discrepancies and non-conformances have been resolved as well as a compliant close-out audit if required.

END OF SECTION 114

ADD THE FOLLOWING SECTION:**SECTION 117 – CONTRACTOR QUALITY CONTROL TESTING****117.01 GENERAL**

- A. The testing procedures and frequency shall comply with Table I, Appendix X.
- B. For the purposes of testing, the following common structural items are hereby defined as non-structural and will only be required to meet the minimum requirement of once per week per mix design:
1. Manholes.
 2. Utility Collars.
 3. Street Light Bases.
 4. Curb and Gutter.
 5. Sidewalk.
 6. Driveways.
 7. CLSM.
 8. ADA ramps

117.02 EXCEPTIONS

- A. AASHTO Test Method Modifications:
1. AASHTO T310 In-place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (shallow depth) Section 9.4.15
 - a. Once the initial wet density test reading is recorded, retest in the same position for a minimum of two. If the difference between the wet densities is less than the values in Tables 1 then the two tests are to be averaged for the density test calculation.

Table 1 – Direct Transmission Single Operator Two Test Range

ASTM Soil Type 1	Acceptable Range Between Two Tests (Lb/ft ³)
CL	1.0
SP	0.8

Note 1: ASTM D2487 Table 1

- b. If the value is outside of the range, another round of two new tests is required in the same position or rotated 90 degrees. If not satisfactory, repeat other rounds until two tests are within the acceptable range.

B. ASTM Test Method Modifications:

1. ASTM D 2950 Density of Bituminous Concrete in Place by Nuclear Methods Section 9
 - a. Once the initial wet density test reading is recorded, retest in the same position for a minimum of two. If the difference between the wet densities is less than the values in Table 2 then the two tests are to be averaged for the density test calculation.

Table 2 – Single Operator Two Test Range

Acceptable Range Between Two Tests (Lb/ft ³)
2.6

- b. If the value is outside of the range, another round of two new tests is required in the same position or rotated 90 degrees. If not satisfactory, repeat other rounds until two tests are within the acceptable range.

117.03 CONSTRUCTION

A. Bridge Abutments

1. The zone for structural backfill for bridge abutments is within 50 feet of the structure. Walk behind equipment must be used at the face of the walls.

B. Concrete Plant Inspection

1. The minimum requirement for plant inspection and field testing of concrete is set at one (1) inspection per week per mix design. The field sampling shall be performed on the same concrete placement as the plant inspection.

C. Reinforcement Bar Testing

1. Tensile testing of reinforcing steel is required for all structural concrete at the frequency specified in the QC tables. However, tensile testing of reinforcing steel used in non-structural items as listed in Subsection 117.01 "General" is not required.

D. Concrete Testing

1. The following Table 3 applies to testing for each individual mix. Frequencies apply to each mix individually. Aggregate sampling and testing is required any time a plant inspection is performed.

Table 3 – Concrete Mix Test Frequency

Size of Concrete Placement and Aggregate Testing	Any Individual Day		Cumulative for the Week	
	Structural Concrete	Non-Structural Concrete	Structural Concrete	Non-Structural Concrete
Less than 3 cy	NO Tests	NO Tests	NO Tests	NO Tests
3 cy. to 50 cy	YES – 1 Minimum	NO compression Tests	YES – 1 Minimum	YES – 1 Minimum
More than 50 cy	YES & 1/100 CY Thereafter	YES & 1/100 CY Thereafter	YES & 1/100 CY Thereafter	YES & 1/100 CY Thereafter

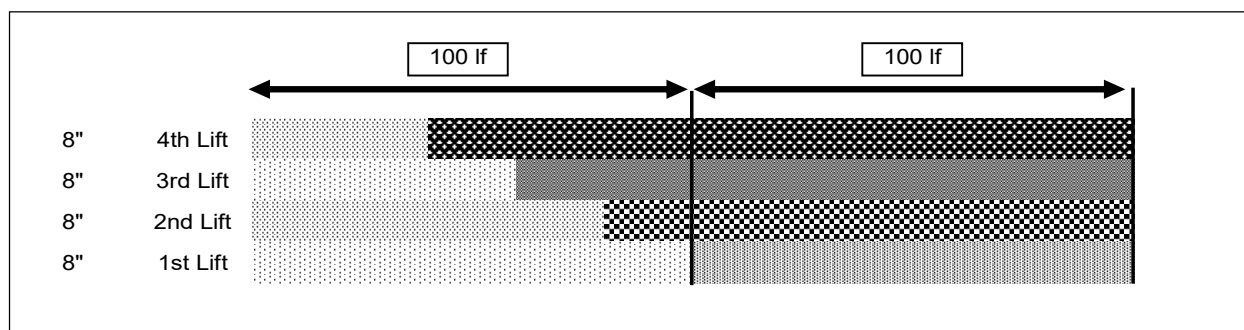
a.

E. Soil Compaction Lifts

1. In order to reduce the possibility that testing frequencies are not being met, the following guideline is presented.

a. Figure 1 is an example for trenches and from Appendix X, Table 1, the frequency of testing is 1/100 Linear Feet (LF) / per Lift. The Lighter colored lifts on the Left hand side of the diagram were placed in the morning (AM). The Darker colored lifts on the Right hand side were placed in the afternoon (PM).

- 1) In the AM (lighter) the following testing would be required:
 - a) The 1st Lift would require one (1) test.
 - b) The 2nd Lift would require one (1) test.
 - c) The 3rd Lift would require one (1) test.
 - d) The 4th Lift would require one (1) test.
- 2) In the PM (darker), the following testing would be required:
 - a) The 1st Lift would require one (1) test.
 - b) The 2nd Lift would require two (2) tests.
 - c) The 3rd Lift would require two (2) tests.
 - d) The 4th Lift would require two (2) tests.

**Figure 1 – Trench Backfill****END OF SECTION 117**

