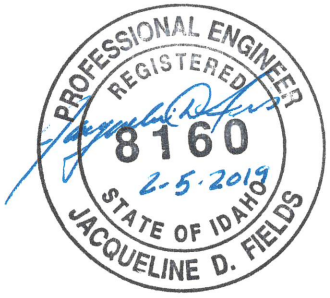
CITY OF TWIN FALLS REVISIONS

to the

2017 IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION



February 4, 2019

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Changes to the Specifications

Revisions from the *City Revisions to the 2015 ISPWC* that were adopted statewide and incorporated into the *2017 ISPWC* were eliminated from the *City Revisions to the 2017 ISPWC*.

Minor revisions were made throughout the document. Major changes from the *City Revisions to the 2015 ISPWC* to the *City Revisions to the 2017 ISPWC* are included in the following locations:

Section 810

Division 900

Division 1100

Section 2020

Section 2030

Section 2040

Changes to the Standard Drawings

Previously modified Standard Drawings, which have not changed from the original *City Revisions to the 2015 ISPWC*, still show 2016 as the date in the lower left hand corner of the Standard Drawing. Standard Drawings, which were changed from either the *2017 ISPWC* or the *City Revisions to the 2015 ISPWC*, now have 2018 as the date in the lower left hand corner. If not deleted, the portion(s) of the Standard Drawing which were changed should be highlighted in gray. Those drawings, which were changed for this edition, include the following:

TFSD-303

TFSD-402

TFSD-402A

TFSD-406

TFSD-507

TFSD-507A

TFSD-508

TFSD-704

TFSD-709

TFSD-709A

TFSD-710B

TFSD-801

TFSD-804

TFSD-901

TFSD-903

TFSD-904

TFSD-905

TFSD-1109

TFSD-1116 **TFSD-1119**

TFSD-1117 **TFSD-2040I**

Division 100 – GENERAL CONDITIONS

Article 1 – Definitions and Terminology

Add Item 1.01.A.16a.

COTF – City of Twin Falls

Add Item 1.01.A.23a.

In-place – Any contract item, structure, or material designated as "in place" shall be furnished as a finished product, complete with all equipment, labor and materials required to manufacture, install, place or otherwise construct the item, structure or material. All costs incurred in furnishing the finished product are incidental to the bid unit price of that item, structure or material.

Add Item 1.01.A.23b.

Laboratory – The materials laboratory of the City of Twin Falls and any other laboratory designated by the City Engineer. Unless otherwise specified, in case of conflict, the results of the laboratory of the City of Twin Falls supercede any third party or independent laboratory.

Add Item 1.01.A.35a.

Regular Working Hours – Any period not to exceed eight hours between 8:00 AM and 5:00 PM on a day other than a legal holiday, Saturday or Sunday.

Add Item 1.01.A.41a.

Special Provisions – The specific clauses setting forth conditions or requirements peculiar to the project under consideration.

Add the following at the end of Item 1.01.A.44:

Substantial completion is further defined as (i) that degree of completion of the Project's operating facilities or systems sufficient to provide Owner the

full time, uninterrupted, and continuous beneficial operation or use of the Work; and (ii) required functional, performance, and acceptance, or startup testing has been successfully demonstrated for components, devices, equipment, and instrumentation and control to the satisfaction of Engineer in accordance with the requirements of the Specifications.

Add the following to Item 1.02.E.1.

When materials or equipment are to be incorporated into the work, they shall be in new or unused operable condition unless otherwise specified.

Article 2 – Preliminary Matters

Delete Item 2.01.B in its entirety and insert the following in its place:
Evidence of Insurance: Before any work at the Site is started, Contractor shall deliver to the Owner, with copies of each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance, which Owner or any additional insured may reasonably request) which Contractor is required to purchase and maintain in accordance with Article 5.

Modify Item 2.02.A. as follows:

Replace the word “ten” with “five”.

Add Item 2.04.B.

Submittals may be submitted to Engineer, but review of submittals will not start until Notice to Proceed has been issued to Contractor.

Add Item 2.04.C.

Once the Contract Times commence, Contractor shall begin and shall prosecute the work regularly and uninterruptedly thereafter (unless otherwise directed by the Owner) with such force as to secure the completion of the work within the Contract Times.

Add Item 2.05.B.

Tax Submittals – Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. WH-5 Public Works Contract Report in conformance with Idaho Statutes 54-1904A and 63-3624(g) and

2. Affidavit of Payment of Securement of all Taxes in conformance with Idaho Statute 63-1502.

Article 3 – Contract Documents: Intent, Amending, Reuse

Add the following Item 3.03.B.2. as follows:

In cases of conflict in the requirements and provisions as set out by the contract documents, such conflict shall be reconciled by the acceptance of the following order of precedence for the contract documents:

1. Permits from Regulatory Agencies
2. Project Plans
3. Special Provisions
4. City of Twin Falls Revisions to ISPWC
5. Supplementary Conditions to the General Conditions of ISPWC
6. ISPWC Standard Specifications and Standard Drawings

Article 4 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points

Add Item 4.04.C. as follows:

Identification of potential utility conflicts shall be an ongoing process, occurring well ahead of trenching operations. Contractor shall locate and field verify utilities along the pipeline alignment, at connection points to existing Underground Facilities and in locations where the indicated tolerance on the location of the facilities could result in conflict with new facilities. The Contractor shall perform exploratory excavations to locate the existing facilities and, as applicable, the size, materials and other relevant characteristics of the existing facilities. Such exploratory excavations shall be performed in sufficient time ahead of proposed work to permit the Engineer to determine if any modifications are needed for the proposed facilities and for the Contractor to determine, at connection points, the location, materials and size of the existing pipe, and such other information needed to make the connection.

Add the following after the first sentence of Item 4.05.A:

Contractor shall provide all construction surveying and staking required to complete the project unless otherwise specified.

Add Item 4.06.J. as follows:

For a Hazardous Environmental Condition created by the Contractor or anyone for whom Contractor is responsible, Contractor shall submit to the Owner its cleanup plan to render the Hazardous Environmental Condition safe for resumption of work. After the Owner's concurrence with the cleanup plan, the Contractor shall obtain any required permits related to the cleanup and provide a copy of such permits to the Owner. Contractor shall then proceed with the cleanup. Owner reserves the right to retain a qualified expert to evaluate the Contractor's proposed cleanup plan prior to Contractor proceeding with its cleanup (except in an emergency) and to monitor the cleanup work to assure that the affected area has been rendered safe.

Article 5 – Bonds and Insurance

Delete 5.03.B.

Delete 5.03.D.

Delete 5.05.

Delete the first 5.06.A. Section which refers to the Owner purchasing and maintaining property insurance.

Delete 5.07.

Delete 5.08.

Delete 5.09.

Delete 5.10.

Article 6 – Contractor's Responsibilities

Add the following to Item 6.03.A.

Materials specifically indicated shall be furnished by the Owner. The fact that the Owner is to furnish material is conclusive evidence of its acceptability for the purpose intended, and the Contractor may continue to use it until otherwise directed. If the Contractor discovers any defect in material furnished by the Owner, he shall notify the Engineer immediately. Unless otherwise noted or specifically stated, materials furnished by the

Owner will be picked up by the Contractor at a location within the City of Twin Falls Area of Impact. The Contractor shall be prepared to unload and properly protect all such material from damage or loss. The Contractor shall be responsible for material loss or damage after receipt of material at the point of delivery.

Add Item 6.03.D.

All equipment shall operate properly and shall not have any excessively worn or defective parts. All equipment shall be serviced away from the site. Equipment that drips fuel, oil or grease shall be immediately removed from the job until the leakage is corrected.

Add Item 6.11.E.

Dust Control: Contractor shall be responsible for dust control at the project site during the period within which this contract is in force. Unless otherwise specified, the cost thereof shall be incidental to the cost of the contract. City Code Section 7-1-20 “Control of Particulate Matter (Dust)” shall apply including enforcement standards and the schedule of fines.

Delete the last sentence of Item 6.12.A and replace it with the following:

Upon completion of the Work, these record documents, Samples, Shop Drawings, Mylar As-Builts, and electronic .pdf files will be delivered to the Engineer for Owner. Contractor shall include accurate locations for buried and embedded items.

Add Item 6.17.D.4:

Engineer's review of Shop Drawings and Samples, Standard Specifications and descriptive literature submitted by Contractor will be only for general conformance with design concept, except as otherwise provided, and shall not be construed as:

1. Permitting any departure from the Contract Requirements;

2. Relieving Contractor of the responsibility for any error in details, dimensions or otherwise that may exist in such submittals;

3. Constituting a blanket approval of dimensions, quantities, or details of the material or equipment shown; or

4. Approving departures from additional details or instructions previously furnished by Engineer. Such check or review shall not relieve Contractor of the full responsibility of meeting all the requirements of the Contract Documents.

Add Item 6.23 Audit: Access to Records

A. Contractor shall maintain books, records, documents and other evidence related to performance of work under this Contract in accordance with generally accepted accounting principles and practices consistently applied. Contractor shall also maintain the financial information and data used in the preparation or support of its Bid or of any Change Order or of any claim. The Owner or any of the Owner's authorized representatives shall have access to all such books, records, documents and other evidence for the purpose of inspection, audit and copying during normal business hours. The Contractor shall provide proper facilities for such access and inspection.

B. Contractor agrees to make Subparagraphs A through D of this Item 6.23 applicable to all Change Orders and claims affecting the Contract Price or the Contract Times. The Contractor agrees to include Paragraphs A through D in all of its subcontracts at all tiers, in excess of $10,000, and to make Paragraphs A through D applicable to all Change Orders and claims related to such subcontracts at all tiers.

C. Audits conducted under this paragraph shall be conducted in accordance with generally accepted auditing standards and with established procedures and guidelines of the Owner.

D. Records under Paragraph A above shall be maintained by the Contractor during performance under this Contract and for three years after final payment and until all pending matters are closed.

Add Item 6.24 Public Notifications

The Contractor shall notify the public as follows:

A. *Public Announcement* – When public streets are to be closed, the Contractor shall notify the news media no less than forty-eight (48) hours in advance including all locally broadcast radio stations, newspapers, and television stations.

B. *Business Owners Affected* – Meet with each business owner whose business access shall be limited or blocked during construction**.** The Contractor shall find an alternative access route around the construction or access through the construction. This shall be done at least 48 hours prior to the actual start of work affecting that business.

C. *Adjacent Property Owners* – Contractor shall be required to notify all adjacent property owners with a notice attached to their doorknobs twenty-four (24) hours in advance of each of the following:

    a. Beginning of construction,
    b. Road closures,
    c. Private access closures, or
    d. Temporary shutdown of any utilities.

    The notices shall include the date when the work will be performed, the name and local telephone number of the Contractor's representative who can be contacted in case of problems or complaints.

    Notices shall be submitted to the Engineer for review and acceptance prior to public distribution.

D. *Contractor Signs* – Contractor shall be responsible for posting two (2) Contractor identification signs. One sign shall be posted at each end of the project and shall be clearly visible to the public stating the name of the Contractor and 24-hour contact information in case of emergency. The signs shall be located within the City right-of-way and outside of any sight triangles. The signs shall have lettering no less than 6" tall unless otherwise approved by the Engineer. The signs shall be in accordance with the City of Twin Falls Sign Ordinance 2957.

The Contractor shall respond to complaints within 24 hours.

If Contractor fails to notify public in accordance with the subparagraphs in Item 6.24, this may result in a forfeiture of Two Hundred Dollars ($200.00) per occurrence.

Add Item 6.25 Notifications to the City of Twin Falls

The Contractor shall provide a 48-hour advance notice to City representatives prior to all requested inspections and prior to the commencement of all paving operations.

Article 9 – Engineer's Status during Construction

Add the following to Item 9.09.B.

However, any safety violations noted by the Engineer during his other inspections shall be corrected immediately by the Contractor.

Article 12 – Change of Contract Price; Change of Contract Times

Add Item 12.01.D.

In the event Contractor submits request for additional compensation as a result of a change or differing Site conditions, or as a result of delays, acceleration, or loss of productivity, Owner reserves right, upon written request, to audit and inspect Contractor's books and records relating to the Project. Upon written request for an audit, Contractor shall make its books and records available within 14 days of request. Owner shall specifically designate identity of auditor. As part of audit, Contractor shall make available its books and records relating to the Project, including but not limited to Bidding Documents, cost reports, payroll records, material invoices, subcontracts, purchase orders, daily timesheets, and daily diaries. Audit shall be limited to those cost items which are sought by Contractor in a change order or claim submission to Owner.

Article 13 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work

Add Item 13.01.B.

The fact that the Engineer may have overlooked defective work shall not constitute an acceptance of any part of it.

Add the following to Item 13.03.A.

Contractor shall establish an inspection program and a testing plan acceptable to the Owner and Engineer and shall maintain complete inspection and testing records available to Owner and Engineer.

Add the following to Item 13.03.D.

Tests required by Contract Documents to be performed by Contractor that require test certificates be submitted to Owner or Engineer for acceptance shall be made by a qualified testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required, testing laboratories or agencies shall meet the following applicable requirements:

1. Basic requirements of AASHTO R-18, “Standard Recommended Practice for Establishing and Implementing a Quality System for Construction Materials Testing Laboratories” as applicable.

2. Calibrate testing equipment at reasonable intervals by devices of accuracy, traceable to the National Institute of Standards and Technology or accepted values of natural physical constants.

Article 14 – Payments to Contractor and Completion

Add the following to Item 14.02.A.

Materials are not gravel, asphalt products, or minor materials.

Delete the following from Item 14.07.A.2.c:

“and”

Modify Item 14.07.A.2.d. as follows:

Delete “.” and
Add “; and”

Add Item 14.07.A.2.e.

written statement from adjacent property owners indicating the work has been satisfactorily completed and releasing the Contractor, Engineer, and Owner from future claims. Should it be found that the Contractor cannot obtain the required release either because of extended absence of the property owner or because of impractical demands by the property owner, then the Engineer may waive this requirement if the Engineer feels the Contractor has fulfilled his obligation.

Add Item 14.07.C.2.

The Owner will release the final retainage upon receiving certification from the State of Idaho that the provisions of Idaho Statute Sections 54-1904A, 63-1501 through 63-1505 and 63-3624(g) have been met.

Article 15 – Suspension of Work and Termination

Delete the following from Item 15.02.A.3:

"or"

Modify Item 15.02.A.4. as follows:

Delete "." and
Add "; or"

Add Item 15.02.A.5.

Contractor's declaration of bankruptcy, becoming insolvent, or assigning his assets for the benefits of his creditors.

Delete the first sentence of Item 15.03.A. in its entirety and insert the following in its place:

Upon seven (7) days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract or any portion of the Contract.

Article 16 – Dispute Resolution

Delete Item 16.01.B in its entirety and insert the following in its place:

Mandatory Mediation:

1. All appealed or unsettled claims, disputes or other matters between Owner and Contractor arising out of or relating to the Contract Documents or the breach thereof, (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.09) shall first be submitted to mandatory mediation prior to either of them exercising any rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

2. Notice of demand for mediation shall be filed in writing with the other party and with a copy to the Engineer for information. Any demand for mediation of any appealed or unsettled claim, dispute or other matter that is required to be referred to Engineer initially for decision in accordance with paragraph 9.09 shall be filed by the appealing party within 10 days after the executive negotiation has been declared unsuccessful by the Owner or Contractor, and in all other cases within a reasonable time after the unsettled claim, dispute or other matter has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such unsettled claim, dispute or other matter would be barred by the applicable statute of limitations. Failure to demand mediation within said 10-day period will result in Engineer's decision being final.

Delete Item 16.01.C in its entirety and insert the following in its place:

If the Claim is not resolved by mediation, Engineer's action under Item 10.05.C shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. gives to the other party written notice of intent to submit the Claim to a court of competent jurisdiction; or

2. agrees with the other party to submit the Claim to another dispute resolution process.

Notwithstanding any applicable statute of limitations, a party giving notice under Item16.01.C.1 shall commence an action on the Claim within 1 year of giving such notice. Failure to do so shall result in the Claim being time-barred and Engineer's action or denial shall become final and binding.

Article 17 – Miscellaneous

Modify Item 17.01.A.2 as follows:

Delete "." and
Add "; or"

Add Item 17.01.A.3 as follows:

delivered via email to the individual for whom it is intended and notification from that individual is obtained that he received the email.

Division 200 – EARTHWORK

Section 201 – Clearing and Grubbing and Removal of Obstructions

Subsection 3.1 Clearing and Grubbing

Add the following to Item A.5.f:

Contractor shall ensure tree service performing work is licensed and has obtained applicable permits as required by the City of Twin Falls Tree Ordinance 2791.

Add the following to Item B.4:

If the area has grown alfalfa in the past five (5) seasons, Contractor shall strip an additional 12 inches and apply an approved sterilant in accordance with manufacturer's recommendations within the right-of-way.

Section 202 – Excavation and Embankment

Subsection 3.2 Excavation

Delete the following from Item A.2:

"are visible or"

Add Item A.5 as follows:

No payment shall be made for excavation of any material, including, rock, below subgrade elevations. There shall be no payment for overbreak.

Add Item C.6 as follows:

At no time shall there be a cut in excess of six (6) inches in depth at the limits of construction, such as cross streets, unless the cross street is completely barricaded to prevent automobiles from high centering at the cut line.

Subsection 3.8 Embankment Construction

Delete the last sentence of Item C.1 and replace it with the following:

The testing frequency for materials placed in a roadway section shall be 1 test per each 300 linear feet of roadway per lane and 1 test per 10,000 square feet of general fill and embankment areas for each lift. The testing frequency for materials placed under the curb, gutter, and sidewalk shall be 1 test per each 300 linear feet per lift. Should a compaction test fail, rework and re-compact the area around the failed compaction test. The length of the area to be reworked and re-compacted shall be determined as half the distance from the failing test to the next passing test on both sides.

Division 300 – TRENCHING

Section 301 – Trench Excavation

Subsection 3.1 General Requirements

Modify Item A as follows:

Replace “Standard Drawing SD-301” with “Twin Falls Standard Drawing TFSD-301”.

Replace “Standard Drawing SD-306” with “Twin Falls Standard Drawing TFSD-306”.

Subsection 3.5 Survey Line and Grade

Modify Item A as follows:

Replace “Engineer” with “Contractor” unless otherwise specified.

Delete Item B.

Modify Item C as follows:

Replace “Engineer” with “Contractor” unless otherwise specified.

Section 302 – Rock Excavation

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace “4” with “24”

Subsection 3.3 Blasting General Safety

Add the following to Item A:

The Contractor shall be responsible for obtaining all necessary permits for the use of explosives from the City of Twin Falls Fire Marshal. No blasting

shall be done within twenty (20') feet of a completed pipe or structure unless approved by the Engineer.

Subsection 4.1 Measurement and Payment

Delete the second to last sentence of Item A and replace it with the following:

"Measurement to also include the portion of boulders in excess of 3/4 cubic yard which are within the neat line dimensions of the trench."

Section 303 – Exploratory Excavation

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace "4" with "24"

Section 304 – Trench Foundation Stabilization

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace "4" with "24"

Section 305 – Pipe Bedding

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace "4" with "24"

Subsection 2.2 Type I Bedding

Add the following to Item A:

Type I bedding material may also be: 1/2 inch or 3/8 inch pea gravel. The material shall be a clean mixture free from organic or deleterious matter. It shall be washed, dried, and screened to meet the following gradation requirements:

Sieve Size	Percent Passing
3/4"	100
1/2”	85-100
No. 4	10-30
No. 8	0-10
No. 200	0-3

A geotextile filter fabric may be required at the discretion of the Engineer at no additional cost to the Owner.

Section 306 – Trench Backfill

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace “4” with “24”

Subsection 3.3 Type A Trench Backfill (A-1, A-2, A-3)

Modify Item C.1 as follows:

Replace “8” with “12”.

Delete Item C.4.a and replace it with the following:

Horizontal Frequency: Every 50-100 linear feet
Vertical Frequency: Minimum 1 test per every 3 lifts where each lift is a 12” loose lift.

Subsection 3.6 Service/Utility Trench Backfill

Modify Item A as follows:

Replace “SD-306” with “Twin Falls Standard Drawing TFSD-306”.

Delete Item B and replace it with the following:

For trenches in traffic areas, refer to Twin Falls Standard Drawing TFSD-306.

Section 307 – Street Cuts and Surface Repairs

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace “4” with “24”

Subsection 2.1 Concrete

Modify Item B as follows:

Replace “3000” with “4000”

Subsection 3.1 General Requirements

Modify Item B as follows:

Delete “4 feet in width.” from the last sentence and replace it with:

“as shown in the standard drawings.”

Delete Item C and replace it with the following:

Backfill across a road, street, or driveway section at the end of each workday and in no case less than twenty-four (24) hours after the start of the work. The backfill shall conform to the Twin Falls Standard Drawings, TFSD-301 and TFSD-306.

Temporary Surface Repair

Should weather conditions not allow the construction of a permanent surface restoration, the Contractor shall temporarily fill the trench up to finish grade with gravel leveling course material. The temporary fill shall be kept in good repair at all times and shall never be allowed to deviate from the finished roadway surface more than one inch (1”).
As soon as weather permits, the temporary fill shall be removed and the permanent patch constructed. No additional compensation will be paid for the construction or removal of the temporary fill. A temporary winter patch may be constructed at the Contractor’s expense using an approved asphaltic winter patch material which has been approved by the City

Engineer. This material shall be maintained by Contractor until such time as a permanent surface restoration can be constructed.

Permanent Surface Repair

Complete permanent surface restoration and final cleanup as soon as possible and in no case longer than 30 days after initial excavation or as otherwise specified in the Contract Documents, or approved by the Engineer. Finished subbase and gravel surfaces shall not vary more than one-half inch (1/2") from proper grade when measured with a ten (10) feet straight edge and shall be repaired in as good or better condition as existed prior to excavation.

Subsection 3.6 Type "B" Surface Restoration (Concrete Roadway Surfaces)

Modify Item B as follows:

Replace "Standard Drawing SD-303" with "Twin Falls Standard Drawing TFSD-303".

Delete Item D and replace it with the following:

Saw cut along existing score lines or expansion joints where feasible. Replace all panels in their entirety when saw cut by trenching operations.

Subsection 3.7 Type "C" Surface Restoration (Gravel Roadway Surfaces)

Modify Item B as follows:

Replace "Standard Drawing SD-303" with "Twin Falls Standard Drawing TFSD-303".

Subsection 3.8 Type "P" Surface Restoration (Asphalt Roadway Surfaces)

Modify Item B as follows:

Replace "Standard Drawing SD-303" with "Twin Falls Standard Drawing TFSD-303".

Delete Item E and replace it with the following:

Asphalt concrete pavement thickness shall be two inches more than adjacent existing pavement thickness but it need not exceed six inches in depth unless a greater section is otherwise indicated in the Contract Documents. In no case shall pavement thickness be less than 2-1/2 inches on residential streets or 3 inches on collector streets.

Delete Item F and replace it with the following:

After base compaction, trim back existing pavement by cutting to a straight line. All asphaltic surfaces, regardless of the thickness, shall be cut in neat, straight lines. The Contractor shall, at his expense, repair or replace all adjacent asphalt surfaces which have been damaged during excavation, or which have an irregular exposed face or edge due to improper removal of designated asphalt surfaces.

Add Item K as follows:

Provide full lane width restoration if 50% or more of the lane has been removed or damaged.

Longitudinal joints shall be located either at the edge or center of the lane and in no case in the vehicular wheel path. Length of surface repair parallel with traffic flow to be 20 feet minimum on collectors and arterials.

Subsection 3.10 Full Width Pavement Surface Restoration

Modify Item A as follows:

Replace “Standard Drawing SD-303” with “Twin Falls Standard Drawing TFSD-303”.

Subsection 3.11 Modified Full Width Restoration

Modify Item A as follows:

Replace “Standard Drawing SD-303” with “Twin Falls Standard Drawing TFSD-303”.

Replace “Standard Drawing SD-303A” with “Twin Falls Standard Drawing TFSD-303A”.

Section 308 – Boring and Jacking

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace “4” with “24”

Section 309 – Horizontal Directional Drilling

Subsection 1.5 Field Measurements

Modify Item B as follows:

Replace “4” with “24”

Division 300 – Standard Drawings

SD 301 – Typical Trench

Remove and replace drawing with TFSD 301.

SD 303 – Street Cuts and Surface Repair Details

Remove and replace drawing with TFSD 303.

SD 303A – Type “P” Alternate for Modified Full Width Surface Restoration

Remove and replace drawing with TFSD 303A.

SD 303B – Type “P” Alternate for Modified Full Width Surface Restoration

Remove and replace drawing with TFSD 303B.

SD 305 – Gravel Access Road Turnaround Detail

Remove and replace drawing with TFSD 305.

SD 306 – Utility Trench

Remove and replace drawing with TFSD 306.

SD 308 – Flowable Fill at Culvert Crossings

Remove and replace drawing with TFSD 308.

Division 400 – WATER

Section 401 – Water Pipes and Fittings

Subsection 2.1 Pipe and Fittings Size, Type and Strength

Add Item D as follows:

Unless otherwise approved by the City Engineer, water pipe diameter shall be a minimum of 12 inches on arterial streets, 10 inches on collector streets, and 8 inches everywhere else.

Subsection 2.2 Polyvinyl Chloride (PVC) Pipe and Fittings

Replace Item A.1 with the following:

Pressure Class: Minimum Pressure Rating is 165 psi.

Replace Item B.1 with the following:

Pressure Class: Minimum Pressure Rating is 165 psi.

Replace Item C.1 with the following:

Pressure Class: Minimum Pressure Rating is 165 psi.

Delete Item D.3

Subsection 2.5 Polyethylene Pipe and Fittings

Add the following to Item A: “to be used only with approval of the City Engineer.”

Subsection 2.6 Couplings

Add the following to Item A:
The Romac Style XR501 is an approved substitute.

Add the following to Item B:
The Ford UFA900-C-x Series is an approved substitute.

Subsection 2.9 Mechanical Restraint

Add the following to Item B:

The Romac GripRing™ Pipe Restrainer is an approved substitute. The Romac RomaGrip™ is an approved substitute only on ductile pipe.

Delete Item C and replace it with the following:

Application: Installation as an alternative to thrust blocks is to be only upon approval of the City Engineer based on service and installation conditions.

Subsection 3.1 Examinations

Modify Item C as follows:

Replace “48” with “36”.

Modify Item F as follows:

Replace “4” with “24”.

Subsection 3.2 Pipe Installation

Add the following to Item K:

All pipe shall be laid with the factory class marking visible in the upper one-third (1/3) of the pipe.

Add Item R as follows:

Install mechanical restraints per manufacturer’s recommendations.

Add Item S as follows:

Pressure testing approval required after water system is complete and before any improvements are constructed over the pipes.

Subsection 3.8 Pipe Markers

Delete Item A in its entirety and replace it with the following:

Furnish and install pipe markers at stub-outs per Twin Falls Standard Drawing TFSD-511A.

Subsection 3.9 Flushing and Disinfection

Delete the last sentence from Item D.1.

Subsection 3.10 Connections to Existing Mains

Add Item E as follows:

Tapping live lines to be only completed by the City of Twin Falls Water Department or an approved licensed Contractor authorized by the City Engineer.

Subsection 3.11 Abandonment of Existing Mains

Add the following to Item B:

Abandoned pipe shall be capped.

Section 402 – Hydraulic Valves

Subsection 2.2 Resilient Seated Gate Valves

Delete the following from Item A.1:

“or push-on joint”

Subsection 2.3 Butterfly Valves

Delete the following from Item A.1:

“or push-on joint”

Add the following Item A.10:

Use: Only to be used in lines greater than 12” unless approved by City Engineer.

Subsection 2.4 Air Release, Air/Vacuum and Combination Air Valves

Delete Item A.4 and replace it with the following:

Standard Detail: Refer to Twin Falls Standard Drawing TFSD-408A Combination Air Release / Vacuum Valve.

Subsection 2.7 Valve Boxes

Delete the following from Item A:

", locking style".

Modify Item E as follows:

Replace "Standard Drawing SD-406" with "Twin Falls Standard Drawing TFSD-406".

Subsection 3.1 Examination

Modify Item E as follows:

Replace "4" with "24".

Subsection 3.2 Installation

Modify Item B as follows:

Replace "Standard Drawing SD-406" with "Twin Falls Standard Drawing TFSD-406".

Add Item G as follows:

Manholes and valve boxes shall be located by the Contractor prior to paving operations. The Contractor may remove risers to allow for easier paving. Upon completion of the paving operations, the Contractor shall again locate all manholes and valve boxes and use a circular cutter centered on the valve or manhole to remove plantmix pavement. After the pavement has been removed, the riser is replaced and concrete is poured in place in accordance with the appropriate standard drawing.

Section 403 – Hydrants

Subsection 2.2 Fire Hydrant

Add the following to Item A after “ANSI/AWWA C 502”: “, American Flow Control 5 1/4" Waterous Pacer Fire Hydrant or approved substitution”

Subsection 2.3 Color

Delete Item A and replace with the following: Prepare and paint fire hydrants red with white caps.

Subsection 2.7 Drain Rock

Delete Item A and replace with the following: Drain Rock shall be a clean mixture free from organic or deleterious matter. It shall be washed and screened to meet the following gradation requirements:

Sieve Size	Percent Passing
3"	100
1”	0

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Add Item H as follows:

The length of the hydrant service line from the point of connection with main (following along the pipe alignment) to the hydrant shall not exceed 150 feet.

Section 404 – Water Service Line and Meters

Subsection 1.4 Submittals

Delete Item B and replace it with the following:

Submit manufacturer’s certification that service pipe meets or exceeds specified requirements prior to installation.

Subsection 1.7 Meter Warranty and Operation and Maintenance Manual

Delete the entire subsection

Subsection 2.2 Service Pipe

Modify Item A.2 as follows:

Replace “DR 7” with “SDR 9”.

Delete Item A.3 and replace it with the following:

Dimension Basis: Copper Tube Size (CTS).

Modify Item A.4 as follows:

Delete “3350” and replace it with “2737”

Delete Item C in its entirety.

Subsection 2.3 Water Meter

Delete Item A and Item A.1 and replace them with the following:

City approved meter to be installed by the City of Twin Falls.

Subsection 2.4 Appurtenances

Delete the first sentence of Item A.1 and replace it with the following:

1” to 2” taps: Romac 202S or approved substitution.

Delete Item A.2.

Modify Item B.1 as follows:

Replace “Pack” with “Grip”.

Modify Item B.3 as follows:

Replace “Ford FB1101” with “FB1000-4-G-NL”.

Modify Item C.1 as follows:

Replace “Pack” with “Grip”.

Modify Item D.1 as follows:

Replace “pack” with “grip”.

Modify Item D.2 as follows:

Replace “Iron pipe size” with “Copper tube size”.

Delete Item D.4.

Modify Item D.5 as follows:

Replace “VHH92” with “VB74-18W-44-44-G-NL”.

Delete Item E.1 and replace with the following:

All brass or copper with iron pipe threads, NSF approved, and compliant with the Reduction of Lead in Drinking Water Act.

Modify Item G.1 as follows:

Delete “3/4 inch to”

Delete Item G.1.a and replace with the following:

Size: See TFSD-401.

Delete Item G.1.b and replace with the following:

Product: RMB-13-24-18

Delete Item G.2.a and replace with the following:

Type: RMB-17-30-18

Delete Items H.1 – H.4 and replace with the following:

Type: RML-Poly-13×24-R-Lid or equal

Subsection 2.5 Health Requirements

Add the following to the end of first sentence of Item A after “standards”:

“and compliant with the Reduction of Lead in Drinking Water Act”

Subsection 3.1 Examinations

Modify Item C as follows:

Replace “48” with “36”

Modify Item F as follows:

Replace “4” with “24”.

Add the following to the end of Item F as follows:

No service line shall be backfilled until it has been inspected by the Engineer for proper alignment, grade or other defect. Any backfilling prior to approval by the Engineer shall be removed by the Contractor at no additional cost to the Owner.

Subsection 3.2 Installation

Add the following to Item B:

Service lines shall be less than or equal to 70 feet in length.

Subsection 4.1

Modify Item A as follows:

Delete “meter” from the list of included items.

Division 400 – Standard Drawings

SD 401 – Water Service Connection (3/4” – 1”)

Remove and replace drawing with TFSD 401.

SD 402 – Water Service Connection (1 1/2” – 2”)

Remove and replace drawing with TFSD 402 and TFSD 402A.

SD 404 – Fire Hydrant Detail

Remove and replace drawing with TFSD 404.

SD 406 – Valve Box and Lid Detail

Remove and replace drawing with TFSD 406.

SD 408 – Air Release / Vacuum Valve

Remove drawing.

SD 408A – Combination Air Release / Vacuum Valve

Remove and replace drawing with TFSD 408A.

Add TFSD 409 – 4” Water Meter Vault

Add TFSD 410 – 6” Water Meter Vault

Division 500 – SEWER

Section 501 – Gravity Sewers

Subsection 2.1 Pipe Size, Type and Strength

Add the following to Item A:

Unless otherwise approved by the City Engineer, gravity sewer pipe diameter shall be a minimum of 8 inches.

Subsection 2.2 Gravity Sewer Pipe and Fittings

Delete Items C and D.

Delete Items F through H.

Delete the last sentence of Item J.

Subsection 2.3 Couplings for Dissimilar Pipe or Two Plain Ends of Similar Pipe

Delete Item C.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Subsection 3.2 Pipe Installation

Delete Item L in its entirety and replace with the following:

“All pipe shall be laid with the factory class marking visible in the upper one-third (1/3) of the pipe.”

Add Item U as follows:

Provide tracer wire and tracer wire marking posts for pipes which have a nonlinear alignment between manholes.

Add Item V as follows:

Sewer lines under permanent structures shall be C900 Class 150 PVC. These lines to be installed only with the expressed written approval of the City of Twin Falls City Engineer.

Subsection 3.3 Plugs and Pipe Markers

Delete Item A in its entirety and replace it with the following:

Furnish and install pipe markers at main line stub-outs per Twin Falls Standard Drawing TFSD-511A.

Subsection 3.4 Testing

Delete Item G.3.b in its entirety.

Delete Item H.2 and replace it with the following:

CCTV sewer line inspection to be performed by the City of Twin Falls. Notify the City at least 48 hours prior to CCTV inspection. City acceptance required prior to surface repair.

Delete Items H.8 through H.11.

Section 502 – Manholes

Subsection 2.2 Manholes

Add Item D as follows:

If groundwater is encountered, exterior of manhole to be coated with asphaltic emulsion.

Subsection 2.3 Steps

Delete Item A in its entirety and replace it with the following:

No steps allowed.

Subsection 2.4 Grade Rings

Modify Item A as follows:

Replace “3000” with “4000”.

Subsection 2.5 Frames and Covers

Modify Item A as follows:

Replace “Standard Drawings SD-507” with “Twin Falls Standard Drawings TFSD-507”.

Replace “SD-507A” with “TFSD-507A”.

Delete Item D.

Subsection 2.6 Collars

Modify Item A as follows:

Replace “3000” with “4000”.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Subsection 3.4 Connection of Sewer Lines to Existing Manholes

Modify Item E as follows:

Replace “Standard Drawing SD-508” with “Twin Falls Standard Drawing TFSD-508”.

Subsection 3.6 Manhole Invert Construction

Delete Item C and replace it with the following:

Construct the trough to a section identical with that of the lower half of the sewer pipe flowing through the manhole. At transitions of different pipe diameters, construct the trough to form a smooth transition.

Modify Item D as follows:

Replace “42” with “48”.

Modify Item E as follows:

Replace “42” with “48”.

Add the following Item G:

Unless otherwise shown, manholes shall have 0.1 feet fall from upstream invert(s) to downstream trunk invert.

Subsection 3.7 Manhole Barrel and Cone Construction

Modify Item B as follows:

Delete “non-shrink grout or”.

Modify Item C as follows:

Replace “21” with “12”.

Subsection 3.8 Placement of Grade Rings

Modify Item A as follows:

Replace “21” with “12”.

Delete Item B and replace it with the following:

Set grade rings on mastic (Ram-Nek or approved substitution). Apply non-shrink grout or mastic (Ram-Nek or approved substitution) between metal frame and the top grade ring.

Subsection 3.9 Installation of Steps

Delete Items A, B and C and replace them with the following:

No steps allowed. If prefabricated barrels come with holes for steps, fill them with grout.

Subsection 3.13 Placement of Concrete Collars

Modify Item A as follows:

Replace “Standard Drawing SD-508” with “Twin Falls Standard Drawing TFSD-508” and replace “3000” with “4000”.

Add Item E as follows:

Manholes and valve boxes shall be located by the Contractor prior to paving operations. The Contractor may remove risers to allow for easier paving. Upon completion of the paving operations, the Contractor shall again locate all manholes and valve boxes and use a circular cutter centered on the valve or manhole to remove plantmix pavement. After the pavement has been removed, the riser is replaced and concrete is poured in place in accordance with the appropriate standard drawing.

Subsection 3.14 Construction of Drop Manholes

Modify Item A as follows:

Replace “Standard Drawing SD-504” with “Twin Falls Standard Drawing TFSD-504”.

Modify Item B as follows:

Replace “3000” with “4000”.

Section 503 – Clean-Outs

Delete Section 503 – Clean-outs in its entirety.

Section 504 – Sewer Services

Subsection 2.2 Pipe and Fittings

Delete Item B.2.
Delete Item C.

Subsection 2.3 Service Line Markers

Delete Item A in its entirety and replace it with the following:

Mark service line ends with a steel T-style fence post. Refer to Twin Falls Standard Drawing TFSD-511A.

Subsection 3.1 Examinations

Modify Item A as follows:

Replace “Standard Drawing SD-306” with “Twin Falls Standard Drawing TFSD-306”.

Modify Item E as follows:

Replace “4” with “24”.

Subsection 3.2 General

Modify Item A as follows:

Replace “Standard Drawing SD-511” with “Twin Falls Standard Drawing TFSD-511”.

Replace “SD-511A” with “TFSD-511A”.

Subsection 3.4 Connection to Existing Manholes

Delete Items A, B and C and replace them with the following:

Not allowed.

Subsection 3.6 Installation of Service Line Markers

Delete Item A in its entirety and replace it with the following:

Install service line markers per Twin Falls Standard Drawing TFSD-511A.

Modify Item B as follows:

Replace “1 foot” with “2 feet”.

Delete Items D and E.

Section 505 – Pressure Sewers

Subsection 2.8 Locating Wire Boxes

Modify Item C as follows:

Replace “3000” with “4000”.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Section 506 – Plastic Liner

Subsection 3.1 Examinations

Modify Item C as follows:

Replace “4” with “24”.

Section 507 – Sanitary Sewer Open Cut Repair / Rehabilitation

Subsection 2.1 Pipe Size, Type and Strength

Modify Table 1 by removing all references to Vitrified Clay Pipe (VCP) as a replacement pipe option.

Subsection 2.2 Gravity Sewer Pipe and Fittings

Delete Items C, E, and F.

Subsection 3.2 Examinations

Modify Item A as follows:

Replace “4” with “24”.

Subsection 3.10 Rechannel Manhole

Modify Item B as follows:

Replace “Standard Drawing SD-502” with “Twin Falls Standard Drawing TFSD-502”.

Section 508– Sliplining

Subsection 3.2 Examinations

Modify Item A as follows:

Replace “4” with “24”.

Section 509– CIPP Rehabilitation

Subsection 3.2 Examinations

Modify Item A as follows:

Replace “4” with “24”.

Section 510– Pipe Bursting

Subsection 3.2 Examinations

Modify Item A as follows:

Replace “4” with “24”.

Subsection 3.4 Sewer Flow Maintenance

Replace Item D as follows:

Notify affected property owner(s) of any impending sewer service interruption, unless otherwise approved by the Engineer. Limit service interruptions to less than two (2) hours.

Subsection 3.5 Pre Pipe Bursting Operations

Modify the reference in Item C.1 to “501.3.4.H.6”

Modify the reference in Item C.2 to “501.3.4.H”

Section 511– Fold-N-Form Pipe Rehabilitation

Subsection 3.2 Examinations/Preparation

Modify Item B as follows:

Replace “4” with “24”.

Division 500 – Standard Drawings

SD 501 – Standard Manhole Type A
Remove and replace drawing with TFSD 501.

SD 501A – Standard Manhole Precast Base Type A
Remove and replace drawing with TFSD 501A.

SD 502 – Standard Manhole Type B
Remove and replace drawing with TFSD 502.

SD 503 – Standard Manhole Type B, Deep
Remove drawing.

SD 504 – Drop Manhole
Remove and replace drawing with TFSD 504.

SD 505 – Standard Shallow Manhole
Remove and replace drawing with TFSD 505.

SD 505A – Shallow Manhole Type 1
Remove drawing.

SD 506 – Standard 8" Traffic Rated Clean-out
Remove drawing.

SD 506A – Standard 4" Traffic Rated Clean-out
Remove drawing.

SD 506B – Bolt-down Cover Details – 4" Clean-outs
Remove drawing.

SD 506C – Bolt-down Cover Detail for Backwater Valve – 6" Dia.
Remove drawing.

SD 507 – Standard Manhole Cover and Frame
Remove and replace drawing with TFSD 507.

SD 507A – Manhole Cover and Flat Frame
Remove and replace drawing with TFSD 507A.

SD 508 – Manhole Collar
Remove and replace drawing with TFSD 508.

SD 509 – Plastic Coated Manhole Steps

Remove drawing.

SD 511 – Standard Sewer Service Line

Remove and replace drawing with TFSD 511.

SD 511A – Standard Sewer Service Connection for New Development Projects

Remove and replace drawing with TFSD 511A.

SD 511B – Standard Deep Sewer Service for Existing Development Type ‘J’

Remove drawing.

SD 512 – Standard Service Marker

Remove drawing.

Division 600 – CULVERTS, STORM DRAIN AND GRAVITY IRRIGATION

Section 601 – Culvert, Storm Drain and Gravity Irrigation Pipe

Subsection 2.1 Pipe Size, Type and Strength

Add the following to Item A:

Unless otherwise approved by the City Engineer, storm drain and irrigation pipe diameter shall be a minimum of 12 inches.

Add Item D:

Plastic pipe such as polyethylene (PE) or polyvinyl chloride (PVC) shall not be used with bare or headwall terminations where exposure to fire is possible or likely.

Subsection 2.2 Culvert, Storm Drain and Gravity Irrigation Pipe and Fittings

Delete Items D, F and G.

Add Item J.4 as follows:

To be used only with approval of the City Engineer.

Delete Item N in its entirety.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Subsection 3.2 Pipe Installation

Add the following to Item D:

“All pipe shall be laid with the factory class marking visible in the upper one-third (1/3) of the pipe.”

Subsection 3.3 Plugs and Pipe Markers

Delete Item B in its entirety and replace it with the following:

Furnish and install pipe markers at stub-outs per Twin Falls Standard Drawing TFSD-511A.

Section 602 – Storm Drain Inlets, Catch Basins, Manholes, and Gravity Irrigation Structures

Subsection 1.2 Related Sections

Add Item I as follows:

Section 502 – Manholes

Subsection 2.4 Steps

Delete the subsection in its entirety and replace it with the following:

No steps allowed.

Subsection 2.5 Grade Rings, Frames, Grates and Covers

Modify Item B as follows:

Replace “3,000” with “4,000”.

Subsection 2.6 Collars

Modify Item A as follows:

Replace “3,000” with “4,000”.

Subsection 2.11 PVC Drainage Structures

Delete the subsection in its entirety.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”.

Subsection 3.7 Appurtenances Barrel or Box Construction

Delete the following from Item B:

“non-shrink grout or a”

Add Item C as follows:

Catch basins to be constructed to match the shape and elevation of the gutter flow line. Care shall be taken to ensure that all water will enter the catch basin.

Add Item D as follows:

The Contractor to install a flow gate at each pipe exiting from each irrigation box. Flow gates shall be installed according to the manufacturer’s specifications and shall be easily operable from the top of the box.

Add Item E as follows:

The finished box and irrigation system shall function as well or better than presently exists.

Subsection 3.8 Jointing of Precast Sections

Delete Item B and replace it with the following:

Trim mastic flush with the inside wall of the manhole, inlet or catch basin.

Subsection 3.9 Placement of Grade Rings

Delete Item B and replace it with the following:

Install mastic material in between grade rings.

Subsection 3.10 Installation of Steps

Delete the subsection in its entirety and replace it with the following:

No steps allowed.

Subsection 3.12 Placement of Concrete Collars

Add Item E as follows:

Manholes and valve boxes shall be located by the Contractor prior to paving operations. The Contractor may remove risers to allow for easier paving. Upon completion of the paving operations, the Contractor shall again locate all manholes and valve boxes and use a circular cutter centered on the valve or manhole to remove plantmix pavement. After the pavement has been removed, the riser is replaced and concrete is poured in place in accordance with the appropriate standard drawing.

Subsection 3.14 PVC Drainage Structures

Delete the subsection in its entirety.

Division 600 – Standard Drawings

SD 604A – Inlet Catch Basin Type IV (for Rolled Curb)

Remove drawing.

SD 611 – Standard Concrete Catch Manhole

Remove drawing.

SD 612 – Standard Manhole Type A

Remove drawing.

SD 613 – Standard Manhole Type B

Remove drawing.

SD 613A – Standard Manhole Type B – Raised Invert

Remove drawing.

SD 614 – Standard Manhole Type B, Deep

Remove drawing.

SD 614A – Standard Manhole Type B, Deep – Raised Invert

Remove drawing.

SD 616 – Manhole Collar

Remove drawing.

SD 617 – Standard Manhole Frame, Cover and Riser

Remove drawing.

SD 618 – Plastic Coated Manhole Steps

Remove drawing.

SD 619 – Standard Irrigation Box

Remove and replace with TFSD 619.

Division 700 – CONCRETE

Section 703 – Cast-in-Place Concrete

Subsection 2.2 Admixtures

Add Item F as follows:

An admixture may be used, if approved in writing by the City of Twin Falls. No admixture shall be approved unless it can be shown, by either certified laboratory test results or satisfactory field performance records, that the product fulfills any and all claims made to support use of the product. Admixtures shall meet the requirements of ASTM C-494.

Admixtures and air-entraining agents shall be added to the mix water, each agent introduced separate from the other. Under no circumstance are these agents to be combined prior to their introduction in the mixing unit.

Subsection 2.4 Concrete Mix

Modify Item D as follows:

Replace “3000F” with “4000”.

Subsection 3.5 Curing and Protection

Modify Item C as follows:

Delete “burlap or”.

Add Item F as follows:

Backfill shall not begin until the concrete has cured for 28 days unless approved by the Engineer. Backfill to be placed in accordance with Division 200.

Subsection 3.8 Defective Concrete

Delete Item A and replace with the following:

Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements; uncontrolled cracking; or a broken section. Acceptance of strength will be determined from the results of 28-day strength tests.

Section 705 – Portland Cement Concrete Pavement

Subsection 3.9 Protection and Opening Pavement to Traffic

Add the following to Item A:

Contractor to be responsible for the protection of fresh concrete against footprints, tracks, or any other objectionable marks. Repair and replacement to be determined at the discretion of the Engineer and at the expense of the Contractor.

Delete the following from Item C:

"Permit cars and pickup trucks 72 hours after placement unless directed otherwise by the Engineer."

Add Item E as follows:

There shall be no vibrator rolling performed within fifty (50) feet of freshly poured concrete for a period not less than forty-eight (48) hours.

Section 706 – Other Concrete Construction

Add Subsection 1.6 Permits

Installation or relocation of approaches along the State of Idaho roadways must have approval and a permit from the State. When approaches fall within the City of Twin Falls limits, a right-of-way permit is required. Inspections are also required from the City of Twin Falls.

Subsection 2.4 Portland Cement Concrete

Modify the following in Table 1:

Replace "3000" with "4000" in the "28-day Compressive Strength (PSI)" column.

Replace “0.50” with “0.44” in the “Max. Water/Cement Ratio (LB/LB)” column.

Modify Item A.4 as follows:

Delete “3,000” and replace it with “4,000”.

Add Item A.5 as follows:

Decorative or colored concrete will be allowed within the right-of-way only by permission of the City of Twin Falls.

Add Item B as follows:

Concrete batch plants are to have National Ready Mix Concrete Association (NRMCA) certification and be on the Idaho Transportation Department’s approved list.

Subsection 3.7 Joints

Replace Item A as follows:

Sidewalk and ADA ramp contraction joints shall be scored in a straight line having a width of one-eighth (1/8) inch and a depth of three-fourths (3/4) inch. All edges of sidewalk and joints shall be rounded with an edging tool.

Curb & gutter and curb turn fillet contraction joints shall have a minimum depth of two (2) inches and a width of three-sixteenth (3/16) inch maximum and one-eight (1/8) minimum. Joints shall be rounded with an edging tool.

Subsection 3.8 Finishing

Add Item F as follows:

Tooled joints shall be formed around all appurtenances such as manholes, utility poles, hydrants, etc. extending into and through the sidewalk.

Add Item G as follows:

When brooming the surface of the concrete, the broom may be slightly dampened by dipping into water, then shaking off the majority of the water. Splashing water on the surface of fresh concrete by any method is unacceptable and will necessitate removal and replacement.

Subsection 3.9 Backfill

Delete Item A and replace it with the following:

Backfill up to 4 inches from top of concrete with materials equal to or better than the material that was removed. Compact to prevent settlement.

Subsection 3.10 Tolerances

Add Item E as follows:

Guidelines for determining concrete "failure" amounting to rejection of the work include the following:

Crack or fractures other than temperature cracks;
Cracks or fractures longer than 3";
Displacements greater than ¼"; and
Missing concrete resulting from "scuffing" deeper or wider than 1"

Subsection 3.13 Standard Details

Delete Item A and replace it with the following:

Comply with approved Standard Drawings and City of Twin Falls Revisions to the Standard Drawings for other concrete construction unless otherwise detailed in the Contract Documents.

Subsection 4.1 Measurement and Payment

Delete Item F and replace it with the following:

Concrete Driveway Approaches: By the square yard or per each.

1. Bid Schedule Payment Reference: 706.4.1.F.1.
2. Bid Schedule Description: Concrete Driveway Approach…square yard (SY).

3. Bid Schedule Payment Reference: 706.4.1.F.3.
4. Bid Schedule Description: Concrete Driveway Approach…each (EA).

Division 700 – Standard Drawings

SD 701 – 6” Vertical Curb and Gutter

Remove and replace drawing with TFSD 701.

SD 701A – 6” Vertical Curb (No Gutter)

Remove drawing.

SD 702 – 3” Rolled Curb and Gutter

Remove and replace with TFSD 702.

SD 703 – Curb and Gutter Type I

Remove drawing.

SD 704 – Curb and Gutter Type II

Remove and replace drawing with TFSD 704.

SD 705 – Curb and Gutter Type III

Remove drawing.

SD 706 – Curb Cut Detail for Curb Type III

Remove drawing.

SD 708 – Valley Gutter

Remove and replace with TFSD 708.

Add TFSD 708A – Curb Turn Fillet Approach

SD 709 – Concrete Sidewalk

Remove and replace with TFSD 709.

SD 709A – Curbside Mailbox Stand

Remove and replace with TFSD 709A.

Add TFSD 709B – Cluster Box Unit Detail

Add TFSD 709C – USPS Cluster Box Unit Detail

Add TFSD 709D – USPS Multi-Cluster Box Unit Detail

SD 710 – Concrete Driveway Approach

Remove and replace with TFSD 710.

SD 710A – Concrete Driveway Approach with Sidewalk around Approach

Remove and replace with TFSD 710A.

SD 710B – Concrete Driveway with Ramped Sidewalk

Remove and replace with TFSD 710B.

SD 710C – Concrete Driveway with Detached Sidewalk

Remove and replace with TFSD 710C.

Add TFSD 710D – Onsite Turnaround

SD 711 – Driveway Grade Standard

Remove and replace with TFSD 711.

SD 712C – Pedestrian Ramp Type "C" for New Development

Remove and replace with TFSD 712C.

SD 714A – Concrete Pavement Jointing Details

Remove and replace with TFSD 714A.

Division 800 – AGGREGATES AND ASPHALT

Section 801 – Uncrushed Aggregates

Subsection 2.2 Uncrushed Aggregate Gradation

Modify Item E as follows:

Delete the 2nd sentence.

Add Subsection 2.3 Aggregate Acceptance as follows:

Uncrushed aggregate for base acceptance tests will be performed at a frequency of 1 test per each 1000 tons. Test samples will be obtained in accordance with AASHTO T 2 from the materials delivered to the job site. Acceptance tests will include gradation and sand equivalency. Acceptance criteria are defined in subsection 2.1 and 2.2 of this section.

Subsection 3.4 Compaction

Delete Item A.4 and replace it with the following:

Perform one in-place density test per lift per lane per 300 linear feet of roadway or fraction thereof, but in no case, less than one test per 10,000 square feet per lift. Perform one in-place density test per lift for every 10,000 square feet of general fill and embankment area or fraction thereof. Refer to Section 202.3.8 for material moisture control and density acceptance requirements. If the specified density is not attained, the area shall be reworked and/or re-compacted until the density specifications are achieved and documented by additional testing or retesting at the designated frequencies.

Section 802 – Crushed Aggregates

Subsection 2.1 Description

Modify Item E.2 as follows:

Delete “AASHTO T35” and replace it with “AASHTO T 335”.

Subsection 2.3 Aggregate Control

Add the following to Item B and Item C:

In no case, shall the allowed variation be outside the limits shown in Table 1 – Crushed Aggregate for Base Gradations.

Subsection 3.4 Compaction

Add the following after the first sentence of Item G:

Contractor shall provide one moisture density curve (proctor) with gradation every 2000 feet or fraction thereof in trenches or 500 cubic yards of aggregate and at any noticeable change in soil type.

Section 805 – Asphalt

Subsection 2.1 Asphalt Cements

Delete Item B and replace it with the following:

PG 64-28 or better grade shall be used unless otherwise approved by the City Engineer.

Subsection 3.1 Application of Asphalt

Delete Item B and replace it with the following:

Remove asphalt from any surfaces that are discolored and restore to original or better condition.

Section 806 – Asphalt Tack Coat

Subsection 2.1 Description

Modify Item A as follows:

Delete the first sentence and replace it with:

Asphalt to be CSS-1, except for chip seal projects, which is to be CRS-1, unless otherwise approved by the Engineer.

Subsection 3.3 Application of Tack Coat

Add Item E as follows:

The spread rate is 0.08 – 0.12 gallons per square yard unless otherwise approved by the Engineer.

Section 807 – Asphalt Prime Coat

Subsection 2.1 Description

Delete Item A and replace it with the following:

Asphalt to be CRS, SS-1, or SS1-h unless otherwise specified in the contract.

Add Item D as follows:

Blotter to be sand or filter sand; refer to Table 1 in Section 801.

Section 808 – Seal Coat

Delete the section in its entirety and replace with the separate City of Twin Falls Seal Coat Specification.

Section 809 – Surface Treatment

Add Subsection 2.3

Blotter to be sand or filter sand; refer to Table 1 in Section 801.

Section 810 – Plant Mix Pavement

Subsection 1.2 Related Sections

Add Item F as follows:

Section 402 – Hydraulic Valves

Add Item G as follows:

Section 502 – Manholes

Add Item H as follows:

Section 602 – Storm Drain Inlets, Catch Basins, Manholes, and Gravity Irrigation Structures

Subsection 2.5 Recycled Plant Mix (RAP)

Modify Item A as follows:

Replace “30” with “17”.

Modify Item H as follows:

Replace “3” with “C”.

Subsection 2.6 Mix Design Approval

Delete Item A in its entirety and replace it with the following:

The Contractor shall furnish a job mix formula (JMF) for HMA pavement that complies with Hveem, Marshall or Superpave mixture requirements outlined below. The JMF shall be stamped by a Professional Engineer licensed in the State of Idaho. Submit the JMF design documentation for review a minimum of thirty (30) days prior to commencement of paving operations. Contactor may use what is commonly referred to as a “Contractor’s JMF” as long as it has been approved in writing by a Professional Engineer licensed in the State of Idaho. Furnish a new JMF design if past results indicate difficulty in meeting existing JMF design requirements.

Production paving shall not begin until the City Engineer or representative has found “no exceptions” with the JMF. The JMF that is accepted by the City will be the basis by which the testing requirements will be measured.

Add Item E:

Provide the City a minimum of one (1) 40-pound split sample unless otherwise specified to be used to verify the JMF.

Subsection 3.1 Mixing Plant

Delete Item A.1.a and replace it with the following:

Plant and trucks scales to conform to ITD Specifications Subsection 109.01 – Measurement of Quantities.

Subsection 3.4 Rollers

Add Item E.2.C as follows:

Rollers to be capable of applying up to ninety pounds per square inch (90 psi) ground contact.

Subsection 3.6 Plant Mix Leveling Course

Delete Subsection 3.6 in its entirety.

Subsection 3.7 Spreading and Finishing

Add the following to Item B:

Maximum ratio of t/NMAS is 5 unless otherwise approved.

Delete Item C in its entirety and replace it with the following:

Apply a thin, uniform asphalt tack coat between plantmix pavement lifts and to the surfaces of curbing, gutters, manholes, asphalt cement pavement, Portland cement pavement, and other structures where pavement will abut.

Add Item E as follows:

The finished plant-mix pavement shall have a smooth, well-graded, dense surface. No loose or segregated particles shall be visible on the surface. No spilled oil, gas or other harmful substance shall be on the surface.

Engineer will determine if there are locations with segregation or a loose graded surface. Contractor to chip or slurry seal areas where such defects occur at no additional cost to the owner. Logical termini of the chip or slurry to be determined by the Engineer.

Add Item F as follows:

At no time shall a pavement be laid in such a way as to either allow water to stand in puddles on the pavement or to prevent water from flowing off the pavement. If requested, at no additional cost to the owner, Contractor to provide full water truck and evaluate performance by drenching pavement prior to final acceptance.

Subsection 3.8 Joints

Add Item A.5 as follows:

Broken edges on longitudinal joints to be cut back to a vertical edge and the longitudinal transition cut back edge shall allow the proper compaction be achieved.

Delete Item E.4 and replace it with the following:

Transverse Wedge Milling – Start at the surface and continue into the adjoining pavement on a 200:1 slope or flatter in the longitudinal direction until a vertical edge equal to 0.15 foot is reached.

Longitudinal Wedge Milling – Start at curb at the desired inlay depth and continue into the adjoining pavement in the transverse direction without exceeding a 3% maximum finished grade cross slope on the road.

Add Item H as follows:

There shall be no transverse cold joints closer than one hundred (100) feet from an intersection.

Add Item I as follows:

Four to six (4-6) inches of the pavement shall remain unconfined along longitudinal hot joints until the adjacent pass has been paved. If a longitudinal cold joint is anticipated, the longitudinal joint must be rolled and compacted with a perpendicular edge. If not, the joint must be saw cut. All cold joints will be tacked prior to the paving of the next adjacent pass. Although less preferred, the Contractor may microsurface pave the areas where rollers pass over an unprotected edge.

Add Item J as follows:

All pavement to pavement joints to be sealed with CSS-1 asphalt after paving is complete at a rate of 0.05 gallons per square yard.

Add Item K as follows:

The pavement edge shall not vary more than three (3) inches from true alignment at any location.

Add Item L as follows:

Joints larger than 1/8” shall be crack sealed prior to sealing with CSS-1.

Subsection 3.9 Weather Limitations

Add the following to Item C:

Progress schedule is to be accepted by the Engineer before removal or altering begins.

Subsection 3.10 Compaction

Delete Item C and replace it with the following:

If Contractor proceeds with paving prior to the completion of compaction and smoothness requirements of the base, he accepts the responsibility for the outcome of his work.

Add Item F as follows:

When paving over existing pavement, the Contractor shall verify that the existing material is sufficient to achieve testing requirements. The Contractor shall express any concerns with the Engineer prior to paving.

Add Item G as follows:

Contractor shall use pneumatic rollers for intermediate rolling.

Add Item H as follows:

Compacting or recompacting the pavement after initial paving operation will not be allowed in order to increase pavement density.

Subsection 3.12 Field Quality Acceptance

Delete the subsection in its entirety.

Subsection 3.13 Surface Smoothness

Add the following to Item A.3 as follows:

Surface variation not to exceed 0.25 inch when pulling a taut string line between 0 and 25 feet along the pavement either parallel or perpendicular to the centerline. Surface variation not to exceed 0.5 inch when pulling a taut string line between 25 and 50 feet along the pavement either parallel or perpendicular to the centerline

Add Item A.5 as follows:

Plant mix pavement after final compaction is to be 1/4 inch (± 1/8 inch) above the lip of gutter along the entire length of the gutter. The standard is lowered to 1/8 inch (± 1/8 inch) above the lip of gutter at ADA curb ramps. In no case is the plant mix pavement to be lower than the gutter line after final compaction.

Delete the following from Item B:

“For roadways with a speed limit of greater than 40 miles per hour, profile”

and replace it with the following:

“Profile”.

Delete Item B.5.e

Add the following to Item B.15

The minimum width of paving to be replaced will be a lane width.

Add Subsection 3.14 Testing Requirements:

A. Contractor to test per General Conditions 13.03.B and this section. Contractor shall take and have tested samples in accordance with Table 5: Number of Loose Asphalt Mixture Samples Required. All loose asphalt mixture samples need to be a minimum of 40-pounds.

   In addition to Contractor testing, Contractor shall take and provide the City with the same number of samples as required for the Contractor in

accordance with Table 5: Number of Loose Asphalt Mixture Samples Required. The City, at their own discretion, may test some or all of the samples provided by the Contractor.

If the Contractor would like to ensure there is sufficient material to perform a dispute resolution at some future date, Contractor shall take and provide the City with the same number of samples as required for the Contractor in accordance with Table 5: Number of Loose Asphalt Mixture Samples Required. The City will hold the dispute resolution samples and not test them. If needed, a Dispute Resolution testing agency will be utilized to test the dispute resolution samples, separate from any party who has been working on the project to date.

All samples the City may be testing need to be delivered by the Contractor immediately after collecting samples. Samples should still be hot when delivered. Coordinate with the City of Twin Falls Laboratory to deliver samples.

Results from both the Contractor's independent testing agency and the City of Twin Falls Laboratory will be used to determine acceptance and the pay factor in accordance with 3.15 of Section 810.

B. Unless otherwise specified, the number of samples shall be obtained from the mix as follows:

Table 5: Number of Loose Asphalt Mixture Samples Required

Plan Quantity (tons)	Number of Loose Mix Samples
0 – 100	0
101 – 750	1
751 – 2250	3
2251+	1 per 750 tons or fraction thereof

Regardless of the plan quantity, a minimum of one loose mix sample per testing entity per day will be required when the quantity placed is over 100 tons. Samples shall be tested for asphalt cement content per AASHTO T 308 and gradation per AASHTO T 30.

C. The pavement shall be compacted to the percentage range of the AASHTO T 209 theoretical maximum density value as outlined in 1 below.

Testing calculations shall use the field-determined (not JMF) theoretical maximum densities generated by averaging the all the densities obtained in a lot. Testing agencies only need to use data obtained from their own samples, not those from other testing agencies for their calculations.

Compaction tests are not required for plant mix leveling courses or temporary pavement unless otherwise specified.

1. 92.0 to 97.0 percent for in-place density values determined from cores tested in accordance with AASHTO T 166.

2. Density testing shall be performed randomly at a frequency of no more than one test per 1,000 square yards of roadway for each lift and at least one test per 300 feet of roadway per lift with an absolute minimum of 3 cores when plan quantities exceed 100 tons.

3. The City will generate the randomly determined locations where cores will be taken. The Contractor will notify the City at least one business day prior to paving if they would like to witness the random generation of core locations.

4. All cores will be taken by the Contractor and even split between the Contractor's independent testing agency and the City laboratory. If an odd number of cores are required, the extra will be tested by the Contractor's independent testing agency. Coordinate with the City of Twin Falls Laboratory to deliver the cores. Results from both the Contractor's independent testing agency and the City of Twin Falls Laboratory will be used to determine acceptance and the pay factor in accordance with 3.15 of Section 810.

5. When testing cores, they shall be cut straight and shaken in water to fill air voids in accordance with WAQTC and AASHTO T 166.

6. The Contractor shall fill all core holes and replace any and all missing pavement sections. The Contractor shall extend all

pavement to project limits as per plans, change orders, and specifications.

D. In-place density tests shall be performed a minimum distance of 12 inches from all joints. Additionally, cores are not to be taken within 10 feet of the transverse meet lines associated with the beginning and ending of project (or location if multiple locations are being paved under a single project).

E. Condition loose asphalt mixture samples for a minimum of two hours before testing to allow for binder absorption, unless otherwise allowed. Time begins when the binder is introduced to the aggregate. Condition all material used for acceptance tests. Match test condition time for material used for acceptance tests to the field conditions to the field compacted mixture. The Contractor must demonstrate to the Engineer that absorption is complete in less than two hours in the field in order to shorten condition time. Do not over-condition the material by keeping the samples at an elevated temperature.

F. Superpave Hot Mix Asphalt Types SP-5 and SP-6 testing requirements to conform to ITD Specifications Section 405 – Superpave Hot Mix Asphalt. For these Superpave HMA types, third party testing agency to be determined by City and paid for by the City unless otherwise specified.

G. In addition to other inspections and testing, a visual inspection may be used for all projects. The Engineer may direct additional core(s) to be taken in locations that appear coarse or segregated. Any of these additional core(s) will not be incorporated into the data set that determines acceptance and pay factor. If the in-place density from core(s) show the pavement falls below the minimum density standard, an area determined by the Engineer will be removed and replaced by the Contractor at no expense to the Owner.

Add Subsection 3.15 – Acceptance as follows:

A. **Pavement Thickness**

Plantmix pavement shall be within ± ¼ inch of the design thickness. In no case, shall the pavement be less than 2” thick for ½” mix and 2 ¼” thick for ¾” mix.

Less than Minimum Thickness (Single Core)

If a single core shows pavement is less than the absolute minimum requirement the Contractor shall remove and replace the area associated with that core as determined by the Engineer at no additional cost to the Owner.

When there is a failed core due to a thickness deficiency below the absolute minimum requirement, the following guidelines should be followed:

1. Cores will be drilled at the same offset as the original failed core, 10 feet behind and ahead of the station of the failed core.

2. If either of those two new cores fail the design thickness requirement, subsequent cores shall be drilled 20 feet further away until a passing core (within ¼" of design thickness) is drilled.

3. Once the extents of the thickness deficiency are found based on core thicknesses, an area determined by the length between those passing cores and the width of the paved pull shall be removed and replaced by the Contractor at no expense to the Owner.

4. The failing core will be omitted from the data set that determines acceptance and pay factor and the Engineer will randomly select one of the two new passing cores (with regard to thickness) to replace the failed core in determining acceptance and pay factor. The core that is chosen will be tested by the same testing agency that tested the original failed core.

Less than Design Thickness (All Cores Combined)

If the average thickness of all cores is between ¼ inch and ½ inch less than the design thickness on a residential street the Contractor shall remove and replace the new pavement or provide a chip seal at logical

termini as determined by the Engineer in conjunction with a 50% reduction of the pay factor assessed on all plantmix pavement.

If the average thickness of all cores is less than the design thickness by more than ½ inch on a residential street the Contractor shall remove and replace at least a 2½ inch plantmix pavement lift as determined by the Engineer. Where no curb or gutter exists along the project, a thin overlay may be sufficient as determined by the Engineer.

If the average thickness of all cores is less than the design thickness by more than ¼ inch on a collector or arterial street the Contractor shall remove and replace at least a 2½ inch plantmix pavement lift as determined by the Engineer. Where no curb or gutter exists along the project, a thin overlay may be sufficient as determined by the Engineer.

More than Design Thickness

No payment shall be made for excessive plantmix pavement more than ¼ inch above the design thickness as determined by the average thickness of the cores obtained from the project.

B. **Hveem, Marshall, and Superpave HMA SP-2 and SP-3 Mixes**

Test results must meet the requirements designated in Table 6.

Table 6: Tolerance from the Asphalt Mix Design Target Values*

Asphalt Cement Content	± 0.4%
Passing 3/8” Sieve	± 7%
Passing No. 8 Sieve	± 5%
Passing No. 200 Sieve	± 2%

*In no case shall the upper and lower specifications limits be outside the control points specified in Section 803 or ITD Specifications 703 for Superpave mixes.

Pavement may be subjected to the incentive/disincentive process outlined below.

C. **Superpave HMA SP-5 and SP-6 Mixes**

Test results must meet the requirements in the ITD Specifications.

Pavement may be subjected to the incentive/disincentive process outlined below.

D. **Incentive / Disincentive Process**
Incentive/Disincentive payments will not be calculated for quantities under 100 tons.

Acceptance, Pay Factors & Incentive/Disincentive Payment.

1. Mix Characteristic Acceptance and Pay Factors

Determine the arithmetic mean, $\overline{X}$

$$\overline{X} = \frac{\sum x_i}{n}$$

Where,
Σ = Summation
x_i = Individual test value
n = Total number test values

Compute the sample standard deviation, (S)

$$S = \sqrt{\frac{\sum(x_i - \overline{X})^2}{n-1}}$$

Compute the upper quality index (Q_u).

$$Q_u = \frac{USL - \overline{X}}{S}$$

Where,
USL = Upper specification limit
S = Standard deviation

Compute the lower quality index (Q_L).

$$Q_L = \frac{\overline{X} - LSL}{S}$$

Where,
LSL = Lower specification limit.
S = Standard deviation

Determine P_U (percent within the upper specification limit, which corresponds to a given Q_U) from Table 7. If a *USL* is not specified, P_U will be 100.

Determine P_L (percent within lower specification limit, which corresponds to a given Q_L) from Table 7. If a *LSL* is not specified or the specification is zero (0), P_L will be 100.

Determine the Quality Level (QL) (the total percent within the specification limits).

Quality Level (QL) = (P_U + P_L) – 100

Table 7
P_U or P_L Percent within Limits for Positive Values of Q_U or Q_L for a given Sample Size (n)

PWL	*n* = 3	*n* = 4	*n* = 5	*n* = 6	*n* = 7	*n* = 8	*n* = 9	*n* = 10 to 11	*n* = 12 to 14	*n* = 15 to 18
100	1.16	1.50	1.79	2.03	2.23	2.39	2.53	2.65	2.83	3.03
99	1.15	1.47	1.67	1.80	1.89	1.95	2.00	2.04	2.09	2.14
98	1.15	1.44	1.60	1.70	1.76	1.81	1.84	1.86	1.91	1.93
97	1.14	1.41	1.54	1.62	1.67	1.70	1.72	1.74	1.77	1.79
96	1.14	1.38	1.49	1.55	1.59	1.61	1.63	1.65	1.67	1.68
95	1.13	1.35	1.44	1.49	1.52	1.54	1.55	1.56	1.58	1.59
94	1.13	1.32	1.39	1.43	1.46	1.47	1.48	1.49	1.50	1.51
93	1.12	1.29	1.35	1.38	1.40	1.41	1.42	1.43	1.44	1.44
92	1.12	1.26	1.31	1.33	1.35	1.36	1.36	1.37	1.37	1.38
91	1.11	1.23	1.27	1.29	1.30	1.30	1.31	1.31	1.32	1.32
90	1.10	1.20	1.23	1.24	1.25	1.25	1.26	1.26	1.26	1.27
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21	1.21	1.21	1.22
88	1.07	1.14	1.15	1.16	1.16	1.16	1.16	1.17	1.17	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
86	1.04	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96	0.96	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93	0.92	0.92	0.92
81	0.96	0.93	0.91	0.90	0. 90	0.89	0.89	0.89	0.89	0.88
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86	0.85	0.85	0.85

PWL	*n* = 3	*n* = 4	*n* = 5	*n* = 6	*n* = 7	*n* = 8	*n* = 9	*n* = 10 to 11	*n* = 12 to 14	*n* = 15 to 18
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82	0.82	0.82	0.81
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79	0.79	0.78	0.78
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76	0.75	0.75	0.75
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72	0.72	0.72	0.71
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69	0.69	0.69	0.68
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66	0.66	0.66	0.65
73	0.76	0.69	0.66	0.65	0.64	0.63	0.63	0.63	0.62	0.62
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60	0.60	0.59	0.59
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57	0.57	0.57	0.56
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54	0.54	0.54	0.53
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51	0.51	0.51	0.50
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48	0.48	0.48	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46	0.45	0.45	0.45
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43	0.43	0.42	0.42
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40	0.40	0.40	0.39
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37	0.37	0.37	0.36
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35	0.34	0.34	0.34
62	0.43	0.36	0.34	0.33	0.32	0.32	0.32	0.32	0.31	0.31
61	0.39	0.33	0.31	0.30	0.30	0.29	0.29	0.29	0.29	0.29
60	0.36	0.30	0.28	0.27	0.27	0.27	0.26	0.26	0.26	0.26
59	0.32	0.27	0.25	0.25	0.24	0.24	0.24	0.24	0.23	0.23
58	0.29	0.24	0.23	0.22	0.21	0.21	0.21	0.21	0.21	0.21
57	0.25	0.21	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18
56	0.22	0.18	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.15
55	0.18	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13
54	0.14	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10
53	0.11	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
52	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05
51	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOTE: For negative values of Q_U or Q_L, P_U or P_L is equal to 100 minus the table value for P_U or P_L. If the value of Q_U or Q_L does not correspond exactly to a figure in the table, use the next higher figure.

For Asphalt Binder Content and Air Voids, each lot will be assigned a pay factor using the following equation:

$$\frac{55+(0.5)QL}{100}$$

2. Pay Factors for Gradation (Hveem, Marshall, SP-2 and SP-3), VMA (SP-5 and SP-6) and Density (All Mix Classes)

Table 8

Pay Factor for a given Sample Size (n) and Quality Level

Pay Factor	***n* = 3**	***n* = 4**	***n* = 5**	***n* = 6**	***n* = 7**	***n* = 8**	***n* = 9**	***n* = 10 to *n*=11**	***n* = 12 to *n*=14**	***n* = 15 to *n*=18**
1.05	100	100	100	100	100	100	100	100	100	100
1.04	90	91	92	93	93	93	94	94	95	95
1.03	80	85	87	88	89	90	91	91	92	93
1.02	75	80	83	85	86	87	88	88	89	90
1.01	71	77	80	82	84	85	85	86	87	88
1.00	68	74	78	80	81	82	83	84	85	86
0.99	66	72	75	77	79	80	81	82	83	85
0.98	64	70	73	75	77	78	79	80	81	83
0.97	62	68	71	74	75	77	78	78	80	81
0.96	60	66	69	72	73	75	76	77	78	80
0.95	59	64	68	70	72	73	74	75	77	78
0.94	57	63	66	68	70	72	73	74	75	77
0.93	56	61	65	67	69	70	71	72	74	75
0.92	55	60	63	65	67	69	70	71	72	74
0.91	53	58	62	64	66	67	68	69	71	73
0.90	52	57	60	63	64	66	67	68	70	71
0.89	51	55	59	61	63	64	66	67	68	70
0.88	50	54	57	60	62	63	64	65	67	69
0.87	48	53	56	58	60	62	63	64	66	67
0.86	47	51	55	57	59	60	62	63	64	66
0.85	46	50	53	56	58	59	60	61	63	65
0.84	45	49	52	55	56	58	59	60	62	64
0.83	44	48	51	53	55	57	58	59	61	63
0.82	42	46	50	52	54	55	57	58	60	61
0.81	41	45	48	51	53	54	56	57	58	60
0.80	40	44	47	50	52	53	54	55	57	59
0.79	38	43	46	48	50	52	53	54	56	58
0.78	37	41	45	47	49	51	52	53	55	57
0.77	36	40	43	46	48	50	51	52	54	56
0.76	34	39	42	45	47	48	50	51	53	55
0.75	33	38	41	44	46	47	49	50	51	53

NOTE: If the Quality Level number does not correspond exactly to a number in Table 8, use the next lower value in the table.

3. Calculation of Incentive/Disincentive Payment for Hveem, Marshall, SP-2 and SP-3 mixes
    a. The Maximum Pay Factor will be 1.05. Material with an individual or combined Pay Factor less than 0.75 shall be rejected, removed, and replaced at no additional cost to the City.

    b. A Pay Factor for Plant Mix Aggregate Gradation ($PF_{(PMAG)}$) will be determined by Table 7 and Table 8 using the lowest gradation quality level from any required sieve and the number of test samples.

    c. A Pay Factor for Asphalt Binder Content ($PF_{(ABC)}$) will be computed using the above formula with the asphalt binder quality level determined by Table 7 along with the number of test samples.

    d. A Pay Factor for Density ($PF_{(D)}$) will be determined by Table 7 and Table 8 using the core density quality level and the number of test cores.

    e. Calculation of Incentive/Disincentive Payment. The incentive/disincentive payment for all Hveem, Marshall, Superpave SP-2 and SP-3 plant mix pavement accepted by the Owner will be computed using the formula:
        i. $B = (A)\ ((0.3*PF_{(PMAG)} + 0.3*PF_{(ABC)} + 0.4*PF_{(D)}) -1)\ (Q)$
        ii. B = Total Incentive/Disincentive payment for all Plant Mix Pavement accepted
        iii. A = Unit Bid Price
        iv. Q = Total Quantity of Plant Mix Pavement accepted

4. Calculation of Incentive/Disincentive Payment for SP-5 and SP-6 mixes
    a. The Maximum Pay Factor will be 1.05. Material with an individual or combined Pay Factor less than 0.75 shall be rejected, removed, and replaced at no additional cost to the City.

    b. A Pay Factor for Air Voids ($PF_{(AV)}$) will be computed using the above formula with the air voids quality level determined by Table 7 along with the number of test samples.

    c. A Pay Factor for VMA ($PF_{(VMA)}$) will be determined by Table 7 and Table 8 using the VMA quality level and the number of samples.

d. A Pay Factor for Density ($PF_{(D)}$) will be determined by Table 7 and Table 8 using the core density quality level and the number of test cores.

e. Calculation of incentive/disincentive payment. The incentive/disincentive payment for all Superpave SP-5 and SP-6 Hot Mix Asphalt accepted by the Owner will be computed using the formula:

   i. $B = (A)\ ((0.3*PF_{(AV)} + 0.3*PF_{(VMA)} + 0.4*PF_{(D)}) -1)\ (Q)$

   ii. B =Total incentive/disincentive payment for all Plant Mix Pavement accepted

   iii. A = Unit Bid Price

   iv. Q = Total Quantity of Plant Mix Pavement accepted

5. The Engineer will combine the Contractor's tests into lots for Quality Analysis. The lots will be used by the Engineer to represent the material produced in Quality Analysis. Samples can only be excluded with approval of the Engineer. Lot size will be determined by the Engineer.

   The following criteria may be used:

   a. A lot is based on work shift's production.
   b. Minimum of 3 samples per lot. When 3 loose mix samples are not required per Table 5 of Section 810.3.14.B, additional data may be generated to determine the pay factor as follows:
      i. When only 1 loose mix sample is available:
         a. The design target from the JMF and the average between the available test and the design target from the JMF will be utilized to create two additional data points.
      ii. When 2 loose mix samples are available:
         a. The design target from the JMF will be utilized to create an additional data point.
   c. If the work shift is represented by less than 3 tests, the test(s) will be combined with the following work shift.
   d. If the final work shift is represented by less than 3 tests, the test(s) will be combined with the previous work shift.

6. Either party may opt to pay for Dispute Resolution testing. A Dispute Resolution testing agency will be determined by both the Contractor and the City. The Contractor must have already delivered loose plantmix pavement sample(s) to the City during paving operations to utilize Dispute Resolution.

   When the Contractor opts to utilize Dispute Resolution for Hveem, Marshall, or Superpave SP-2 and SP-3 mixtures, previous City and Contractor testing results will be ignored. The Dispute Resolution testing agency will retrieve the loose mix sample(s) from the City and the cores from both the City and the Contractor's independent testing agency. No additional cores will be drilled.

   The Dispute Resolution testing agency will test the loose mix and all the previously drilled cores to determine whether the pavement is acceptable and if so, determine a pay factor utilizing the same incentive/disincentive method. Only results from the Dispute Resolution testing agency will be utilized to determine the pay factor.

   If the Dispute Resolution results fall below the acceptable standard as determined by the incentive/disincentive method, the pavement is rejected, and the Contractor shall remove and replace the rejected plantmix pavement at no additional cost to the Owner.

   Regardless of the outcome of the Dispute Resolution, the party that opted for the Dispute Resolution will pay for the testing associated with it.

Subsection 4.2

Delete the second sentence.

Section 813 – Fog Coat

Delete the section in its entirety and replace with separate City of Twin Falls Seal Coat Specification.

Division 800 – Standard Drawings

SD 801 – Typical Street Section

Remove and replace drawing with TFSD 801.

SD 802 – Typical Rural Street Section

Remove and replace drawing with TFSD 802.

SD 803 – Typical Paved Alley Section

Remove and replace drawing with TFSD 803.

SD 804 – Typical Graveled Alley Section

Remove and replace drawing with TFSD 804 – Standard Bike Path.

SD 805 – Standard Cul-de-sac

Remove and replace drawing with TFSD 805.

SD 806 – Typical Street Widening

Remove and replace drawing with TFSD 806.

SD 807 – Typical Commercial Driveway Approach

Remove drawing.

SD 808 – Typical Mailbox Turnout

Remove drawing.

SD 809 – Rural Driveway Approach

Remove drawing.

Division 900 – PRESSURE IRRIGATION

Section 901 – Pressure Irrigation Pipe and Fittings

Subsection 2.2 Polyvinyl Chloride (PVC) Pipe and Fittings

Delete the following from Item A.5:

“If used to convey reclaimed municipal wastewater, pipe”

and replace with:

“Pipe”

Delete Items C.1.d. and C.2.

Subsection 2.3 Ductile Iron Pipe and Fittings

Add the following as Item B.2:

“Usage: Only use above ground.”

Subsection 2.5 Polyethylene (PE) Pressure Pipe and Fittings

Modify Item A as follows:

Replace “Distribution” with “Transmission (ONLY)”.

Add the following as Item A.5:

Usage: With City Engineer written approval (ONLY).

Subsection 2.6 Steel Pipe and Fittings

Add the following as Item A.6:

Usage: Only use above ground.

Subsection 2.11 Locating Wire

Add the following as Item C:

Attach to top of pipe.

Subsection 3.1 Examinations

Modify Item F as follows:

Replace “4” with “24”

Subsection 3.2 Pipe Installation

Add the following to Item K:

All pipe shall be laid with the factory class marking visible in the upper one-third (1/3) of the pipe.

Add Item R as follows:

Install mechanical restraints per manufacturer’s recommendations.

Add Item S as follows:

Pressure testing approval required after water system is complete and before any improvements are constructed over the pipes.

Subsection 3.4 Thrust Blocks

Modify Item F as follows:

Replace “1500 psi” with “1500 psf”.

Subsection 3.8 Pipe Markers

Delete Item A in its entirety and replace it with the following:

Install identification tape per TFSD-301.

Delete Item B in its entirety and replace it with the following:

Furnish and install pipe markers at stub-outs per Twin Falls Standard Drawing TFSD-511A.

Subsection 3.11 Abandonment of Existing Irrigation Mains

Delete Item D in its entirety and replace it with the following:

Cap or plug any abandoned pipe left in the ground utilizing an MJ Cap.

Subsection 4.1 Measurement and Payment

Delete the following from Item B:

"disinfection and"

Section 902 – Pressure Irrigation Valves

Subsection 2.2 Resilient Seated Gate Valves

Delete the subsection in its entirety and replace it with 402.2.2.A and City Revisions thereto.

Subsection 2.3 Butterfly Valves

Delete the subsection in its entirety and replace it with 402.2.3.A and City Revision thereto.

Application: Valves larger than 12 inches unless approved by the City Engineer.

Subsection 2.6 Valve Boxes

Delete the subsection in its entirety and replace it with the following:

A. Size: Minimum 5-1/4 inch inside diameter
B. Material: Cast Iron
C. Adjustment: Adjustable with sufficient length for bury.
D. Cover: Cast Iron stamped "Irrigation".
E. Detail Standard Drawing TFSD-406.

Add Subsection 2.8 Blow-Off Assembly

Refer to Standard Drawings TFSD-903, TFSD-904, and TFSD-905.

Spacing requirements to be approved by the City Engineer.

Subsection 3.1 Examinations

Modify Item E as follows:

Replace “4” with “24”

Subsection 3.2 Installation

Add the following to Item B:

Set valve box centered and plumb over wrench nut and flush with ground or street surface. Install box per Standard Drawing TFSD-406.

Add Item G:

Manholes and valve boxes shall be located by the Contractor prior to paving operations. The Contractor may remove risers to allow for easier paving. Upon completion of the paving operations, the Contractor shall again locate all manholes and valve boxes and use a circular cutter centered on the valve or manhole to remove plantmix pavement. After the pavement has been removed, the riser is replaced and concrete is poured in place in accordance with the appropriate standard drawing.

Section 903 – Pressure Irrigation Service Lines and Appurtenances

Subsection 1.3 References

Delete Item C.

Subsection 1.7 Ownership and Maintenance

Delete the subsection in its entirety and replace it with the following:

Pressure Irrigation stations, mainlines, and services to the union fitting (including the fitting) in the valve box (including the box) are owned and maintained by the City of Twin Falls Water Department unless specifically designated otherwise. All other pressure irrigation appurtenances beyond the union fitting in the valve box are privately owned and maintained.

Subsection 2.2 Service Pipe and Fittings

Delete Item A.

Modify Item B.1 as follows:

Replace “160” with “200”

Modify Item B.3 as follows:

Replace “Iron pipe” with “Copper Tube”

Subsection 2.3 Appurtenances

Delete Item B.

Delete Item E in its entirety and replace it with the following:

E. Service Valve Box

1. Size and Type: Minimum of 13” × 20” × 12” (L × W × D) HDPE Irrigation Box

Subsection 3.1 Examinations

Modify Item F as follows:

Replace “4” with “24”

Subsection 3.2 Installation

Add the following to Item B:

Service lines shall be less than or equal to 70 feet in length.

Modify Item E as follows:

Replace “SD-306” with “TF SD-306”

Add Section 904 – Pressure Irrigation Stations

This section applies to publicly owned infrastructure.

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Packaged Pumping Station

The packaged pump station supplier shall furnish a skid mounted pump station complete with all mechanical and electrical components as listed in the technical specifications. The pumping station shall include a UL 508A Listed control panel. The pump station shall meet the performance requirements outlined in the system technical specifications and be designed to span a wet well (the wet well design is site specific).

B. Factory Testing

The pump station shall undergo and pass all of the following system performance tests:

1. Hydrostatic Testing. The packaged pump station shall undergo hydrostatic testing that meets ANSI/HI specifications and standards.
2. Vibration Testing. The packaged pump station shall undergo vibration testing that meets ANSI/HI 9.6.4—Vibration Measurement and Allowable Values—specifications and standards.
3. Flow Testing. The packaged pump station shall undergo Hydraulic Performance Acceptance testing that meets ANSI/HI 14.6 specifications and standards.
4. Test Results. The results of all tests shall be available to the owner.

C. On-Site Pump Station Start-Up

Certified start-up and calibration shall be furnished by the Packaged Pump Station Manufacturer or their qualified service agent. Location and mounting details shall be furnished by the Packaged Pump Station Manufacturer.

The City Engineer for the City of Twin Falls or an authorized representative must be present to witness the station startup prior to acceptance of the station.

Technical start-up procedures by the pump station technician shall include the following:

1. Station start-up and pressurization.
2. Pressure, flow, and programming adjustments.
3. Monitoring of complete operational cycle when possible.
4. Testing of all alarms and fault conditions.
5. Customer training and the presentation of the station operation and maintenance manual.

D. Maintenance and Service

Furnish service and maintenance of pump station and accessories for one year from date of Start-up. Provide factory certified technician residing within 150 miles of pump station installation. Annual renewal of service and maintenance shall be available.

1. Spring start-up
2. 2 in season checks:
    a. Check amp draw – all pumps
    b. Check packing and grease
    c. Check overloads for trip rating
    d. Check circuit breakers for trip rating
    e. Inspect and clean interior and exterior panels
    f. Test all indicator lamps, bulbs
    g. Test buttons, switches, selectors, etc.
    h. Check safety of all electrical components
    i. Inspect, tighten all electrical connections
    j. Inspect and test all fuses and fuse holders
    k. Inspect, test pressure transducers
    l. Inspect, tighten any leaking joints and couplers.
    m. Inspect, clean component filters
    n. Test, adjust quick pressure relief valve
    o. Test all electrical valves
    p. Test all manual valves
    q. Test, adjust high & low level switches
    r. Test, adjust level sensor
    s. Test, adjust low water float
    t. Test pressure gauges
    u. Inspect, flush discharge filter
    v. Examine and test self-cleaning cw screen
3. Winterization

E. Warranty

The Manufacturer shall warrant that the packaged pump station shall be free from defects in material and workmanship for a period of twelve (12) months from the date of placing the Equipment in operation.

The motor control panel shall be covered under Warranty for an additional 3 years.

F. Operation and Maintenance Manual

Three operation and maintenance manuals shall be furnished at the time of start-up and initial training. The owner shall also receive training specific to the pump station.

Operation and maintenance instructions shall contain the following as a minimum:

1. Approved shop drawings and submittal data
2. Model, type, size and serial numbers of equipment furnished
3. Equipment and driver nameplate data
4. List of parts showing replacement numbers
5. Recommended list of spare parts
6. Complete operating instructions.
7. Service and Maintenance instructions and schedules including seasonal activation and shutdown, winterization, and blowout.
8. VFD parameter settings
9. Complete operator interface instructions with diagrams

1.2 MANUFACTURER QUALIFICATIONS

A. Single Source Responsibility

1. The entire pump station and the control panel shall be designed, assembled, programmed, and tested by a single UL QCZJ Listed Packaged Pump Station Manufacturer.

B. Safety Certifications

1. The pump station manufacturer must be a UL QCZJ listed pump station manufacturer, as well as a UL 508A Listed Control Panel Manufacturer.

C. Manufacturer Personnel

1. The Manufacturer shall employ service personnel who are trained and certified in every aspect of service that may be required on the pump station.

1.3 SUBMITTALS

A. Submittals shall be well organized, labeled, and presented in a professional manner. Sloppy or poorly presented submittals shall be rejected.

B. The pump station manufacturer shall submit the following items as part of a complete submittal package.

1. Shop drawings for pump station. Indicate general assembly, components, accurate dimensions, clearances and methods of assembly for complete pre-assembled pump station.
2. Technical data sheets for all major system components. Provide component and control system and complete wiring schematic, including the VFD, PLC and all control components. Provide manufacturer's literature including general pump assembly and pump curves showing performance characteristics with pump and system, operation point indicated, NPSH curve, controls, wiring diagrams and service connections and valves. Pump station manufacturer shall provide a list of at least 10 similar VFD pump station installations.

1.4 REFERENCES

A. Specifications refer to portions of the following standards:

1. NEMA – National Electrical Manufacturers Association
2. NEC – National Electrical Code
3. UL – Underwriters Laboratories, Inc.
4. AWWA – American Water Works Association
5. ANSI – American National Standards Institute
6. ANSI/HI – American National Standards Institute/Hydraulic Institute
7. ASTM – American Society of Testing & Materials

PART 2 – TECHNICAL SPECIFICATIONS

2.1 Onsite Conditions

A. Intake Source: Suction Lift from a Wet Well.
B. Electrical Input: 480V, 3 phase

2.2 System Type

A. Non-potable Suction Lift Irrigation Station

2.3 Performance

A. Design Point: Determined by Service Area Model

2.4 Pumps

A. Duty Pumps
    1. Quantity: Minimum 2 installed (expandable to 4)
    2. Operation Mode: Lead-Lag. Duty pumps shall alternate lead-lag designations based on a user selectable alternation cycle to equal out run time on each pump.
    3. Type: Vertical Turbine
    4. Power: 30 HP each.
    5. Design Point Performance: Variable from 150 to 450 gpm per pump. With 2 installed pumps, variable from 150 to 900. (When expanded to 4 pumps, variable from 150 to 1800 gpm)

2.5 Sequence of Operation: Lead/Lag

The packaged pump station shall operate according to the following sequence of operation:

1. Lead Pump

A variable frequency drive (VFD) shall vary the Lead Pump speed as needed to maintain the system pressure setpoint.
The Lead Pump shall enter sleep mode as needed when the demand drops.

2. Lag Pumps

If demand exceeds the Lead Pump's capacity, then Lag Pump #1 shall start across-the-line, operating at full speed. The Lead pump shall continue to vary its speed as needed to maintain the system pressure setpoint.

If demand exceeds the Lead Pump and Lag Pump #1's capacity, then Lag Pump #2 shall start across the line, operating at full speed. The Lead pump shall continue to vary its speed as needed to maintain the system pressure setpoint.

If demand exceeds the Lead Pump, Lag Pump #1, and Lag Pump #2's capacity, then Lag Pump #3 shall start across the line, operating at full speed. The Lead pump shall continue to vary its speed as needed to maintain the system pressure setpoint.

The Lag Pumps shall enter sleep mode, one at a time, as demand decreases and the remaining Pump(s) can meet demand.

3. Lead-Lag Designation

Lead selection of equal horsepower pumps shall be accomplished by total accumulated pump running time. Unless manually overridden, the next available pump shall be the next pump started in the sequence. Internal VFD alternating logic for selection of lead pump shall not be accepted.

If enabled, the lead pump shall alternate to the next available pump in the event the lead pump cannot operate.

The duty pumps shall alternate lead-lag designations based on a user selectable alternation cycle to equal out run time on each pumps.

See section 3.5 C 2 for more information about pump settings and PLC Control Functions.

2.6 System Protections

The pump station shall include the following system protections:

1. Selectable Low Flow Shutdown and Low Flow Sleep Mode
2. High Discharge Pressure Shutdown
3. Low Water Level Pump Slowdown
4. Low Water Level Shutdown
5. Individual Motor/Phase Loss
6. Electrical System Protections as described in Section 3.5.

PART 3 – PRODUCTS

3.1 Pumps and Motors

The pumps shall meet the following design specifications:

A. Vertical Turbine Pumps

1. Bowl Assembly

The bowl assembly—including suction case, intermediate bowls, and discharge bowls—shall be of Class 30 cast iron. The impellers shall be of stainless steel or bronze, statically balanced. Impellers shall be adjusted vertically by means of an adjusting nut located at the top of the driver. The pump shaft shall be supported by bearings above and below each impeller. The size of each shaft shall be appropriate to transmit the horsepower required by the pump.

2. Inlet Strainer

Each turbine pump inlet strainer shall be corrosion-resistant basket type with an area not less than four times the pump suction bell inlet area.

3. Discharge Column Pipe

The discharge column pipe shall be A53 Grade B sch 40 steel and furnished in interchangeable 10' sections with threaded couplings. The line shafts shall be ground and polished 416 stainless steel, and shall be coupled with steel couplings, have left hand threads, which tighten during operation. Drop-in type shaft centering spiders shall be provided at each column coupling at maximum 10' spacing. The section of shaft passing through the stuffing box shall be stainless steel having a chromium content of not less than 12%. Pumps shall be manufactured by Goulds or approved equal.

4. Discharge Heads

Each pump shall be supplied with a CAST IRON discharge head having a flanged discharge opening. The top diameter of the discharge head shall match the motor base to distribute the load uniformly. The minimum operating pressure of each discharge head shall be no less than 30% higher than the

maximum output pressure of the pump. The CAST IRON discharge head will have a tensile strength of 65,000 PSI.

5. Column Pipe

Column pipe should be A53, Grade B schedule 40 material, in interchangeable sections not more than 10 feet in length. Pump line shaft shall be AISI 416 SS. The size of the shaft shall be no less than determined by ANSI specification B58.1, Section 4.2, Table 4. Bearing retainers shall be bronze with rubber bearings.

B. Vertical Turbine Pump Motor

1. Each pump driving motor shall be squirrel cage induction vertical hollow-shaft type. The connection to the pump shaft shall be bolted-down type couplings in the motor. The temperature rise of the motor shall be to NEMA standard MG-1-12. Motors to be Inverter Duty, High Efficient with Class F installation. A thrust bearing of ample capacity to carry the weight of all rotating parts plus the hydraulic thrust of the pump shall be incorporated into the motor. The bearings shall be B10 rating with average life no less than five years continuous operation. The motor shall be of proper size to drive the pump at any point on the operation curve without exceeding the percent of the motor horsepower nameplate rating as called out in the Technical Specifications.
2. VHS MOTOR WINDING CONDENSATE HEATER
   Each VHS pump motor will be supplied with a 120 volt space heater in the motor windings to prevent condensation during non-use times. The heaters will be deactivated while the motors are running.

3.2 Mechanical Components

A. Pump Station Enclosure

1. The pump station enclosure shall be built out of marine grade aluminum. Enclosure shall consist of a frame built out of structural folded aluminum. Frame shall be built to readily accept foil faced insulation. Aluminum panels to be mounted to enclosure frame with pan head torx tamper resistant stainless steel screws. Enclosure shall consist of 2 hinged, lockable entry doors. Enclosure shall consist of a roll-away removable roof that shall be sloped to prevent moisture build up.

2. The enclosure shall include a ventilation fan (or fans) that will adequately cool all of the enclosed equipment during the most extreme expected seasonal temperatures.

B. Pump Station Skid

1. The entire pump station shall be manufactured and tested in the controlled environment of a manufacturing facility. No on site fabrication or assembly shall be acceptable.
2. The pump skid shall be constructed of 3/8 inch steel plate per ASTM A36.
3. Steel plate shall be press brake formed with minimum riser height of 6 inches. Welded bases or open rail systems shall not be acceptable.
4. All bolts, washers, nuts and fasteners used in teh assembly of the packaged pump station shall be stainless steel, zinc or cadmium plated to retard corrosion.
5. The Pump Skid shall be designed and constructed with adequate supports to free span a wet well opening of 8 ft. (See attached Preliminary Construction Drawing for proposed wet well dimensions.)
6. All components shall be mounted to the skid in professional workmanlike manner.

C. Piping and Fittings

1. All piping and fittings supports shall be constructed of ASTM A53 pipe with a Class D pressure rating fittings. Threaded connections in the piping network shall not be acceptable.
2. Pipe supports shall be mild steel.

D. Grooved Couplings

1. Grooved couplers shall be ductile iron conforming to ASTM A 536, Grade 65-45-12. Connecting bolts shall be heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B. Bolts and nuts shall be zinc electroplated.

E. Flanges

1. All welded flanges shall be Class D forged steel slip-on or weld neck type. All welded fittings shall be seamless, conforming to ASTM Specification A234, with pressure rating not less than 150 PSI.

F. Powder Coating

1. All piping, fittings, station skid, and enclosure shall be powder coated according to the following specifications:

2. Testing

i. Prior to coating, all welded assemblies shall be leak tested. No welding shall be performed after the pump station is powder coated.

3. Preparation

i. All surfaces of the skid base shall be prepared per SSPC-SP10, near white metal blast.

4. Surface Coating

i. All surfaces of the skid shall be powder coated using an epoxy fusion-bonded coating with a minimum thickness of 5 mils.

3.3 Valves

The packaged pump station shall include the following valves:

A. Butterfly Isolation Valves

1. Grooved Valves
   a. Body: ASTM A-536 Ductile Iron
   b. Disc: ASTM A-536 Ductile Iron, with EPDM or NBR coating
   c. Upper and Lower Shafts: ASTM A-276 Stainless Steel
   d. Operator: lever handle or gear operator, with 10 position indicator

e. Pressure Ratings: 300 psi

2. Flanged Valves
    a. Body: ASTM A-536 Ductile Iron
    b. Disc: ASTM A-536 Ductile Iron, with EPDM or NBR coating
    c. Upper and Lower Shafts: 316 Stainless Steel
    d. Operator: lever handle or gear operator, with 10 position indicator
    e. Pressure Ratings: 250 psi
    f. Flange Standard: ASME Class 125/150
    g. Flanged butterfly valves shall be Grinnell Series 8000, or approved equal.
3. Valve Operators
    a. For valves 6” and under, valve operators shall be lever style.
    b. Valves 8” and larger shall be equipped with manual gear operators.
    c. Each operator a have a 10 position indicator.
4. Isolation valves shall be located on the discharge of each pump to isolate pumps in case the pump requires removal for service and an isolation valve on the discharge of the station to isolate the entire system.

B. Check Valves

1. Pump Discharge Assembly Check Valves
    a. A spring-loaded non-slam type check valve shall be installed on the discharge of each pump. The valve shall be wafer style typed fitted between two flanges. The head loss through the check valve shall not exceed 5 PSI at the pump design capacity. Check valves shall be Val-Matic 1400A series or approved equal.
2. Filter Check Valve
    a. A spring-loaded check valve shall be installed on the outlet of the automatic filter.
    b. The filter check valve shall be constructed of the following materials: Body: Cast Iron ASTM A126B; Trim Material: 316 SS – Spring; Disc Material: Nickel Plated Ductile Iron; Seal Material: EPDM;
    c. The filter check valve shall have a working pressure of 200 psi.

C. Air Relief Valves

1. The pump station shall include continuous acting air relief valves on the discharge manifold, as well as each main pump discharge. The air relief valve shall continuously discharge entrapped air in the system, and shall be constructed of a cast iron body with stainless steel float and trim. Air relief shall be manufactured by Val-Matic or approved equal.

D. Pressure Relief Valve

1. Function
    a. The valve shall protect the piping network by bypassing or relieving excess pressure and shall maintain close pressure limits without causing surges. All water discharged from the pressure relief shall be directed back into the wet well. If upstream pressure decreases below the spring setting, the valve shall close.
2. Model and Manufacturer
    a. The valve shall be a Cla-Val Co. Model No. 50-01/650-01 Pressure Relief and Pressure Sustaining Valve as manufactured by Cla-Val, or approved equal.

E. Intake Screen Supply Valve

1. Automatically controlled solenoid valve to supply water to the wet well intake screen cleaning device.

3.4 Water Filtration

A. The pump station shall include an automatic discharge filter.

1. Filter must be sized to provide maximum pump station flow.
2. The filter element must be capable down to 300 microns.
3. The filter shall automatically remove debris from the interior of the filter element whenever there is a pressure differential of approximately 7 PSI between the intake and discharge of the filter.
4. Pressure gauges shall be located on the inlet and outlet sides of the filter.
5. An automatic flushing interval function shall be incorporated allowing user adjustable flush delays.
6. The filter shall include electric motor that shall be operated by the programmable control system.
7. Multiple filters controlled by the programmable control system must be flushed sequentially.
8. The filter cleaning device shall be suction scanner type that shall suck debris from a minimum of 98% of the total filtration area. At no time during the flushing operation shall waste water exceed 1% of the total system flow rate.
9. During the flush cycle, the pump station shall continue to provide filtered water.

10. PLC monitoring function shall be used to indicate limit and PSID switch failures.
11. Automation of the Automatic Discharge Filter(s) shall be incorporated into the pump station PLC. Use of a separate controller is not acceptable. Pump station manufacturer shall be authorized by Amiad to perform filter automation sequences and must have a minimum of 5 years prior experience and at least 10 functioning pump stations utilizing filter automation.
12. Automatic Discharge Filter(s) shall be AMIAD Model SAF series, or equal.

B. Lake Intake Screen Supply Valve and Controls

1. The pump station shall include automatic inlet screen valve controls.
2. Controls shall have a method to manually test the valve.
3. Automatic controls shall include an interval function to shut off the valve for a user adjustable time allowing the system to detect a period of low usage.

C. Intake Screen

1. A Clemons Clearwater self-cleaning intake screen or equivalent shall be provided to the contractor responsible for installing the wet well and intake structure.
2. The intake screen shall be a Model CW2400 with 24 mesh stainless steel screen and a sealed, heavy duty, bearing for horizontal installation.
3. The intake screen shall be modified in such a way that the standard flanged outlet is removed and replaced by a model 7042 water tight half coupler. The water tight half coupler shall be sized such that it is compatible with the outside diameter of the wet well intake pipe. Intake pipe size shall be verified and coordinated with Owner's irrigation foundation contractor.

3.5 Motor Control Panel (MCP)

The control panel shall be designed, manufactured, programmed, and tested by the Packaged Pump Manufacturer. The Motor Control Panel shall include the following features:

A. General Features:

1. Panel Construction
    a. The pumping station electrical controls shall be mounted in a self-containing NEMA 12 rated enclosure fabricated from not

less than 12 gauge steel. Door gasket seals shall be neoprene sponge, sufficient to protect interior components from weather and dust. The electrical panel doors shall be constructed from 12 gauge steel with integral latches. The MCP shall be NEMA 12 rated enclosure.

2. External Operating Devices and Internal Components
    a. All external operating devices shall be dustproof and weatherproof. All internal components of the enclosure shall be mounted on a removable back panel. Mounting screws for components shall not be tapped into the enclosure wall. No pressure gauges, pressure switches, water activated devices, or water lines of any sort shall be installed in any electrical control panel.
3. MCP Temperature Regulation
    a. Pump control panel cooling shall be provided and sized to the local maximum ambient conditions, plus component cooling requirements. Cooling should be sized such that internal panel temperature does not exceed 104F. Cooling shall conform to NEMA 12 filter fan forced cooling. Filters must be utilized to keep the enclosure free of contaminants. At least two sets of spare filters shall be provided.
4. VFD Status Indicator
    a. VFD status and internal parameters must be viewable without the opening of the enclosure door.
5. Control Panel Manufacturing
    a. The control panel shall be designed, built, tested, and UL 508A listed by the pump station manufacturer.
    b. The control panel shall be UL labeled as an "Enclosed Industrial Control Panel".
    c. The pump control panel shall be completely manufactured, tested and programmed prior to delivery to the job site.
6. Control Panel Information
    a. The following shall be permanently affixed to the inside of the control panel enclosure:
        i. A full-color, diagrammatic wiring schematic.
        ii. Pump and motor nameplate information.
        iii. Factory calibrated control setpoints.
7. Service Rated Main Disconnect
    a. A three-pole, main station disconnect shall be contained within the NEMA 12control enclosure. The disconnect shall

be non-fused and isolate all power to the control enclosure. The disconnect shall have an operating handle mounted in the enclosure door, mechanically interlocked to prevent entry while disconnect is in the ON position. The disconnect shall be UL98 Service Rated.

8. Motor Circuitry Protection
    a. Each motor shall be protected by a combination starter and thermal magnetic circuit breaker. Circuit breaker shall be UL 489 rated. Motor starter shall be electrically and mechanically interlocked. All starters shall be suitable for use in group installation applications according to NEC-430-53(c).
9. Control Transformer
    a. The control transformer shall provide 24 VDC power to the pump station controls. The control transformer shall be protected on primary side with appropriately sized fuses. Secondary side shall be protected by a group of supplementary miniature circuit breakers.
10. Surge Protection
    a. A surge protector shall incorporate a single, heavy duty, distribution grade Metal Oxide Varistor (MOV) disk, assembled under pressure in an environmentally sealed aluminum casing.
    b. Surge suppressor shall meet or exceed the following criteria: Minimum nominal discharge capacity of 20,000 amperes per phase, Response time of 1ns. Suppressors shall consist of solid-state components and operate bi-directionally. Minimum continuous operating voltage of the suppressor shall be 700VAC or greater.
    c. Surge suppressor model shall be Strikesorb model 30-C or 30-D manufactured by Raycap.
11. Secondary Control Circuit Breakers
    a. Single-pole secondary distribution breakers with appropriate ratings shall supply power to each pump starter coil circuit, the control system, and to other circuits as specified.
12. Main Panel Power and Motor Phase Monitor
    a. The incoming power and each motor shall be protected by a phase loss/low voltage system dropout relay to de-energize the pump station control circuit or motor contactor if a phase failure, phase reversal, or low voltage condition occurs. If

after attempted automatic re-starts the phase failure/low voltage alarm condition remains, the alarm must be manually reset. Individual motor overloads shall also act as phase monitors for each motor.

b. The Voltage Monitor shall be model ICM455 as manufactured by ICM Controls, or approved equal.

13. Harmonic Filter
    a. The MCP shall be equipped with a passive harmonic filter that ensures the MCP meets IEEE-519 requirements for harmonic current. The total harmonic current distortion shall be 8% at 30% load, and 5% max at full load. The harmonic filter efficiency range shall be 97% - 99%.
    b. The harmonic filter shall be manufactured by MTE Corporation, or approved equal.

B. Variable Frequency Drives (VFDs)

1. The VFDs shall be appropriately sized to meet the FLA, full load amps, required by the pump motor as stated on the motor nameplate.
2. The control panel shall be equipped variable frequency drives (VFD) on all pumps & motors. VFD shall be isolated from main input power by use of a contactor to protect the VFD from power outside of tolerances.
3. The variable frequency drive shall be IGBT based with selectable carrier frequency up to 15 KHZ. The VFD shall include terminals for incoming power, motor output power and control terminals. All VFDs shall include an RS485 port built-in to the VFD for dedicated communication to the PLC.
4. The VFD shall generate a sine-coded, variable voltage/ frequency, three phase output for optimum speed control. The VFD shall incorporate power loss ride- through for a minimum of 2 seconds. VFD protective features shall include current limit, auto restart, short circuit protection, electronic motor overload protection, and ground fault protection. The VFD shall have a push button programming display for easy access to operation parameters. The VFD shall be protected on the primary side by a breaker of the appropriate amperage.
    a. Overload capacity: 120% rated output current for one minute.
    b. Voltage Fluctuation: +10%, -15%.

c. Sine wave, PWM, with full range, and automatic torque boost.
d. Frequency Control Range: 0.5 to 500Hz.
e. Frequency Accuracy: Digital, 0.01Hz, Analog, .1%. Motor overload protection, Instantaneous over current of 180% of rated output current.
f. Over voltage at 820VDC if 460V input.
g. Under voltage: user-adjustable.
h. Momentary Power Loss: up to 2 second ride through.
i. Electronic Ground Fault.
j. LED capacitor charge indicator.
k. Input Phase loss alarm.
l. Ambient temperature range of 0 to 50 degrees C.
m. Humidity of 95% non- condensing.

5. VFDs shall be ACS550 series manufactured by ABB, or an approved equal.

C. Programmable Logic Controller (PLC)

1. PLC Operator Interface
   a. Hardware
      i. Operator interface shall be used for a logical display of all pump station functions.
      ii. Operator interface shall be a full color LCD Display unit mounted in the control panel door.
      iii. The operator interface shall be NEMA 4 rated.
      iv. The operator interface shall be touch sensitive with intuitive on-screen user instruction for ease of operator use. The use of buttons or keys or off-screen user instructions shall not be permitted.
      v. The operator interface shall be color TFT LCD display type with no less than 800 x 600 pixel resolution, with viewing area measuring not less than 8" diagonal.
      vi. Interface shall have the following data ports:
         1. 1 RJ-45 Ethernet port
         2. 2 USB Ports: 1 Type A & 1 Type B Mini.
      vii. Memory Storage Capacity:
         1. Operator interface shall be capable of holding up to one year of critical pump operation data.

b. The PLC shall be an Allen Bradley 1400, or approved equal.
    i. The Owner owns software to program Allen Bradley PLC's. If a PLC other than an Allen Bradley is submitted as an equal, the alternate PLC shall include software and the software license that will allow the owner to edit the PLC program.

2. PLC Functions

The PLC and Operator Interface shall include, but are not limited to, the following monitoring and control functions:

a. Monitoring Functions

The PLC shall provide the following user monitoring functions:

i. Overview Screen
    1. Pump status, including lead pump designation, VFD frequency, and current draw.
    2. Alarm conditions, with the ability to manually reset alarms.
    3. Current values of all system sensors, including pressure and flow.

ii. Fault Log
    1. The PLC shall have a system fault log that displays the precise times of fault occurrences and recoveries, as well as message indicating the fault type.
    2. The fault log shall include a fault diagnosis utility that provides possible causes of and solutions to all system faults and warnings.

iii. Trend Log
    1. Trend graphing screen capable of detailing pressure, flow, and current data.
    2. Graphing function shall give the option to graph and plot a point at user adjustable intervals.

3. All data shall be capable of being logged and downloaded to a USB drive, and allow an operator to upload the data to a spreadsheet type program.

b. Control Functions
    i. Pressure Settings
    Pressure Settings shall include the following:
        1. Pressure transmitter calibration, discharge pressure setpoint, and high and low pressure alarm conditions.
    ii. Flow Settings
        1. Flow Settings shall include the following:
        2. A display of total gallons pumped with user reset button and time/date stamp of last reset.
        3. Low and High Flow Alarm Conditions.
        4. Flow meter sensor calibration settings.
    iii. Pump Settings
        1. Pump detail screens showing total run hours of each pump since last reset and any modes, options, or functions specific to that pump.
        2. Pump sleep settings.
            a. The pump shall enter sleep mode via user adjustable settings based on either of two thresholds: VFD frequency or system flow. The user shall also be able to adjust the sleep delay mode. The pump shall enter operating mode when the system pressure reaches a user adjustable “Wake-Up” pressure setting.
        3. Pump Lead-Lag settings.
            a. Lag Start and Stop Settings shall be user adjustable, with two different start and stop thresholds:
                i. Lead VFD Frequency, and

ii. System pressure setpoint deviation (starting)/flow (stopping).

iv. Pre-programmed Start-Up Routines
    1. The PLC shall be programmed with various start-up routines that limit and/or delay the starting and acceleration of the pump—ensuring that excessive velocity and pressure do not damage the distribution system.
    2. The program shall include individual routines for initial start-up, mainline fill, re-start after a power outage, and re-start after a system fault.
    3. The operator shall be able to adjust the timing of the routines via the operator interface.

v. Password Protection
    1. The PLC shall have a password protection ability.

vi. Loading and Saving System Default Settings
    1. The system shall allow the operator to Load Factory Default PLC settings, Save New Operator settings, and Load previously saved Operator PLC settings.

vii. System Data and Time
    1. The PLC shall allow the operator to change the system date and time.

viii. Intake screen cleaning
    1. The PLC shall control intake screen cleaning and cleaning interval.
    2. The cleaning interval shall be selectable between a timed interval or an interval based on gallons pumped.
    3. The PLC shall allow the operator to adjust the interval parameters and switch between automatic and manual cleaning modes.

ix. System Protections

1. The PLC shall have the following user adjustable system protections:
    a. Low Flow Shutdown
       The PLC shall automatically shut down the system if there is no, or too little flow, based on signals received from a flow switch. The low flow shutdown shall have a user adjustable time delay.
    b. High Discharge Pressure Shutdown
       In addition to the pressure data received from the pressure transmitter, the PLC shall automatically shut-down the system based on signals from a high pressure switch.
    c. Low Water Level Pump slowdown. The PLC shall read water level in sump. If levels in sump drop and approach the Low Level Shutdown setpoint, the PLC shall activate intake screen cleaning mode. If sump levels continue to drop, the PLC shall lower the discharge setpoint (pressure/flowrate) as needed to prevent the sump from reaching the Low Level Shutdown setpoint. As water levels in sump increase, the PLC shall increase set point back to normal and return intake screen cleaning to interval control. The PID activation shall be user adjustable.
    d. Low Water Level Shutdown
       The PLC shall automatically shut-down the system based on low level signals from a low water switch.

e. Electrical Fault Shutdowns
    i. Incoming power high, low, and imbalance limits in addition to shut down and restart time delays shall be user-adjustable.
    ii. Analog transmitter failure. Input levels of all connected transmitters and meters shall be monitored for failures.
    iii. Motor starter failure. Circuit breaker and/or motor overload contacts shall be monitored to indicate a motor failure.
    iv. VFD Fault.
    v. Phase protection: a phase failure or low voltage safety circuit shall shut the system down in the event of either condition on the line side of the pump starter. Each pump shall have its individual protective device and time delay to allow maximum motor protection during motor starting.
    vi. Optional Alarms for Custom Sensors as defined in the Technical Specifications.

2. The controls shall attempt to restart the system after alarm shutdown or loss of power to minimize loss of irrigation. After a user-adjustable number of attempts to re-pressurize the system, the controls shall go into hard shut down and remain there until manually reset.

3. PLC User Guide
   The pump station manufacturer shall supply an owner's manual in digital form that includes graphic images of all touch screens with explanations of all settings and modes.
4. PLC Program
   The pump station manufacturer shall provide an editable electronic copy of the program installed on the Pump Station PLC.

3.6 Sensors, Switches, and Gauges

The packaged pump station shall include the following sensors, switches, and gauges:

A. **Magnetic Flow Meter**

1. The pump station shall include a magnetic flow meter. By using the system operator interface, an operator shall have access to flow meter data—including current flow rates and total gallons pumped—as well as adjustable settings for flow meter calibration and system flow fault setpoints.
2. The flow meter shall be electromagnetic design comprising of two major components, a primary head and a signal converter. The meter head shall incorporate a straight-thru flow design with no moving parts or pressure loss, low maintenance, and high accuracy.
3. The flow meter shall be constructed of the following materials: Body: Welded steel, epoxy-coated; Liner: dual durometer rubber; Electronics Housing: powder coated diecast aluminum; Electrodes: 316 Stainless Steel. It shall be rated NEMA 4X, have a working pressure of 150 psi, and an operating temperature range between 10° –130° F.
4. The flow meter signal converter shall produce a pulse signal output in linear proportion to the flow rate.
5. Flow meter shall read flows from 0 to full design flow. Accuracy shall be +/-1% of reading for flow between 10% and 100% of max flow and +/-2% of reading for flow from cutoff to 10% of max flow.
6. Flow meter shall be externally powered with battery backup in case of power failure.
7. Meter shall be installed according to manufacturer straight pipe requirements.

8. The meter shall be fully tested during the pump station full run performance testing while at the factory prior to shipment. The magnetic flow sensor on the pump station shall be calibrated against a master meter.
9. The flow meter shall be Seametrics AG2000, or approved equal.

B. **Pressure Gauges**

1. Pressure gauges shall have a 304 stainless steel case, with bezel construction. Gauges shall have a 2.5” diameter, liquid filled. Pressure sensing connection shall be 1/4" NPT lower gauge connection.

C. **Pressure Transmitters**

1. The station shall have pressure transmitters to continually monitor system pressure.
2. The pressure transmitters shall provide noise free, linear output that is proportional to pressure. Transmitter shall be solid-state, strain gauge type with integral voltage regulation and output accuracy not less than 0.4%. Transmitter shall be constructed of stainless steel and rated for the pump station discharge pressure called out in the technical specifications.
3. The pressure transmitter shall be manufactured by IFM or approved equal.

D. **Low Intake Water Switch**

1. The pumping system shall be equipped with a safety switch to shut off the system if the water supply for the pump station is insufficient. The switch shall work in conjunction with the PLC (programmable logic controller). In the event that the supply drops below a safe operating level, the PLC will shut down the pump system. The PLC shall be programmed to attempt to restart the pumping system two times. If after two attempts the water supply is still too low, the system will require a manual reset.

E. **PID Sump Level Sensor**

1. The system shall be equipped with a liquid level transmitter in the sump to measure water level.

3.7 Wiring

A. All wiring shall conform to NEC standards, as well as UL 508A Panel standards.

PART 4 – WORKMANSHIP

4.1 Examinations

1. The design engineer shall verify and provide their approval of the Pressure Irrigation Station to the City of Twin Falls.
2. After the Pressure Irrigation station has been approved by the design engineer, the City Engineer or an authorized representative for the City of Twin Falls may accept the Pressure Irrigation station by verifying construction of station meets or exceeds the Pressure Irrigation Station construction plans, performance requirements, and submittals.

Division 900 – Standard Drawings

SD 901 – Pressure Irrigation Service with 4” PVC Valve Box

Remove and replace drawing with TFSD 901.

SD 902 – Pressure Irrigation Service with Fiberglass Valve Box

Remove drawing.

SD 903 – Pressure Irrigation Riser Location

Remove and replace drawing with TFSD 903.

ADD TFSD 904 – Pressure Irrigation 2” Blow-off Assembly

ADD TFSD 905 – Temporary Pressure Irrigation Blow-off Assembly

Division 1000 – CONSTRUCTION STORMWATER (BMPs)

Section 1002 – Construction Site Housekeeping

Subsection 1.1 – Section Includes

Add the following to Item A:

6. Concrete Washout

Division 1100 – TRAFFIC

Section 1101 – Traffic Signals and Appurtenances

Delete the section in its entirety. Traffic signals and appurtenances by design only as approved by the City Engineer.

Section 1102 – Street Lighting

Subsection 2.2 – Junction Boxes

Delete subsection in its entirety and replace it with the following:

A. Provide a reinforced stackable footed polymer concrete box approved for roadway installation with a traffic rated, UL approved, bolt down cover (marked “electrical”) and frame. Minimum size is 11” × 18” × 18” (Length × Width × Depth).

B. Box to be Hubbell Quazite PG1118JA18 or approved equal. Cover to be Hubbell Quazite PG1118HH0041 or approved equal.

Subsection 2.3 – Fuse Holders

Delete Item A and replace it with the following:

A. Insulated fuse holders (installed at the base of each metal pole), one per each ‘hot’ line.

1. Fuse Holder and Insulating Boot: In-line, water resistant, Ferraz Shawmut Model FEB-81-81-BA or approved substitution.

Subsection 2.5 – Conduit

Delete Item A.2 in its entirety and replace it with the following:

2. Schedule 80 PVC conduit: UL approved, 1 inch minimum diameter

Subsection 2.11 – Fiberglass Poles

Delete the subsection in its entirety.

Subsection 2.12 – Historical Poles

Delete last sentence from Item A.

Subsection 2.13 Concrete Pole Bases

Modify Item A as follows:
Replace “3000” with “4000”

Delete “be” from Item C.

Subsection 2.16 Light Fixtures

Delete from the following from Item B:
“, high pressure sodium light source”

Delete Item D in its entirety and replace it with the following:
LED lighting color temperature between 4000K and 4400K.

Delete Item F in its entirety and replace it with the following:
Acrylic or glass lens with internal refractor. Type of distribution required by local agency.

Subsection 3.1 Examinations

Delete Item B.3.

Subsection 3.6 Disconnect Boxes

Add the following to the title of the Subsection:
“(If required) Wood Pole Application ONLY”

Subsection 3.7 Grounding

Modify Item B as follows:
Delete “fastened”

Subsection 3.9 Pole Installation

Modify Item B as follows:
Delete “or fiberglass”

Modify Item H as follows:
Replace “hold” with “hole”

Section 1103 – Construction Traffic Control

Subsection 3.1 - General

Add the following to Item C:

Contractor shall not close a roadway more than three (3) hours before work is to begin on that particular roadway.

Division 1100 – Standard Drawings

SD 1109 – Standard Signal Pole Foundation Detail

Remove and replace drawing with TFSD 1109.

SD 1110 – Standard Cabinet Foundation – Detail A

Remove and replace drawing with ITD Standard Drawing I-7-A-1.

SD 1111 – Standard Cabinet Foundation – Detail B

Remove and replace drawing with ITD Standard Drawing I-7-A-2.

SD 1112 – Standard Detector Loop Wire Color Scheme Detail

Remove drawing.

SD 1114 – Standard Traffick Signal Mast Arm and Pole – Detail A

Remove drawing.

SD 1115 – Standard Traffic Signal Mast Arm and Pole – Detail B

Remove drawing.

SD 1116 – 25’ Standard Metal/Fiberglass Streetlight with Mast Arm Greater than 6’

Remove and replace drawing with TFSD 1116.

SD 1117 – Street Light Installation 25’ Standard Concrete Base

Remove and replace drawing with TFSD 1117.

SD 1119 – Street Light Installation 25’ Standard Direct Burial

Remove and replace drawing with TFSD 1119.

SD 1126 – Metered Illumination and Metered Signalization Electrical Service Pedestal

Remove and replace drawing with ITD Standard Detail td04PAD.

Division 2000 – MISCELLANEOUS

SECTION 2020 – SURVEY MONUMENTS

Subsection 3.3 – Poured Monuments

Modify Item B as follows:

Delete “Owner” and replace it with “Contractor”

SECTION 2030 – UTILITY ADJUSTMENTS

Subsection 3.1 – Manholes, Storm Drains, and Valve Boxes

Modify Item D as follows:

Delete “21” and replace it with “12”

Subsection 3.2 – Raise Manhole to Grade

Modify Item A as follows:

Delete “21” and replace it with “12”

Modify Item B as follows:

Delete “21” and replace it with “12” in both locations.

SECTION 2040 – FENCING

Add Subsection 1.5 – Submittals

Submit shop drawings for gates showing all bracing and hardware.

Add SECTION 2060 – WATER FOR CONSTRUCTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This work consists of providing water as necessary for the construction of the project including but not limited to the following:

1. Dust Abatement

2. Water for Compaction
3. Drilling Operations

1.2 RELATED SECTIONS

A. Section 201 – Clearing and Grubbing
B. Section 202 – Excavation and Embankment
C. Section 206 – Permanent Erosion Control
D. Section 207 – Permanent Stormwater BMPs
E. Section 301 – Trench Excavation
F. Section 307 – Street Cuts and Surface Repairs
G. Section 401 – Water Pipe and Fittings
H. Section 501 – Gravity Sewers
I. Section 601 – Culvert, Storm Drain and Gravity Irrigation Pipe
J. Section 703 – Cast-In-Place Concrete
K. Section 801 – Uncrushed Aggregates
L. Section 802 – Crushed Aggregates
M. Section 901 – Pressure Irrigation Pipe and Fittings

PART 2 MATERIALS

2.1 NOT USED

PART 3 WORKMANSHIP

3.1 Provide sufficient equipment and materials to apply water as needed and/or as directed by the Engineer for suppressing dust caused by construction activities, obtaining sufficient compaction of materials, aiding in drilling operations, or for any other construction activities.

3.2 Water meters and access to City of Twin Falls fire hydrants may be procured by contacting the City of Twin Falls Water Department at (208) 736-2275.

PART 4 MEASUREMENT AND PAYMENT

4.1 Use the following unit price options as designated in the Bid Schedule for Excavation. If required and not listed in the Bid Schedule, the following Bid Items are to be considered incidental to other Bid Items.

A. Water for Construction: By the lump sum. Includes full compensation for all materials, labor, and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 2060.4.1.A.1
2. Bid Schedule Description: Water for Construction…lump sum (LS).

B. Water for Construction: By the 1,000 gallons measured through calibrated tanks, distributors or accurate water meters. Includes full compensation for all materials, labor, and equipment necessary for completing the work and all appurtenances not itemized on the Bid Schedule.

1. Bid Schedule Payment References: 2060.4.1.B.1
2. Bid Schedule Description: Water for Construction…1,000 gallons (MG).

END OF SECTION

Division 2000 – Standard Drawings

SD 2030A – Adjust Standard Manhole Type A to Grade

Remove drawing.

SD 2030AA – Construction Traffic Control

Remove drawing.

SD 2030BA – Construction Traffic Control

Remove drawing.

ADD TFSD 2040I – Chain Link Fence Detail