CITY OF VALDEZ
ALASKA

CM/GC CONTRACT DOCUMENTS

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200
Contract Number: 1933
Cost Code: 310-1115-58000

Issued for Construction
Date:

City of Valdez
Capital Facilities and Engineering
300 Airport Road, Suite 201
P.O. Box 307
Valdez, Alaska 99686

Project Manager:
Brad Sontag

95% Construction Plan Set Completed By:
Kinney Engineering, LLC
3909 Artic Blvd., Suite 400
Anchorage, Alaska 99503

City of Valdez
CM/GC Contract Documents

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ARTICLE 1 GENERAL

1.1 RELATIONSHIP OF PARTIES

Contractor accepts the Construction Manager relationship of trust and confidence established with the Owner by the Contract, and covenants with the Owner to furnish the Contractor's reasonable skill and judgment and to cooperate with the Engineer and the Project Manager (defined in Section 3.2) in furthering the interests of the Owner. The Contractor shall furnish Pre-Construction and Construction Phase construction services, cost tracking and scheduling and other similar services and use the Contractor's best efforts to perform the Work in an expeditious and economical manner consistent with the interests of the Owner. The Owner shall endeavor to promote cooperation among the Engineer, the Project Manager, the Contractor and other persons or entities employed by the Owner for the Project.

1.2 GENERAL

For the Construction Phase (including any portion of the Construction Phase that proceeds concurrently with the Preconstruction Phase), the General Provisions of this Contract shall be the standard City of Valdez General Provisions, Division 10 ("General Provisions"), which are attached and incorporated herein by reference as (Exhibit B). These may be modified by the Special Provisions (Exhibit C).

ARTICLE 2 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall perform the services and construct the Work as designed in the Contract Documents. The services specified in Sections 2.1 are to be provided in the Preconstruction Phase. The Work specified in Section 2.3 is to be provided in the Construction Phase. If the Owner and the Contractor agree, the Construction Phase may commence before the Preconstruction Phase is completed, in which case both Phases will proceed concurrently.

2.1 PRECONSTRUCTION PHASE

2.1.1 **PRELIMINARY EVALUATION**

The Contractor shall provide a preliminary evaluation of the Owner's Work budget and schedule requirements, each in terms of the other.

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2.1.2 **CONSULTATION**

The Contractor, the Project Manager and the Engineering firm shall jointly schedule and attend regular meetings with the Owner. The Contractor shall consult with the Owner and Engineer regarding site use and improvements and the selection of materials, building systems and equipment. The Contractor shall provide recommendations on construction feasibility, actions designed to minimize adverse effects of labor or material shortages or harsh weather conditions, time requirements for procurement, installation and construction completion, and factors related to construction cost, including estimates of alternative designs or materials, preliminary budgets and possible economies.

2.1.3 **PRELIMINARY WORK SCHEDULE**

When Work requirements described in Section 3.1 have been sufficiently identified, the Contractor shall prepare, and periodically update, a preliminary Work construction schedule for the Engineer's review and the Owner's approval. The Contractor shall (a) obtain the Engineer's approval of the portion of the preliminary Work construction schedule relating to performance of the Engineer's services and (b) coordinate and integrate the preliminary Work construction schedule with the other Project services and activities. As design proceeds, the preliminary Work construction schedule shall be updated to indicate proposed activity sequences and durations, milestone dates for receipt and approval of pertinent information, submittal of a Guaranteed Maximum Price and Schedule of Values (defined in Section 2.2.4.6) proposal, preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead-time procurement, Owner's occupancy requirements showing portions of the Work having occupancy priority, and proposed date of Substantial Completion. If preliminary Work schedule updates indicate that previously approved schedules may not be met, the Contractor shall make appropriate recommendations to the Owner and Architect.

2.1.4 **PHASED CONSTRUCTION**

The Contractor shall make recommendations to the Owner and Engineer regarding the phased issuance of Construction Documents to facilitate phased construction of the Work, if such phased construction is appropriate for the Work, taking into consideration such factors as economies, time of performance, availability of labor and materials, harsh weather conditions, ability to finish required work as scheduled, and provisions for temporary facilities.

2.1.5 **PRELIMINARY COST ESTIMATES**

During the preparation of the Construction Documents for the Work, the Contractor shall update and refine the construction cost estimate at appropriate intervals agreed to by the Project Manager, Engineer and Contractor.

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2.1.6 **SUBCONTRACTORS AND SUPPLIERS**

The Contractor shall seek to develop interest by subcontractors (each subcontractor a "Subcontractor"; a subcontractor of a Subcontractor also a "Subcontractor") and suppliers (each supplier a "Supplier"; a supplier of a Supplier also a "Supplier") for the Work, including those Subcontractors and Suppliers specified in Section 2.1.10, and shall furnish upon request to the Owner and Engineer for their information a list of possible Subcontractors and Suppliers who are to furnish work, materials or equipment fabricated to a special design, from which bids or proposals will be requested for principal portions of the Work. The Owner will promptly reply in writing to the Contractor if the Owner has any objection to any such Subcontractor or Supplier. The receipt of such list shall not require the Owner to investigate the qualifications of proposed Subcontractors or Suppliers; nor shall it waive the right of the Owner later to object to or reject any proposed Subcontractor or Supplier and/or to require competitive bidding or proposals for Subcontractor or Supplier selection by the Contractor.

2.1.7 **LONG-LEAD-TIME ITEMS**

The Contractor shall recommend to the Owner and Engineer a schedule for procurement of long-lead-time items which will constitute part of the Work as required to meet the Work schedule. If such long-lead-time items are procured by the Owner, they shall be procured on terms and conditions acceptable to both the Owner and the Contractor. Upon the Owner's acceptance of the Contractor's Guaranteed Maximum Price and Schedule of Values proposal, all contracts for such items shall be assigned by the Owner to the Contractor and assumed by the Contractor, and the Contractor shall accept responsibility for such items as if procured by the Contractor. The Contractor shall expedite the delivery of long-lead-time items.

2.1.8 **EXTENT OF RESPONSIBILITY**

The Contractor does not warrant or guarantee estimates and schedules except as may be included as a condition to or in the Guaranteed Maximum Price, the Schedule of Values, any Change Orders, any amendment to this Contract, or any Subcontract, Supply Contract or Work authorized pursuant to Section 2.3.1.1(b). The recommendations and advice of the Contractor concerning design alternatives, construction feasibility, costing and scheduling, and other required construction management services shall be subject to the review and approval of the Owner, the Engineer, and the Owner's other professional consultants. It is not the Contractor's responsibility to ascertain that the Contract Documents (including the Construction Documents) are in accordance with applicable laws, statutes, ordinances, building codes, rules and regulations. However, if the Contractor claims that portions of them are at variance therewith, the Contractor shall promptly notify the Architect and the Owner in writing, specifying the particulars of such

variances. Contractor shall not be deemed to have waived any future claim that any specific part of the Contract Documents (including the Construction Documents) contains an error which has caused the Contractor to suffer increased Costs of Work, losses, damages or delays.

2.1.9 **EQUAL EMPLOYMENT OPPORTUNITY, AFFIRMATIVE ACTION & MINIMUM WAGES**

The Contractor shall comply with (a) all applicable laws, regulations and special requirements of the Contract Documents regarding equal employment opportunity and affirmative action programs, (b) any minimum wage requirements of Federal and/or State law, and (c) any special requirements that may be required by any of the Owner's funding sources for the Work. Owner shall advise Contractor of all such special requirements by the Owner's funding sources. Alaska prevailing wage requirements are in Article 6.15 of the General Provisions.

2.1.10 **REQUIRED PERSONNEL**

Contractor shall assign and provide a list of specific personnel to be primarily in charge of and responsible for Contractor's Construction Phase services. Contractor shall not re-assign or substitute for such equivalent personnel without the Owner's prior written consent, which shall not be unreasonably withheld.

2.2 GUARANTEED MAXIMUM PRICE PROPOSAL AND CONTRACT TIME

2.2.1 "**GMP" COST PROPOSAL**

When the Construction Documents are sufficiently complete in the opinion of both the Owner and Contractor, within 30 days thereafter the Contractor shall propose an updated Guaranteed Maximum Price, which shall be the sum of the estimated Cost of the Work (including Contractor's Contingency defined in Section 2.2.3.2) (including the Owner's Contingency defined in Section 2.2.3.1) and the Contractor's Fixed Fee (defined in Section 4.1.1) for construction of the Work in accordance with the Contract Documents (including the Construction Documents).

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2.2.2 CHANGES TO THE "GMP" COST PROPOSAL

If the Construction Documents are not finished and approved by the Owner at the time the Guaranteed Maximum Price and Schedule of Values proposal is made, the Contractor shall base the Guaranteed Maximum Price on the then existing Construction Documents by the Architect that includes such things as changes in scope or substantial changes in systems, kinds and quality of materials, finishes, or equipment shall entitle the Contractor and/or the Owner to a Change Order that adjusts the Guaranteed Maximum Price based upon such change as set forth in the General Provisions. Otherwise, neither the Contractor nor the Owner shall be entitled to any Change Order or other adjustment to the Guaranteed Maximum Price or Schedule of Values as a result of any such change.

2.2.3 THE GUARANTEED MAXIMUM PRICE

The Guaranteed Maximum Price proposal shall include all costs which are properly reimbursable as a Cost of the Work and include two separate contingency funds: 1) an Owner's Contingency fund, which may also be identified as a Scope & Unforeseen Conditions Contingency; and 2) a Construction Manager's Contingency fund, which may also be identified as Contractor Contingency. The value of these funds shall be negotiated as part of the Guaranteed Maximum Price cost reconciliation process. A request to utilize these funds shall be made in the form of a Contingency Authorization Request to be reviewed by the Owner's Representative. Guaranteed Maximum Price (GMP) is not to be construed as guaranteeing the price of individual line items in the GMP estimate, Schedule of Values or Budget Estimate. The Contractor guarantees that the total cost of the work as defined in the agreement, including the Contractor's fee, will not exceed the total GMP amount defined in this Contract.

With prior Owner approval, Contingency may be used to account for errors and omissions in the Construction Documents; or for unknown conditions. Unused amounts in the Contractor's Contingency and the Owner's Contingency will be returned to the Owner at the Completion of the Work.

2.2.3.1 OWNER'S CONTINGENCY

Owner's Contingency: To the extent that the Drawings and Specifications are anticipated to require further development and complete the design, the Construction Manager shall provide in the Guaranteed Maximum Price for such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include such things as material changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required shall be funded, at the Owner's sole discretion, through the Owner's

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Contingency. A request to access the Owner's Contingency will not be warranted if the Work in question was reasonably inferable from or contemplated by, or a prudent contractor should have realized that the Work was necessary and appropriate under the Contract Documents referenced in the Guaranteed Maximum Price proposal.

2.2.3.2 **CONTRACTOR'S CONTINGENCY**

This project will NOT include a Contractor's Contingency:

Damaged work not covered by insurance, subcontractor performance and unanticipated expediting cost for materials are the responsibility of the General Contractor to the extent permitted by the Contract Documents.

2.2.3.3 **CONTINGENCY AUTHORIZATION REQUEST**

Contingency Authorization Request: The Construction Manager must give the Owner notice and supporting cost backup when applying to use the Owner's Contingency. The Construction Manager shall use the Owner's Contingency only with the Owner's prior written consent which shall be granted at the Owner's sole discretion. Use of the Contingency shall be tracked in the Schedule of Values submitted with the Application for Payment. Any balance remaining in the Owner's Contingency shall be returned to the Owner at the end of the Project.

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2.2.4 BASIS OF GUARANTEED MAXIMUM PRICE

The Contractor shall include with the Guaranteed Maximum Price proposal a written statement of its basis, which shall include: A list of all of the Contract Documents (including the Drawings and Specifications), which are the basis for, and included within, the Guaranteed Maximum Price proposal. 95% Pricing Set Dated May 31, 2022.

1. A list of all allowances assumed by the Contractor in its Guaranteed Maximum Price proposal and a statement of their basis.

2. A list of the clarifications and assumptions made by the Contractor in the preparation of the Guaranteed Maximum Price proposal to supplement the information contained in such Construction Documents and other Contract Documents. See Exhibit 1

3. Items in the options log (dated 4-7) 8, 17, 23,24, 36, 39. See Exhibit 2

4. The proposed Guaranteed Maximum Price See Exhibit 4

5. A time schedule for performing the Work covered by the Guaranteed Maximum Price, which includes (a) the Date of Substantial Completion for such Work upon which the proposed Guaranteed Maximum Price is based and (b) the required permitting issuance dates (if any) upon which the date of Substantial Completion is based. See Exhibit 3

6. A schedule of values ("Schedule of Values") for all of the Work covered by the Guaranteed Maximum Price. The Schedule of Values shall allocate the Guaranteed Maximum Price among the various portions of the Work by CSI Specifications, showing the Contractor's Fee and Contractor's Contingency as separate items. See Exhibit 4

7. Reimbursable Rates – See Exhibit 5

2.2.5 "GMP" SUBMITTAL

The Contractor shall submit to the Owner and Architect the Guaranteed Maximum Price and Schedule of Values proposal, including the written statement of its basis. In the event that the Owner or Architect discovers any inconsistencies or inaccuracies in the information presented, they shall promptly notify the Contractor, who shall make appropriate adjustments to the Guaranteed Maximum Price proposal, its basis, or both.

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2.2.6 **"GMP" SUBMITTAL REVIEW TIMEFRAME**

The Owner shall have 30 days to review and accept the Guaranteed Maximum Price and Schedule of Values proposal in writing. Unless the Owner timely accepts the proposal by notifying the Contractor, the Guaranteed Maximum Price and Schedule of Values proposal shall not be effective without written acceptance by the Contractor.

2.2.7 **PRIOR TO "GMP" ACCEPTANCE**

Prior to the Owner's acceptance of the Contractor's Guaranteed Maximum Price and Schedule of Values proposal and issuance of a Notice to Proceed with the Work, the Contractor shall not incur any cost to be reimbursed as part of the Cost of the Work, except as the Owner may specifically authorize in writing. However, the Owner shall have the right to issue (a) a Notice to Proceed to the Contractor for specific early portions of the Work prior to agreement on the Guaranteed Maximum Price if the price and other terms for such specific portions of the Work are agreed upon in writing by the Contractor and the Owner or (b) absent such agreement, a Construction Change Directive(s) for such specific portions of the Work may be issued by the Owner.

2.2.8 **"GMP" ACCEPTANCE**

Upon acceptance by the Owner of the Guaranteed Maximum Price and Schedule of Values proposal, the Guaranteed Maximum Price and Schedule of Values shall be set forth in the Contract Documents that is executed by the Owner and Contractor. This Contract including the General Provisions, the Construction Documents, and documents specified by the Contract pursuant to Section 2, shall thereafter constitute the "Contract Documents." The Guaranteed Maximum Price and Schedule of Values shall be subject to additions and deductions by changes in the Work as provided in the Contract Documents, and the Date of Substantial Completion shall be subject to adjustment as provided in the Contract Documents.

2.2.9 **REVISION OF CONSTRUCTION DOCUMENTS**

The Owner shall authorize and cause the Engineer to revise the Construction Documents to the extent necessary to reflect the agreed-upon assumptions and clarifications contained in any amendment to this Contract referred to in Section 2.2.8. Such revised Construction Documents shall include any revised Work or Substantial Completion schedule agreed to by the Owner, Engineer and Contractor. The Contractor shall promptly notify the Engineer and Owner if such revised Construction Documents are inconsistent with or contrary to the agreed-upon assumptions and clarifications.

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2.2.10 **APPLICABLE SALES AND USE TAXES**

The Guaranteed Maximum Price shall include in the Cost of the Work only those applicable sales and use taxes which are enacted at the time the Guaranteed Maximum Price established. Any applicable sales, use or similar taxes that are first enacted after the Guaranteed Maximum Price is agreed to entitle Contractor to a Change Order equitably adjusting the Guaranteed Maximum Price. However, no income tax or increase therein applicable to the Contractor shall entitle it to any such Change Order.

2.3 CONSTRUCTION PHASE

2.3.1 **GENERAL**

The Construction Phase shall commence on the earlier of: (a) the Owner's acceptance of the Contractor's Guaranteed Maximum Price and Schedule of Values proposal and issuance of a Notice to Proceed, or (b) the Owner's first authorization to the Contractor to: (i) award a Subcontract or Supply Contract or (ii) undertake construction Work with the Contractor's own forces: provided, however, that in the case of the authorizations referred to in Section 2.2.7 the Construction Phase shall apply only to such Subcontract, Supply Contract or Work, (ii) the Construction Phase for the remaining part of the Work shall not begin until the Guaranteed Maximum Price and Schedule of Values are agreed to by the Contractor and the Owner in writing, and (iii) the price of all such Subcontract, Supply Contract and Work shall be included in the Guaranteed Maximum Price and Schedule of Values if and when they are agreed to by the Contractor and the Owner in writing.

2.3.2 **ADMINISTRATION**

Those portions of the Work that the Contractor does not customarily perform with the Contractor's own personnel shall be performed by Subcontractors under subcontracts ("Subcontracts") or by Suppliers under supply contracts ("Supply Contracts") with the Contractor. The Contractor shall obtain bids or proposals from Subcontractors (as required by the Owner), and Suppliers of materials or equipment fabricated to a special design for the Work, from the list previously approved by the Owner and, after analyzing such bids or proposals, shall deliver such bids or proposals to the Owner. The Owner will then determine, with the advice of the Contractor, which bids or proposals will be accepted. The Owner may designate specific persons or entities from which the Contractor shall obtain bids or proposals. The Owner reserves the right to require the Contractor to obtain competitive bids or proposals for any Subcontract or Supply Contract which has a cost to the Contractor of $10,000 or more. If a non-competitive or competitive proposal method for such a Subcontract or Supply Contract would result in

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significant cost savings to Owner, Contractor shall propose such method to Owner for its consideration and decision. If the Guaranteed Maximum Price has been established, the Owner may not prohibit the Contractor from obtaining bids or proposals from other qualified Subcontractor or Supplier bidders or proposers. The Contractor shall not be required to contract with any Subcontractor or Supplier to which the Contractor has reasonable objection; and the Contractor shall not contract with any Subcontractor or Supplier to which the Owner has reasonable objection.

If the Guaranteed Maximum Price has been established and a specific bidder or proposer among those whose bids or proposals are delivered by the Contractor to the Owner (a) is recommended to the Owner by the Contractor, (b) is qualified to perform that portion of the Work, and (c) has submitted a bid or proposal which conforms to the requirements of the Contract Documents without reservations or exceptions, but the Owner requires that another bid or proposal be accepted, then the Contractor may require that a change in the Work be issued to equitably adjust the Contract Time and the Guaranteed Maximum Price and Schedule of Values or other change in the Contract Documents based thereon.

Subcontracts with Subcontractors and Supply Contracts with Suppliers furnishing materials or equipment fabricated to a special design shall conform to the payment provisions of Sections 6.

The Contractor shall schedule and conduct periodic meetings at which the Owner, Project Manager, Contractor and appropriate Subcontractors and Suppliers to discuss the status of the Work. The Project Manager shall prepare and promptly distribute accurate meeting minutes.

Promptly after the Owner’s acceptance of the Guaranteed Maximum Price and Schedule of Values proposal, the Contractor shall prepare a Construction Schedule in accordance with Article 5.22 of the General Provisions.

The Contractor shall provide monthly written reports to the Owner and Project Manager on the progress of the Work. The Contractor shall maintain an accurate and complete daily log containing a record of weather, Subcontractors working on the site, number of workers working on the Work site, Work accomplished, problems encountered and other similar relevant data as the Owner may reasonably require. The log shall be available to the Owner for its inspection and copying.

The Contractor shall develop a system of control for the Cost of Work acceptable to the Owner, including regular monitoring of actual Costs of Work for activities in progress and estimates for uncompleted tasks and proposed changes. The Contractor shall identify variances between actual and estimated Costs of Work for the Negotiated Support Services only and report the variances to the Owner on at least a monthly basis.

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At the request of the Owner, the Contractor shall provide copies of job records or reports on a scheduled or as-requested basis. The cost of preparing these copies will be an eligible Cost of the Work.

2.4 PROFESSIONAL SERVICES

The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Engineer will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Owner. The Owner shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Engineer specified to the Contractor all performance and design criteria that such services must satisfy. The Engineer will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

2.5 HAZARDOUS MATERIALS

2.5.1 **PRECAUTIONS**

If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a hazardous or toxic material or substance, including, but not limited to, asbestos or polychlorinated biphenyl (PCB), encountered at the Work site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Project Manager in writing.

2.5.2 **TESTING**

The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the hazardous or toxic material or substance reported by the Contractor and, in the event any such hazardous or toxic material or substance is found to be present in dangerous amounts, to verify that it has been rendered harmless. Unless otherwise

required by the Contract Documents, the Project Manager shall furnish in writing to the Contractor the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such hazardous or toxic material or substance or who are to perform the task of removal or safe containment of such hazardous or toxic material or substance. The Contractor will promptly reply to the Project Manager in writing stating whether or not either has reasonable objection to the persons proposed by the Project Manager. If the Contractor has an objection to a person proposed by the Project Manager, the Project Manager shall propose another to whom the Contractor has no reasonable objection. When the hazardous or toxic material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

2.6 REQUIRED PERSONNEL

For the Construction Phase services the Contractor shall provide a list of names to the Owner of all of the Contractor's personnel, their titles and the roles they will hold during the Construction Phase. Contractor shall not reassign or substitute such personnel without the Owner's consent, which shall not be unreasonably withheld.

2.7 FINANCIAL ARRANGEMENTS

In addition to the Performance and Payment Bond requirements in Article 3.5 of the General Provisions, the Contractor shall, at the written request of the Owner, prior to commencement of the Construction Phase and thereafter whenever required by the Owner, furnish to the Owner reasonable evidence that adequate financial arrangements have been made to fulfill the Contractor's obligations under the Contract. Furnishing of adequate evidence shall be a condition precedent to the Contractor's right to commence and continue the Work. After such evidence has been furnished, the Contractor shall not materially vary such financial arrangements without prior notice to Owner.

ARTICLE 3 OWNER'S RESPONSIBILITIES

3.1 INFORMATION OF SERVICES

For the Preconstruction Phase, the Owner shall provide information in a timely manner regarding its requirements for the Work which sets forth the Owner's objectives, constraints, criteria, space requirements and relationships, flexibility and expandability requirements, special equipment and systems, and site requirements.

The Owner shall establish and update an overall budget for the Work, based on consultation with the Contractor, which shall include contingencies for changes in the Work and other costs which are the responsibility of the Owner.

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3.1.2 STRUCTURAL AND ENVIRONMENTAL TESTS, SURVEYS & REPORTS

In the Preconstruction Phase, Owner shall furnish to the Contractor with reasonable promptness, at the Owner's expense, the following, except to the extent that the Contractor knows or should know of any inaccuracy, the Contractor shall be entitled to rely upon the accuracy of any such information, reports, surveys, drawings and tests, but shall exercise customary precautions in doing so:

Reports, surveys, drawings and tests concerning the physical conditions of the site which are required by law.

Surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the site; locations, dimensions and necessary data pertaining to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All information on the survey shall be referenced to a Project benchmark.

To the extent reasonably required and when requested by the Contractor, the services of a professional geotechnical engineer for test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, ground corrosion and resistivity tests, including necessary operations for anticipating subsoil conditions, with reports and appropriate professional recommendations.

Structural, mechanical, chemical, air and water pollution tests, tests for hazardous materials, and other laboratory and environmental tests, inspections and reports which are required by law.

The services of other consultants when such services are reasonably required for the Work are requested by the Contractor and are customarily provided by other owners in similar circumstances.

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3.2 OWNER'S PROJECT MANAGER

The Owner shall designate in writing a representative ("Project Manager") who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization, Such Project Manager shall have the authority to make day to day decisions on behalf of the Owner related to the administration of the Work and will coordinate Owner approvals concerning estimates and schedules, construction budgets, and changes in the Work as required. The Project Manager shall render decisions promptly and furnish information expeditiously, so as to avoid unreasonable delay in the Work of the Contractor. The Project Manager for all such matters is Brad Sontag.

3.3 ENGINEER

The Owner shall retain an engineer and/or other qualified professionals to provide Design Services, including civil engineering, landscape, electrical engineering and cost estimating services (in addition to those cost estimating services required of the Contractor) for the Work. The Owner has retained Kinney Engineering to provide the Basic Design Services for the Work. Such services shall be provided in accordance with time schedules agreed to by the Owner and Contractor.

3.4 LEGAL REQUIREMENTS

The Owner shall determine and advise the Contractor of any special legal requirements relating specifically to the Work which are known to the Owner and differ from those generally applicable to construction of the Work in Alaska.

ARTICLE 4 COMPENSATION

For the Contractor's performance of the Work as described in Section 2.3, the Owner shall pay the Contractor in current funds the Contract Sum consisting of the Cost of the Work as defined in Article 5 and the Contractor's Fee determined as follows:

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4.1 COMPENSATION

For the Contractor's performance of the Work as described in Section 2.3, the Owner shall pay the Contractor in current funds the Contract Sum consisting of the Cost of the Work as defined in Article 5 and the Contractor's Fee determined as follows:

4.1.1 **Pavement Management Phase III – Whalen Avenue CM/GC Contractor "GMP" Fee: $3,841,475.50**

Grand Total of GMP = 3,841,475.50 (Three Million Eight Hundred Forty-one Thousand Four Hundred Seventy-five Dollars and Fifty cents)

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4.2 GUARANTEED MAXIMUM PRICE

The sum of the maximum Cost of the Work agreed to in writing by the Contractor and the Owner and the Contractor's Fixed Fees based thereon are guaranteed by the Contractor not to exceed the amount provided in the amendment to this Contract referred to in Section 2.2.8, subject to additions and deductions by changes in the Work by Change Order or Construction Change Directive as provided in the Contract Documents. Such maximum sum as adjusted by approved changes in the Work is referred to in this Contract and the other Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner. Guaranteed Maximum Price (GMP) is not to be construed as guaranteeing the price of individual line items in the GMP estimate, Schedule of Values or Budget Estimate. The Contractor guarantees that the total cost of the work as defined in the agreement, including the Contractor's fee, will not exceed the total GMP amount defined in this Contract.

4.3 CHANGES IN THE WORK

4.3.1 **ADJUSTMENTS TO "GMP"**

Adjustments to the Guaranteed Maximum Price on account of changes in the Work subsequent to the execution of the amendment to this Contract referred to in Section 2.2.8 may be determined by any of the methods listed in Article 5.20 of the General Provisions.

In no event shall the aggregate profit and general, administrative and overhead charges of (a) Contractor exceed 4.267% of any Change Order or Construction Change Directive allowable direct costs, (b) any Subcontractor exceed 12% of any Change Order or Construction Change Directive allowable direct costs, or (c) any Supplier exceed 8% of any Change Order or Construction Change Directive allowable direct costs. In no event shall the total of all such profit, general, administrative and overhead percentages exceed 24.267%, regardless of whether there are multiple tiers of Subcontractors and/or Suppliers.

4.3.2 **UNUSED FUNDS OF "GMP"**

Any unused funds from the final associated "GMP" costs shall be returned to the Owner. All savings from Subcontractor Bid Package buy-out and value engineering will be returned to the project GMP to be aggregated in the construction contingency.

ARTICLE 5 COST OF WORK PHASE TO BE REIMBURSED

The term "Cost of the Work" shall mean costs reasonably, necessarily and ordinarily incurred by the Contractor in the proper performance of the Work. Such costs shall be at rates not higher than those customarily paid at the place of the Project, except with prior consent of the Owner (which

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may in its discretion be withheld). The Cost of the Work shall include only the items set forth in this Article 5.

5.1 LABOR COSTS

Wages of construction workers directly employed by the Contractor to perform the construction of the Work at the site or, with the Owner's agreement, at off-site workshops. See Exhibit 6 for Billing Rates

Wages or salaries of the Contractor's supervisory and administrative personnel when performing Work and stationed at a location other than the site, but only for that portion of time required for the Work, See Exhibit 6 for Billing Rates.

Wages or salaries (but not performance bonuses or the equivalent) of the Contractor's supervisory and administrative personnel when, and to the extent, stationed at the site.

Wages and salaries (but not performance bonuses or the equivalent) of the Contractor's supervisory or administrative personnel engaged at factories, workshops or on the road in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

Costs paid or incurred by the Contractor for sales, use and similar taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements, and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided that such costs are based on wages and salaries included in the, Cost of the Work, current Davis-Bacon wage rates shall be applied for the Work under this contract. Reference Alaska Department of Labor and Workforce Development Wage Rates information.

5.2 SUBCONTRACT AND SUPPLIER COSTS

Payments made by the Contractor to Subcontractors and Suppliers in accordance with the requirements of the applicable Subcontracts and Supply Contracts and the Contract Documents.

5.3 COSTS OF MATERIALS AND EQUIPMENT INCORPORATED IN THE COMPLETED CONSTRUCTION

Costs, including transportation, of materials and equipment incorporated or to be incorporated in the completed construction.

Costs of materials in excess of those actually installed but required to provide reasonable allowance for waste and for spoilage. Unused, excess materials, if any, shall be turned over to the Owner at the completion of the Work. The contractor will take ownership of any materials not accepted and turned over to the City.

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5.4 COSTS OF OTHER MATERIALS AND EQUIPMENT, TEMPORARY FACILITIES AND RELATED ITEMS

Costs, including transportation, installation, maintenance, dismantling and removal of materials, supplies, temporary facilities, machinery, equipment, and hand tools not customarily owned by the construction workers, which are provided by the Contractor at the site and fully consumed in the performance of the Work; and cost less salvage value on such items if not fully consumed, whether sold to others or retained by the Contractor. Cost for items previously used by the Contractor shall mean fair market value.

Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by the construction workers, which are provided by the Contractor at the site, whether rented from the Contractor or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rates and quantities of equipment rented shall be subject to the Owner's prior approval.

Costs of removal of debris from the site.

Reproduction costs, facsimile transmissions and long-distance telephone calls, postage and express delivery charges, telephone at the site and reasonable petty cash expenses of the site office.

That portion of the reasonable travel and subsistence expenses of the Contractor's personnel incurred while traveling in discharge of duties connected with the Work.

5.5 MISCELLANEOUS COSTS

That portion directly attributable to this Contract of premiums for insurance and bonds specifically required by the General Provisions. (If charges for self- insurance are to be included, specify the basis of reimbursement.)

Sales, use or similar taxes imposed by a governmental authority which are related to the Work and for which the Contractor is liable.

Fees and assessments for the building permit and for other permits, licenses and inspections for which the Contractor is required by the Contract Documents to pay.

Fees of testing laboratories for tests required by the Contract Documents, except those related to nonconforming Work.

Royalties and license fees paid for the use of a particular design, process or product required by the Contract Documents; the cost of defending suits or claims for infringement of patent or other intellectual property rights arising from such requirement by the Contract Documents; payments made in accordance with legal judgments against the Contractor resulting from such suits or claims and payments of settlements made with the Owner's express prior written consent; provided, however, that such costs of legal defenses, judgment and settlements shall not be

included in the calculation of the Contractor's Fee or the Guaranteed Maximum Price and provided that such royalties, fees and costs are not excluded by other provisions of the Contract Documents.

Data processing costs related to the Work.

Deposits lost for causes other than the fault of Contractor or its Subcontractors or their failure to fulfill a specific responsibility to the Owner set forth in this Contract.

Legal, mediation and arbitration costs, other than those arising from disputes between the Owner and Contractor, to the extent they are not caused by the Contractor's fault and are reasonably incurred by the Contractor in the performance of the Work, provided the Owner gives its prior written permission, which permission shall not be unreasonably withheld.

Expenses incurred in accordance with Contractor's standard personnel policy for relocation and temporary living allowances of personnel required for the Work, in case it is necessary to relocate such personnel from distant locations.

5.6 OTHER COSTS

Other costs incurred in the performance of the Work if and to the extent approved in advance in writing by the Owner.

Completion Cost —The Contractor will establish a Contract Completion line item in the Schedule of Values with an amount equal to 0.5% of the Cost of the Work. Once the Owner issues a notice of Substantial Completion as outlined in the General Provisions, the Contractor may request payment of the completion cost line item, less 1.5 times the Cost of the Work remaining to be completed, but not before then.

5.7 EMERGENCIES AND REPAIRS TO DAMAGED OR NONCONFORMING WORK

The Cost of the Work shall also include costs described in Section 5.1 which are incurred by the Contractor:

To the extent not caused by the fault of the Contractor, its Subcontractors, Suppliers, or any person for which any of them is legally responsible, in taking action to prevent threatened damage, injury or loss in case of an emergency affecting the safety of persons and property.

In repairing or correcting damaged or nonconforming Work executed by the Contractor or any of its Subcontractors or replacing non-conforming materials provided by any of its Suppliers, provided that such damaged or nonconforming Work or materials was not caused by the failure of the Contractor or any of its Subcontractors or Suppliers to fulfill a specific responsibility set forth in this Contract, any Subcontract or any Supply Contract or the fault of the Contractor or any of its Subcontractors or Suppliers, and only to the extent that the cost of repair, correction or replacement is not recoverable by the Contractor from insurance.

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The costs described in Sections 5.1 through 5.7 shall be included in the Cost of the Work notwithstanding any provision of the General Provisions which may require the Contractor to pay such costs, unless such costs are excluded.

5.8 ACCOUNTING RECORDS

The Contractor shall keep accurate, full and detailed accounts and utilize such accounting and control systems as may be necessary for proper financial management under this Contract and are acceptable to the Owner and its funding sources. The Owner and the Owner's accountants and attorneys shall be afforded full access during normal business hours for inspection and copying all of the Contractor's records, books, correspondence, instructions, drawings, receipts, Subcontracts, Supply Contracts, purchase orders, vouchers, memoranda and other data relating to the Work, and the Contractor shall preserve these for a period of five years after final payment, or for such longer period as may be required by funding sources or State law.

ARTICLE 6 CONSTRUCTION PHASE

6.1 PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Architect, itemized based upon the CSI Specification Divisions listed in the Schedule of Values, and Certificates for Payment issued by the Architect and the Project Manager the Owner shall make progress payments to the Contractor as provided below and elsewhere in the Contract Documents.

6.1.2 **PAYMENT PERIOD**

The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

6.1.3 **PAYMENT SUBMISSION TERMS**

Provided an Application for Payment for the preceding month is received by the Project Manager by the 10th day of the next succeeding month, the Architect shall issue a Certificate of Payment based upon the percentage of completion of the Work through the period covered by such Application for Payment that is computed in accordance with the requirements of Section 6.1.6 and agreed upon by the Contractor and the Project Manager or, failing such agreement, the percentage of completion determined by the Project Manager. The Owner shall make payment to the Contractor of the amount specified in such Certificate of Payment not later than 30 days after the Project Manager's receipt of such Application for Payment. If and to the extent that an Application for Payment is received by the Project Manager after the 10th day of the next succeeding month, such Certificate of Payment and payment deadlines shall be correspondingly extended.

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6.1.4 **PAYMENT FORMAT**

Upon Owner's request, the Contractor shall make available an accounting in an electronic format, together with all supporting payrolls, petty cash accounts, invoices, and any other backup for the Application of Payment required by Owner.

6.1.5 **PAYMENT SUPPORTING DOCUMENTATION**

Each Application for Payment shall (a) be based upon and allocate the Cost of the Work for which payment is sought therein among the various Work items (on both a per Application and cumulative basis) shown on the Schedule of Values; and (b) be prepared in such form and supported by such data to substantiate its accuracy and completeness as the Project Manager may require. The Schedule of Values shall be used as a basis for the Project Manager's review of the Contractor's Applications for Payment.

6.1.6 **PAYMENT PERCENTAGE COMPLETION**

Each Application for Payment shall show the percentage completion for each portion of the Work shown in the Schedule of Values, as well as all of the Work, as of the end of the period covered by the Application. The percentage completion for each such purpose shall be the lesser of

(a) the percentage of the subject Work which has actually been completed, or

(b) the percentage obtained by dividing

(c) the allowable Cost of Work which has actually been incurred by the Contractor on account of the subject Work for which the Contractor has made payment, by the share of the Guaranteed Maximum Price allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work shown in the Schedule of Values by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the Schedule of Values.

6.1.7 **PAYMENT COMPUTATION**

1. Take that portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work shown in the Schedule of Values by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the Schedule of Values. In determining the share of the Guaranteed Maximum Price properly allocable to completed Work, the Contractor shall have the right to allocate Contractor's Contingency among the other Work items shown in the Schedule of Values in its

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discretion. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute may be included, even though the Guaranteed Maximum Price has not yet been adjusted by Change Order.

2. Add that portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation into the Work or, if approved in advance by the Owner, suitably Stored off the site at a location agreed upon in writing, provided that good, marketable and unencumbered title to such materials and equipment passes to the Owner before or upon payment of such portion of the Guaranteed Maximum Price.

3. Add the Contractor's Fee attributable to the Cost of the Work for which payment is sought in such Application for Payment. The Contractor's Fee shall be computed on a pro rata amount based upon the Cost of the Work for the period covered by the

Application of Payment of the CM/GC Contractor fixed fee stated in Section 4.1.1. Subtract the aggregate of previous payments made by the Owner. Subtract amounts, if any, for which the Architect has withheld or nullified a payment.

6.1.8 **PAYMENT RECONCILIATION**

Upon receipt of the backup materials referred to in Section 6.1.4, the Owner shall compare (a) the aggregate Cost of Work through the end of the period covered by the Application for Payment to which. they apply with (b) the Guaranteed Maximum Price multiplied by the percentage of completion of all of the Work which is the lesser of the percentages of compensation for all of the Work computed pursuant to Sections 6.1.6(a) and (b). If the amount in Section 6.1.8(a) varies from the amount in Section 6.1.8(b) by plus or minus 5% or more, at the discretion of the Owner it may require the Contractor to provide a written reconciliation of such aggregate Cost of Work within 10 days. Such written reconciliation shall explain in detail why such variation exists. In the event of an aggregate Cost of Work under run, such reconciliation shall estimate the portion of the Guaranteed Maximum Price that the Contractor then believes will remain unspent by the Owner after the Final Payment to the Contractor to allow the Owner to plan for use in other Project priorities. In the case of an aggregate Cost of Work overrun, such reconciliation shall provide a detailed written plan for the Contractor to complete the Work for a total Cost of Work not to exceed the Guaranteed Maximum Price.

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6.1.9 **ADVANCED PAYMENTS**

Except with the Owner's express prior written approval, which may be withheld at the Owner's discretion, the Contractor shall not make advance payments to Subcontractors or Suppliers for Work, materials or equipment which have not been delivered and stored at the site.

6.1.10 **AUDITS OF PAYMENTS**

In taking action on the Contractor's Applications for Payment, the Owner and the Architect shall be entitled to rely on the accuracy and completeness of the accounting, backup and other information furnished by the Contractor and shall not be deemed to represent that they have made a detailed examination, audit or arithmetic verification of such accounting, backup or other information, that they have made exhaustive or continuous on-site inspections, or that they have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Architect or Owner's accountants or attorneys acting in the sole interest of the Owner.

6.1.11 **WITHHOLDING PAYMENTS**

The Owner may withhold a payment in whole or in part to the extent reasonably necessary to protect the Owner due to the Owner's determination that the Work has not progressed to the point indicated in the Application for Payment or that the quality of Work is not in accordance with the Construction Documents. The Owner may also withhold a payment or, because of subsequently discovered evidence, may nullify the whole or a part of an Application Payment previously issued to such extent as may be necessary to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts or omissions. The Owner may withhold up to 5% of each progress payment until the progress Work is substantially complete.

6.2 FINAL PAYMENT

Based upon Applications for Payment submitted to the Architect, itemized based upon the CSI Specification Divisions listed in the Schedule of Values, and Certificates for Payment issued by the Architect, the Owner shall make progress payments to the Contractor as provided below and elsewhere in the Contract Documents.

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6.2.1 **FINAL PAYMENT TERMS**

Final Payment shall be made by the Owner to the Contractor when (1) the Contract has been fully performed by the Contractor except for the Contractor's responsibility to correct nonconforming Work, as provided in the Standard General Provisions, or to satisfy other requirements, if any, which necessarily survive final payment; (2) a notarized Certificate of Compliance has been filed per Standard General Provisions Article 7.7, (3) a final Application for Payment and a final accounting for the Cost of the Work, together with such backup and other information as the Architect and Owner may require, have been submitted by the Contractor and reviewed by the Architect and Owner; and (4) a final Certificate for Payment has then been issued by the Architect and the Owner. Such final payment shall be made by the Owner not more than 30 days after the issuance of the final Certificate for Payment.

6.2.2 **FINAL PAYMENT CALCULATIONS**

The amount of the Final Payment shall be calculated as follows:

1. Take the sum of the Cost of the Work substantiated by the Contractor's final accounting and the Contractor's Fee, but not more than the Guaranteed Maximum Price after all required Change Orders, Construction Change Directives and other proper adjustments (if any) are taken into account.

2. Subtract amounts, if any, for which the Architect withholds, in whole or in part, in a final Certificate for Payment as provided in the General Provisions or other provisions of the Contract Documents.

3. Subtract the aggregate of previous payments made by the Owner.

If the aggregate of previous payments made by the Owner exceeds the amount due the Contractor, the Contractor shall reimburse the difference to the Owner, with interest at the Contract Rate.

6.2.3 **FINAL ACCOUNTING**

The Owner will review and report in writing on the Contractor's final accounting within 30 days after delivery of the final accounting to the Architect by the Contractor. Based upon such Cost of the Work as the Owner reports to be substantiated by the Contractor's final accounting, together with such backup and other information as the Owner may require, and provided the other conditions of Section 6.2.1 have been met, the Architect will, within seven days after completion of its written report, either issue to the Owner a final Certificate for Payment with a copy to the Contractor or notify the Contractor and the Owner in

writing of its reasons for withholding such Certificate as provided in the General Provisions. The time periods stated in this Section 6.2 supersede those stated in other contract documents.

6.2.4 **FINAL PAYMENT DISPUTES**

If the Architect reports the Cost of the Work as substantiated by the Contractor's final accounting to be less than claimed by the Contractor, the Contractor shall be entitled to proceed in accordance with Article 8 without a further decision of the Architect. Unless agreed to otherwise, a demand for mediation of the disputed amount shall be made by the Contractor within 60 days after the Contractor's receipt of a copy of the final Certificate for Payment. Failure to make such demand within this 60-day period shall result in the substantiated amount reported by the Architect becoming binding on the Contractor. Pending a final resolution of the disputed amount, the Owner shall pay the Contractor the amount certified in the final Certificate for Payment by the Architect.

ARTICLE 7 INSURANCE AND BONDS

7.1 INSURANCE REQUIRED OF THE CONTRACTOR

The CM/GC Contractor shall provide at a minimum with the following types and amounts of insurance as in accordance with the requirements set forth in Article 6.9 of the General Provisions. The City of Valdez, and their respective related persons or entities (to be determined by the City of Valdez) shall be named as an additional insured on all insurance policies except professional liability contracts.

Each policy of insurance required by this section shall provide for no less than thirty (30) days advance notice to the City of Valdez prior to cancellation or material modification. Failure to provide evidence of adequate coverage is a material breach and grounds for termination of the contract.

The premium cost of the insurance required is a Cost of the Work if and to the extent that it is expressly endorsed to apply only to the Work. Absent any such endorsement, only such premium cost multiplied by the ratio that the Guaranteed Maximum Cost bears to the aggregate contract prices for Contractor's work for all clients during each premium period may be included within the Cost of the Work.

7.2 PERFORMANCE BONDS

The CM/GC Contractor shall provide Performance and Payments Bonds in accordance with the requirements set forth in Article 3.5 of the General Provisions. City of Valdez forms for Performance Bond and Labor and Material Payment Bond are attached to this contract.

City of Valdez
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ARTICLE 8 MISCELLANEOUS PROVISIONS

8.1 RESOLUTIONS FOR DISPUTES

8.1.1 **RESOLUTIONS**

During both the Preconstruction and Construction Phases, Claims, disputes or other matters in question between the parties to this Contract shall be resolved as provided in the General Provisions.

8.2 OTHER PROVISIONS

8.2.1 **TERMS**

Unless otherwise noted, the terms used in this Contract shall have the same meaning as those in the General Provisions. “Architect” is the same as “Engineer”.

8.2.2 **EXTENT OF CONTRACT**

The Contract Documents, which include this Contract and the other documents incorporated herein by reference, represent the entire and integrated agreement between the Owner and the Contractor and supersede all prior negotiations, representations, warranties, covenants, promises and agreements, either written or oral, with respect to the subject matter thereof. The Contract Documents may be amended only by written instrument signed by both the Owner and Contractor. If anything in any document incorporated into this Contract is inconsistent with this Contract, this Contract shall govern. No oral communications or course of dealing or performance between Contractor, Architect, Project Manager and/or Owner shall be taken into account to determine whether any amendment to the Contract Documents has occurred.

8.2.3 **ASSIGNMENT**

The provisions for Assignment of the Contract are included in Article 1 of the General Provisions.

8.2.4 **OWNERSHIP OF DOCUMENTS**

All project documents developed during delivery of this Contract shall become property of the Owner.

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ARTICLE 10 SUSPENSION OR TERMINATION

10.1 SUSPENSION

The Owner may suspend this Contract at any time pursuant to Article 5.24 of the General Provisions.

10.2 TERMINATION

The Owner may suspend this Contract at any time pursuant to Article 5.24 of the General Provisions.

City of Valdez
Scope of Work

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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SCOPE OF WORK

The Work consists of the construction of Whalen Avenue as well as all associated site work with the St. Patrick Subdivision Development as described within the Contract Documents.

This project includes but is not necessarily limited to:

Construction of Whalen Avenue between West Egan Street and West Klutina Street. This new Roadway includes installation of utilities and infrastructure that will connect to the new St. Patrick Subdivision Development. The scope of work includes excavation, backfill and paving to construct new roadway, curb, gutter, and sidewalks; install new water main with stub-outs for subdivision and connection to new water well; install new sewer lines with sub-out for subdivision and storm drain system with connections to subdivision; install new fire hydrants, signs, traffic markings, and street lighting.

Construction Administration Services and Special Inspections will be contracted separately by the Owner for this project.

City of Valdez
Agreement Page 1 of 2

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

This agreement is made on the TBD day of May, 2022, by and between the City of Valdez, Alaska, hereinafter called the Owner, acting through its Mayor, and Harris Sand & Gravel, Inc. doing business as ~~an individual, partnership~~, a Limited Liability Company (strike out inapplicable words) located in Valdez, Alaska, hereinafter called the Contractor.

The Contractor agrees to this Contract known as:

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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Furthermore the Contractor agrees to accept as full and complete payment for all work to be done in this Contract for the Guaranteed Maximum Price inclusive of Contractor and Owner Contingencies and per unit prices as set forth in the Contract Documents for this project. The total amount of this Contract shall not exceed:

"GMP" Grand Total 3,841,475.50 (Three Million Eight Hundred Forty-one Thousand Four Hundred Seventy-five Dollars and Fifty cents)

The Contractor hereby agrees to commence work on this project within ten (10) working days after the date of the written Notice to Proceed and to complete all work in accordance with the contract documents by April 28, 2022. Said contract documents are listed in the Table of Contents herein. All documents listed therein are by this reference made a part hereof.

The Owner agrees to pay the Contractor for the performance of the Contract, subject to additions and deductions, as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions of this of this Contract, and to make payments on account thereof as provided in the City of Valdez Standard Specifications Section 10 Standard General Provisions and City of Valdez City Code.

City of Valdez
Agreement Page 2 of 2

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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IN WITNESS WHEREOF, the parties to this presence have executed this Contract in two (2) counterparts, each of which shall be deemed as original, in the year and day first mentioned above.

Harris Sand & Gravel, Inc.

_____
Signature

_____
Name

_____
Title

_____
Date

_____
Mailing Address

_____
City, State, Zip Code

_____
Federal I.D. or S.S.N.

Corporate Secretary

Attest: _____
Corporate Secretary

City of Valdez, Alaska, Authorized

_____
Sharon Scheidt, Mayor

_____
Date

Attested:

_____
Sheri L. Pierce, MMC, City Clerk

_____
Date

Recommended:

_____
Mark Detter, City Manager

_____
Date

_____
Nathan Duval, Capital Facilities Director

_____
Date

Approved as to Form:
Brena, Bell & Walker, P.C.

_____
Jon S. Wakeland

_____
Date

City of Valdez
Limited Liability Company Acknowledgement

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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(To be filled in when Contract is executed in behalf of a Limited Liability Company)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

The foregoing instrument was acknowledged before me this ___ day of _____, 20_____.

_____ _____
(Name) (Title)

_____
(Name of LLC)

_____
Notary Public

My Commission Expires: _____

My Commission Expires: _____

City of Valdez
Non-Collusion Affidavit

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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(to be executed prior to award)

UNITED STATES OF AMERICA)
)SS.
STATE OF ALASKA)

I, _____, of _____, being duly sworn, do depose and state:

I, or the firm, association of corporation of which I am a member, a bidder on the Contract to be awarded, by the City of Valdez, Alaska, for the construction of that certain construction project designated as:

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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Located at Valdez, in the State of Alaska, have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such Contract.

_____
Signature

Subscribed and sworn to this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires:_____

City of Valdez
Labor and Material Payment Bond

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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Know all men by these presents that:

Harris Sand & Gravel, Inc.
PO Box 6
Valdez, Alaska 99686

as Principal, hereinafter called Principal, and,

(Here insert full name and address or legal title of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, Alaska 99686

as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of

Dollars ($_____),
(Here insert a sum equal to the contract amount)

for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Principal has by written agreement dated _____, 20_____, entered into a contract with Owner for

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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in accordance with Drawings and Specifications prepared by

Kinney Engineering, LLC
3909 Artic Blvd., Suite 400
Anchorage, Alaska 99503

which contract is be reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Labor and Material Payment Bond

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expirations of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials are furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business. Or served in any manner in which legal process may be served in the state in which aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county of other political subdivision of the state in which the Project, or any part thereof is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety or mechanic's liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against the bond

Signed and Sealed this _____, day of _____, 20___

_____ _____

(Witness) (Principal) (Seal)

_____

(Title)

_____ _____

(Witness) (Surety) (Seal)

_____

(Title)

City of Valdez
Performance Bond

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

KNOW ALL MEN BY THESE PRESENTS: that

Harris Sand & Gravel, Inc.
PO Box 6
Valdez, Alaska 99686

as Principal, hereinafter called Contractor, and ,

(Here insert full name and address or legal title Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

City of Valdez
P.O. Box 307
Valdez, AK 99686

as Obligee, hereinafter called Owner, in the amount of

Dollars ($)

for the payment whereof Contractor and Surety bind themselves, their heirs, executor, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated _____, 20_____, entered into a contract with Owner for

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

in accordance with Drawings and Specifications prepared by

Kinney Engineering, LLC
3909 Artic Blvd., Suite 400
Anchorage, Alaska 99503

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

City of Valdez
Performance Bond

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

Now, therefore the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly comply with one of the following:

1. Complete the Contract in accordance with its terms and conditions, or

2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the bidder, arrange for contract between such bidder and Owner, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and Sealed this _____ day of _____, 20_____

_____ _____
(Witness) (Principal) (Seal)

_____
(Title)

_____ _____
(Witness) (Surety) (Seal)

_____
(Title)

City of Valdez
Contractor Certificate of Substantial Completion

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

CONTRACTOR: _____

This is to certify that I, _____, am a duly authorized official of the said CONTRACTOR working in the capacity of_____, and in my official capacity representing said CONTRACTOR do hereby certify as follows:

1. The work of the subject Contract above has been performed, and materials used and installed in accordance with and in conformity to, the Contract Drawings, Contract Specifications, City of Valdez Standard Specifications and Details.

2. The Contract work is now substantially complete in all parts and requirements.

3. I understand that neither the determination by the Engineer--Architect that the work is substantially complete nor the acceptance thereof by the Owner shall operate as a bar to claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

4. The work to which this Certificate applies has been properly inspected and that work is hereby declared to be substantially complete in accordance with the Contract Documents.

5. The date of Substantial Completion is the date upon which all guarantees and warranties begin.

6. The Owner accepts the Project or specified area as described under "REMARKS," of the Project as substantially complete and will assume full possession of the Project or specified area of the Project at _____(time) on _____day,_____, 20___.

Dawson Construction, LLC CONTRACTOR	CITY OF VALDEZ OWNER
_____ (Signature)	_____ Capital Facilities Director
_____ (Title)	_____ Date
_____ Date	

REMARKS:_____

_____

City of Valdez
Contract Release Page 1 of 2

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

The undersigned, _____
for itself, its successors in interest, assigns trustees, administrators, subcontractors, suppliers, and laborers do hereby release and forever discharge the CITY OF VALDEZ, ALASKA a municipal corporation, from all actions, causes of actions, suits, controversies, claims, damages and demands of every kind and nature, mature or to mature in the future, for and by reason of any matter, thing or claim arising out of the following Contract:

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

The undersigned also intends hereby to discharge the City of Valdez from all liability for any and all damages or injuries presently undiscovered or unanticipated. The undersigned's intention hereby is to waive any right it may subsequently have to set aside this release under the doctrine of Witt v. Watkins, 579 P.2d 1065 (Alaska 1978).

The undersigned further agrees to defend, indemnify and hold harmless the City of Valdez against any claims, liens, or causes of action arising under or by virtue of this Contract, including, but not limited to, any claim that the undersigned, any successor in interest, assignee, trustee, administrator, subcontractor, supplier or laborer of the undersigned or any other person might make or claim that he could possibly make against the City of Valdez.

The undersigned certifies that he has not assigned any amounts payable under this Contract to anyone.

The undersigned hereby acknowledges receipt of the amount of $_____ as full of final payment in consideration for all services, materials and labors rendered in connection with this Contract.

The undersigned hereby declares that the terms of this RELEASE have been completely read and are fully understood, and said terms are voluntarily accepted for the purpose of making a full and final release of any and all claims, disputed or otherwise, arising under or by virtue of this Contract.

City of Valdez
Contract Release Page 2 of 2

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____day of _____, 20_____.

_____
COMPANY

_____
SIGNATURE

_____
TITLE

STATE OF ALASKA)
)ss.
THIRD JUDICIAL DISTRICT)

THIS IS TO CERTIFY that on this _____ day of _____, 20_____, before me, Notary Public in and for the State of Alaska, personally appeared _____of _____, known to me to be its _____and acknowledged to me that he has read this foregoing RELEASE and knew contents thereof to be true and correct to the best of his knowledge and belief, and that he signed the same freely and voluntarily for the uses and purposes therein mentioned, and that he was duly authorized to execute the foregoing document according to the Bylaws or by Resolutions of said corporation.

WITNESS my hand and notarial seal this _____ day of _____, 20_____.

_____
Notary Public in and for Alaska
My Commission expires: _____

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

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City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 01 General Statement

The Special Provisions set forth conditions and requirements unique to this Project and are supplemental to, and supersede, the City of Valdez "Standard Specifications/ Standard General Provisions and Standard Details."

SP 02 Special Site Conditions

Contractor must provide at all times safe access to pedestrians along walkways. A safe and tidy job site must be kept by the Contractor at all times during the duration of the project.

Work is not to exceed noise levels set forth within City ordinances without prior approval from the Capital Facilities Director.

The Contractor is responsible for providing all approved DOT traffic control and SWPPP plans. These plans must be followed in accordance with these approved plans. The Contractor is responsible for setting up detours, signage or barricades if their work is in a public area and will interfere with normal traffic flow. The Contractor must include a Traffic Control Plan with the project schedule before construction operations begin.

Contractor is to repair any damage caused by construction operations.

The Contractor will be responsible for the disposal of all refuse and debris generated by the project. The City has, on a limited 'first come first served' basis, dumpsters for use free of charge on City projects if available. Dump fees will be waived. The Contractor will be responsible for hauling demolished materials and construction waste out to the City Baler facility on South Sawmill Drive. The Baler is located approximately 5 miles out of town. Please contact the Baler ahead of time to make arrangements for the disposal of such materials. The Baler's number is 907-835-2356. The project name and contract number will be required on all Baler disposal forms and when calling to reserve or empty dumpsters.

Staging area for all work included will be located on-site in an area agreed upon with the City and the Contractor. Staging area or areas will be determined after during the Pre-construction meeting.

Local building permit fees are waived. The Contractor will be responsible for applying for and obtaining local building permits before the Notice to Proceed is issued. The Contractor will need to call the City building Department at 907-834-3401.

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 03 Hazardous Waste Generation

Every effort to minimize or eliminate the generations of hazardous waste shall be used by the Contractor in the performance of the work of this Contract. Unless there is no substitute, no hazardous material shall be used in the performance of the work of this Contract.

SP 04 Coordination and Schedule

The Contractor shall, within ten (10) working days of the date of the Notice to Proceed, submit to the Project Manager and Engineer a schedule as required in Section 10.5, Control of Work, Article 5.3. The schedule shall be updated every month and included with each of the Contractor's Periodic Payment Requests. Failure to provide an updated schedule will be cause to withhold partial payment.

SP 05 Site Preservation, Restoration, Cleanup and Environmental Reporting

The Contractor shall be solely responsible for damage to public or private property caused by construction operations. The Contractor shall take all precautions necessary to control dust. The Contractor shall notify the City of any claims of damage, and shall clean and restore any property so damaged at the sole expense of the Contractor. All spills or releases of any hazardous substance shall be reported to the appropriate governmental agency as well as notice to the City. Contractor shall be responsible for all associated cleanup costs and fines.

At all times during the work, keep the premises clean and orderly. Upon completion of the work, repair all damage caused by equipment and leave the Project free of rubbish and excess materials of any kind.

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 06 Permits

The Contractor shall obtain all licenses and permits that are required to complete the Work with the exception that City will obtain the required state agency permits.

SP 07 Payment

Payments shall be in accordance with Section 10.07, Measurement and Payment of the CVSS. All invoices for payment must be submitted on a City of Valdez *Periodic Payment Request Form.* An electronic copy of this form (Excel Spreadsheet) will be made available for the Contractor's use.

Disbursement of money to a person, firm or corporation will be made only after all the various receivable accounts of the general government and any municipal utility or enterprise have been reviewed for outstanding balances owed, and the disbursement will be reduced by setting off the amount of any delinquent indebtedness due the city from such person, firm or corporation.

All contracts to which the city is a party which will or may involve the disbursement of city funds shall contain the following clause, or its substantial equivalent: "Disbursement of money by the City of Valdez hereunder shall subject to set-off pursuant to the provisions of the Valdez City Code." Such contracts include, but are not limited to, oral contracts, employment contracts, construction contracts, purchasing contracts and contracts of any municipal utility or enterprise, including customer's deposits.

SP 08 References to City of Valdez Standard Specifications (CVSS)

The City of Valdez Standard Specifications & Standard Details, Streets-Drainage-Utilities-Parks, dated April 2003, hereafter referred to as CVSS, are incorporated in and become a part of the Contract Documents for the work, The Standard Specifications are available for purchase from the Engineer's Office of the City of Valdez, P.O. Box 307, Valdez, Alaska 99686. All work under this Contract shall comply with the latest edition and addenda to all applicable codes, ordinances, and standards.

It shall be the responsibility of the Contractor to prepare his "GMP" Cost Proposal so all materials and/or different arrangements of connections or fittings shall harmoniously conform with the intent of the Contract Drawings, CVSS, and the Special Provisions.

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 09 Construction Specifications

The Specifications for construction of the work of this Project are incorporated into the design and on the future drawings. These drawings are by reference to Kinney Engineering.

SP 10 Resident Project Representative

The Owner shall designate a person authorized to act as Resident Project Representative, having the same authority and limitations described for the Engineer in Section 10.05, Article 5.1 of the CVSS. The Resident Project Representative will be responsible for daily coordination with the Contractor and for furnishing instruction to the Contractor's field Superintendent during the performance of field Work. The Resident Project Representative may be assisted by inspectors, surveyors, or technical support staff.

SP 11 Contractor Daily Reports

By the end of each day's work, the Contractor's Superintendent shall complete a daily report describing the general conditions and activities at the site, including but not limited to: Weather; number of workers and description of activities for general contractor, subcontractor and specialty/sub-subcontractors; testing and inspections; instructions, extra work, or additional testing from Engineer, Owner representatives; remarks about site visitors, preconstruction conferences, new work activities, special site meetings, exceptions to anticipated progress; site surveys, as-built entries. This report in digital format shall be furnished to the Resident Representative before noon on the following day accompanied by subcontractor's daily reports and sufficient color photographs to document the relevant activities and progress that day

SP 12 Definitions

ALLOWANCES shall mean the establishment of cash allowances in the GMP for portions of the work that cannot be specified with sufficient particularity to estimate at the time of contracting. This includes primarily items that have not yet been designed, chosen, or other specific characteristics have not been determined. When the actual costs of allowance items are known, the differences from the specified allowances should be adjusted by means of a change order. If the net cost (including shipping and taxes) exceeds the allowance, the excess is to be charged to the owner by an additive change order or, when it is less, by a deductive change order.

FIELD LABOR shall mean, in addition to items as defined in the general conditions, standard rates cover costs related to safety, quality control, small tools, and overhead applicable to the self-performance by the General Contractors crews.

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 13 Owner

Owner will provide information so that the Contractor can confirm the funding for the project has been secured.

Owner will provide all permits. Owner will provide all Special Inspections and pay for all inspection and testing costs.

When unforeseen conditions or work outside the scope upon which the GMP has been established are discovered, the Contractor will notify the Owner and present a cost proposal to the Owner for review and approval.

SP 14 General Contractor and/or Construction Manager Rates

Construction Management Rates will be incorporated into this project in a separate contract with R&M Consultants, Inc.

General Contractor Rates – See attached rates from Harris Sand & Gravel, Inc.

SP 15 Time of Completion

All work shall be completed in accordance with the Contract Documents as follows:

Substantial Completion: Substantial Completion shall be defined as the stage in the progress of the work when the work is sufficiently complete in accordance with the Contract Documents so the Owner (City) can occupy or use the structure or that which is the subject of the contract, for its' intended use

Substantial Completion deadline is October 31, 2022

Final Completion deadline is July 31, 2023

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

SP 16 Insurance

At the date and approval by the Owner (City) that substantial completion has been met the Owner's General Liability Policy will replace the Contractor's Builder's Risk Insurance.

SP 17 Warranty

The Contractor will provide a minimum one year warranty from the date of substantial completion on all Contractor and Subcontractor supplied materials, labor and services provided.

SP 18 Closeout

The Contractor will provide a minimum one year warranty from the date of substantial completion on all Contractor and Subcontractor supplied materials, labor and services provided.

Tax Clearances
Upon completion of the project, the Contractor shall grant permission to the Alaska Department of Labor and Workforce Development to provide the Owner with clearance that all Payroll Taxes have been paid by the Contractor and all Subcontractors that have worked on the project.

In addition, the Contractor shall grant permission to the Alaska Department of Revenue to provide the Owner with clearance that all Corporate Taxes have been paid by the Contractor.

Certified Payroll
The Contractor shall provide the Owner with an approved Notice of Completion from the Alaska Department of Labor and Workforce Development upon completion of the project.

Per ADOLWD directive, a portion of the final payment shall be retained by the Owner until such time as an approved Notice of Completion is received. This standard shall also be applied to include the Payroll and Corporate tax clearances.

City of Valdez
Special Provisions

Project: Pavement Management Phase III – Whalen Avenue CM/GC
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Release of Liens
Following final payment of the contract, the Contractor shall provide the Owner with a Release of Liens removing all claims the Owner.

Consent of Surety
Following final payment of the contract where Payment and Performance bonds have been issued, the Contractor shall in addition provide the Owner with a Consent of Surety.

Maintenance, Operation, Ownership of the Completed Project
The Contractor shall provide project documentation required to establish an effective facility management and preventative maintenance program that satisfies the requirements of AS 14.11.011(b)(4).

City of Valdez
Modifications and Additions to the Standard Specifications

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

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City of Valdez
Modifications and Additions to the Standard Specifications

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

Division 10 Standard General Provisions

Article 7.5 Progress Payments

Add the following:

Any request for payments for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for payment by Jan. 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1,000 and up to 5% of the invoice not to exceed $10,000.

Article 7.7 Final Payments

Add the following:

Any request for final payment for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for final payment by January 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1,000 and up to 5% of the invoice not to exceed $10,000.

City of Valdez
Minimum Prevailing Wage Rates

Project: Pavement Management Phase III – Whalen Avenue CM/GC
Project Number: 20-310-1200 / Contract Number: 1933

Minimum Prevailing Wage Rates and Title 36 Public Contracts Follows
See attached Links:

http://labor.state.ak.us/lss/pamp600.htm
http://labor.alaska.gov/lss/forms/Pam400.pdf

In accordance with the requirements of AS 36.05.070 and AS 36.05.080, the following provisions are included where applicable:

(1) The Contractor or subcontractors of the Contractor shall pay all employees unconditionally and not less than once a week;

(2) wages may not be less than those stated in Pamphlet 600, Issue 39, effective 9/1/2019, regardless of the contractual relationship between the Contractor or subcontractors and laborers, mechanics, or field surveyors;

(3) the scale of wages to be paid shall be posted by the Contractor in a prominent and easily accessible place at the site of the work;

(4) Owner shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the Contractor or subcontractors the difference between

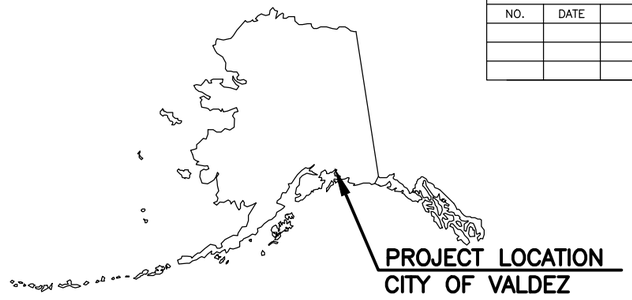
(A) the rates of wages required by the contract to be paid laborers, mechanics, or field surveyors on the work; and

(B) the rates of wages in fact received by laborers, mechanics, or field surveyors.

(5) If it is found that a laborer, mechanic, or field surveyor employed by the Contractor or subcontractor has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid, the Owner may, by written notice to the Contractor, terminate the Contractor's right to proceed with the work or the part of the work for which there is a failure to pay the required wages and to prosecute the work to completion by contract or otherwise, and the Contractor and the Contractor's sureties are liable to Owner for excess costs for completing the work.

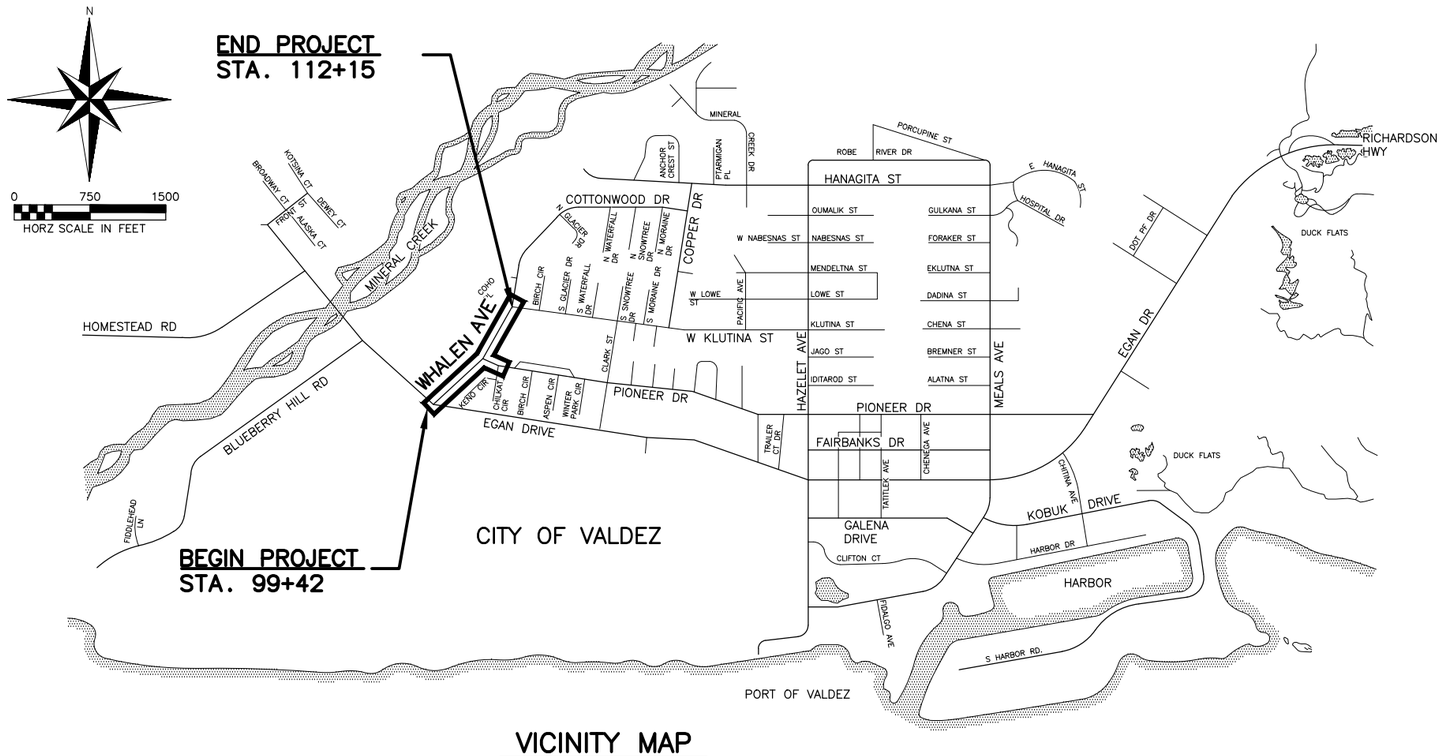
REVISIONS			YEAR	SHEET NO.	TOTAL 'A' SHEETS
NO.	DATE	DESCRIPTION	2022	A1	A4
				PLAN SET TOTAL	40

CITY OF VALDEZ



WHALEN AVENUE PROJECT NO. 20-310-1200
ROAD, DRAINAGE, SEWER, WATER, SIGNING, STRIPING, AND LIGHTING IMPROVEMENTS

95% PS&E REVIEW



VICINITY MAP

INDEX

April 28, 2022

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION Z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_A1_COVER
DATE TIME 4/27/2022 5:20 PM
LAYOUT A1
SCALE
DRAFTED BY BRIAN.LEWIS

GENERAL NOTES:

1. CONTRACTOR SHALL COMPLETE CONSTRUCTION IN ACCORDANCE WITH THE CITY OF VALDEZ STANDARD SPECIFICATIONS LATEST EDITION. DRAWINGS, TECHNICAL SPECIFICATIONS, AND SPECIAL PROVISIONS TAKE PRECEDENCE OVER THE COV STANDARD SPECIFICATIONS.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY LOCAL, STATE AND FEDERAL PERMITS PRIOR TO BEGINNING CONSTRUCTION. THE PERMITS SHALL BE MAINTAINED AT THE JOB SITE.
3. CONTRACTOR SHALL MAINTAIN "REDLINE" RECORD DRAWINGS ON A CLEAN SET OF CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL MAINTAIN THE "REDLINES" CURRENT ON A DAILY BASIS WHICH SHALL BE AVAILABLE TO THE ENGINEER FOR INSPECTION ON THE JOB SITE. CONTRACTOR SHALL RECORD SURVEY NOTES AND SUBMIT DAILY TO THE ENGINEER. CONTRACTOR SHALL RECORD SURVEY NOTES FOR SUBMITTAL WITH RECORD DRAWINGS, INCLUDING HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES ENCOUNTERED IN THE FIELD. CONTRACTOR SHALL RECORD ALL DEVIATIONS FROM THE PLANS.
4. CONSTRUCTION OPERATIONS REQUIRED FOR THIS PROJECT SHALL REMAIN WITHIN EXISTING CITY OF VALDEZ RIGHTS-OF-WAY AND EASEMENTS, UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER AND THE AFFECTED PROPERTY OWNER.
5. LOCATIONS DEPICTED FOR THE UTILITIES AND OTHER EXISTING FEATURES ARE APPROXIMATE. SOME UTILITIES HAVE BEEN LOCATED FROM RECORD DRAWINGS AND UTILITY COMPANY LOCATES. CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
6. UNDERGROUND ELECTRICAL AND TELECOMMUNICATION LINES OCCUR WITHIN THE PROJECT AREA; CONTRACTOR SHALL COORDINATE WORK ACCORDINGLY. ALL WORK IN CLOSE PROXIMITY TO EXISTING UNDERGROUND LINES SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL STATUTES, CODES AND GUIDELINES, AND THE ELECTRICAL FACILITY CLEARANCE REQUIREMENTS OF THE GOVERNING UTILITY. CONTRACTOR SHALL HAND DIG WITHIN TWO FEET OF BURIED ELECTRICAL CABLE.
7. CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT (ROADS, PARKING AREAS, DRIVEWAYS, ETC.,) TO A LINE 2 FEET BEYOND THE PROPOSED IMPROVEMENTS, DURING THE INITIAL EXCAVATION OPERATIONS. IF EXISTING PAVEMENT HAS BEEN LIFTED, IF EDGE DOES NOT OCCUR IN UNDISTURBED MATERIAL, OR IF EDGE IS LOCATED WITHIN A TRAVEL LANE, FURTHER REMOVAL MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, TO PROVIDE A PROPER TRANSITION BETWEEN NEW AND EXISTING PAVEMENT. SAW CUTTING OF EXISTING PAVEMENT IS INCIDENTAL TO THE BID ITEM "REMOVE PAVEMENT", AND NO SEPARATE PAYMENT SHALL BE MADE.
8. CONTRACTOR SHALL APPLY TACK COAT TO THE SAW CUT ASPHALT FACE PRIOR TO PAVING. CONTRACTOR SHALL SAWCUT CURB & GUTTER AND SIDEWALK AT THE NEAREST JOINT AT OR BEYOND REMOVAL LIMITS OR AS DIRECTED BY THE ENGINEER. TACK COAT IS INCIDENTAL TO THE RESPECTIVE BID ITEM.
9. CONTRACTOR SHALL MAINTAIN STOP SIGNS AND STREET NAME SIGNS OPERATIONAL IN THE PROJECT AREA DURING CONSTRUCTION.
10. LIMITS OF EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
11. CONTRACTOR SHALL REMOVE ORGANIC MATERIAL FROM THE SUBGRADE TO A DEPTH TO BE DETERMINED BY THE ENGINEER. CONTRACTOR SHALL NOT PLACE OR SHALL NOT OTHERWISE UTILIZE ORGANIC MATERIAL OR OTHER DELETERIOUS MATERIAL FOR BACKFILL, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
12. WORK AND MATERIALS REQUIRED FOR REMOVING LITTER OR DEBRIS THAT EXIST WITHIN THE PROJECT LIMITS ARE INCIDENTAL TO THE PROJECT AND NO SEPARATE PAYMENT SHALL BE MADE.
13. CONTRACTOR SHALL REPLACE ALL DISTURBED PROPERTY CORNERS. PAYMENT FOR REPLACING DISTURBED PROPERTY CORNERS IS INCIDENTAL TO THE CONTRACT AND NO SEPARATE PAYMENT SHALL BE MADE.
14. CONTRACTOR SHALL TOPSOIL AND SEED ALL DISTURBED AREAS WHERE OTHER SURFACE IS NOT SPECIFIED.
15. CONTRACTOR SHALL RESTORE DISTURBED PROPERTY TO PRECONSTRUCTION CONDITION(S), UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PAYMENT FOR RESTORING DISTURBED PROPERTY IS INCIDENTAL TO THE CONTRACT AND NO SEPARATE PAYMENT SHALL BE MADE.
16. IF CONTAMINATED SOIL, GROUNDWATER, OR FREE-PRODUCT ARE ENCOUNTERED, THE CONSTRUCTION CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER WHO WILL IMMEDIATELY CONTACT THE DEC PREVENTION AND EMERGENCY RESPONSE (PERP) OFFICE STAFF AT (907) 269-3063 / FAX (907)269-7648 IN ACCORDANCE WITH SPILL REPORTING REQUIREMENTS UNDER 18 AAC 75.300, AND COORDINATE MANAGEMENT OF ALL CONTAMINATED MEDIA WITH EMERGENCY RESPONSE PERSONNEL.
17. PROJECT COORDINATE SYSTEM, RIGHTS-OF-WAY (ROW), PLANIMETRIC AND TOPOGRAPHY INFORMATION ARE BASED ON A 11-13-2016 SURVEY BY WRANGELL MOUNTAIN TECHNICAL SERVICES. ROW OUTSIDE OF THE SURVEY AREA ARE APPROXIMATED BASED ON DATA FROM RECORDED PLATS.

STANDARD DRAWING INDEX

THE FOLLOWING STANDARD DRAWINGS APPLY TO THIS PROJECT:

CITY OF VALDEZ

20-9	TYPE II-A CLASSIFIED FILL & BACKFILL GRADING LIMITS
20-10	LEVELING COURSE GRADING LIMITS
20-11	TRENCH BACKFILL
20-12	FOUNDATION MATERIAL
20-15	CLASS "C" BEDDING MATERIAL
30-1	CURB AND GUTTER CROSS SECTIONS
50-5	MANHOLE HEIGHTS (SEWER)
50-8	MANHOLE STEP (SEWER)
50-10	MANHOLE COVER (SEWER)
50-11	MANHOLE FRAME (SEWER)
70-24	SIGN PLACEMENT CURB WITHOUT SIDEWALK
70-32	FIRE HYDRANT SIGN

DESIGN STANDARDS

- CITY OF VALDEZ STANDARD SPECIFICATIONS AND DETAILS, 2003
- A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS (PGDHS OR "GREEN BOOK"), AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), 2011
- THE ALASKA TRAFFIC MANUAL (ATM), CONSISTING OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 AS AMENDED, U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION (FHWA) AND THE ALASKA TRAFFIC MANUAL SUPPLEMENT, 2012, STATE OF ALASKA, DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
- ROADSIDE DESIGN GUIDE, 4TH EDITION, AASHTO, 2011

DESIGN CRITERIA	
	WHALEN AVENUE
FUNCTIONAL CLASS	COLLECTOR STREET
DESIGN SPEED	25 MPH
POSTED SPEED	20 MPH
ROADWAY WIDTH	40 FT
SIDEWALK WIDTH	6 FT

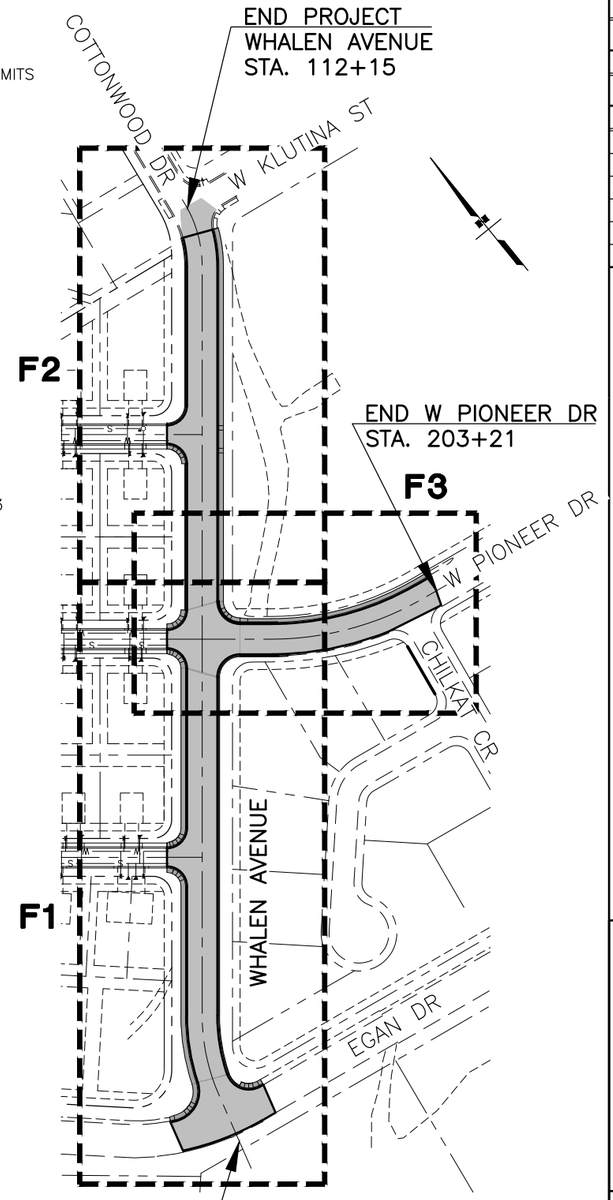
CALL BEFORE YOU DIG!

CONTRACTOR SHALL CALL A MINIMUM OF 3 DAYS IN ADVANCE OF CONSTRUCTION

ALASKA DIGLINE....907-278-3121 OR 800-478-3121

CALL OR GO TO WWW.AKONECALL.COM/STATEWIDE.HTM FOR MEMBER LIST OF WHO WILL BE NOTIFIED

CONTACT THE FOLLOWING UTILITIES DIRECTLY:
City of Valdez Water/Waste Water 835-4888
Copper Valley Electric Association 835-4301
Copper Valley Telephone Cooperative 835-2231
GCI 220-6097



SHEET LAYOUT

SHEET NO.	TOTAL SHEETS
A2	A4

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

GENERAL NOTES, DESIGN CRITERIA, AND SHEET LAYOUT

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
Z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_A3_GENERAL NOTES_DSN-CRT.dwg

4/28/2022 10:17 AM | LAYOUT A2 | SCALE | DRAFTED BY BRIAN.LEWIS

UTILITIES

	EXISTING	PROPOSED
PIPELINES:		
STORM DRAIN STRUCTURE AND PIPE NUMBERS, APPLICABLE IF SHOWN	S1-1, S1-2, P1-1, P1-2	
STORM DRAIN	SD	
MANHOLE STORM DRAIN	SD	SD
CURB INLET CATCH BASIN		
FIELD INLET CATCH BASIN	FI	FI
PIPE CULVERT w/ END SECTION		
SANITARY SEWER	SS	
MANHOLE SANITARY SEWER	SS	
SEPTIC VENTS		
WATER	W	W
FIRE HYDRANT		
VALVE OR RISER		
ELECTRIC (OVERHEAD)	OE	
ELECTRIC (UNDERGROUND)	UE	UE
UTILITY POLE		
UTILITY POLE WITH LUMINAIRE		
GUY WIRE		
ELECTRICAL TRANSFORMER	E	E
TELEPHONE (UNDERGROUND)	UT	
TELEPHONE PEDESTAL		
FIBER OPTIC	FO	
FIBER OPTIC MANHOLE	FO	
CABLE TV (UNDERGROUND)	UTV	
CABLE TV PEDESTAL		

UTILITIES

	EXISTING	PROPOSED
ELECTROLIER		
ILLUMINATION		UE
TYPE IA JUNCTION BOX		
TYPE II JUNCTION BOX		
LOAD CENTER		

RIGHT OF WAY

RIGHT-OF-WAY	
PROPERTY LINE	
EASEMENT	
TEMPORARY CONSTRUCTION EASEMENT/PERMIT	
PROJECT CENTERLINE	27+00

TOPOGRAPHY

CONTOURS - MAJOR	515
CONTOURS - MINOR	

MISCELLANEOUS

TRAFFIC SIGN	
GEOTECHNICAL BORE LOCATION	B-X
RADIUS POINT	200
GRADING POINT	100

ROADWAY

	EXISTING	PROPOSED
REMOVAL OF EXISTING PAVEMENT		
LIMIT OF CUT SLOPE		
LIMIT OF FILL SLOPE		
EDGE OF PAVEMENT		
CONCRETE CURB		
CONCRETE CURB & GUTTER		
CONCRETE CURB CUT		
SIDEWALK		
CURB RAMPS		
PARALLEL CURB RAMP		
DETECTABLE WARNING TILES		
DRIVEWAY APPROACH		
GRAVEL EDGE		
PATH / TRAIL		
FENCE	X X	X X
DITCH		
DITCH LINING		

BRASS CAP MONUMENT	
ALUMINUM MONUMENT	
ALUMINUM CAP	
ALUMINUM CAP	CP
TEMPORARY BENCHMARK	TBM

SHEET NO.	TOTAL SHEETS
A3	A4

ADDENDUM NO.

ATTACHMENT NO.

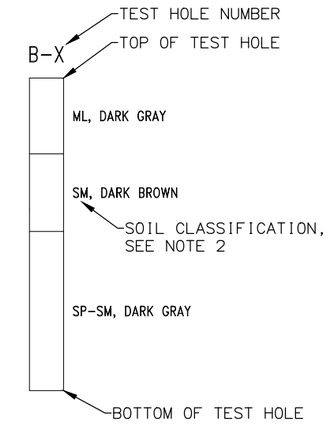
REVISIONS

NO.	DATE	DESCRIPTION

ABBREVIATIONS

AC	- ASPHALT CEMENT	HDPE	- HIGH-DENSITY POLYETHYLENE	PSI	- POUNDS PER SQUARE INCH
ASTM	- AMERICAN SOCIETY FOR TESTING AND MATERIALS	HMWPE	- HIGH MOLECULAR WEIGHT POLYETHYLENE	PT	- POINT OF TANGENCY
AWWA	- AMERICAN WATER WORKS ASSOCIATION	INV	- INVERT	R	- RADIUS
BF	- BOARD FOOT	IPS	- IRON PIPE SIZE	RT	- RIGHT
BOP	- BOTTOM OF PIPE	L	- LENGTH	ROW	- RIGHT OF WAY
CB	- CATCH BASIN AND CONSTRUCT CATCH BASIN	LF	- LINEAR FOOT	S	- SUPERELEVATION RATE
CMP	- CORRUGATED METAL PIPE	LOC	- LIP OF CURB	SDMH	- STORM DRAIN MANHOLE
C.O.V.	- CITY OF VALDEZ	LT	- LEFT	SDR	- STANDARD DIMENSION RATIO
CY	- CUBIC YARD	LS	- LUMP SUM	SHLD	- SHOULDER
DIP	- DUCTILE IRON PIPE	MAX	- MAXIMUM	STA.	- STATION
DOT	- DEPARTMENT OF TRANSPORTATION	MIN	- MINIMUM	SY	- SQUARE YARD
E	- EASTING	MJ	- MECHANICAL JOINT	TBC	- TOP BACK OF CURB
EA	- EACH	MSF	- THOUSAND SQUARE FEET	T	- TANGENT
ELEV	- ELEVATION	N	- NORTHING	TYP.	- TYPICAL
EOP	- END OF PROJECT	NO.	- NUMBER	V	- VERTICAL
F&I	- FURNISH AND INSTALL	NTS	- NOT TO SCALE	VB	- VALVE BOX
FT	- FOOT OR FEET	OSHA	- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	VPI	- VERTICAL POINT OF INTERSECTION
GRSC	- GALVANIZED RIGID STEEL CONDUIT	PC	- POINT OF CURVATURE		
GV	- GATE VALVE	P.C.C.	- PORTLAND CEMENT CONCRETE		
H	- HORIZONTAL	PI	- POINT OF INTERSECTION		

LEGEND - SOIL



NOTES:
1. STANDARD LEGEND AND ABBREVIATIONS SHOWN. NOT ALL LEGEND ITEMS ARE PART OF THIS CONTRACT.
2. SOIL CLASSIFICATION IS BASED UPON UNIFIED SOIL CLASSIFICATION (ASTM D 2487-00), SEE GEOTECHNICAL REPORT FOR MORE INFORMATION.

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

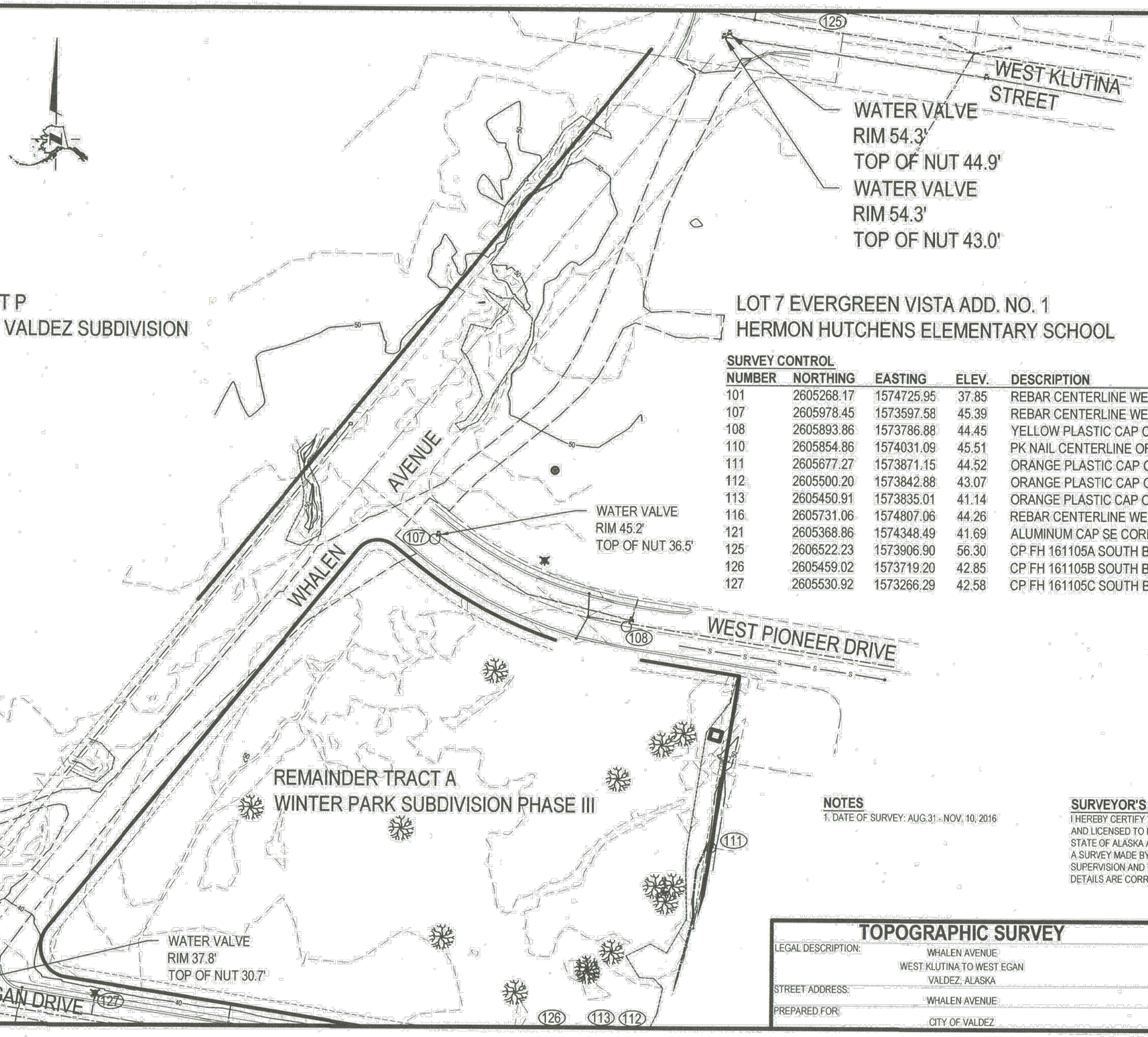
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

LEGEND AND ABBREVIATIONS

SHEET NO.	TOTAL SHEETS
A4	A4



LEGEND

- BOUNDARY LINE THIS SURVEY
- BOUNDARY LINE OTHERS
- ROAD ASPHALT EDGE
- ROAD CENTERLINE
- WATER EDGE OR MHW MARK
- WATER
- SEWER
- STORM DRAIN
- 30 — CONTOUR MAJOR WITH ELEVATION
- CONTOUR MINOR
- (125) SURVEY CONTROL
- COTTONWOOD TREE
- FND REBAR MONUMENT
- (W) WELLS

SURVEY CONTROL

NUMBER	NORTHING	EASTING	ELEV.	DESCRIPTION
101	2605268.17	1574725.95	37.85	REBAR CENTERLINE WEST EGAN AND CLARK STREET
107	2605978.45	1573597.58	45.39	REBAR CENTERLINE WEST PIONEER
108	2605893.86	1573786.88	44.45	YELLOW PLASTIC CAP CENTERLINE WEST PIONEER
110	2605854.86	1574031.09	45.51	PK NAIL CENTERLINE OF WEST PIONEER AND BIRCH
111	2605677.27	1573871.15	44.52	ORANGE PLASTIC CAP ON REBAR SE CORNER LOT 3 WINTER PARK PHASE 3
112	2605500.20	1573842.88	43.07	ORANGE PLASTIC CAP ON REBAR SE CORNER LOT 1 WINTER PARK PHASE 3
113	2605450.91	1573835.01	41.14	ORANGE PLASTIC CAP ON REBAR SE CORNER TRACT A SW CORNER TRACT D
116	2605731.06	1574807.06	44.26	REBAR CENTERLINE WEST PIONEER AND CLARK STREET
121	2605368.86	1574348.49	41.69	ALUMINUM CAP SE CORNER TRACT C WINTER PARK PHASE 2
125	2606522.23	1573906.90	56.30	CP FH 161105A SOUTH BOLT ON FIRE HYDRANT CHISELED X W/BLUE PAINT W. KULTINA
126	2605459.02	1573719.20	42.85	CP FH 161105B SOUTH BOLT ON FIRE HYDRANT CHISELED X W/BLUE PAINT W. EGAN
127	2605530.92	1573266.29	42.58	CP FH 161105C SOUTH BOLT ON FIRE HYDRANT CHISELED X W/BLUE PAINT W. EGAN

NOTES

1. DATE OF SURVEY: AUG.31 - NOV. 10, 2016

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND THAT THIS DRAWING PRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT AS OF NOV. 10, 2016.

STATE OF ALASKA
49th
ALLEN MINISH
LS 8205
11/13/16
REGISTERED PROFESSIONAL LAND SURVEYOR

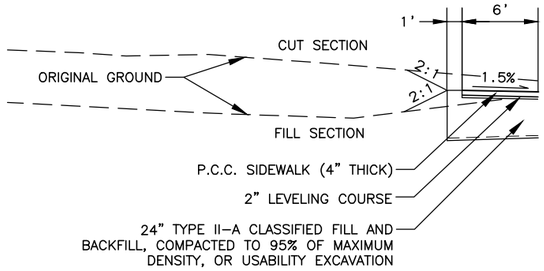
TOPOGRAPHIC SURVEY

LEGAL DESCRIPTION:	WHALEN AVENUE WEST KLUTINA TO WEST EGAN VALDEZ, ALASKA
STREET ADDRESS:	WHALEN AVENUE
PREPARED FOR:	CITY OF VALDEZ

WRANGELL MOUNTAIN TECHNICAL SERVICES
P.O. BOX 118, CHITINA, ALASKA 99566
907-823-2280

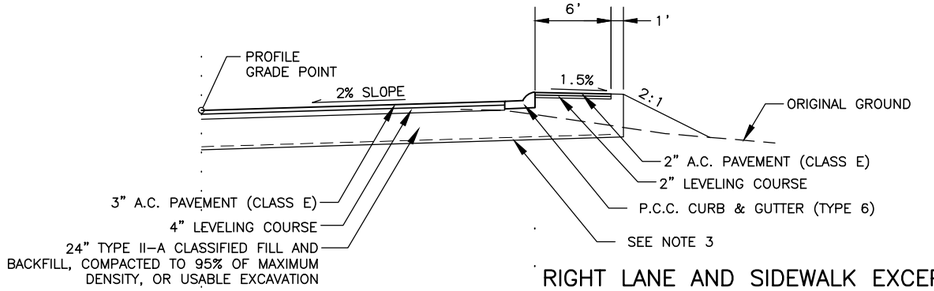
DATE:	DRAWN:	CHECK:	SCALE:
11/13/16	MINISH	MINISH	1"= 100'
JOB#: 16031	DRAWING #: 16031 COV STREET 161113B		SHEET: 1 OF 1 REV#: 0

SURVEY CONTROL **95% PS&E REVIEW**



LEFT SIDEWALK EXCEPTION; W EGAN AVE TO W PIONEER AVE

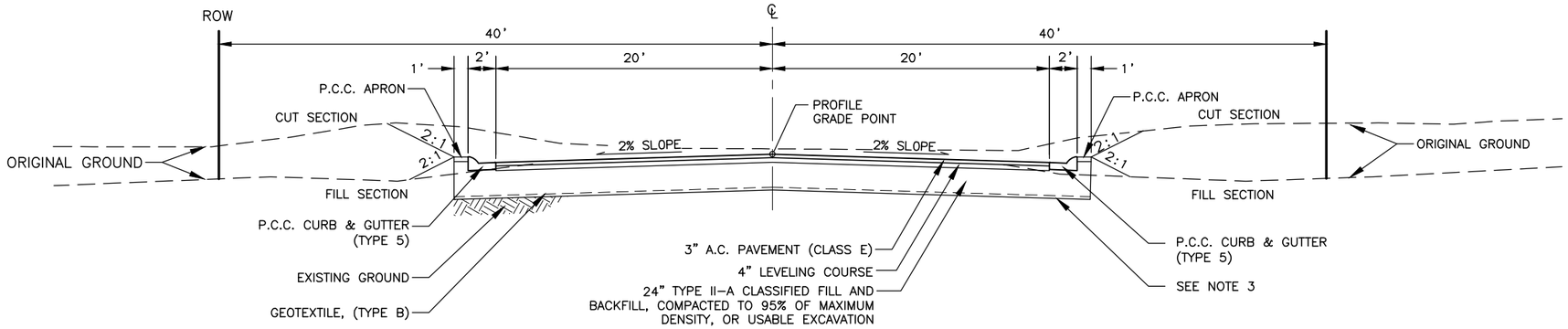
STA. 100+20 TO STA. 106+40



RIGHT LANE AND SIDEWALK EXCEPTION; W PIONEER AVE TO W KLUTINA ST

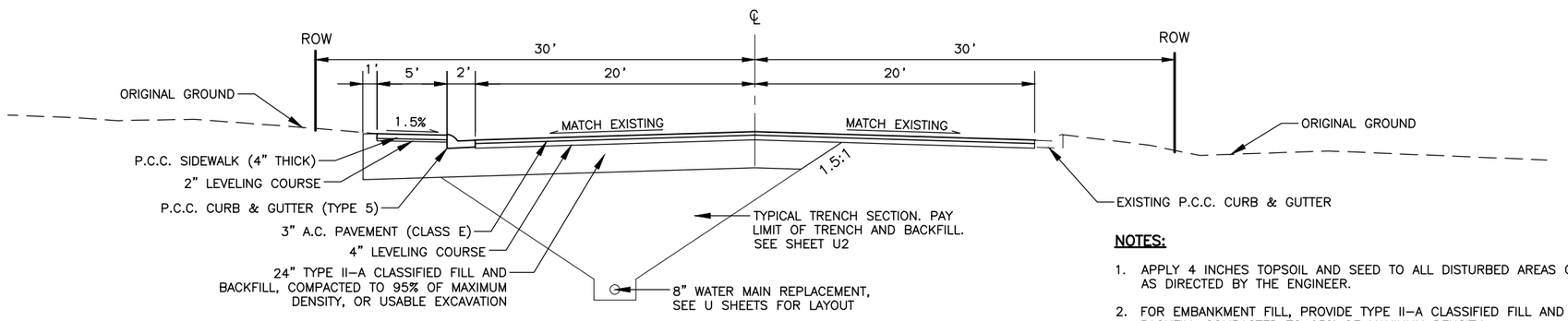
STA. 106+40 TO STA. 111+76

SEE GRADING SHEETS FOR ROADWAY AND SIDEWALK CROSS SLOPE TRANSITIONS.



WHALEN AVENUE

STA. 100+20 TO STA. 111+76



W. PIONEER DRIVE

STA. 201+12 TO STA. 203+25

NOTES:

1. APPLY 4 INCHES TOPSOIL AND SEED TO ALL DISTURBED AREAS OR AS DIRECTED BY THE ENGINEER.
2. FOR EMBANKMENT FILL, PROVIDE TYPE II-A CLASSIFIED FILL AND BACKFILL COMPACTED TO 95% OF MAXIMUM DENSITY.
3. TEST ROLLING SHALL BE PERFORMED ON THE IN-SITU SUBGRADE. SEE ADDITIONS TO THE STANDARD SPECIFICATIONS.
4. UNLESS NOTED OTHERWISE, TRANSITION FROM TYPE 2 C&G TO TYPE 5 OR TYPE 6 C&G OVER A DISTANCE OF AT LEAST 10 FEET.
5. UNLESS NOTED OTHERWISE, TRANSITION FROM 5 C&G TO TYPE 6 C&G OVER A DISTANCE OF AT LEAST 5 FEET.

SHEET NO.	TOTAL SHEETS
B1	B1

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

TYPICAL SECTIONS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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ESTIMATE OF QUANTITIES

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY
A-1	10.09	INTERIM WORK AUTHORIZATION	CS	ALL REQ'D
A-2	10.10	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D
A-3	20.02	CLEARING AND GRUBBING	ACRE	1.50
A-4	20.04	USABLE EXCAVATION	CY	2,080
A-5	20.04	UNUSABLE EXCAVATION	CY	8,290
A-6	20.05	TYPE II-A CLASSIFIED FILL AND BACKFILL	TON	13,690
A-7	20.06	LEVELING COURSE	TON	1,972
A-8	20.07	TRENCH EXCAVATION AND BACKFILL (VARIOUS DEPTHS)	LF	2,522
A-9	20.11	BEDDING MATERIAL (CLASS C)	TON	1,573
A-10	20.13	DISPOSAL OF UNUSABLE OR SURPLUS MATERIAL	CY	8,348
A-11	20.17	REMOVE EXISTING SIDEWALK	SY	191
A-12	20.18	REMOVE EXISTING CURB AND GUTTER	LF	448
A-13	20.19	REMOVE EXISTING PAVEMENT	SY	2,109
A-14	20.22	GEOTEXTILE, (TYPE B)	SY	11,100
A-15	20.30	STORM WATER POLLUTION PREVENTION PLAN	LS	ALL REQ'D
A-16	20.32	FURNISH AND INSTALL CASING	LF	80
A-17	20.40	TEST ROLLING	LS	ALL REQ'D
A-18	30.02	P.C.C. CURB AND GUTTER (ALL TYPES)	LF	2,770
A-19	30.03	P.C.C. SIDEWALK 4" THICK	SY	760
A-20	30.03	P.C.C. SIDEWALK 6" THICK	SY	24
A-21	30.07	P.C.C. CURB RAMP (PARALLEL)	EA	8
A-22	30.07	DETECTABLE WARNINGS	EA	8
A-23	40.02	A.C. PAVEMENT (CLASS E)	TON	1,310
A-24	50.02	FURNISH AND INSTALL PIPE (8" PVC DR 18)	LF	737
A-25	50.03	CONSTRUCT MANHOLE (TYPE A)	EA	3
A-26	50.23	COATING INTERIOR MANHOLE	EA	1
A-27	55.02	FURNISH AND INSTALL CPEP, 18", TYPE S	LF	290
A-28	55.02	FURNISH AND INSTALL CPEP, 24", TYPE S	LF	628
A-29	55.02	FURNISH AND INSTALL CPEP, 36", TYPE S	LF	50
A-30	55.04	CONSTRUCT TYPE 1 MANHOLE	EA	11
A-31	55.06	CONSTRUCT CATCH BASIN	EA	4
A-32	55.07	CONNECT TO EXISTING STORM DRAIN MANHOLE	EA	1
A-33	55.16	COATING INTERIOR STORM DRAIN MANHOLE	EA	2
A-34	60.02	FURNISH AND INSTALL 6" HDPE WATER MAIN	LF	5
A-35	60.02	FURNISH AND INSTALL 8" HDPE WATER MAIN	LF	1,809
A-36	60.02	FURNISH AND INSTALL 12" HDPE WATER MAIN	LF	992
A-37	60.03	FURNISH AND INSTALL 6" GATE VALVE	EA	1
A-38	60.03	FURNISH AND INSTALL 8" GATE VALVE	EA	11
A-39	60.03	FURNISH AND INSTALL 12" GATE VALVE	EA	2
A-40	60.04	FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (SINGLE PUMPER)	EA	2
A-41	60.17	FURNISH AND INSTALL ANODE	EA	14
A-42	65.02	CONSTRUCTION SURVEY MEASUREMENT	LS	ALL REQ'D
A-43	65.02	SURVEY MONUMENT INSTALLED IN MONUMENT CASE	EA	2
A-44	65.02	TWO-PERSON SURVEY CREW	HR	60
A-45	70.03	ADJUST MANHOLE RING	EA	3
A-46	70.06	REMOVE EXISTING CATCH BASIN	EA	1
A-47	70.07	ADJUST MAINLINE VALVE BOX TO FINISH GRADE	EA	4
A-48	70.12	INSULATION BOARD (R=20)	SF	1,780
A-49	70.13	PAINTED TRAFFIC MARKINGS	LS	ALL REQ'D
A-50	70.14	STANDARD SIGN	SF	103.41
A-51	70.15	TRAFFIC MAINTENANCE	LS	ALL REQ'D
A-52	70.16	REMOVE PIPE	LF	540
A-53	75.04	TOP SOIL (AT 4" DEPTH)	MSF	11
A-54	75.05	SEEDING (TYPE 1)	MSF	11

ESTIMATE OF QUANTITIES (CONT.)

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY
A-55	80.02	TRENCH AND BACKFILL (2' X 3')	LF	1,430
A-56	80.04	DRIVEN PILE LUMINAIRE POLE FOUNDATIONS	EA	6
A-57	80.05	FIXED BASE LUMINAIRE POLE (24' LENGTH)	EA	6
A-58	80.05	LUMINAIRE ARM (8' LENGTH)	EA	6
A-59	80.07	GRC STEEL CONDUIT (2")	LF	1,430
A-60	80.08	JUNCTION BOX (TYPE 1A)	EA	7
A-61	80.08	JUNCTION BOX (TYPE II)	EA	1
A-62	80.10	1 CONDUCTOR, #8 AWG XHHW	LF	1,430
A-63	80.10	3 CONDUCTOR, #8 AWG XHHW	LF	1,630
A-64	80.14	POST-MOUNTED LOAD CENTER UNDERGROUND SERVICE, TYPE 2	EA	1
A-65	80.23	LUMINAIRE, 182W LED, 80 LED, TYPE 3 OPTICS	EA	6

TABLE OF ESTIMATING FACTORS

ITEM NO.	ITEM DESCRIPTION	ESTIMATING FACTOR
20.05	TYPE II-A CLASSIFIED FILL AND BACKFILL	144 LBS. / C.F.
20.06	LEVELING COURSE	144 LBS. / C.F.
20.11	BEDDING MATERIAL (CLASS C)	110 LBS. / C.F.
40.02	A.C. PAVEMENT (CLASS E)	151 LBS. / C.F.

SHEET NO.	TOTAL SHEETS
C1	C1

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

ESTIMATE OF QUANTITIES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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PETER.MAMROL

SCALE

LAYOUT
C1

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SPEC NO. 20.17

REMOVE EXISTING SIDEWALK

SHEET	LOCATION	QTY (SY)	REMARKS
F1	EGAN DRIVE, NW CORNER	7	
F1	EGAN DRIVE, NE CORNER	20	
F1	W PIONEER, N SIDE	164	STA. 200+60 TO STA. 203+25 LT
	TOTAL	191	

SPEC NO. 20.18

REMOVE EXISTING CURB AND GUTTER

SHEET	LOCATION	QTY (SY)	REMARKS
F1	EGAN DR - NW CORNER	35	
F1	EGAN DR - NE CORNER	60	
F1	EGAN DR - SOUTH SIDE	65	
F3	W PIONEER - S SIDE	43	STA. 200+70 TO STA. 201+12
F3	W PIONEER - N SIDE	245	STA. 200+70 TO STA. 203+45
	TOTAL	448	

SPEC NO. 20.19

REMOVE EXISTING PAVEMENT

SHEET	LOCATION	QTY (SY)	REMARKS
F1	EGAN DRIVE INTERSECTION	734	
F1	W PIONEER DRIVE	1152	
F2	KLUTINA INTERSECTION	223	
	TOTAL	2109	

SPEC NO. 20.22

GEOTEXTILE, (TYPE B)

SHEET	LOCATION	QTY (SY)	REMARKS
F1-F2	WHALEN AVE	11,100	
	TOTAL	11,100	

SPEC NO. 20.32

FURNISH AND INSTALL CASING

SHEET	STATION	OFFSET	QTY (LF)	NOTES
U5	202+86	3 LT	20	ENCASE PIPE PW1-16 AT SD CROSSING
U6	99+96	23 LT	40	ENCASE PIPE PW2-2 AT SS AND SD CROSSING
U10	100+11	53 LT	20	ENCASE PIPE PS1-1 AT WATER CROSSING
		TOTAL	80	

SPEC NO. 30.02

CURB AND GUTTER, ALL TYPES

SHEET	LOCATION	OFFSET	QTY (LF)	NOTES
F1	EGAN - ST TERESA S	LT	374	TYPE 5
F1	EGAN - W PIONEER	RT	690	TYPE 5
F1	EGAN - SOUTH	LT	65	TYPE 2
F1	ST TERESA S - W PIONEER	LT	295	TYPE 5
F1, F2	W PIONEER - ST TERESA N	LT	277	TYPE 5
F1, F2	W PIONEER - KLUTINA	RT	505	TYPE 6
F2	ST TERESA N - KLUTINA	LT	264	TYPE 5
F3	W PIONEER - CHILKAT	RT	300	TYPE 5
		TOTAL	2,770	

SPEC NO. 30.03

CONCRETE SIDEWALK, 4" THICK

SHEET	LOCATION	OFFSET	QTY (SY)	NOTES
F1	EGAN - ST TERESA (SOUTH)	LT	250	6' WIDE SIDEWALK
F1	EGAN - W PIONEER	RT	77	1' WIDE APRON AT TBC
F1	EGAN - SOUTH	LT	8	1' WIDE APRON AT TBC
F1	ST TERESA S - W PIONEER	LT	197	6' WIDE SIDEWALK
F1, F2	W PIONEER - ST TERESA (NORTH)	LT	31	1' WIDE APRON AT TBC
F1, F2	W PIONEER - KLUTINA	RT	0	ASPHALT PATHWAY - SEE 40.02
F2	ST TERESA N - KLUTINA	LT	30	1' WIDE APRON AT TBC
F3	W PIONEER - CHIKLAT	LT	167	5' WIDE SIDEWALK
		TOTAL	760	

SPEC NO. 30.03

CONCRETE SIDEWALK, 6" THICK

SHEET	LOCATION	OFFSET	QTY (SY)	NOTES
F2	STA. 108+92 TO STA. 109+16	RT	24	SCHOOL CURB CUT
	TOTAL		24	

SPEC NO. 30.07

P.C.C. CURB RAMP (PARALLEL) & DETECTABLE WARNINGS

SHEET	STATION	OFFSET	P.C.C. CURB RAMP (PARALLEL)	DETECTABLE WARNINGS	REMARKS
F1	100+32.5	41.0 LT	1	1	EGAN DRIVE
F1	100+29.6	36.7 RT	1	1	EGAN DRIVE
F1	103+33.5	29.4 LT	1	1	ST TERESA LP (SOUTH)
F1	103+71.5	29.4 LT	1	1	ST TERESA LP (SOUTH)
F1	106+21.4	29.4 LT	1	1	W PIONEER DRIVE
F1	106+59.4	29.4 LT	1	1	W PIONEER DRIVE
F1	106+71.7	29.2 RT	1	1	W PIONEER DRIVE
F2	108+91.4	29.4 LT	1	1	ST TERESA LP (NORTH)
		TOTAL	8	8	

NOTE: THE STATION AND OFFSET REFERENCE POINT IS LOCATED AT TBC OF THE LANDING MIDPOINT.

SHEET NO.	TOTAL SHEETS
D1	D2

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SUMMARY TABLES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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LAYOUT D1 | SCALE | 4/27/2022 3:27 PM | DRAFTED BY PETER.MAMROL

SPEC NO. 60.03

FURNISH AND INSTALL GATE VALVE, VALVE BOX AND MARKER

SHEET	STATION	OFFSET	6" GV	8" GV	12" GV	REMARKS
U3	100+03	17 LT		1		WATER MAIN #1
U3	103+60	44.5 LT		1		WATER MAIN #1
U3	106+46	12 RT		2		WATER MAIN #1
U3	106+48	44.5 LT		1		WATER MAIN #1
U4	107+94	12 RT		1		WATER MAIN #1
U4	107+94	137 RT		1		WATER MAIN #1
U4	109+02	44.5 LT		1		WATER MAIN #1
U4	111+73	6 RT	1			WATER MAIN #1
U4	111+99	12 RT		1		WATER MAIN #1
U5	202+86	15 LT		2		WATER MAIN #1
U6	99+42	40 LT			1	WATER MAIN #2
U7	107+98	142 RT			1	WATER MAIN #2
		TOTAL	1	11	2	

NOTE: FIRE HYDRANT VALVES AND VALVE BOXES ARE INCIDENTAL TO THE FIRE HYDRANT ASSEMBLY

SPEC NO. 60.04

FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (SINGLE PUMPER)

SHEET	STATION	OFFSET	QTY	REMARKS
U2	102+38	32 RT	1	
U2	104+48	32 RT	1	
	TOTAL		2	

SPEC NO. 70.03

ADJUST MANHOLE RINGS

SHEET	STATION	OFFSET	QTY	REMARKS
F1	99+81	59 LT	1	EGAN/WHALEN INTERSECTION (SSMH)
F1	99+94	43 LT	1	EGAN/WHALEN INTERSECTION (SDMH)
F3	202+62	1 LT	1	W PIONEER/CHILKAT CIR (SDMH)
	TOTAL		3	

SPEC NO. 70.06

REMOVE EXISTING CATCH BASIN

SHEET	STATION	OFFSET	QTY	REMARKS
F1	100+22	35 RT	1	EGAN/WHALEN INTERSECTION
	TOTAL		1	

SPEC NO. 70.07

ADJUST MAINLINE VALVE BOX TO FINISH GRADE

SHEET	STATION	OFFSET	QTY	REMARKS
F1	100+02	21 LT	1	EGAN/WHALEN INTERSECTION
F1	100+03	17 LT	1	EGAN/WHALEN INTERSECTION
F1	100+04	20 LT	1	EGAN/WHALEN INTERSECTION
F3	112+00	15 RT	1	KLUTINA/WHALEN INTERSECTION
	TOTAL		4	

SPEC NO. 70.12

INSULATION BOARD (R=20)

SHEET	LOCATION	QTY (SF)	REMARKS
U3	OVER WATER MAIN #1	400	INSTALL OVER PIPE PW1-1
U6	WATER MAIN #2 CROSSING	160	
U6	WATER MAIN #2 CROSSING	160	
U7	WATER MAIN #2 CROSSING	160	
U10	SEWER MAIN @ EGAN DR	900	INSTALL OVER PIPE PS1-1 (100 LF OF PIPE) AND PS1-2 (125 LF OF PIPE)
	TOTAL	1,780	

SPEC NO. 70.16

REMOVE PIPE

SHEET	STATION	OFFSET	QTY	REMARKS
F1	99+95 TO 100+85	LT	100	REMOVE 42" CMP STUB OUT
F1	100+22	RT	20	REMOVE 18" PIPE FROM CURB INLET
U3	100+00 TO 100+90	LT	72	REMOVE 8" DIP WATER STUB OUT
U4	111+73	LT	10	REMOVE 6" DIP AS REQ'D FOR NEW CONNECTION; ABANDON REMAINDER OF PIPE
U4	112+00	RT	10	REMOVE 8" DIP AS REQ'D FOR NEW CONNECTION; ABANDON REMAINDER OF PIPE
U5	200+92 TO 202+00	LT	220	REMOVE 8" DIP WATER MAIN; ABANDON PIPE WHERE REQ'D TO REDUCE IMPACTS TO EXISTING SD
U10	100+00 TO 100+90	LT	108	REMOVE 8" DIP SEWER STUB OUT
	TOTAL		540	

SHEET NO.	TOTAL SHEETS
D2	D2

ADDENDUM NO.

ATTACHMENT NO.

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SUMMARY TABLES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION Z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_D1_SUMMARY SHEETS.dwg
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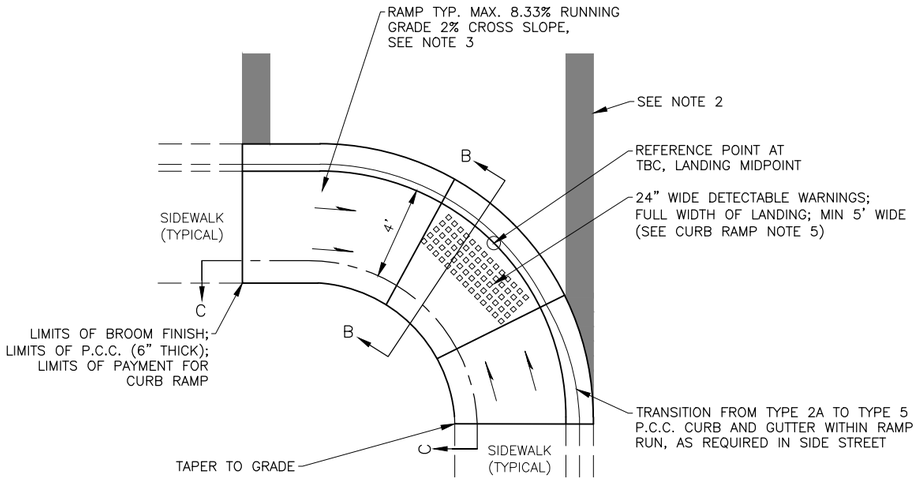
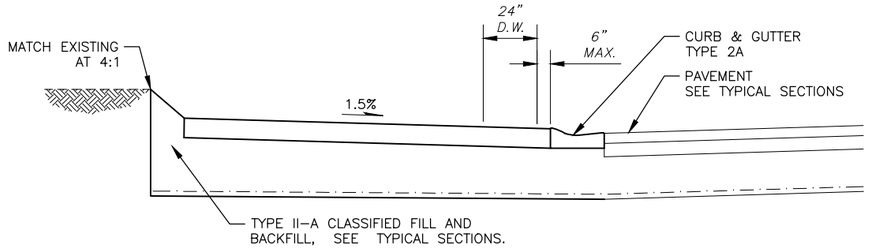
LAYOUT D2
SCALE
DRAFTED BY PETER.MAMROL

CONSTRUCTION NOTES:

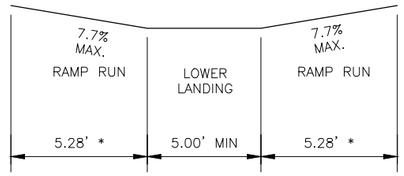
1. CONSTRUCT RAMP RUNS AND LANDINGS OF CONCRETE, REGARDLESS OF WHETHER THE SIDEWALK IS ASPHALT OR CONCRETE.
2. REFER TO THE STRIPING PLANS FOR CROSSWALK LAYOUTS.
3. CONSTRUCT SIDEWALK AND RAMP RUN CROSS SLOPES AT 1.5% NOMINAL (1.0% MIN. AND 2.0% MAX). MEASURED PERPENDICULAR TO THE SIDEWALK OR RAMP RUN MAXIMUM CROSS SLOPE ON LOWER LANDINGS IS 2.0% MEASURED IN ANY DIRECTION. MAXIMUM RUNNING SLOPE OF RAMPS SHALL BE 8.3%, BUT SHALL NOT REQUIRE THE RAMP TO EXCEED 15 FEET. CONTRACTOR SHALL CONSTRUCT THE RAMP PORTIONS AND LOWER LANDINGS OF THE CURB RAMP WITH NO MANHOLES, UTILITY JUNCTION BOXES, OR OTHER OBSTRUCTIONS.
4. PROVIDE A COARSE BROOMED FINISH RUNNING PERPENDICULAR TO THE CURB ON RAMP RUNS AND UPPER LANDINGS AND PARALLEL TO THE CURB ON LOWER LANDINGS.
5. CONTRACTOR SHALL INSTALL 24 INCH DETECTABLE WARNINGS (D.W.) I.A.W. MANUFACTURERS' RECOMMENDATIONS AND THE DRAWINGS. D.W. SHALL EXTEND THE FULL WIDTH OF THE LANDING. INSTALL D.W. SO THAT THE FIELD AREA AT THE BASE OF THE DOMES IS FLUSH WITH THE SURROUNDING CONCRETE. ALLOW NO LIPS AT EDGE OF THE D.W. OR FLOW LINE. D.W. SHALL BE FEDERAL YELLOW, OR APPROVED EQUAL. WHERE POSSIBLE, FINISHED EDGES WILL BE PLACED ON THE D.W. OUTER BOUNDARIES. ENSURE D.W. TILES MEET SECTION 705.1 OF THE 2006 ADA STANDARDS FOR TRANSPORTATION FACILITIES FOR THE FULL WIDTH OF THE RAMP. ALIGN TRUNCATED DOME PATTERN IN THE PREDOMINANT DIRECTION OF WHEELCHAIR TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
6. SEE SUMMARY TABLES FOR CURB RAMP REFERENCE POINT STATION AND OFFSET.



ONE CROSSING DIRECTION
(PARALLEL CURB RAMP)
(AT CORNER)
NTS

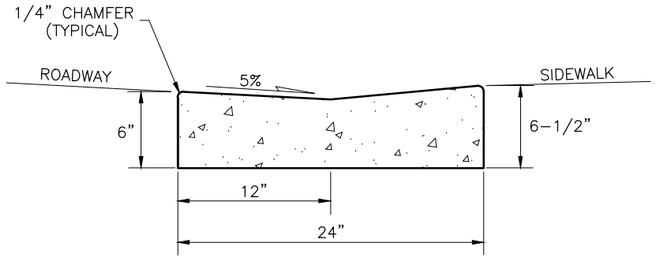


SECTION B–B



PROFILE C–C
* SEE NOTE 4

PARALLEL CURB RAMP
NTS



CURB RAMP CURB & GUTTER, TYPE 2A
NTS

SHEET NO.	TOTAL SHEETS
E1	E5

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

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KINNEY ENGINEERING, LLC
FOR
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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
Z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_E1_Details.dwg

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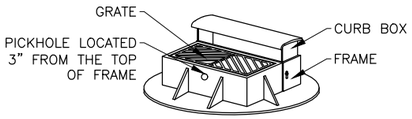
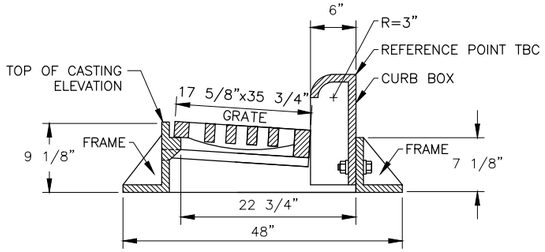
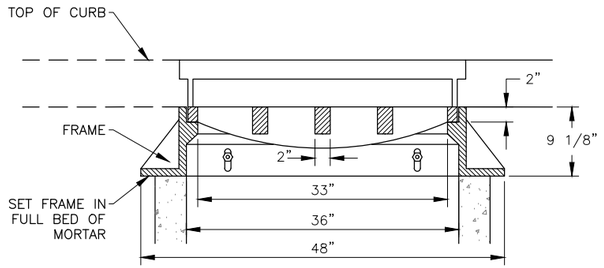


ISOMETRIC VIEW



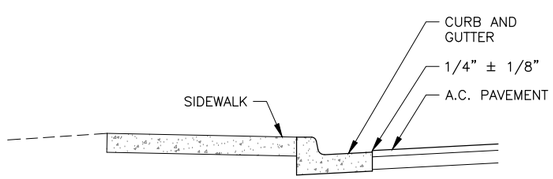
SIDE VIEW



FRONT VIEW

36" CURB INLET, ROUND FRAME AND GRATE FOR STORM DRAIN MANHOLE

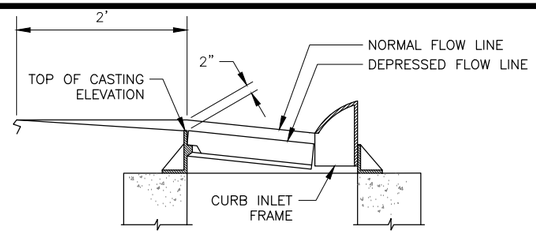
NTS



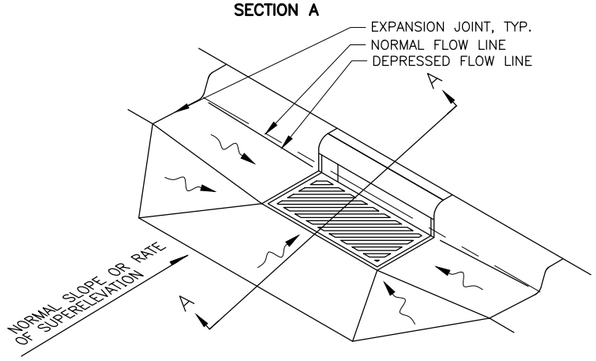
NOTES:

1. THE FINISHED A.C. SURFACE SHALL BE 1/4" ± 1/8" HIGHER THAN THE LIP OF THE CURB PAN.
2. AT CROSSWALKS THE FINISHED A.C. SURFACE SHALL BE FLUSH

PAVING DETAIL

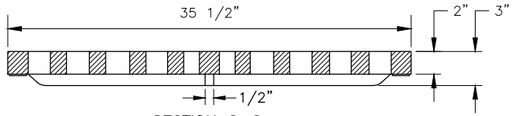


SECTION A



STANDARD CURB INLET INSTALLATION

NTS



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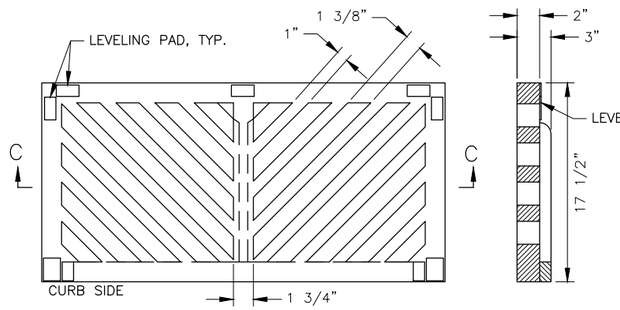
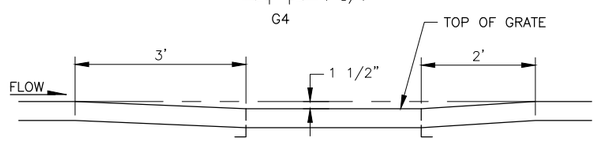
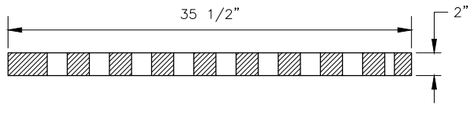
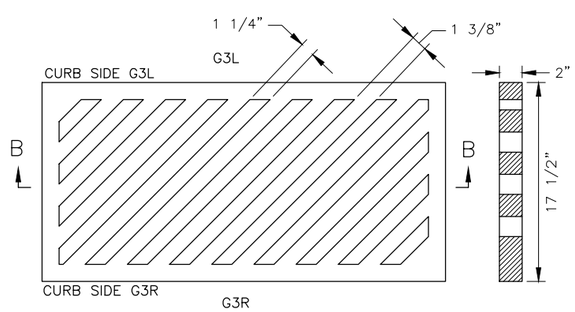


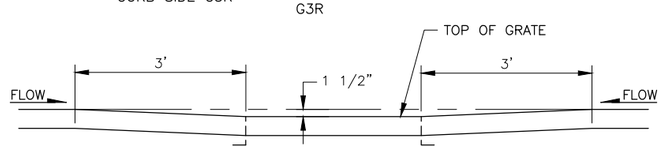


ON GRADE



SECTION B–B

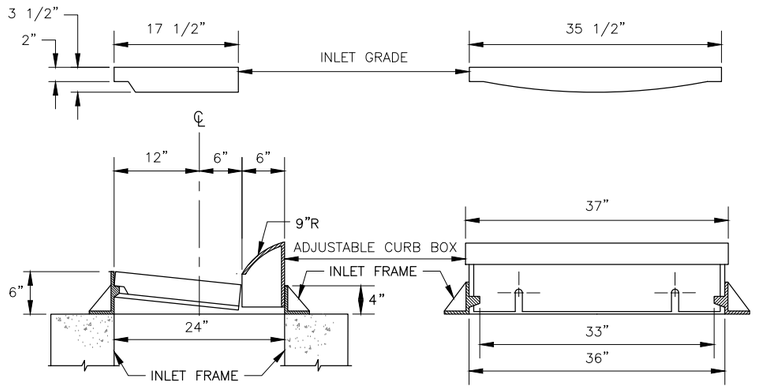




AT LOW POINT

GENERAL NOTES:

1. DETAILS SHOWN ARE TO INDICATE GENERAL DESIGN ONLY. DIMENSIONS AND DESIGN MAY VARY AMONG THE MANUFACTURERS.
2. MINIMUM CASTING WEIGHT SHALL BE 330 LBS FOR CURB INLET FRAME WITH CURB BOX AND 200 LBS. FOR INLET GRATE.
3. THE OUTSIDE DIMENSIONS OF INLET GRATE SHALL BE 35 1/2" X 17 1/2" AND ALL GRATES SHALL BE INTER–CHANGEABLE.
4. MINIMUM DRAINAGE AREA OF INLET GRATE SHALL BE 255 SQUARE INCHES.
5. INLET GRATE TYPE G–3R OR G–3L SHALL BE USED IN ALL CASES EXCEPT WHERE DRAINAGE IS FROM BOTH DIRECTIONS, IN WHICH CASE TYPE G–4 SHALL BE USED.



SIDE VIEW FRONT VIEW

36" CURB INLET, SQUARE FRAME AND GRATE FOR TYPE A INLET BOX

NTS

DEPRESSION IN FLOW LINE AT INLET CONSTRUCTION DETAILS

NTS

SHEET NO.	TOTAL SHEETS
E2	E5

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

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LAYOUT E2

SCALE

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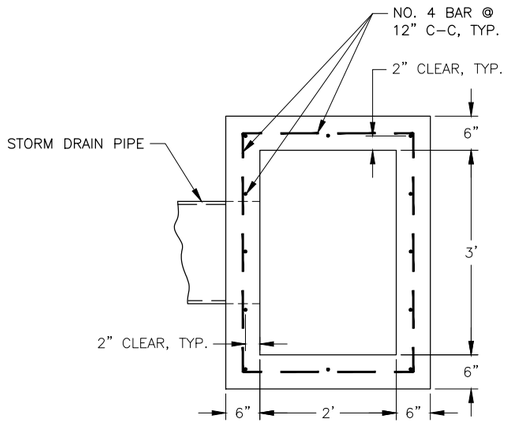
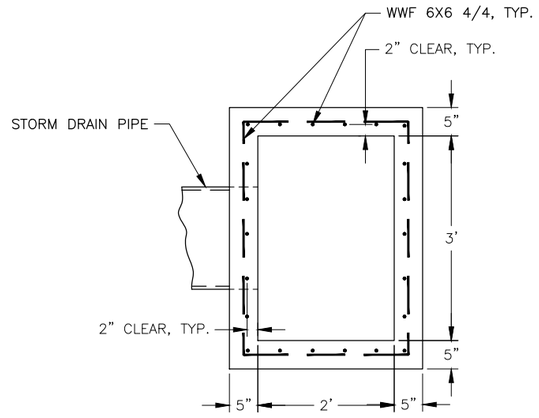
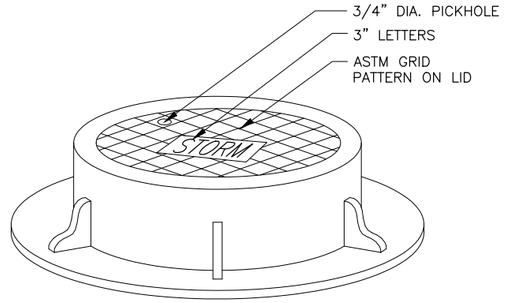


CAST IN PLACE
PLAN



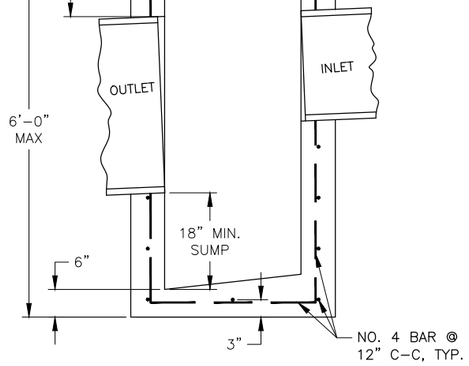
PRECAST
PLAN



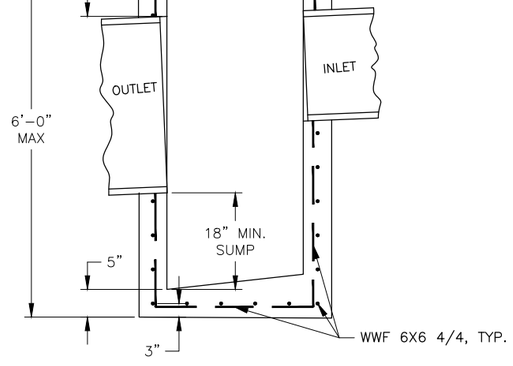
STANDARD MANHOLE LID/FRAME
NTS

MANHOLE LID NOTES:

1. DETAILS SHOWN ARE TO INDICATE GENERAL DESIGN ONLY. DIMENSION AND DESIGN MAY VARY AMONG THE MANUFACTURERS,
2. MANHOLE LIDS SHALL BE 32" IN DIAMETER.



CAST IN PLACE
ELEVATION



PRECAST
ELEVATION

TYPE A CONCRETE INLET BOXES
NTS

NOTES:

1. INSTALL INLET BOXES PARALLEL TO THE CURB LINE.
2. SHAPE FLOORS TO DRAIN.

SHEET NO.	TOTAL SHEETS
E3	E5

ADDENDUM NO.

ATTACHMENT NO.

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DRAWING LOCATION
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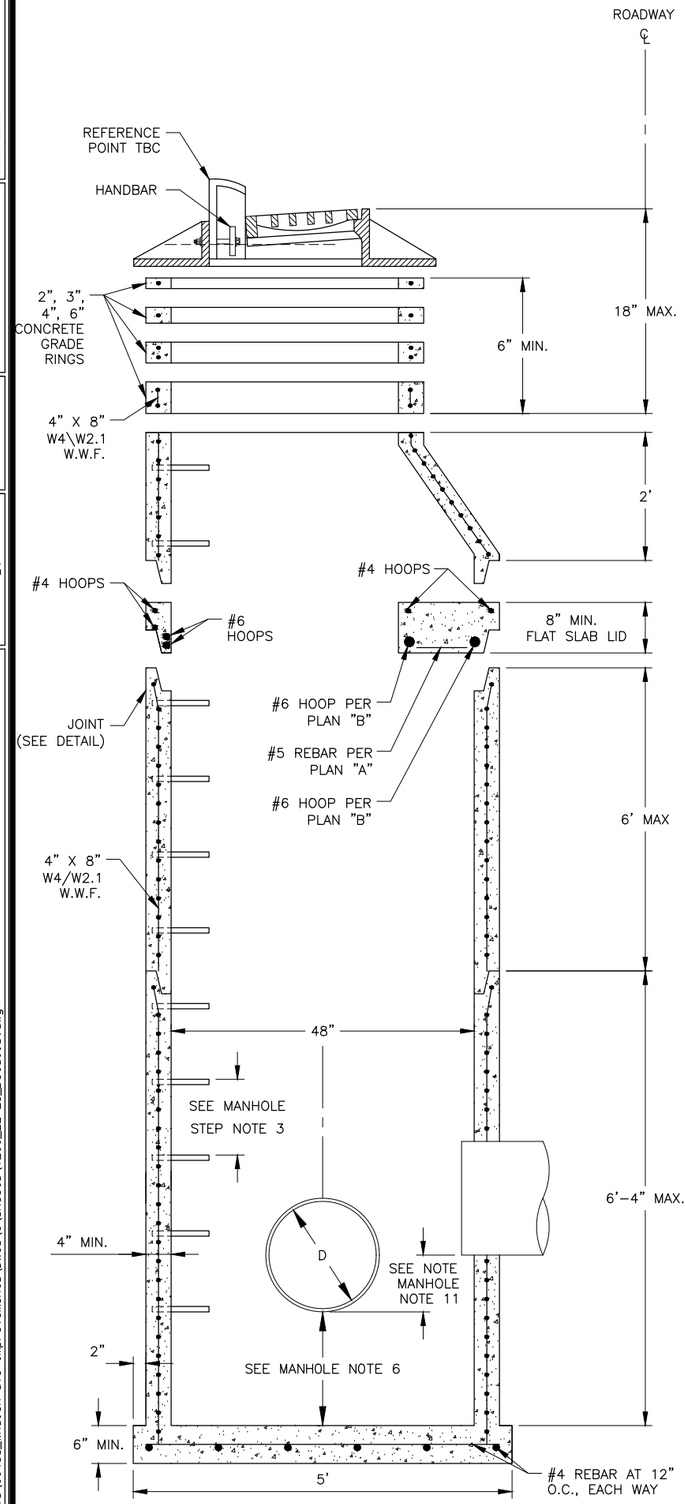
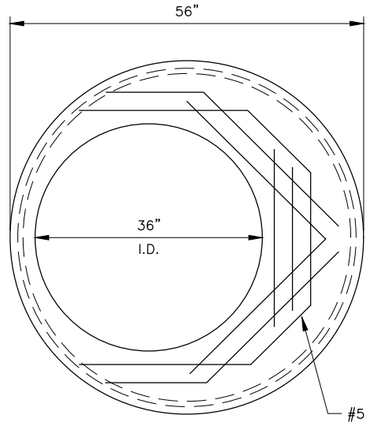
BRIAN.LEWIS		E3	



STORM DRAIN MANHOLE TYPE 1

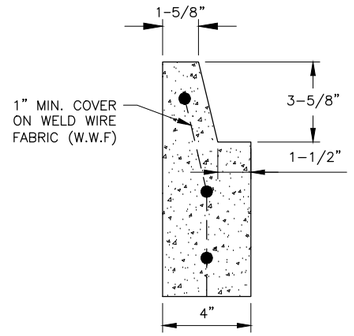
NTS



FLAT SLAB LID PLAN "A"

#5 REBAR BOTTOM REINFORCEMENT

NTS

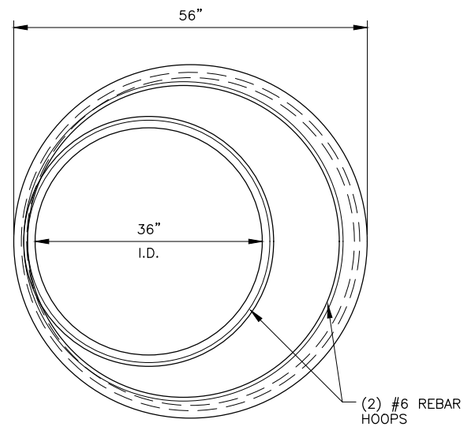


JOINT DETAIL

(NORMAL DIMENSIONS)

NTS

NOTE:
MANUFACTURE JOINING UNITS TO FIT.

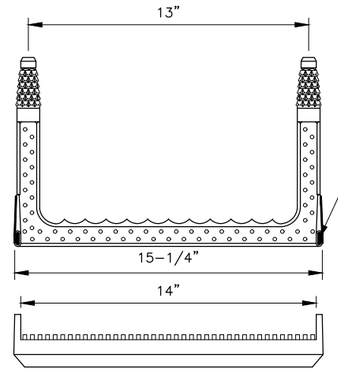


SEE CROSS SECTION AT LEFT FOR LOCATIONS OF THE #4 HOOPS.

FLAT SLAB LID PLAN "B"

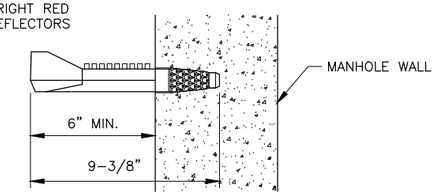
#6 REBAR HOOPS ABOVE #5 REBAR AND WITHIN 3" OF BASE

NTS



MANHOLE STEP

NTS



MANHOLE NOTES:

1. MAXIMUM KNOCKOUT SIZE FOR PIPES IS 32". MINIMUM DISTANCE BETWEEN KNOCKOUTS IS 4".
2. USE CONCRETE WITH A MINIMUM 4000 PSI 28 DAY COMPRESSIVE STRENGTH AND 6% ± 1.5% AIR ENTRAINMENT. MAXIMUM WATER/CEMENT RATIO IS 0.45.
3. MINIMUM STEEL REQUIRED FOR BARREL AS PER AASHTO M199 SHALL BE EMBEDDED IN BASE SO THAT THE FIRST BARREL SECTION IS CONNECTED TO THE BASE BY CONTINUOUS STEEL.
4. MINIMUM COVER ON REINFORCING STEEL IS 1".
5. FORM ALL BLOCKOUTS.
6. ALL CATCH STORM DRAIN MANHOLES AND INLETS SHALL HAVE 18" MINIMUM SUMPS.
7. A FLAT LID WITH A SMALLER OPENING MAY ALSO BE USED IF CALLED FOR. THIS REQUIRES ADDITIONAL #5 REBAR REINFORCEMENT AT THE SAME SPACING AS SHOWN IN PLAN "A". ALSO, ADJUST HOOP DIAMETERS AROUND THE OPENING TO PROVIDE THE SAME COVER.
8. MANHOLES PLACED ALONG CURB LINE SHALL HAVE STEPS ALIGNED UNDER THE CURB INLET.
9. PLACE MANHOLE BASE ON 6" MIN. COMPACTED AGGREGATE BASE COURSE.
10. EXTEND PIPE A MINIMUM OF 2" INTO MANHOLE.
11. MINIMUM DROP BETWEEN PIPES IS 1.5".
12. PIPE LENGTH, INVERT, AND SLOPE ARE MEASURED FROM CENTER OF MANHOLE.

MANHOLE STEP NOTES:

1. MANHOLE STEPS SHALL BE INJECTION MOLDED POLYPROPYLENE COVERED GRADE 60 STEEL TIGHTLY IMBEDDED AT LEAST 3" INTO CONCRETE.
2. THE INSTALLED STEPS SHALL RESIST A PULLOUT FORCE OF 1500 LB.
3. STEPS SHALL BE PLACED 12" O.C. ON AN UNOBSTRUCTED SIDE OF THE STRUCTURE, 24" MAX. FROM TOP OF CASTING AND 18" FROM MANHOLE BASE.

SHEET NO.	TOTAL SHEETS
E4	E5

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

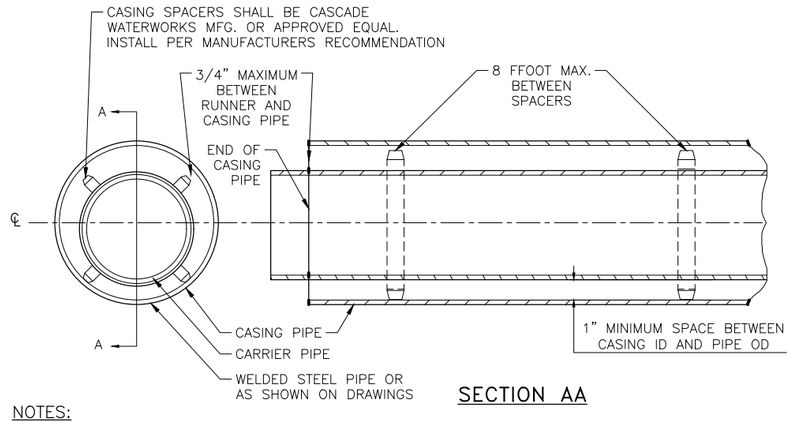
WHALEN AVENUE

DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_E2-E5_Details.dwg

LAYOUT E4 | SCALE | 4/28/2022 10:52 AM | DRAFTED BY BRIAN.LEWIS



SECTION AA

NOTES:

1. CASING PIPE SHALL BE WELDED STEEL PIPE. CASING PIPE SHALL BE DESIGNED FOR ALL LOADS FOR EACH APPLICATION.

2. INSTALL CASING SPACERS A MAXIMUM OF ONE FOOT (1') FROM EACH SIDE OF EACH PIPE JOINT. CASING SPACERS SHALL BE CASCADE WATERWORKS MFG. STAINLESS STEEL WITH POLYETHYLENE RUNNERS OR APPROVED EQUAL.

3. ENDS OF CASING PIPE SHALL BE SEALED WITH SYNTHETIC RUBBER SEAL WITH STAINLESS STEEL BANDS. CASING SHALL BE WATERTIGHT. END CAPS MAY BE DELETED BY THE CORROSION ENGINEER.

4. CARRIER PIPE SHALL HAVE FIELD LOK® GASKETS OR APPROVED EQUAL INSTALLED ENTIRE LENGTH OF CASING PIPE AND AT A MINIMUM SHALL EXTEND ONE FULL PIPE LENGTH BEYOND END OF CASING.

5. JOINT BONDS OR THAW WIRES SHALL BE INSTALLED THE ENTIRE LENGTH OF CARRIER PIPE PER AWWU DCPM CORROSION CONTROL MAGNESIUM BAG ANODE INSTALLATION DETAIL.

6. FILL CARRIER PIPE WITH WATER PRIOR TO FILLING ANNULAR SPACE WITH CDF GROUT.

7. GROUT ANNULAR SPACE WITH CONTROLLED DENSITY FILL (CDF) 50–150 PSI 28 DAY STRENGTH, pH MIN 11.

8. VOIDS CREATED BY CASING INSTALLATION ON OUTSIDE OF CASING SHALL BE PRESSURE GROUTED.

CITY OF VALDEZ ALASKA • OPPORTUNITIES IN EVERY SEASON •	SCALE: NTS APPROVED: REVISED: 09/21	PIPE ENCASEMENT	SECTION # 20.32

SHEET NO.	TOTAL SHEETS
E5	E5

ADDENDUM NO.

ATTACHMENT NO.

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CITY OF VALDEZ

WHALEN AVENUE

DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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LAYOUT E5

SCALE

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PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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BRIAN.LEWIS		F1	

REMOVE 42" CMP FROM EXISTING SDMH AT STA. 99+95, 43' LT TO APPROXIMATE STA. 100+85 (100 LF TOTAL). INSTALL PIPE PD1-1 TO MATCH INVERT OF REMOVED PIPE AND GROUT IN PLACE. COAT STORM DRAIN STRUCTURE WITH EPOXY.

BEGIN NEW PAVEMENT, MATCH EXISTING. SEE GRADING SHEETS

BEGIN NEW P.C.C. SIDEWALK, MATCH EXISTING

TRACT P
PORT VALDEZ SUBDIVISION
PLAT NO. 77-1

LOCATE AND PROTECT FIBER OPTIC UTILITY PRIOR TO STORM DRAIN CONSTRUCTION

APPROXIMATE LAYOUT OF PROPOSED SUBDIVISION

HORZ SCALE IN FEET 0 30 60

10' UTILITY EASEMENT

WHALEN AVENUE

MATCH LINE STA 107+25
SEE SHEET F2

BEGIN PROJECT
STA. 99+42
N 2605465
E 1573139

BEGIN NEW PAVEMENT MATCH EXISTING CURB AND GUTTER

STA. 100+22, 35' RT
REMOVE EXISTING CURB INLET AND STORM DRAIN PIPE. INSTALL CAP AND PLUG AT TEE

REMOVE AND REPLACE AC SIDEWALK. MATCH EXISTING

BEGIN NEW PAVEMENT, MATCH EXISTING. SEE GRADING SHEETS

PROTECT EXISTING CATCH BASIN MANHOLE IN PLACE. COAT STORM DRAIN STRUCTURE WITH EPOXY

EGAN DRIVE

ALIGNMENT CURVE DATA
N = 2605608.8150
E = 1573178.5255
PI = 100+90.80
Δ = 23°43'13"
T = 54.60'
L = 107.639'
R = 260.00'

WATER MAINS #1 & #2
SEE SHEETS U3 & U6

BLOCK 6
WINTER PARK PHASE IV
SUBDIVISION
PLAT NO. 2016-8

INTERSECTION
WHALEN AVE STA. 106+40.37
= W PIONEER DR STA. 200+00.00

200' WELL PROTECTION RADIUS

W PIONEER DRIVE

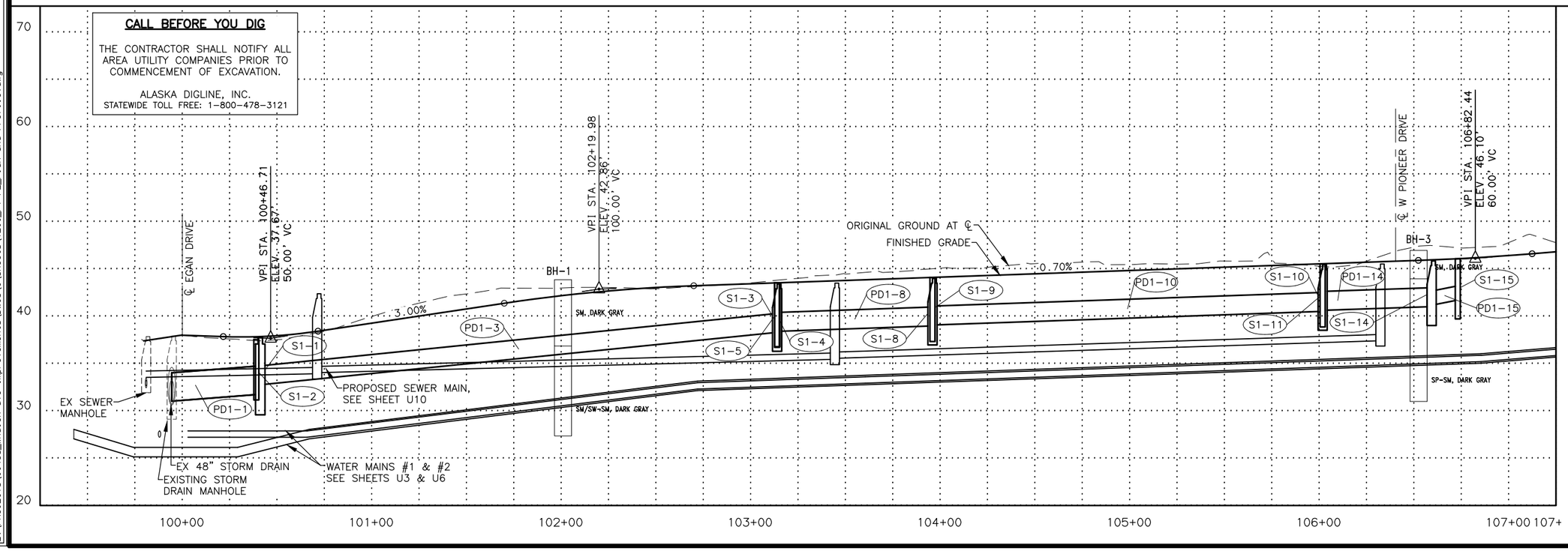
SEE SHEET F3

NOTES:
1. ALL EXISTING UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.
2. REFERENCE POINTS ARE TBC FOR CURB INLETS AND CENTER OF MANHOLES FOR OTHER STRUCTURES.
3. SEE G SHEETS FOR WORK LIMITS INCLUDING PAVEMENT, CURB AND GUTTER, AND SIDEWALK
4. SEE H SHEETS FOR SIGNING, STRIPING, AND ILLUMINATION.
5. INCLUDE WATER TIGHT JOINTS AND LOW PRESSURE TEST AT ALL LOCATIONS WHERE STORM PIPE CROSSES WATER MAIN; SUBSIDIARY TO STORM PIPE PAY ITEM.

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL NOTIFY ALL AREA UTILITY COMPANIES PRIOR TO COMMENCEMENT OF EXCAVATION.

ALASKA DIGLINE, INC.
STATEWIDE TOLL FREE: 1-800-478-3121



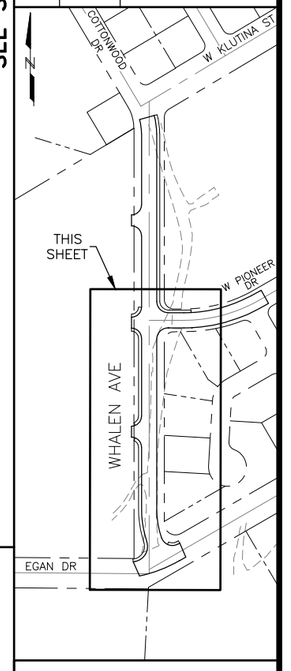
SHEET NO.	TOTAL SHEETS
F1	F4

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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FOR
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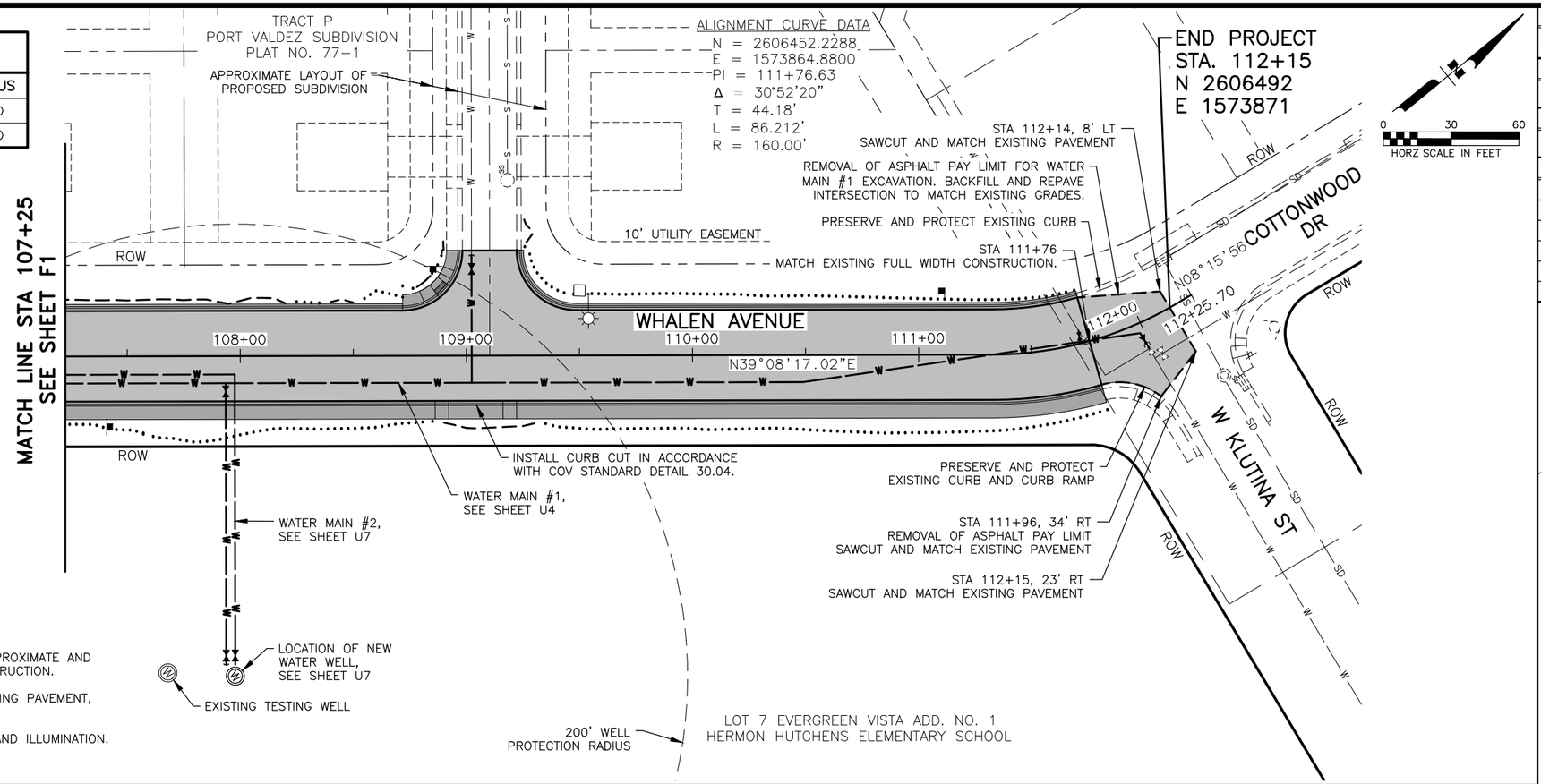
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

PLAN AND PROFILE BOP TO STA 107+25

RADIUS POINT SUMMARY			
POINT	STATION	OFFSET	RADIUS
209	108+71.87	46.50 L	30.0
210	109+48.87	46.50 L	30.0



NOTES:

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.
2. SEE G SHEETS FOR WORK LIMITS INCLUDING PAVEMENT, CURB AND GUTTER, AND SIDEWALK.
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CALL BEFORE YOU DIG

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ALASKA DIGLINE, INC.
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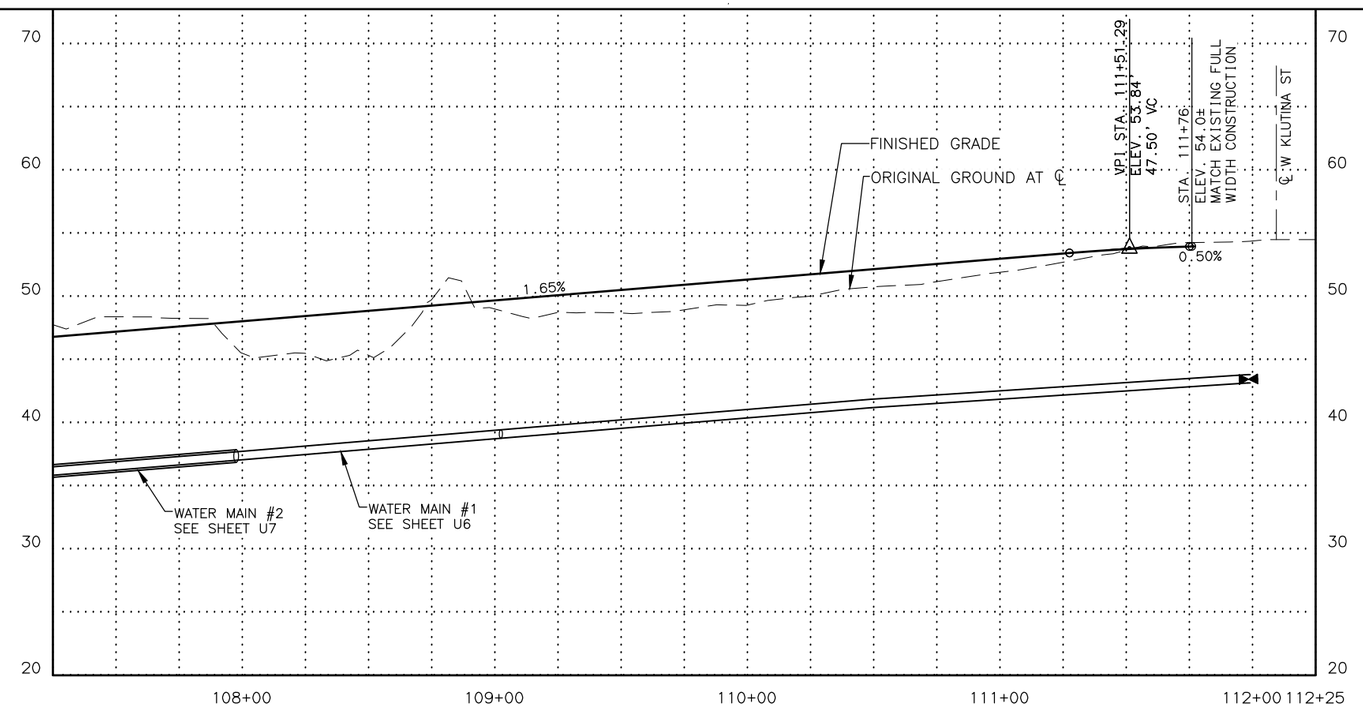


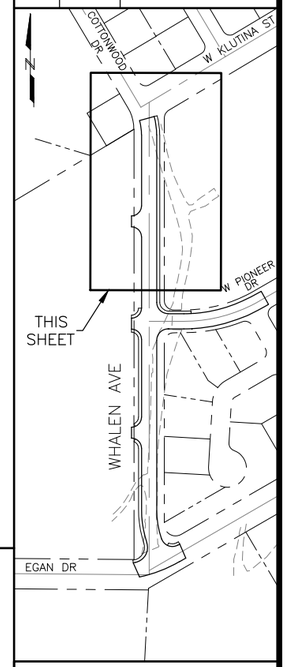
SHEET NO.	TOTAL SHEETS
F2	F4

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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CITY OF VALDEZ

WHALEN AVENUE

PLAN AND PROFILE STA 107+25 TO EOP

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
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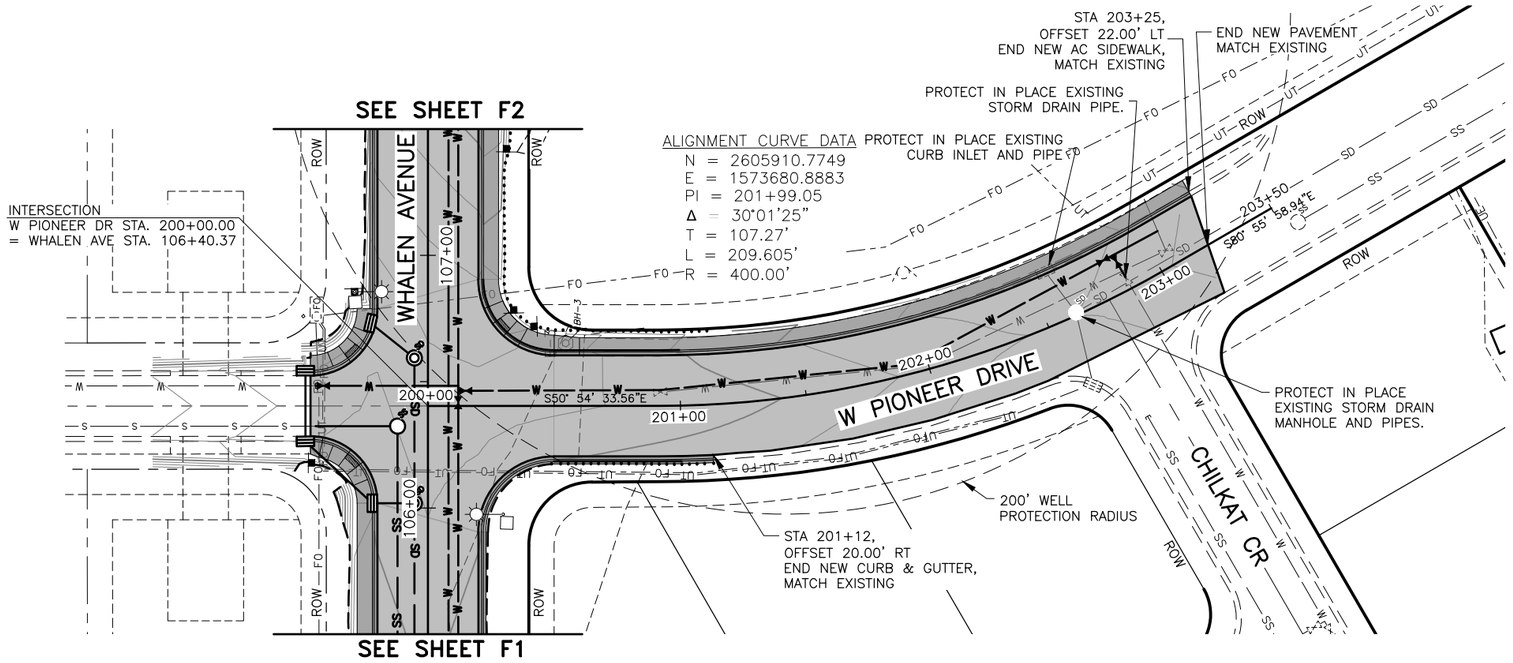
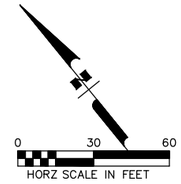
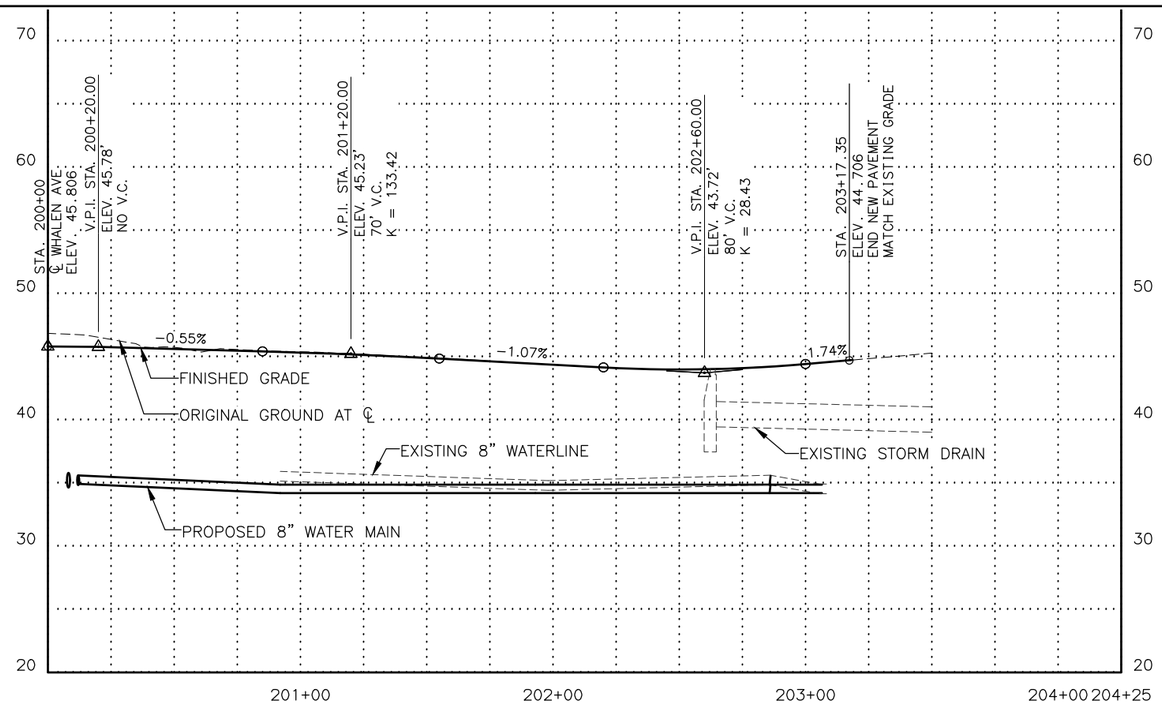
SCALE
LAYOUT F2
4/28/2022 9:43 AM





NOTES:

1. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.
2. SEE G SHEETS FOR WORK LIMITS INCLUDING PAVEMENT, CURB AND GUTTER, AND SIDEWALK.
3. SEE H SHEETS FOR SIGNING, STRIPING, AND ILLUMINATION.



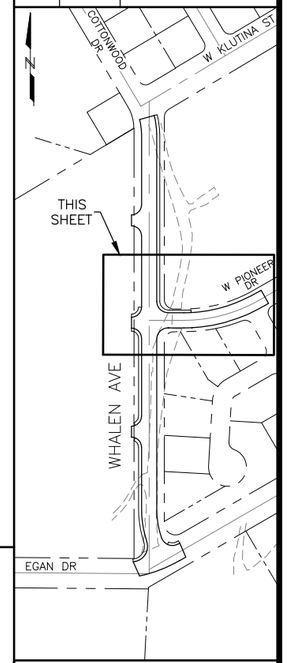
SHEET NO.	TOTAL SHEETS
F3	F4

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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CITY OF VALDEZ

WHALEN AVENUE

PLAN AND PROFILE W PIONEER DRIVE

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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SCALE
LAYOUT F3
4/27/2022 9:45 AM

STORM DRAIN PIPE SUMMARY

PIPE	SIZE (IN)	LENGTH	FROM	TO	START INVERT ELEV. (FT)	END INVERT ELEV. (FT)	% GRADE	REMARKS
PD1-1	36	49.21	S1-1		31.75	31.02±	1.48%	MATCH EXISTING END INVERT
PD1-2	18	56.51	S1-2	S1-1	33.15	32.61	0.96%	
PD1-3	24	281.40	S1-3	S1-1	38.29	32.75	1.97%	
PD1-4	18	27.33	S1-4	S1-3	38.77	38.39	1.39%	
PD1-5	18	16.67	S1-5	S1-3	38.72	38.39	2.00%	
PD1-6	18	36.09	S1-6	S1-5	40.00	38.82	3.27%	
PD1-7	18	28.00	S1-7	S1-6	40.36	40.00	1.28%	
PD1-8	24	82.00	S1-8	S1-3	38.96	38.39	0.70%	
PD1-9	18	16.67	S1-9	S1-8	39.32	39.10	1.32%	
PD1-10	24	205.90	S1-10	S1-8	40.51	39.06	0.70%	
PD1-11	18	16.67	S1-11	S1-10	40.86	40.61	1.50%	
PD1-12	18	36.09	S1-12	S1-11	41.50	40.96	1.50%	
PD1-13	18	28.00	S1-13	S1-12	42.08	41.60	1.72%	
PD1-14	24	57.51	S1-14	S1-10	41.01	40.61	0.70%	
PD1-15	18	22.16	S1-15	S1-14	41.71	41.15	2.52%	

STORM DRAIN STRUCTURE SUMMARY

STRUCTURE	TYPE	STATION	OFFSET	TOP OF CASTING	TYPE OF CASTING	REMARKS
S1-1	SDMH, TYPE 1	100+41.21	29.36' LT	37.73	CURB INLET	
S1-2	SDMH, TYPE 1	100+39.12	27.10' RT	37.54	CURB INLET	
S1-3	SDMH, TYPE 1	103+13.96	5.33' LT	43.41	STANDARD	
S1-4	CATCH BASIN	103+13.96	22.00' RT	43.52	CURB INLET	TYPE A INLET BOX
S1-5	SDMH, TYPE 1	103+13.96	22.00' LT	43.52	CURB INLET	
S1-6	SDMH, TYPE 1	103+38.46	48.50' LT	43.94	CURB INLET	
S1-7	CATCH BASIN	103+66.46	48.50' LT	43.99	CURB INLET	TYPE A INLET BOX
S1-8	SDMH, TYPE 1	103+95.96	5.33' LT	43.99	STANDARD	
S1-9	CATCH BASIN	103+95.96	22.00' LT	44.10	CURB INLET	TYPE A INLET BOX
S1-10	SDMH, TYPE 1	106+01.87	5.33' LT	45.43	STANDARD	
S1-11	SDMH, TYPE 1	106+01.87	22.00' LT	45.52	CURB INLET	
S1-12	SDMH, TYPE 1	106+26.37	48.50' LT	45.99	CURB INLET	
S1-13	CATCH BASIN	106+54.37	48.50' LT	46.03	CURB INLET	TYPE A INLET BOX
S1-14	SDMH, TYPE 1	106+59.38	5.34' LT	45.84	STANDARD	
S1-15	SDMH, TYPE 1	106+73.18	22.67' LT	46.05	CURB INLET	

SHEET NO.	TOTAL SHEETS
F4	F4

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

STORM DRAIN TABLES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION 4/15/2022 4:45 PM

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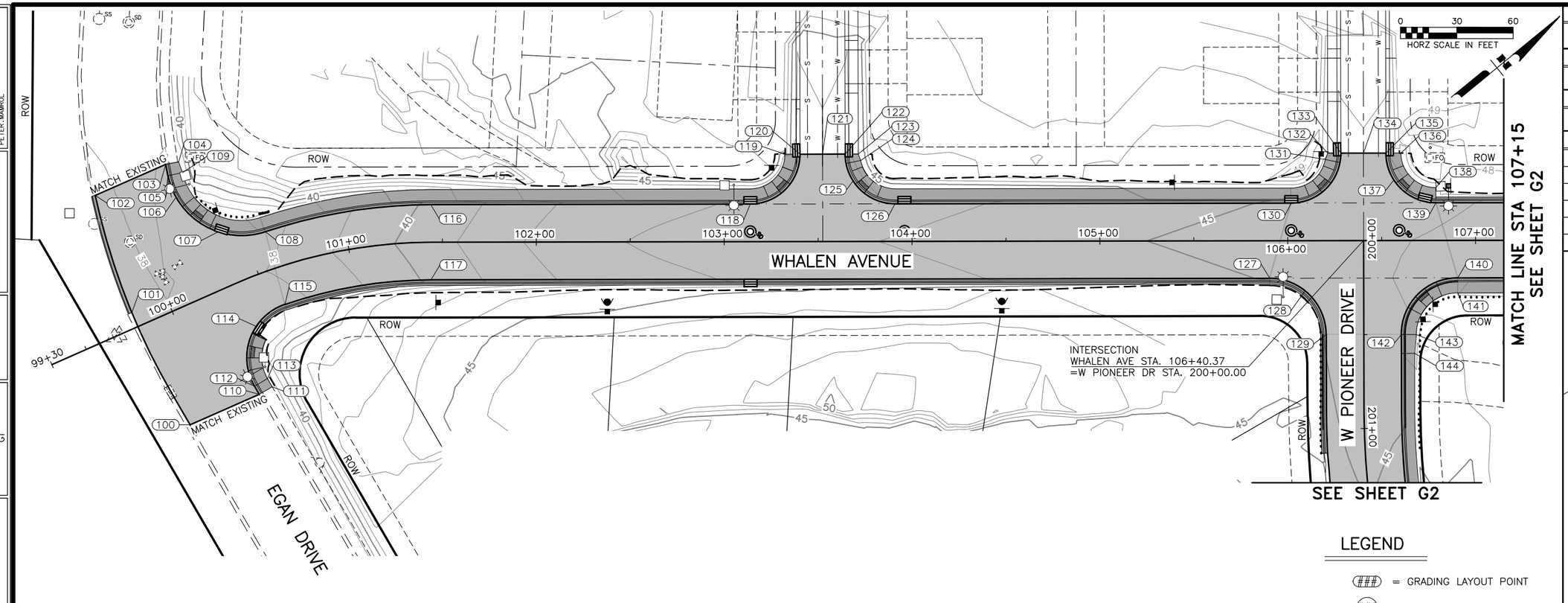
SCALE

LAYOUT F4



LEGEND

(###) = GRADING LAYOUT POINT

(###) = RADIUS POINT

~~~~► = DRAINAGE

ABBREVIATIONS

CL	CENTERLINE
EP	EDGE OF PAVEMENT
GP	GRADE POINT
LOC	LIP OF CURB
ME	MATCH EXISTING
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVATURE
TBC	TOP BACK OF CURB
TOP	TOP OF PAVEMENT
TBW	TOP BACK OF SIDEWALK

GRADING LAYOUT POINT SUMMARY

PNT	STATION	OFFSET	ELEV	REMARKS
100	99+84.33	59.01 R	37.38±	ME:EP
101	99+80.09	8.19 L	37.51±	ME:EP,LOC
102	99+87.47	72.98 L	37.79±	ME:EP,LOC
103	100+28.43	72.98 L	37.93±	ME:EP,LOC
104	100+35.25	71.38 L	38.42±	ME:TBW
105	100+27.08	66.96 L	37.90	EP,PC
106	100+26.38	54.77 L	37.79	EP
107	100+39.12	28.87 L	37.41	EP
108	100+60.66	20.00 L	37.68	EP,PRC
109	100+34.94	65.29 L	38.39	TBW
110	100+24.58	59.01 R	37.37±	ME:EP,LOC
111	100+32.47	58.14 R	37.86±	ME:TBW
112	100+24.03	54.04 R	37.34	EP,PC
113	100+31.98	53.17 R	37.83	TBW
114	100+37.91	25.42 R	37.15	EP
115	100+58.07	20.00 R	37.67	EP,PCC

GRADING LAYOUT POINT SUMMARY

PNT	STATION	OFFSET	ELEV	REMARKS
116	101+43.84	20.00 L	40.18	EP,PT
117	101+43.84	20.00 R	40.18	EP,PC
118	103+13.96	20.00 L	43.12	EP,PC
119	103+32.46	46.50 L	44.01	TBW, PT
120	103+40.46	46.50 L	43.52	EP,PT
121	103+52.46	46.50 L	43.76	EP,CL
122	103+64.46	46.50 L	43.58	EP,PC
123	103+71.46	46.50 L	44.06	TBW
124	103+72.78	43.11 L	44.05	TBW
125	103+68.66	32.19 L	43.55	EP
126	103+90.96	20.00 L	43.66	EP,PT
127	105+90.41	20.00 R	45.06	EP,PC
128	106+09.21	26.62 R	45.14	EP
129	106+20.41	49.97 R	45.06	EP,PT
130	106+01.87	20.00 L	45.14	EP,PC
131	106+20.06	43.15 L	45.98	TBW

GRADING LAYOUT POINT SUMMARY

PNT	STATION	OFFSET	ELEV	REMARKS
132	106+21.37	46.50 L	46.04	TBW
133	106+28.37	46.50 L	45.56	EP,PT
134	106+40.37	46.50 L	45.80	EP,CL
135	106+52.37	46.50 L	45.61	EP,PC
136	106+60.37	46.50 L	46.10	TBW
137	106+56.57	32.18 L	45.56	EP
138	106+78.87	27.99 L	46.22	TBW
139	106+78.87	20.00 L	45.73	EP,PT
140	106+90.41	20.00 R	46.50	EP,PT
141	106+90.41	28.00 R	46.98	TBW,PT
142	106+60.41	50.02 R	45.79	EP,PC
143	106+68.41	50.02 R	46.28	TBW
144	106+67.42	60.02 R	46.11	TBW

NOTES:

1. TRANSITION CROSS-SLOPE FROM NORMAL CROWN TO SUPERELEVATED ALONG BREAKLINE BETWEEN POINTS 127 TO 140 AND POINTS 140 TO 151.
2. TRANSITION SIDEWALK FOR CROSS-SLOPE REVERSAL, BETWEEN POINTS 141 AND 150.
3. PROVIDE SMOOTH TRANSITION AT PROJECT LIMITS TO MATCH EXISTING GRADES BETWEEN MATCH POINTS PROVIDED AND NEAREST GRADING POINT.

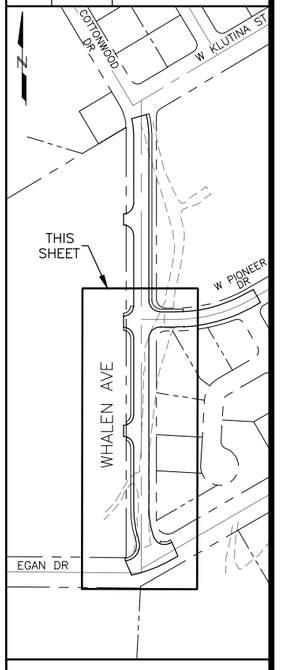
SHEET NO.	TOTAL SHEETS
G1	G2

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

GRADING PLAN
BOP TO STA 107+25

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

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SCALE

LAYOUT G1
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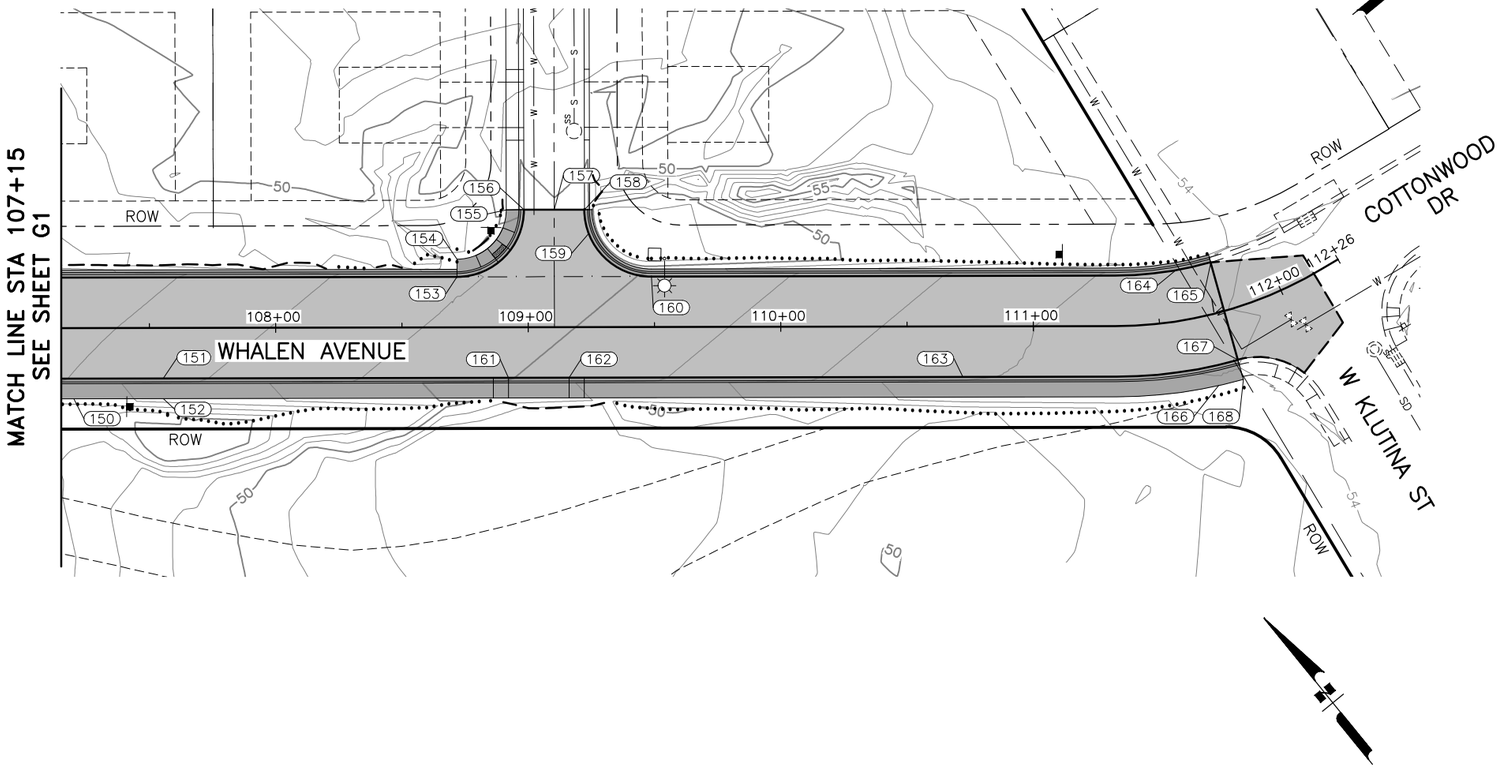


0 30 60
HORZ SCALE IN FEET

GRADING LAYOUT POINT SUMMARY

PNT	STATION	OFFSET	ELEV	REMARKS
150	107+20.00	28.00 R	47.56	TBW
151	107+55.50	20.00 R	47.71	EP
152	107+55.50	28.00 R	48.22	TBW
153	108+71.87	20.00 L	48.83	EP,PC
154	108+71.87	27.00 L	49.33	TBW
155	108+91.37	46.50 L	50.14	TBW,PT
156	108+98.37	46.50 L	49.66	EP,PT
157	109+10.37	46.50 L	49.90	EP,CL
158	109+22.37	46.50 L	49.80	EP,PC
159	109+24.08	37.13 L	49.77	EP
160	109+48.87	20.00 L	50.10	EP,PT
161	108+92.14	20.00 R	49.96	EP
162	109+16.14	20.00 R	50.36	EP
163	110+72.00	20.00 R	52.93	EP
164	111+60.00	20.00 L	53.45	EP
165	111+76.26	19.95 L	53.64±	ME:EP,LOC
166	111+67.50	28.00 R	53.93	TBW
167	111+76.07	20.13 R	53.49±	ME:EP
168	111+76.06	28.13 R	53.73±	ME:TBW

GRADING LAYOUT POINT SUMMARY

PNT	STATION	OFFSET	ELEV	REMARKS
200	200+91.72	20.00 L	45.16	EP,PC
201	200+91.72	20.00 R	44.86	EP
202	201+10.00	20.00 L	44.90	EP
203	201+12.00	20.00 R	44.75±	ME:EP,LOC
204	202+00.00	20.00 L	44.02	EP
205	202+41.13	19.48 R	43.55±	ME:EP
206	202+57.53	20.00 L	43.77	EP
207	203+01.45	20.00 L	44.21	EP
208	203+17.04	19.68 R	44.38±	ME:EP,LOC
209	203+25.00	20.00 L	44.58±	ME:EP,LOC
210	203+24.98	27.14 L	45.05±	ME:TBW

LEGEND

- (###) = GRADING LAYOUT POINT
- (##) = RADIUS POINT
- = DRAINAGE

ABBREVIATIONS

CL	CENTERLINE
EP	EDGE OF PAVEMENT
GP	GRADE POINT
LOC	LIP OF CURB
ME	MATCH EXISTING
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
TBC	TOP BACK OF CURB
TOP	TOP OF PAVEMENT
TBW	TOP BACK OF SIDEWALK

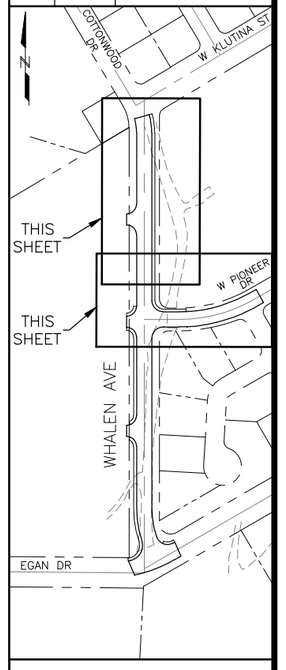
SHEET NO.	TOTAL SHEETS
G2	G2

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

GRADING PLAN
STA 107+25 TO EOP

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
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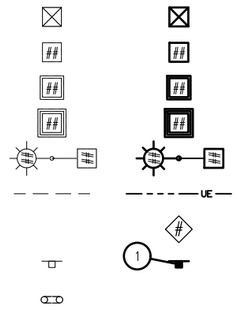
SCALE
LAYOUT G2
DRAFTED BY PETER.MAMROL

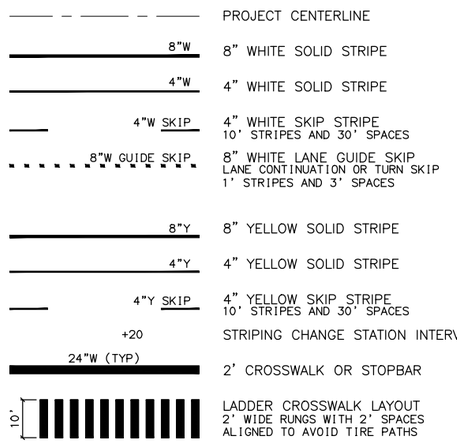
SYMBOL LEGEND

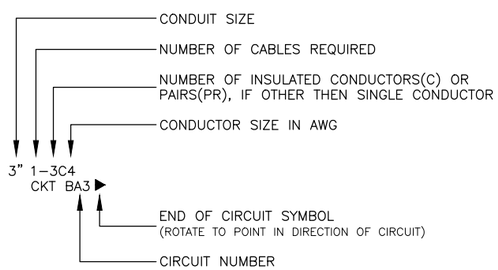
EXISTING PROPOSED



PAVEMENT MARKING LEGEND

PROPOSED





ABBREVIATIONS

℄	–	CENTERLINE	LFNC	–	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
INTX	–	INTERSECTION			
INTX L	–	INTERSECTION LIGHTING	AWG	–	AMERICAN WIRE GAUGE
LTG	–	LIGHTING	NB	–	NORTH BOUND
LC	–	LOAD CENTER	EB	–	EAST BOUND
PEC	–	PHOTOELECTRIC CELL	SB	–	SOUTH BOUND
RMC	–	RIGID METAL CONDUIT	WB	–	WEST BOUND
PE	–	POLYETHYLENE CONDUIT			

NOTES:

FOUNDATIONS NOTES:

1. STATION & C.L. REFERENCE ARE TO THE CENTER OF THE STRUCTURE, EXCEPT ON LOOPS WHICH ARE TO THE CENTER OF THE TRAILING EDGE OF THE LOOP (EDGE NEAREST INTERSECTION).
2. JUNCTION BOX LOCATIONS APPROXIMATE. LOCATE J–BOXES SO THAT THEY ARE LOCATED OUT OF THE PATHWAY, SIDEWALK, CURB RAMPS, AND DRAINAGE COLLECTION AREAS, AND ARE ON THE DOWNSTREAM TRAFFIC SIDE OF POLE.
3. INSTALL LOAD CENTER AND TRAFFIC CONTROLLER FOUNDATIONS WITHIN 1–DEGREE OF PLUMB.
4. INSTALL ANCHOR BOLTS IN CAST FOUNDATIONS TO BE WITHIN 1:40 OF PLUMB.
5. TOPSOIL AND SEED ANY DISTURBED AREAS.

SIGNING & STRIPING NOTES:

1. ALL STATION LOCATIONS FOR SIGN INSTALLATION ARE APPROXIMATE. INSTALL SIGNS AT LOCATIONS AS DIRECTED BY THE ENGINEER.
2. USE THE FOLLOWING DEFINITIONS TO DECIPHER THE ABBREVIATED SIGN POST TYPES IN THE SIGN SUMMARY SHEETS.
   A. PT MEANS A PERFORATED STEEL TUBE.
   B. T MEANS A SQUARE STEEL TUBE.
   C. P MEANS A ROUND STEEL PIPE.
   D. W MEANS A WIDE FLANGE BEAM.
   E. POPL MEANS A POLE PLATE INSTALLED PER ITS STANDARD DRAWING S–23
3. FABRICATE ALL SIGNS FROM 0.125" THICK ALUMINUM SHEETING, UNLESS STATED ELSEWHERE.
4. FOR SIGNS SUPPORTED BY MULTIPLE POSTS, FABRICATE THE POSTS WITH THEIR TOPS LEVEL WITH ONE ANOTHER.
5. FOR PERFORATED STEEL TUBE SIGNPOSTS, INSTALL THE CONCRETE FOUNDATION OPTION SHOWN ON STANDARD DRAWING. TRIM EACH PT POST TO LIMIT THE LENGTH INSERTED INTO THE FOUNDATION TO 12 INCHES.
6. FABRICATE GUIDE SIGNS ACCORDING TO THE SHOP DRAWINGS INCLUDED IN THE TECHNICAL SPECIFICATIONS. TRIM THE CORNERS OF ALL SIGNS TO THE RADIUS SHOWN ON EACH SHOP DRAWING.
7. ERECT NEW SIGNS BEFORE REMOVAL OF EXISTING SIGNS WITH SIMILAR MESSAGE. NOTIFY THE ENGINEER A MINIMUM OF 14 DAYS PRIOR TO BEGINNING SIGN REMOVAL AND SALVAGE OR DISPOSAL ACTIVITIES.
8. FOR SIGNS SUPPORTED BY MULTIPLE TUBES OR PIPES, LOCATE THE OUTER POSTS ON MAXIMUM SIX FEET CENTERS. INSTALL ADJACENT WIDE FLANGE POSTS ON MINIMUM EIGHT FEET CENTERS.
9. SELECTIVE AND HAND CLEARING SHALL BE PERFORMED AT THE DISCRETION OF THE ENGINEER. UPSTREAM OF ALL SIGN INSTALLATION LOCATIONS TO ACHIEVE MINIMUM SIGN VISIBILITY REQUIREMENTS. IF NOT INCLUDED AS A SEPARATE ITEM, THIS WORK SHALL BE SUBSIDIARY TO THE SIGN INSTALLATION ITEMS AND WORK.
10. FOR ALL FINAL PAVEMENT MARKINGS USE PAINT.
11. DIMENSIONS REFER TO THE CENTER OF STRIPE AND THE EDGE OF PAVEMENT.
12. IF THE NEW AND EXISTING PAVEMENT MARKINGS ARE NOT ALIGNED AT MATCH LINE, TRANSITION BETWEEN THE TWO USING A 100:1 TAPER ON THE NEW PAVEMENT.
13. WHERE NEW STRIPING IS TO EXTEND BEYOND PAVING LIMITS, REMOVE EXISTING STRIPING, TO THE EXTENT OF STRIPING LIMITS.

CALL BEFORE YOU DIG!

CONTRACTOR SHALL CALL A MINIMUM OF 3 DAYS IN ADVANCE OF CONSTRUCTION

ALASKA DIGLINE....907-278-3121 OR 800-478-3121

CALL OR GO TO WWW.AKONECALL.COM/STATEWIDE.HTM FOR MEMBER LIST OF WHO WILL BE NOTIFIED

SHEET NO.	TOTAL SHEETS
H1	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

TRAFFIC LEGEND AND NOTES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION | DRAFTED BY BRIAN.LEWIS | SCALE | LAYOUT H2 | 4/27/2022 12:21 PM

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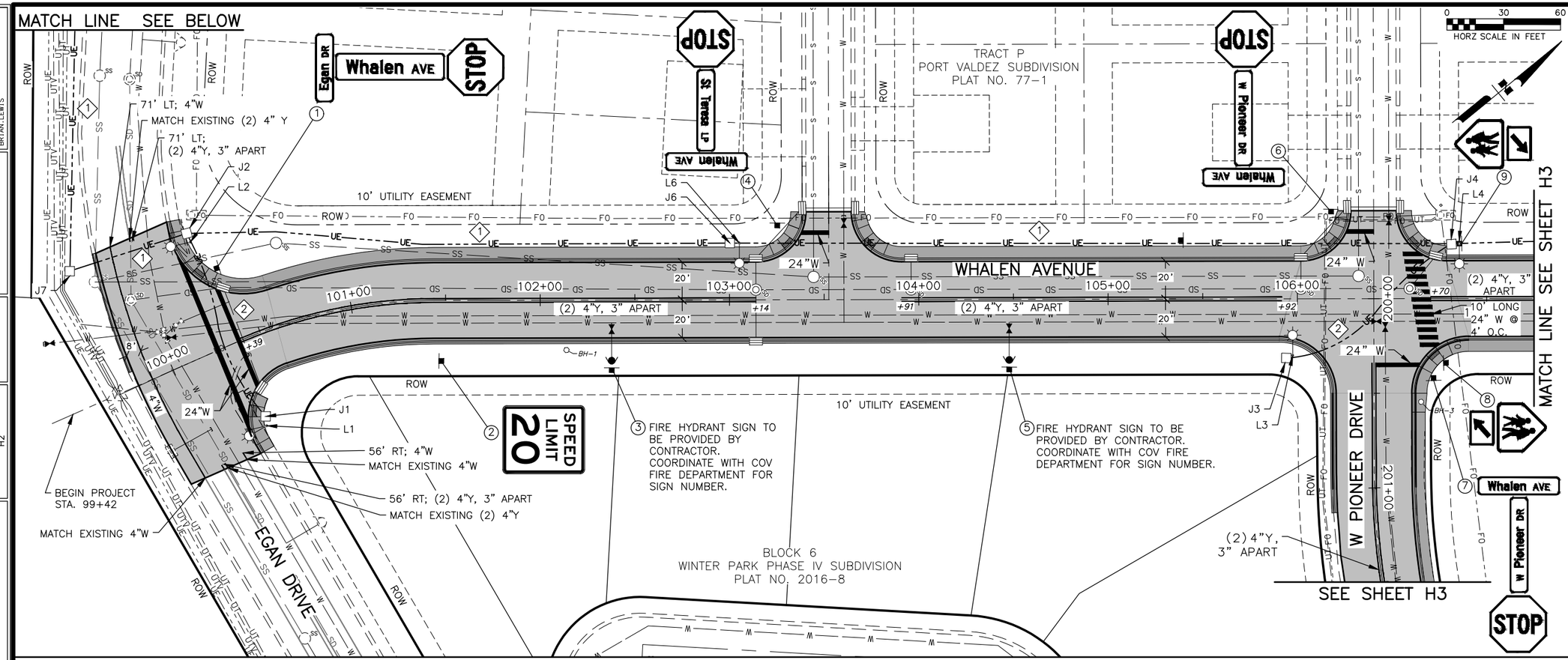
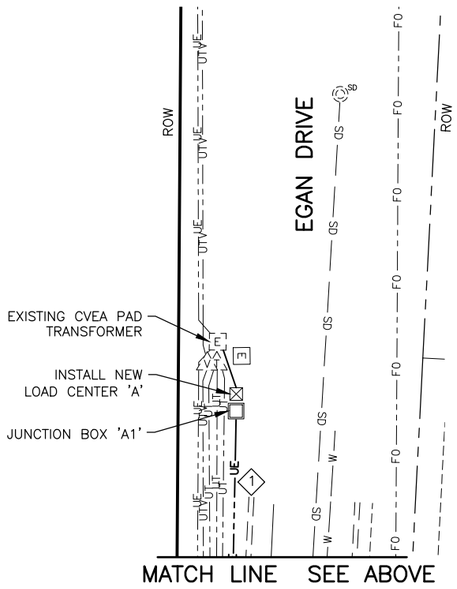




STRIPING NOTES:

1. DISTANCES SHOWN ARE TO CENTER OF SINGLE STRIPE, TO CENTER OF PAIR OF STRIPES, OR TO EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.

SIGNING NOTES:

1. (#) – SIGN POST NUMBER REFERS TO SIGN POST NUMBER NOTES IN THE SIGN SUMMARY TABLES, SHEET H3.

CONDUIT NOTES:

1. 2" RMC 1–3c#8 (LTG A1), 1–1c#8 GND
2. 2" RMC 2–3c#8 (LTG A1), 1–1c#8 GND

ILLUMINATION NOTES:

1. CONTRACTOR SHALL DECREASE CONDUIT BURIAL DEPTH FROM 30" TO 18" WHEN CROSSING OVER SHALLOW UG UTILITIES LOCATED BEHIND THE CURB & GUTTER AND OUT OF THE ROADWAY.
2. THE CIRCUITRY BETWEEN AN ELECTROLIER AND THE JUNCTION BOX SERVING IT SHALL CONSIST OF 1–3c #8 CABLE IN AND OUT (2–3c #8), AND 1–1c #8 BARE CU IN A 2" RMC.
3. CONTRACTOR SHALL CONTAIN ALL IMPROVEMENTS WITHIN THE R.O.W. CONTRACTOR SHALL VERIFY IMPROVEMENT LOCATIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING.
4. CONTRACTOR SHALL STAKE LUMINAIRE POLE LOCATIONS AND BASE PLATE ELEVATIONS FOR THE ENGINEER'S APPROVAL PRIOR TO LUMINAIRE FOUNDATION INSTALLATION.

SHEET NO.	TOTAL SHEETS
H2	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

CITY OF VALDEZ, ALASKA • OPPORTUNITIES IN EVERY SEASON •

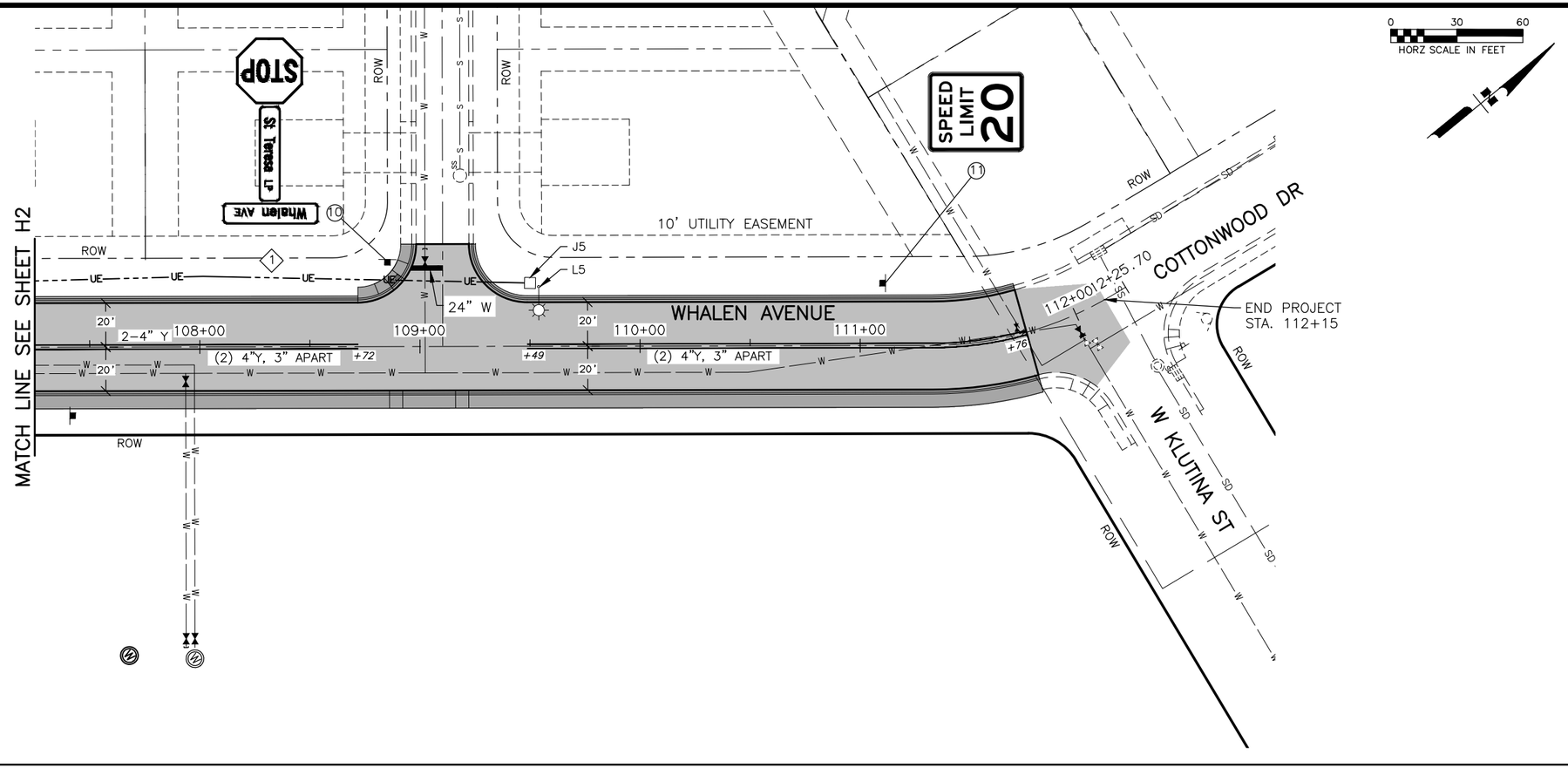
95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SIGNING, STRIPING AND ILLUMINATION PLANS



SHEET NO.	TOTAL SHEETS
H3	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SIGNING, STRIPING AND ILLUMINATION PLANS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

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LAYOUT H3

SCALE

DRAFTED BY BRIAN.LEWIS

SIGN SUMMARY

SHEET NO.	SIGN NO.	LOCATION		TYPE	LEGEND	SIZE (FT)		AREA SQ FT	SIGN FACES	POSTS	THICKNESS (in)		REMARKS
		STATION	OFFSET			WIDTH	HEIGHT			NO., SIZE, & TYPE	FRAMED		
											YES	NO	
H2	1	100+42	LT	D3-1D	EGAN DR	2.50	0.67	3.33	N/S	1- 2.5" PT	0125		MOUNT TWO SIGNS BACK TO BACK
				D3-1D	WHALEN AVE	4.00	1.00	8.00	E/W		0.125		MOUNT TWO SIGNS BACK TO BACK
				R1-1	STOP SIGN	2.50	2.50	6.25	N			0.125	
H2	2	101+48	RT	R2-1	SPEED LIMIT 20 MPH	2.00	2.50	5.00	SW	1- 2.5" PT		0.125	
H2	3	102+38	RT	DETAIL 70-32	FIRE HYDRANT SIGN	1.50	1.00	1.50	NW	1- 2.5" PT		0.125	FIRE HYDRANT SIGN FURNISHED BY CONTRACTOR, COORDINATE WITH COV FIRE DEPARTMENT FOR SIGN NUMBER.
H2	4	103+25	LT	D3-1D	WHALEN AVE	3.00	0.67	4.00	NW/SE	1- 2.5" PT	0.125		MOUNT TWO SIGNS BACK TO BACK
				D3-1D	ST TERESA LP	3.00	0.67	4.00	NE/SW		0.125		MOUNT TWO SIGNS BACK TO BACK
				R1-1	STOP SIGN	2.50	2.50	6.25	NW			0.125	
H2	5	104+48	RT	DETAIL 70-32	FIRE HYDRANT SIGN	1.50	1.00	1.50	NW	1- 2.5" PT		0.125	FIRE HYDRANT SIGN FURNISHED BY CONTRACTOR, COORDINATE WITH COV FIRE DEPARTMENT FOR SIGN NUMBER.
H2	6	106+18	LT	D3-1D	WHALEN AVE	3.00	0.67	4.00	NW/SE	1- 2.5" PT	0.125		MOUNT TWO SIGNS BACK TO BACK
				D3-1D	W PIONEER DR	3.50	0.67	4.67	NE/SW		0.125		MOUNT TWO SIGNS BACK TO BACK
				R1-1	STOP SIGN	2.50	2.50	6.25	NW			0.125	
H2	7	106+72	RT	D3-1D	WHALEN AVE	3.00	0.67	4.00	NW/SE	1- 2.5" PT	0.125		MOUNT TWO SIGNS BACK TO BACK
				D3-1D	W PIONEER DR	3.50	0.67	4.67	NE/SW		0.125		MOUNT TWO SIGNS BACK TO BACK
				R1-1	STOP SIGN	2.50	2.50	6.25	SE			0.125	
H2	8	106+78	RT	S1-1	SCHOOL CROSSING	2.50	2.50	6.25	NE	1- 2.5" PT		0.125	
				W16-7P	(ARROW)	1.00	1.00	1.00	NE			0.125	
H2	9	106+86	LT	S1-1	SCHOOL CROSSING	2.50	2.50	6.25	SW			0.125	ON POLE
				W16-7P	(ARROW)	1.00	1.00	1.00	SW			0.125	
H3	10	108+85	LT	D3-1D	WHALEN AVE	3.00	0.67	4.00	NW/SE	1- 2.5" PT	0.125		MOUNT TWO SIGNS BACK TO BACK
				D3-1D	ST TERESA LP	3.00	0.67	4.00	NE/SW		0.125		MOUNT TWO SIGNS BACK TO BACK
				R1-1	STOP SIGN	2.50	2.50	6.25	NW			0.125	
H3	11	111+10	LT	R2-1	SPEED LIMIT 20 MPH	2.00	2.50	5.00	NE	1- 2.5" PT		0.125	
TOTAL SIGN AREA:								103.41 SF					

SHEET NO.	TOTAL SHEETS
H4	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SIGN SUMMARY

DRAFTED BY: PETER.MAMROL

SCALE

LAYOUT: H4

4/18/2022 10:11 AM

DRAWING LOCATION: z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_H4_Sign Summary.dwg

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

ROADWAY ELECTROLIER SUMMARY

LUMINAIRE NO.	STATION	OFFSET		MOUNTING HEIGHT	MAST ARM LENGTH	LAMP SIZE (WATTS)	LAMP TYPE	IES DISTRIBUTION	CIRCUIT	REMARKS
		DISTANCE	RT/LT							
L1	100+33.15	50.20	RT	26'	8'	182	LED	MC–III	A–A1	
L2	100+35.54	50.72	LT	26'	8'	182	LED	MC–III	A–A1	
L3	105+99.78	29.88	RT	26'	8'	182	LED	MC–III	A–A1	
L4	106+87.89	29.00	LT	26'	8'	182	LED	MC–III	A–A1	
L5	109+54.02	27.04	LT	26'	8'	182	LED	MC–III	A–A1	
L6	103+05.24	30.00	LT	26'	8'	182	LED	MC–III	A–A1	

ROADWAY ILLUMINATION JUNCTION BOX SUMMARY

JUNCTION BOX NO.	STATION	OFFSET		TYPE	REMARKS
		DISTANCE	RT/LT		
J1	100+35.02	45.93	RT	1A	
J2	100+35.61	45.99	LT	1A	
J3	105+96.47	31.02	RT	1A	
J4	106+83.73	28.77	LT	1A	
J5	109+50.00	28.75	LT	1A	
J6	103+50.04	26.62	LT	1A	
J7	99+71.20	69.95	LT	1A	
A1	100+48.43	262.86	LT	II	INSTALL ADJACENT TO NEW LOAD CENTER "A"

ELECTROLIER NOTES:

1. MOUNTING HEIGHT REFERS TO HEIGHT OF A LUMINAIRE ABOVE THE POINT ON THE ROADWAY DIRECTLY BENEATH IT.
2. UNLESS OTHERWISE NOTED, ALL ROADWAY LUMINAIRE POLES SHALL BE MOUNTED ON DRIVEN PILE FOUNDATIONS.
3. CONTRACTOR SHALL VERIFY UNDERGROUND UTILITIES AND ADJUST FOUNDATION LOCATION BEFORE PILE DRIVING, IF CONFLICT EXISTS.
4. CONTRACTOR SHALL ENSURE THAT FOUNDATION BOLT CIRCLE MATCHES LUMINAIRE POLE BASE. ROADWAY LUMINAIRE POLES SHALL BE FABRICATED TO THE DETAILS IN THESE PLANS.
5. AN ELECTROLIER CONSISTS OF A LUMINAIRE POLE, MAST ARM, AND LUMINAIRE.
6. J–BOXES, ELECTROLIERS, AND LED LUMINAIRES SHALL CONFORM TO DETAILS AND SPECIFICATIONS (DIVISION 80) IN THIS PLAN SET.

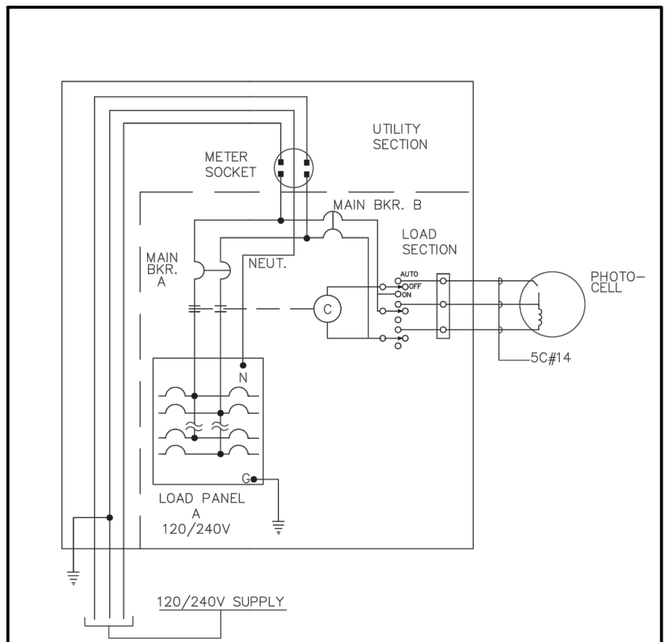
DESIGN CRITERIA FOR ROADWAY LUMINAIRES

LUMINAIRE CRITERIA	VALUE
ROAD WIDTH	40'
MOUNTING HEIGHT	26'
LUMINAIRE OVERHANG*	0.5'
FIXTURE LUMEN OUTPUT	14,200
UNIFORMITY RATIO (MAX) @ EGAN	3.0
AVE ILLUMINANCE (MIN.) @ EGAN	1.5 FC
UNIFORMITY RATIO (MAX) @ PIONEER	4.0
AVE ILLUMINANCE (MIN.) @ PIONEER	1.2 FC

* LUMINAIRE OVERHANG IS THE HORIZONTAL DISTANCE BETWEEN THE LUMINAIRE AND THE FACE OF THE CURB. A POSITIVE VALUE INDICATES THE LUMINAIRE IS ON THE ROAD SIDE OF THE CURB.

LIGHTING CERTIFICATION STATEMENT:

SIGNED STAMP ON THIS DRAWING INDICATES THAT THE LIGHTING DESIGN FOR THIS PROJECT HAS BEEN DESIGNED IN ACCORDANCE WITH AND MEETS THE GUIDELINES SET FORTH IN CHAPTER 5 OF THE 2007 MOA DESIGN CRITERIA MANUAL, AND IESNA RP–8–00.



NOTE:
1. SEE PANEL SCHEDULE, STANDARD DETAIL

SCALE: NTS	LOAD CENTER WIRING DIAGRAM "E"
APPROVED:	
REVISED: 10/07	

LOAD CENTER "A" SUMMARY, TYPE 2 INSTALLATION

LOAD CENTER LOCATION: 100+49.64, 269.15' LT. — SOURCE LOCATION: CVEA TRANSFORMER
SERVICE: SINGLE PHASE, 3 WIRE, 120/240VAC 100A — SOCKET REQ'D. YES

LOAD	MAIN BREAKERS			CONTACTORS			REMARKS
PANEL A	240V	2P	100A	240V	2P	100A	
PE CNTRL	240V	2P	15A				
SPACE	NOTE 8	2P	100AF				

TRANSFORMER: NONE VOLT PRIMARY WITH _____ VOLT SECONDARY _____ KVA 60 HERTZ _____
PANEL "A" RATING: 10,000 AIC, 16 SPACE
120/240 VAC 1–PHASE, 3 WIRE, 100A BUS

CKT#	LOAD PANEL "A" DESCRIPTION	LOAD KVA	BREAKER AMPS	BREAKER POLE	CKT#		LOAD KVA	BREAKER AMPS	BREAKER POLE
A–A1	L1–L6 (NEW)	1.2	20	2					
A–A2	SPARE	0.0	20	2					
A–A3	SPARE	0.0	20	2					
	TOTAL LOAD KVA:	1.2							

NOTES:
1. CONNECTED LOAD 1.3 KVA 5.4 AMPS; NEC DEMAND LOAD 1.6 KVA 6.7 AMPS
2. PROVIDE LAMINATED LABELS, 1/4" BLACK LETTERS ON WHITE BACKGROUND, TO IDENTIFY LOAD AND DEVICE TAG AS APPLICABLE.
3. PROVIDE CONTACTORS WITH 240V COILS, 0.1 KVA LOAD INCLUDED.
4. MOUNT HOA SWITCHES ON DEAD–FRONT COVER, WIRED FOR PE CONTROL IN AUTOMATIC POSITION.
5. MOUNT PHOTOCELL ON LOAD CENTER.
6. LOAD CENTER SHALL CONFORM TO DIVISION 80 SPECIFICATIONS.
7. CONTRACTOR SHALL CONFIRM PROPOSED POWER SUPPLY CAPACITY PROVIDED BY UTILITY AND SUBMIT DATA TO ENGINEER FOR REVIEW. PROVIDE DURABLE FIELD MARKING AT SERVICE EQUIPMENT PER NEC 110.24 AS FOLLOWS: AVAILABLE FAULT CURRENT: 5,040 AMPS, BASED ON 25kVA 1–PH SUPPLY TRANSFORMER.
8. PROVIDE 2P SPACE FOR FUTURE 100A–FRAME SIZE MAIN BREAKER.

LOAD CENTER SERVICE NOTES:

1. CITY OF VALDEZ SHALL MAKE APPLICATION FOR SERVICE AND PAY FOR ENGINEERING AND APPLICATION FEES. CONTRACTOR SHALL PROVIDE POST MOUNTED LOAD CENTER AND METER BASE AND COORDINATE WITH CVEA TO ENERGIZE.

LOAD CENTER "A" ARC FLASH NOTES:

1. UTILITY TRANSFORMER IS ASSUMED TO BE 25KVA, FED BY 45' OF #2 AL CONDUCTOR. ADJUST CALCULATION IF FIELD CONDITIONS ARE OTHERWISE.
2. ARC FLASH PPE REQUIREMENTS: PPE 1.
3. PROVIDE ARC FLASH WARNING LABEL AS PER NFPA 2018 70E 130.5 ARC FLASH RISK ASSESSMENT (H) (3) INDICATING EITHER 3.1 OR 3.2 BUT NOT BOTH,
   - 3.1. INCIDENT ENERGY AND CORRESPONDING WORKING DISTANCE. 10.26 CAL/CM2/ WITH A WORKING DISTANCE OF 18"
   - 3.2. THE REQUIRED PPE.
4. CALCULATED 03–09–22.

SHEET NO.	TOTAL SHEETS
H5	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

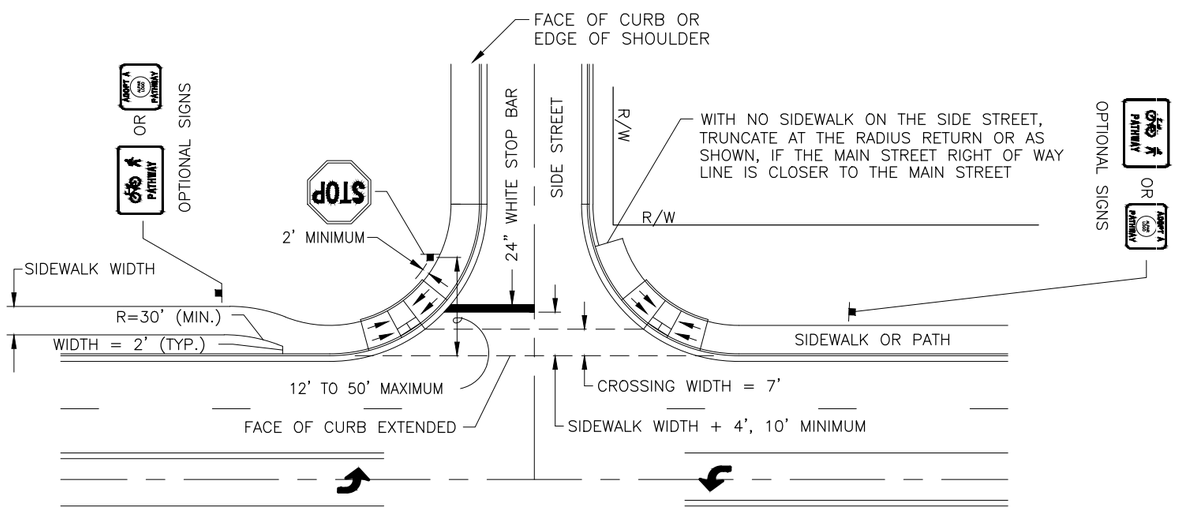
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

ILLUMINATION SUMMARIES

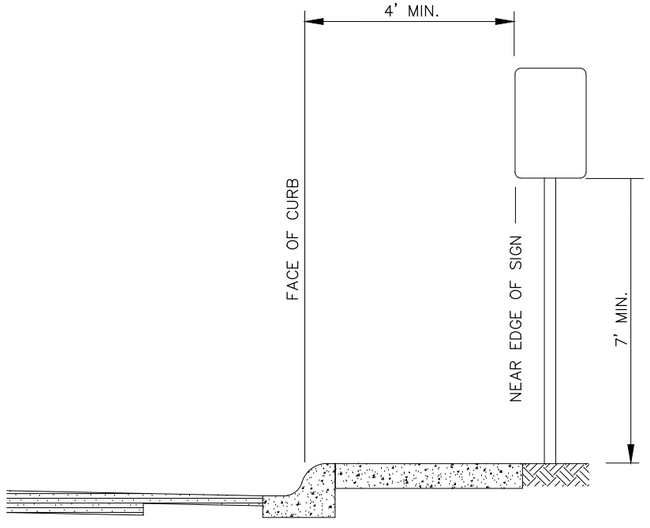
PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_H5_Illumination Summary.dwg
4/27/2022 4:58 PM
LAYOUT H5
SCALE
DRAFTED BY BRIAN.LEWIS



TYPICAL CURBED RETURN WITH SIDEWALK

NOTES:

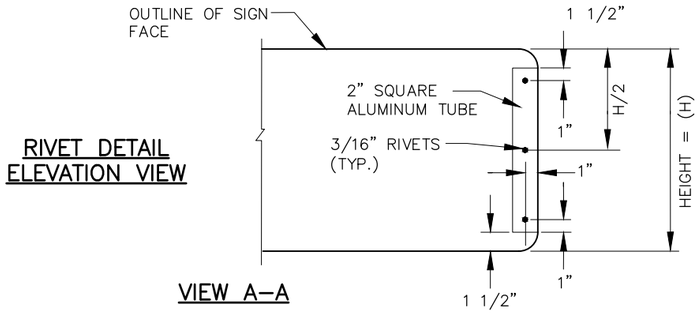
1. WHEN SIDEWALKS ARE SEPARATED FROM THE BACK OF CURB, JOIN THE TWO AS SHOWN USING A REVERSE CURVE WITH A MINIMUM RADIUS OF 30'.
2. BREAK THE MAIN STREET CENTERLINE MARKINGS AT SIDE STREET INTERSECTIONS ONLY WHEN LEFT TURN LANES ARE PROVIDED. OTHERWISE, INSTALL THEM CONTINUOUSLY THROUGH THE INTERSECTION.
3. LOCATE STOP SIGNS SO THEY ARE
   A. VISIBLE TO APPROACHING TRAFFIC AND
   B. AS NEAR TO THE STOP BAR AS PRACTICABLE.



CURB WITH ATTACHED SIDEWALK

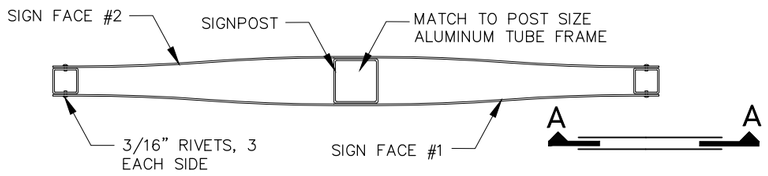
NOTE:

1. SIGN FACE SHALL BE PLACED OUTSIDE SIDEWALK EXCEPT WHEN ROW LIMITATIONS EXIST; FOR EXAMPLE IN THE CENTRAL BUSINESS DISTRICT OR OTHER SIMILAR DISTRICTS.



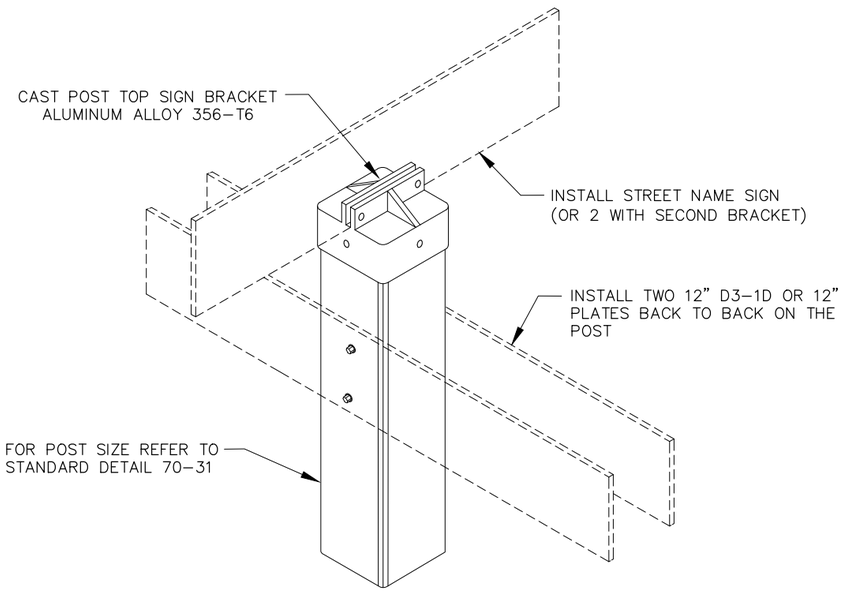
RIVET DETAIL ELEVATION VIEW

VIEW A–A



PLAN VIEW

12" SIGNS/PLATES 36" OR GREATER IN LENGTH BRACING DETAIL



12" PLATE INSTALLATION DETAIL WITH SUPPLEMENTAL 8" D3–1D SIGNS

SHEET NO.	TOTAL SHEETS
H6	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

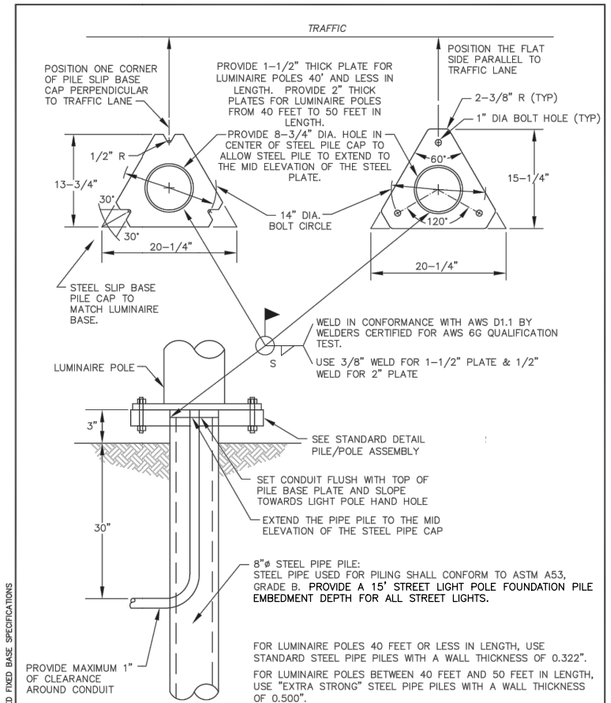
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SIGN DETAILS

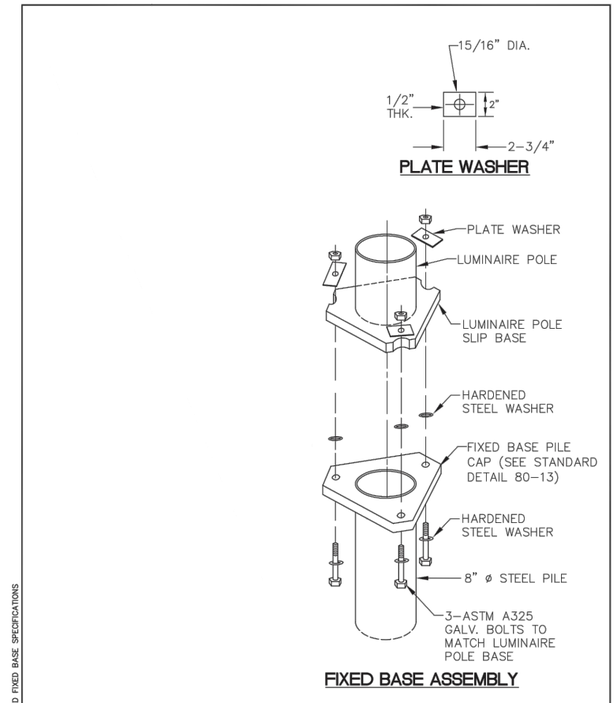
PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_H6_Signing & Striping Details.dwg
DRAFTED BY AARON.F.FINKLER
SCALE
LAYOUT H6
2/4/2022 1:50 PM



REVISION: 12/09 ADDED FIXED BASE SPECIFICATIONS

SCALE: NTS
APPROVED:
REVISED: 12/09

DRIVEN STEEL PILE LIGHT POLE FOUNDATION

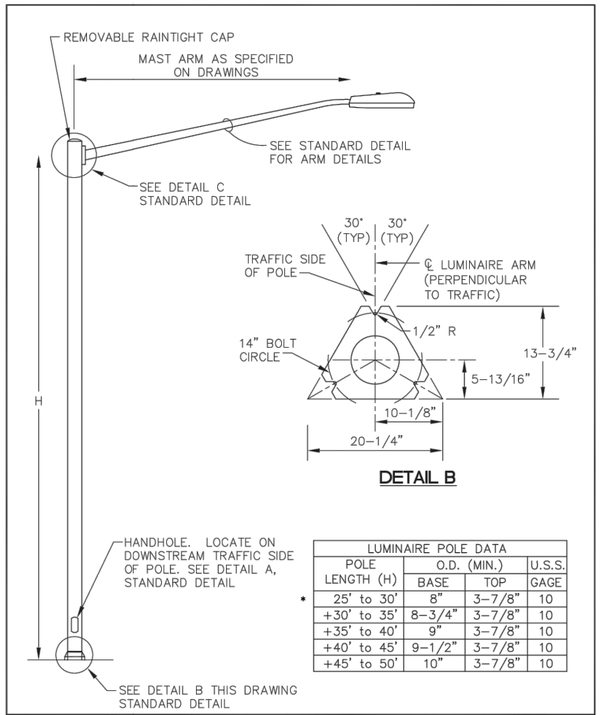


FIXED BASE ASSEMBLY

REVISION: 12/09 ADDED FIXED BASE SPECIFICATIONS

SCALE: NTS
APPROVED:
REVISED: 12/09

DRIVEN STEEL PIPE POLE ASSEMBLIES



LUMINAIRE POLE DATA			
POLE LENGTH (H)	O.D. (MIN.) BASE	TOP	U.S.S. GAGE
* 25' to 30'	8"	3–7/8"	10
+30' to 35'	8–3/4"	3–7/8"	10
+35' to 40'	9"	3–7/8"	10
+40' to 45'	9–1/2"	3–7/8"	10
+45' to 50'	10"	3–7/8"	10

SCALE: NTS
APPROVED:
REVISED: 7/08

FLANGE-MOUNTED LUMINAIRE POLE

* PROJECT LUMINAIRE POLES SHALL MEET CRITERIA FOR 25' TO 30' POLE LENGTHS.

SHEET NO.	TOTAL SHEETS
H7	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

ILLUMINATION DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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LAYOUT H7 | SCALE | 4/28/2022 10:12 AM | DRAFTED BY: BRIAN.LEWIS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_H7-H9_ILLUM DETAILS.dwg
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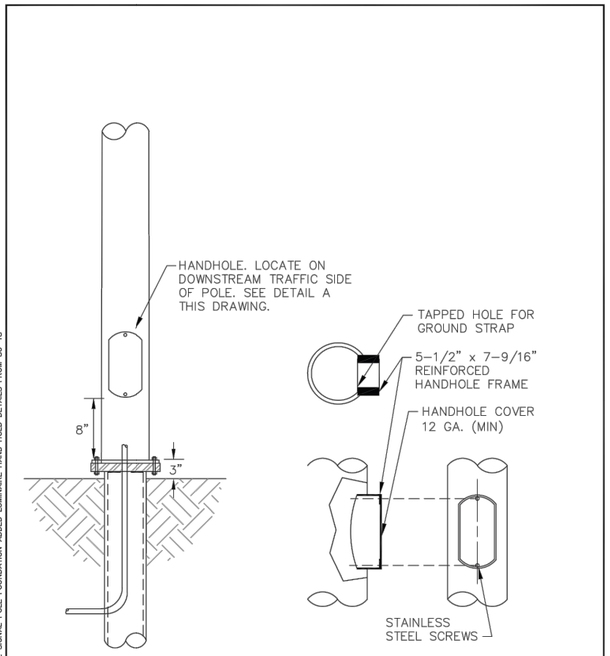
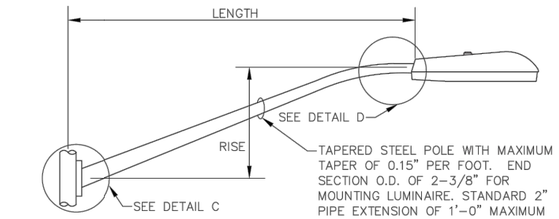


DETAIL A

REVISION: 11/14 DELETED DRIVEN PILE SIGNAL POLE FOUNDATION ADDED LUMINAIRE HAND HOLD DETAILS FROM 80-18

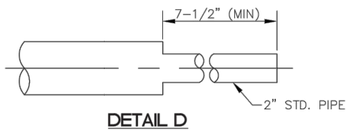
SCALE: NTS	APPROVED:	REVISED: 11/14

LUMINAIRE POLE HANDHOLD DETAILS

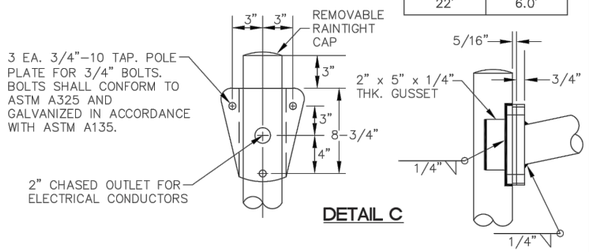


LUMINAIRE ARM DETAIL

LENGTH	RISE
6'	1.5'
8'	2.2'
10'	2.5'
12'	3.6'
15'	4.3'
22'	6.0'



DETAIL D

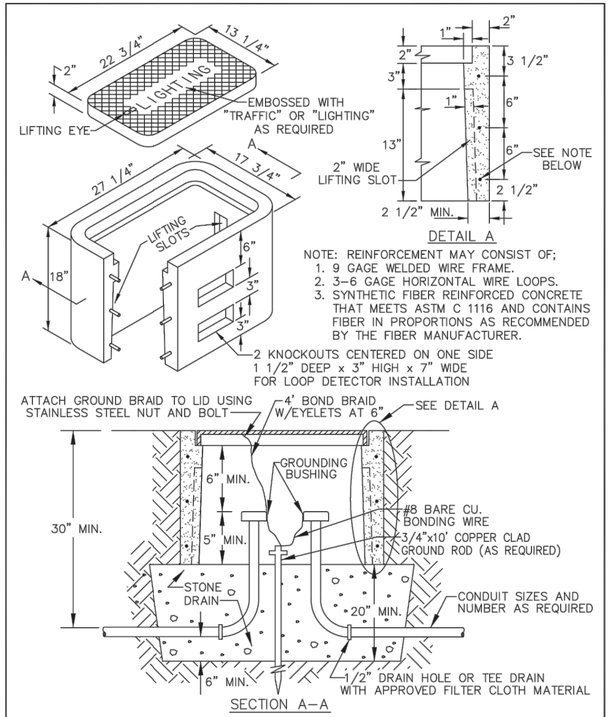


DETAIL C

REVISION: 11/14 ADDED RAINTIGHT CAP

SCALE: NTS	APPROVED:	REVISED: 11/14

LUMINAIRE ARM DETAIL



DETAIL A

NOTE: REINFORCEMENT MAY CONSIST OF;
1. 9 GAGE WELDED WIRE FRAME.
2. 3-6 GAGE HORIZONTAL WIRE LOOPS.
3. SYNTHETIC FIBER REINFORCED CONCRETE THAT MEETS ASTM C 1116 AND CONTAINS FIBER IN PROPORTIONS AS RECOMMENDED BY THE FIBER MANUFACTURER.

SECTION A-A

SCALE: NTS	APPROVED:	REVISED: 10/07

TYPE 1A JUNCTION BOX

SHEET NO.	TOTAL SHEETS
H8	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

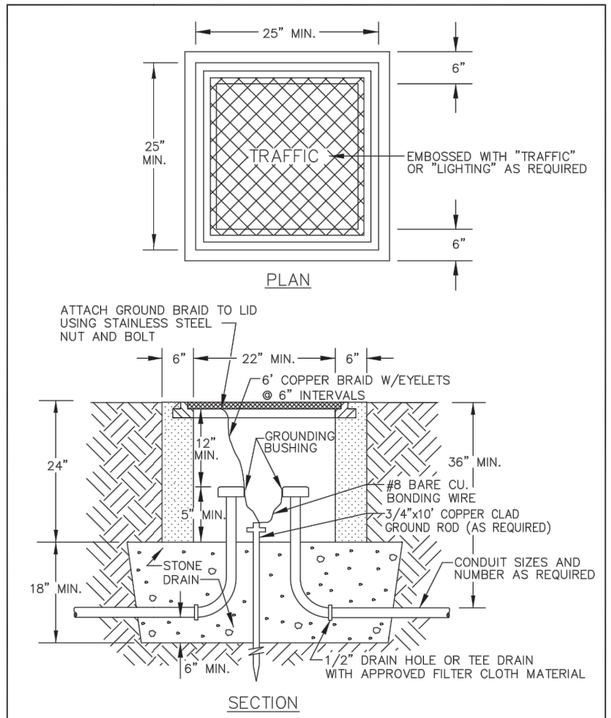
95% PS&E REVIEW

4/28/2022

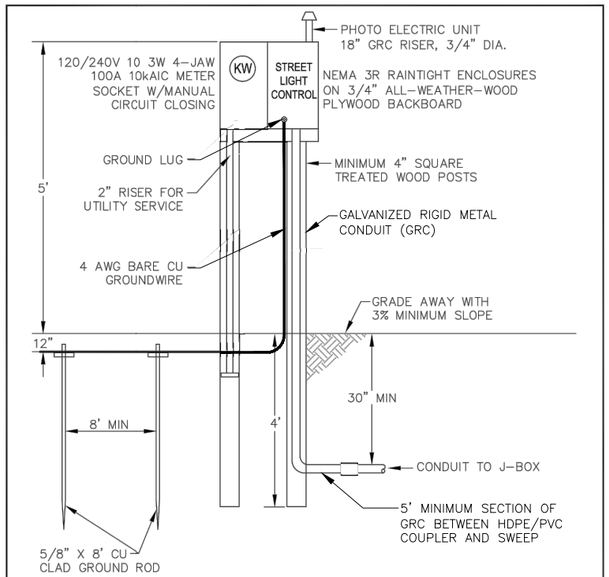
CITY OF VALDEZ

WHALEN AVENUE

ILLUMINATION DETAILS



	SCALE: NTS APPROVED: REVISED: 5/08	**TYPE II JUNCTION BOX**	



NOTES:

1. ATTACH GROUND WIRE TO POLE AT 12" INTERVALS.
2. LOCATE OUT OF DITCH LINE, 5 FT. MINIMUM FROM BACK OF CURB.
3. COORDINATE WITH SERVING UTILITY REGARDING SPECIFIC CONSTRUCTION REQUIREMENTS FOR SERVICE.
4. MARK CONTROL PANEL TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS DURING EXAMINATION, ADJUSTMENT, SERVICING AND/OR MAINTENANCE OF EQUIPMENT. MARKING MUST BE CLEARLY VISIBLE.

REVISION: 11/14 COMPLETELY NEW DESIGN

	SCALE: NTS APPROVED: REVISED: 11/14	**POST MOUNTED LOAD CENTER - TYPE 2**	

NOTE:

CITY OF VALDEZ TO PAY UTILITY FEES FOR NEW TRANSFORMER AND SERVICE HOOKUP. CONTRACTOR TO PROVIDE METER BASE AND POSTMOUNTED LOAD CENTER AND COORDINATE WITH CVEA TO ENERGIZE.

SHEET NO.	TOTAL SHEETS
H9	H9

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

ILLUMINATION DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION	4/28/2022 10:12 AM	LAYOUT H9	SCALE	DRAFTED BY BRIAN.LEWIS

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TRAFFIC MAINTENANCE NOTES:

1. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN (TCP) TO THE COV FOR REVIEW. THE TCP MUST RECEIVE APPROVAL FROM THE COV BEFORE STARTING ANY WORK.
2. PROVIDE, INSTALL, MAINTAIN, MOVE AND REMOVE THE SPECIFIED TRAFFIC CONTROL DEVICES AND ACCESS ACCORDING TO COV STANDARDS, CURRENT ALASKA TRAFFIC MANUAL, ALASKA SIGN DESIGN SPECIFICATION AND APPROVED TRAFFIC CONTROL PLAN (TCP) SETUPS.
3. MOUNT SIGNS SECURELY. MAINTAIN WORK SITE AND AFFECTED AREAS DAILY.
4. THE FINAL JUDGEMENT IN THE SELECTION, NUMBER, AND APPLICATION OF THE TRAFFIC CONTROL DEVICES AND LOCATION OF ALL TRAFFIC CONTROL MEASURES WILL REST WITH THE ENGINEER.
5. COVER EXISTING SIGNS WHICH CONFLICT WITH CONSTRUCTION SIGNING.
6. CONSTRUCTION SIGNING SPECIFIED MAY BE ALTERED BY THE ENGINEER TO MEET CHANGING CONDITIONS AND TO PROTECT THE TRAVELING PUBLIC.
7. TYPE 'A' FLASHING WARNING LIGHTS SHALL BE USED IN CONJUNCTION WITH TYPE III BARRICADES, ROAD CLOSURE SIGNS, ADVANCE DETOUR SIGNING AND THE FIRST TYPE II BARRICADE ENCOUNTERED BY TRAFFIC WHEN USED FOR CHANNELIZING. TYPE 'C' STEADY BURN WARNING LIGHTS SHALL BE USED IN CONJUNCTION WITH REMAINING TYPE II BARRICADES USED FOR CHANNELIZING.
8. ALL CONSTRUCTION SIGNS SHALL HAVE HIGH LEVEL WARNING DEVICES ATTACHED.
9. WORK ZONES MAY OVERLAP DURING CONSTRUCTION UPON APPROVAL BY THE ENGINEER.
10. INTEGRATE TRAFFIC CONTROL WITH OTHER CONSTRUCTION IN THE AREA.
11. DETAILS NOT SHOWN, BUT NECESSARY TO IMPLEMENT THE TRAFFIC CONTROL PLAN SHALL COMPLY WITH THE ALASKA TRAFFIC MANUAL AND MUTCD.
12. ALL SPECIAL SIGNS SHALL BE BLACK ON ORANGE BACKGROUND WITH BORDERS HAVING 1.5" RADIUS AND 0.75" THICKNESS.
13. CONTRACTOR SHALL MAINTAIN PEDESTRIAN ACCESS.
14. PEDESTRIAN FENCE SHALL HAVE R9-9 (SIDEWALK CLOSED) SIGNS MOUNTED AT BOTH ENDS OF THE WORK ZONE AND AT EVERY LOCATION PEDESTRIANS ARE LIKELY TO ENCOUNTER THE CLOSED PATHWAY.
15. INSTALL PEDESTRIAN FENCING AROUND OPEN EXCAVATIONS AT NIGHT.
16. EGAN DRIVE ACCESS MUST BE PROVIDED AT ALL TIMES FOR EMERGENCY VEHICLES.

SHEET NO.	TOTAL SHEETS
J1	J2

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

TRAFFIC CONTROL PLAN

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION 2/9/2022 8:34 PM
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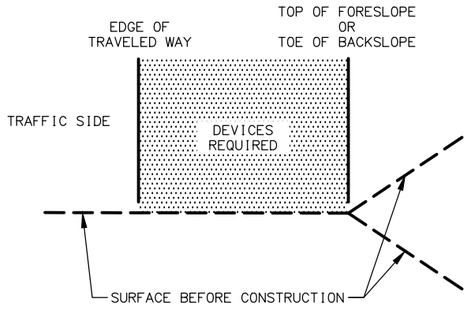
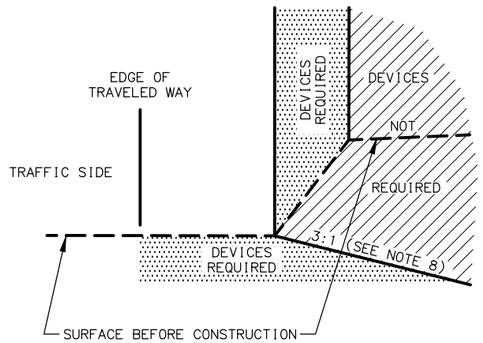
LAYOUT J1 | SCALE | DRAFTED BY BRIAN.LEWIS



EMBANKMENT SECTION



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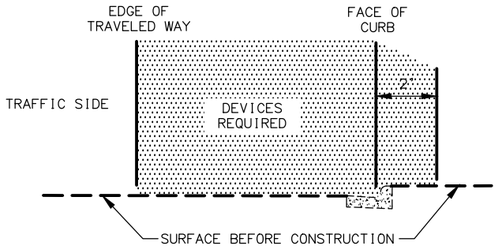
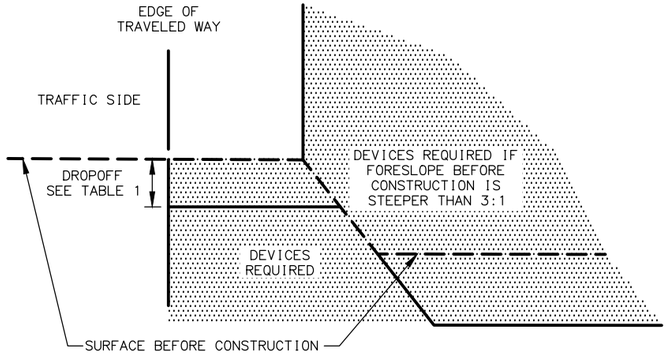


CURB AND GUTTER SECTION



FORESLOPE SECTION

LEGEND

- WORK AREA WHERE TRAFFIC CONTROL DEVICES ARE REQUIRED
- WORK AREA WHERE TRAFFIC CONTROL DEVICES ARE NOT REQUIRED
- SURFACE BEFORE CONSTRUCTION
- CONSTRUCTION AREA BOUNDARY

TABLE 1
TRAFFIC CONTROL DEVICES REQUIRED FOR VERTICAL DROPOFFS ≤ 4 FEET FROM TRAVELED WAY*

ROADWAY TYPE	DROPOFF ≤ 2"	2"< DROPOFF ≤ 12"	DROPOFF ≥ 12"
AVERAGE DAILY TRAFFIC > 4000 OR SPEED > 40 MPH	TAPER ASPHALT AT 1:1 OR ~45°	TYPE II BARRICADES OR DRUMS	TEMPORARY PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL
ALL OTHER ROADWAYS	NONE REQUIRED	TUBULAR CANDLES OR DELINEATORS	TYPE II BARRICADES OR DRUMS

* SPACE THE DEVICES IN ACCORDANCE WITH REQUIREMENTS FOR SPACING TYPE II BARRICADES AND DRUMS SET FORTH IN THE ALASKA TRAFFIC MANUAL.

NOTES:

1. TRAFFIC CONTROL DEVICES REQUIRED BY THE GUIDELINES ON THIS SHEET ARE INTENDED FOR CONDITIONS WHICH WILL BE IN PLACE LONGER THAN ONE CONTINUOUS WORK SHIFT. AN APPROVED TRAFFIC CONTROL PLAN IS REQUIRED PRIOR TO BEGINNING WORK.
2. THE GROUND CROSS SECTION AT A LOCATION BEFORE CONSTRUCTION DETERMINES WHETHER TRAFFIC CONTROL DEVICES ARE NEEDED AT THE SAME LOCATION DURING CONSTRUCTION.
3. GUARDRAIL EXISTING AT A LOCATION BEFORE CONSTRUCTION SHALL REMAIN IN PLACE DURING CONSTRUCTION OR APPROVED ALTERNATE DEVICES INSTALLED.
4. INSTALL TRAFFIC CONTROL DEVICES BETWEEN THE EDGE OF TRAVELED WAY AND THE WORK AREA ON ANY ROADWAY OPENED TO TRAFFIC WHEN REQUIRED BY THIS DRAWING.
5. EXISTING ROADWAY ALIGNMENTS INSTALL TRAFFIC CONTROL DEVICES WHEN WORK OCCURS IN THE DEVICES REQUIRED AREAS SHOWN ON THIS DRAWING.
6. DETOURS, TEMPORARY ROADWAYS, OR NEW ROADWAYS NOT YET COMPLETE. INSTALL TRAFFIC CONTROL DEVICES WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
   A. THE HORIZONTAL OR VERTICAL CURVATURE IS MORE SEVERE THAN BEFORE CONSTRUCTION BEGAN.
   B. THE ROADWAY OR SHOULDER WIDTH IS LESS THAN BEFORE CONSTRUCTION BEGAN.
   C. THE BACKSLOPE OR FORESLOPE IS STEEPER THAN BEFORE CONSTRUCTION BEGAN.
   D. THE HEIGHT OF THE FORESLOPE IS GREATER THAN BEFORE CONSTRUCTION BEGAN.
7. DROPOFFS:
   INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL AND TABLE 1.
8. ON ANY NEWLY CONSTRUCTED SLOPE STEEPER THAN 4:1 TO 3:1 PROVIDE A TEN FOOT FLAT RECOVERY AREA AT THE TOE OF SLOPE OR INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL.
9. TRAFFIC CONTROL DEVICE REQUIREMENTS:
   A. ON ROADWAYS WITH A SPEED LIMIT GREATER THAN 40 MILES PER HOUR OR AVERAGE DAILY TRAFFIC VOLUME GREATER THAN 4000 VEHICLES PER DAY INSTALL TEMPORARY PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL. ON MULTI-LANE ROADWAYS CLOSE THE LANE CLOSEST TO THE WORK AREA AND INSTALL DRUMS.
      TERMINATE RUNS OF TEMPORARY PORTABLE CONCRETE BARRIER USING ONE OF THE FOLLOWING THREE METHODS:
      I. TEMPORARY CRASH ATTENUATOR.
      II. RIGID TO SEMI-RIGID GUARDRAIL TRANSITION WITH SLOTTED RAIL TERMINAL OR OTHER APPROVED CRASHWORTHY END TREATMENT.
      III. FLARE THE ENDS OF THE TEMPORARY BARRIER AWAY FROM THE ROADWAY AT A RATE OF 15:1 ON A TRANSVERSE SLOPE OF 10:1 OR FLATTER TO THE OUTSIDE EDGE OF THE CLEAR ZONE AND INSTALL A SLOPING END TREATMENT, PER STANDARD DRAWING G-46.11.
      TERMINATE RUNS OF TEMPORARY GUARDRAIL USING EITHER OF THE FOLLOWING TWO METHODS:
      I. SLOTTED RAIL TERMINAL OR OTHER APPROVED CRASHWORTHY END TREATMENT.
      II. FLARE THE ENDS OF THE TEMPORARY GUARDRAIL AWAY FROM THE ROADWAY AT A RATE OF 15:1 ON TRANSVERSE SLOPE OF 10:1 OR FLATTER TO THE OUTSIDE EDGE OF THE CLEAR ZONE.
   B. ON ALL OTHER ROADWAYS INSTALL TYPE II BARRICADES, DRUMS OR DELINEATORS WHEN DEVICES ARE REQUIRED. SPACE THE DEVICES IN ACCORDANCE WITH THE REQUIREMENTS FOR SPACING TYPE II BARRICADES AND DRUMS SET FORTH IN THE ALASKA TRAFFIC MANUAL.
10. DO NOT CONSTRUCT VERTICAL DROP OFFS GREATER THAN 1.5" WITHIN THE TRAFFIC LANE OR ACTIVE WHEEL TRACK. PROVIDE 2' OF SHY DISTANCE FROM EDGE OF ALL TRAFFIC CONTROL DEVICES TO THE EDGE OF THE TRAVELED WAY.

SHEET NO.	TOTAL SHEETS
J2	J2

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

TRAFFIC CONTROL PLAN

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_J1-J2_TRAFFIC CONTROL.dwg
2/9/2022 8:34 PM
LAYOUT J2
SCALE
DRAFTED BY BRIAN.LEWIS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
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4/27/2022 10:02 AM
LAYOUT U1
SCALE
DRAFTED BY BRIAN.LEWIS

WATER MAIN NOTES:

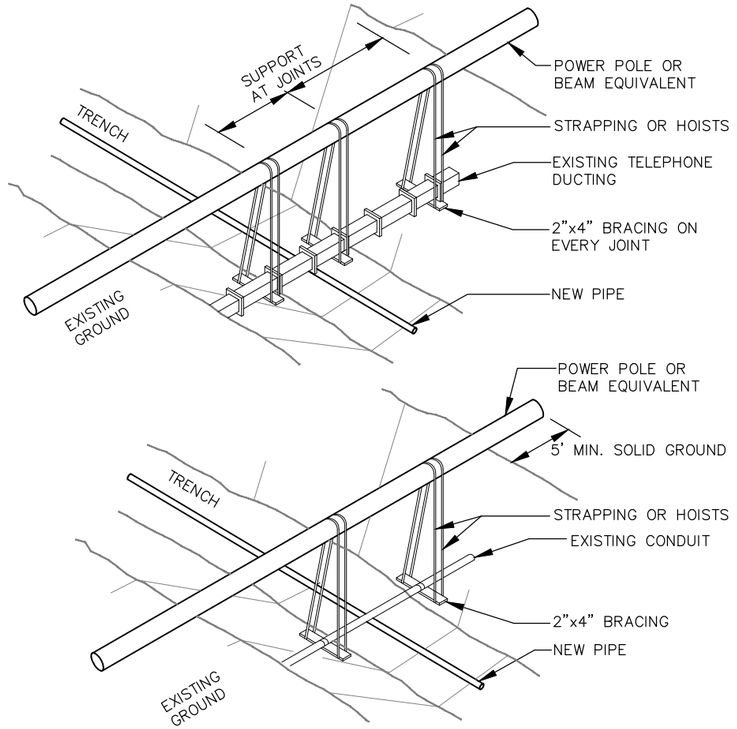
1. ALL PIPE AND RUBBER GASKETS FOR MJ/FLANGE CONNECTIONS SHALL BE NSF STANDARD 61 CERTIFIED FOR USE IN POTABLE WATER SYSTEMS.

2. PIPING FLUSHING – NEWLY INSTALLED WATER MAINS SHALL BE OPEN–BORE FLUSHED BY C.O.V. PRIOR TO INSTALLATION OF WATER SERVICES. WATER FROM PIPE FLUSHING SHALL BE DIRECTED TO THE WEST SIDE OF THE PROJECT IN A MANNER THAT SHALL DISPOSE OF WATER TO EXISTING VEGETATED DRAINAGE AREAS WITHOUT CAUSING EROSION OR DAMAGING THE VEGETATION.

3. PIPING TESTING – A HYDROSTATIC TEST SHALL BE CONDUCTED AFTER "OPEN–BORE" FLUSHING ON ALL NEWLY INSTALLED WATER MAINS IN THE PRESENCE OF C.O.V. PRIOR TO PERFORMING THE HYDROSTATIC TEST, ENSURE THAT THERE IS NO AIR TRAPPED IN THE TEST SECTION.

4. VALVE MATERIAL – GATE VALVES SHALL BE IRON BODY, RESILIENT–SEATED VALVES WITH NON–RISING STEMS FOR WATER SUPPLY SERVICE, MANUFACTURED IN ACCORDANCE WITH AWWA C500. GATE VALVES SHALL HAVE A TWO (2) INCH SQUARE OPERATING NUT, AND SHALL OPEN COUNTERCLOCKWISE. UNLESS OTHERWISE DETAILED ON THE DRAWINGS, VALVE AND VALVE/PIPE INTERFACE SHALL BE MJ/FLANGE TYPE CONNECTIONS CONFORMING TO AWWA C110.

5. AT CROSSINGS OF THE WATER MAIN WITH STORM DRAIN OR SANITARY SEWER, THERE SHALL BE A MINIMUM OF 9 FEET SEPARATION OF THE WATER MAIN PIPE JOINTS FROM THE STORM DRAIN OR SANITARY SEWER.



NOTES:
1. SUPPORT DUCTS WITH 2"x4" AND STRAPS AT JOINTS BEFORE EXCAVATING UNDER DUCTS.

2. PLACE AND COMPACT CLASSIFIED MATERIAL UNDER DUCT BANK UP TO WITHIN 18" OF DUCT. THE LAST 18" TO BE CONCRETE OR CONCRETE SLURRY.

3. DUCTS TO BE ENCASED IN 3" OF SAND (ON ALL SIDES).

STANDARD METHOD FOR SHORING (SUPPORTING) PHONE/CONDUIT A.C.S APPROVED METHOD AND PROCEDURES #86-1

SHEET NO.	TOTAL SHEETS
U1	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

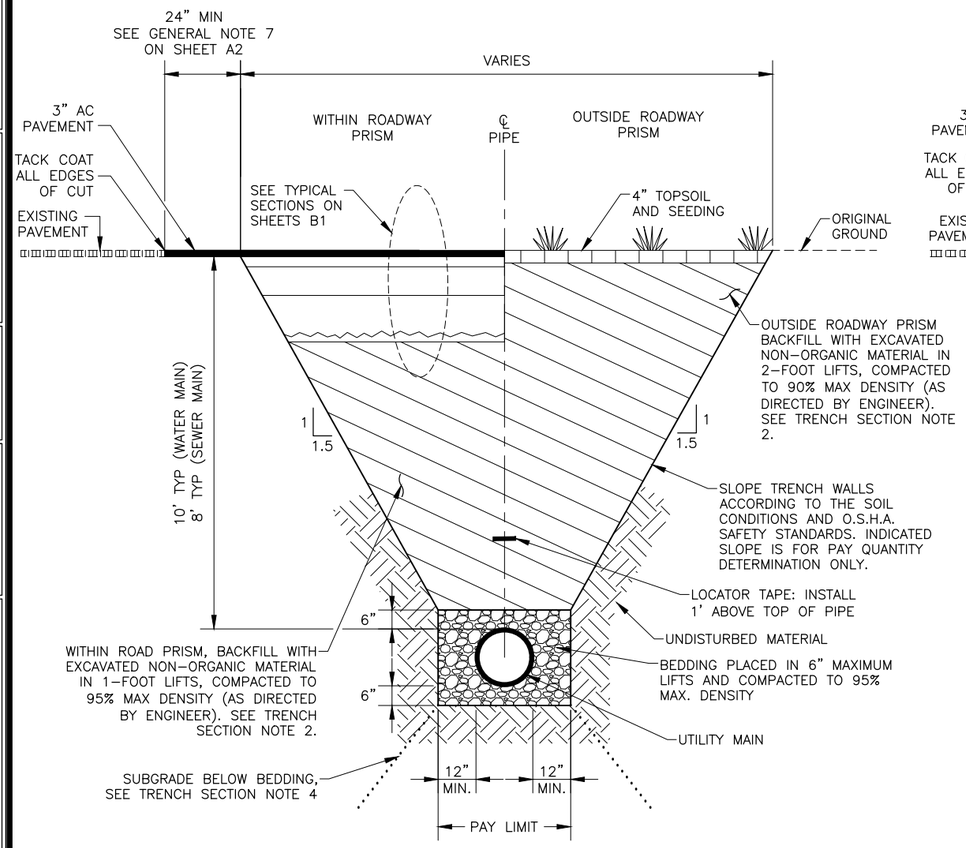
95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

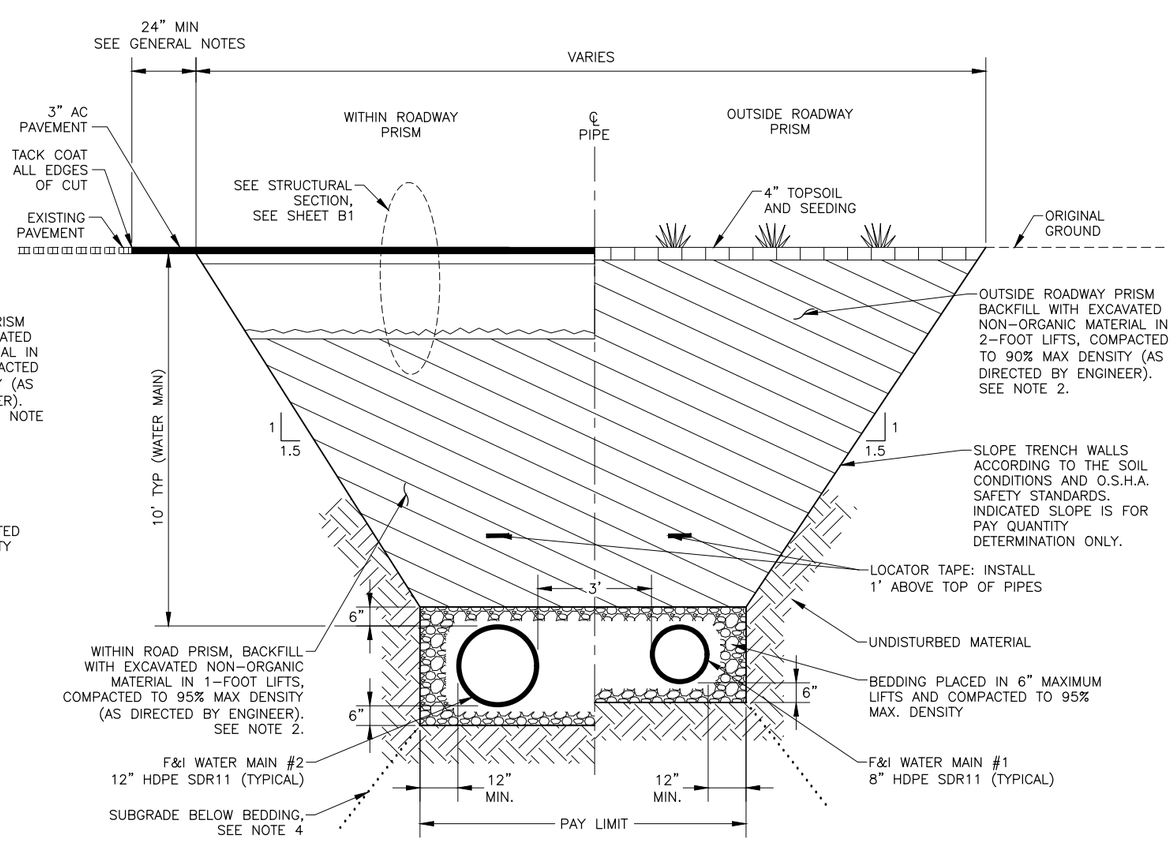
WHALEN AVENUE

UTILITY TRENCH DETAILS AND NOTES



TYPICAL TRENCH SECTION – SINGLE PIPE

NTS



TYPICAL TRENCH SECTION – DUAL PIPE (WATER MAINS #1 AND #2)

NTS

TRENCH SECTION NOTES

1. TRENCH EXCAVATION AND SHORING SHALL COMPLY WITH ALL LOCAL, STATE AND OSHA REGULATIONS AND REQUIREMENTS. PROVIDE PORTABLE STEEL TRENCH SHIELD AS REQUIRED.
2. MATERIAL FOR TRENCH BACKFILL SHALL BE NATIVE MATERIAL, MEETING TYPE II CLASSIFICATION (MINIMUM) AS APPROVED BY THE ENGINEER. NATIVE MATERIAL NOT MEETING TYPE II CLASSIFICATION SHALL BE REMOVED AND REPLACED WITH TYPE II FILL AND BACKFILL. BACKFILL MATERIAL WITHIN ROADWAY PRISM SHALL HAVE 8" MAXIMUM ROCK SIZE.
3. REMOVE AND PROPERLY DISPOSE OF ALL ORGANIC MATERIALS.
4. SUBGRADE BELOW BEDDING PRISM SHALL BE CLEARED OF ALL DEBRIS AND ORGANIC MATERIAL. BACKFILL AND COMPACT EXCAVATED SUBGRADE.
5. TYPICAL DEPTH OF BURY IS 10 FEET FOR WATER MAIN AND 8 FEET FOR SEWER MAIN. FURNISH AND INSTALL 4" THICK INSULATION WHERE DEPTH OF BURY IS LESS THAN 10 FEET FOR WATER MAIN, OR WHERE DEPTH OF BURY IS LESS THAN 5.5 FEET FOR SEWER MAIN, OR AS NOTED ON THE PLANS. INSULATION SHALL BE 4 FEET WIDE PLACED 1–FOOT ABOVE PIPE. INSULATION SHALL BE R–20 FOR A 4–INCH THICKNESS.
6. SEE SHEET F2 FOR ASPHALT REMOVAL PAY LIMITS FOR WATER MAIN #1 AT KLUTINA INTERSECTION.
7. DUAL PIPE (WATER MAINS #1 AND #2) PROFILE AND ALIGNMENTS DIVERGE BETWEEN STA. 99+42 TO 100+67.

SHEET NO.	TOTAL SHEETS
U2	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

UTILITY TRENCH DETAILS AND NOTES

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_U1-U2_UTILITY-TRENCH-DETAILS.dwg
DRAFTED BY BRIAN.LEWIS
SCALE
LAYOUT U2
4/27/2022 10:02 AM

REMOVE 8" DIP STUB-OUT AND GV FROM EGAN DRIVE INTERSECTION TO APPROXIMATE STA. 100+90 (100 LF). BEGIN NEW WATER MAIN #1 AT EXISTING 12" X 12" CROSS, MATCH EXISTING PIPE INVERT ELEVATION.

STA 100+03.02, 17.25' LT (APPROX.)
CONNECT TO EXISTING 12"X12" CROSS
F&I 12" x 8" REDUCER
W/ 22-1/2 DEGREE BEND
W/ 8" GV & VB

STA 100+65.92, 0.43' RT
DEFLECT APPROX. 4°41'11"
F&I 5-5/8 DEGREE BEND
(AS REQ'D)

WATER MAIN #2
SEE SHEETS
U6-U7.

STA 103+60.46, 44.51' LT
F&I 8" GV & VB,
END CAP

STA 103+60.48, 12.00' RT
F&I 8"X8" TEE

APPROXIMATE LAYOUT OF PROPOSED SUBDIVISION

TRACT P
PORT VALDEZ SUBDIVISION
PLAT NO. 77-1

STA 106+48.37, 44.50' LT
F&I 8" GV & VB,
END CAP

STA 106+48.38, 12.00' RT
F&I 8"X8" TEE

STA 106+46.38, 12.00' RT
F&I 8"X8" TEE
W/ 8" GV & VB (2)

INTERSECTION
WHALEN AVE STA. 106+40.37
= W PIONEER DR STA. 200+00.00

0 30 60
HORZ SCALE IN FEET

EGAN DRIVE

10' UTILITY EASEMENT

WHALEN AVENUE

MATCH LINE STA 107+25
SEE SHEET U4

BEGIN PROJECT
STA. 99+42

BLOCK 6
WINTER PARK PHASE
IV SUBDIVISION
PLAT NO. 2016-8

STA 102+37.71, 32.00' RT
F&I FIRE HYDRANT ASSEMBLY,
(SINGLE PUMPER)
W/ AUX GV & VB

STA 104+47.71, 32.00' RT
F&I FIRE HYDRANT ASSEMBLY,
(SINGLE PUMPER)
W/ AUX GV & VB

W PIONEER DRIVE

200' WELL
PROTECTION
RADIUS

SEE SHEET U5

WATER PIPE SUMMARY

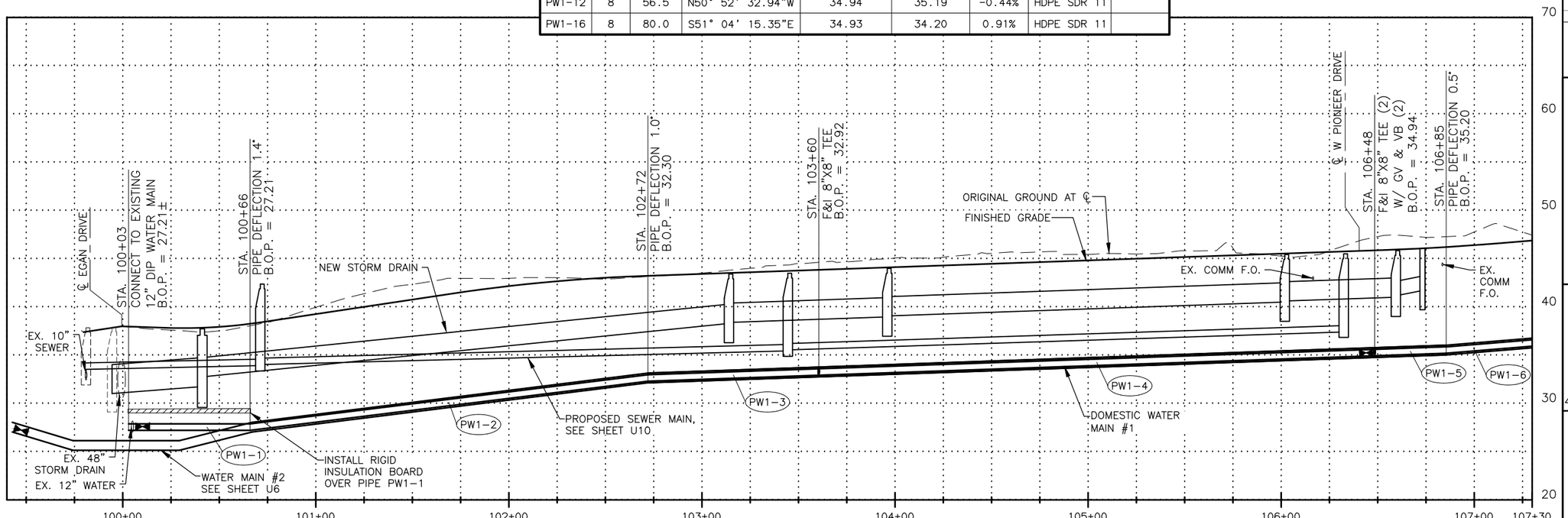
PIPE	SIZE (IN)	LENGTH (FT)	BEARING	START INVERT ELEV. (FT)	END INVERT ELEV. (FT)	% GRADE	TYPE	REMARKS
PW1-1	8	65.7	N32° 34' 13.15"E	27.21 ±	27.21	0.00%	HDPE SDR 11	
PW1-2	8	204.8	N39° 08' 17.48"E	27.21	32.30	-2.49%	HDPE SDR 11	
PW1-3	8	88.5	N39° 08' 17.02"E	32.30	32.92	-0.70%	HDPE SDR 11	
PW1-4	8	287.9	N39° 08' 17.02"E	32.92	34.94	-0.70%	HDPE SDR 11	
PW1-5	8	37.1	N39° 08' 17.02"E	34.94	35.20	-0.70%	HDPE SDR 11	
PW1-6	8	108.1	N39° 08' 17.02"E	35.20	36.97	-1.64%	HDPE SDR 11	
PW1-11	8	56.5	N50° 52' 32.94"W	32.92	33.17	-0.44%	HDPE SDR 11	
PW1-12	8	56.5	N50° 52' 32.94"W	34.94	35.19	-0.44%	HDPE SDR 11	
PW1-16	8	80.0	S51° 04' 15.35"E	34.93	34.20	0.91%	HDPE SDR 11	

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL NOTIFY ALL AREA UTILITY COMPANIES PRIOR TO COMMENCEMENT OF EXCAVATION.

ALASKA DIGLINE, INC.
STATEWIDE TOLL FREE: 1-800-478-3121

NOTE:
ALL EXISTING UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.



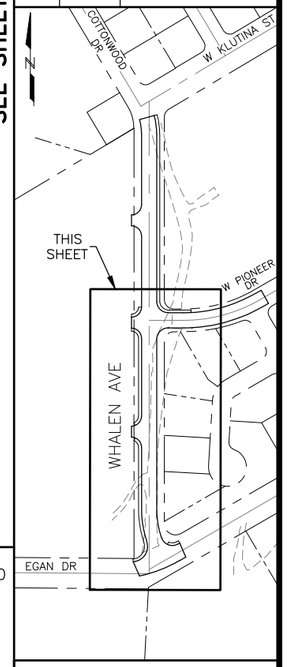
SHEET NO.	TOTAL SHEETS
U3	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

CITY OF VALDEZ, ALASKA
OPPORTUNITIES IN EVERY SEASON

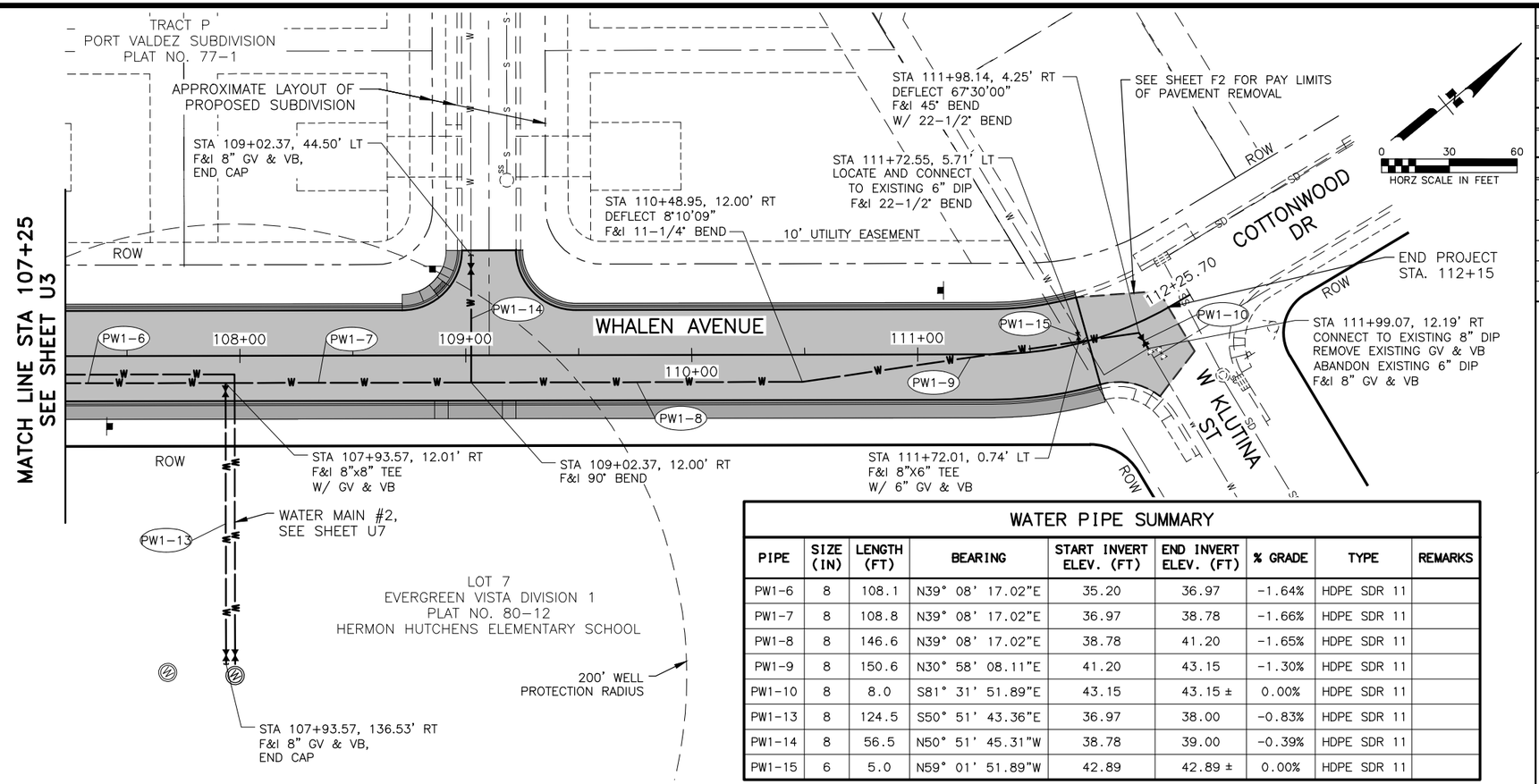
95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

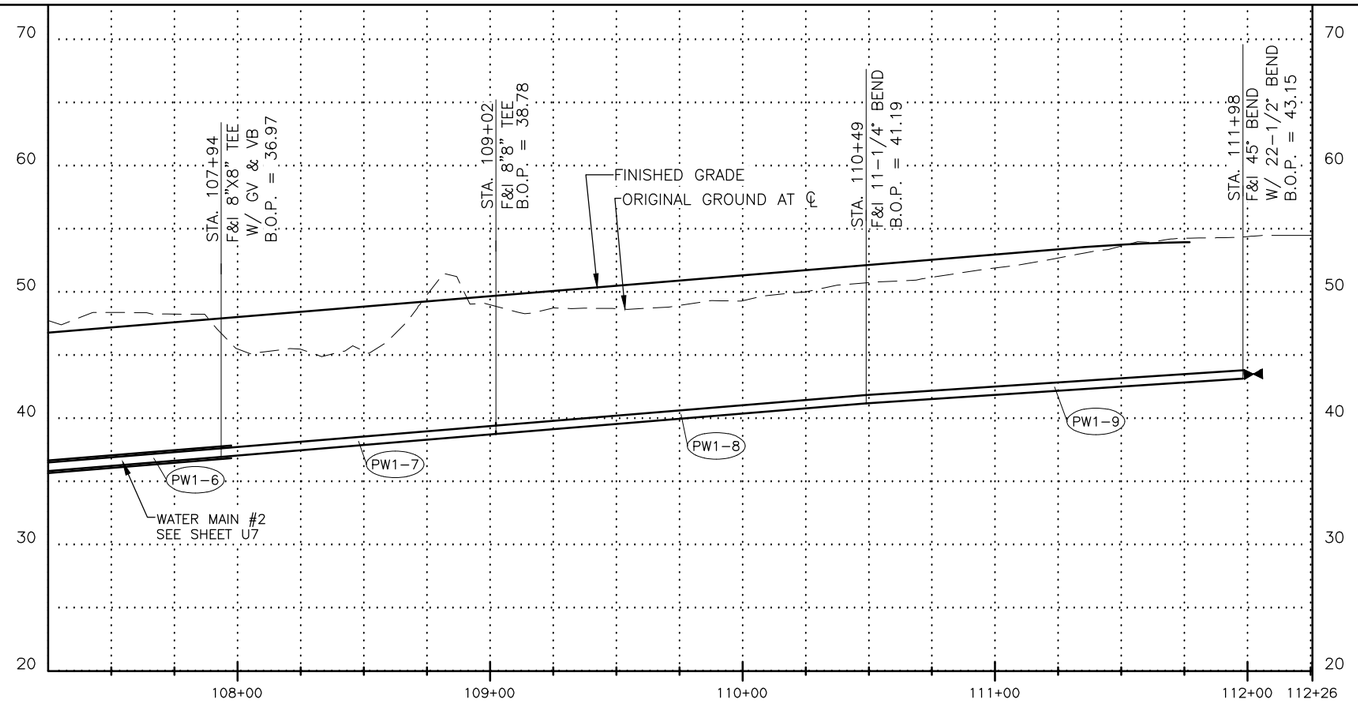
WHALEN AVENUE

DOMESTIC WATER MAIN #1 PLAN AND PROFILE BOP TO STA 107+25



WATER PIPE SUMMARY

PIPE	SIZE (IN)	LENGTH (FT)	BEARING	START INVERT ELEV. (FT)	END INVERT ELEV. (FT)	% GRADE	TYPE	REMARKS
PW1-6	8	108.1	N39° 08' 17.02"E	35.20	36.97	-1.64%	HDPE SDR 11	
PW1-7	8	108.8	N39° 08' 17.02"E	36.97	38.78	-1.66%	HDPE SDR 11	
PW1-8	8	146.6	N39° 08' 17.02"E	38.78	41.20	-1.65%	HDPE SDR 11	
PW1-9	8	150.6	N30° 58' 08.11"E	41.20	43.15	-1.30%	HDPE SDR 11	
PW1-10	8	8.0	S81° 31' 51.89"E	43.15	43.15 ±	0.00%	HDPE SDR 11	
PW1-13	8	124.5	S50° 51' 43.36"E	36.97	38.00	-0.83%	HDPE SDR 11	
PW1-14	8	56.5	N50° 51' 45.31"W	38.78	39.00	-0.39%	HDPE SDR 11	
PW1-15	6	5.0	N59° 01' 51.89"W	42.89	42.89 ±	0.00%	HDPE SDR 11	



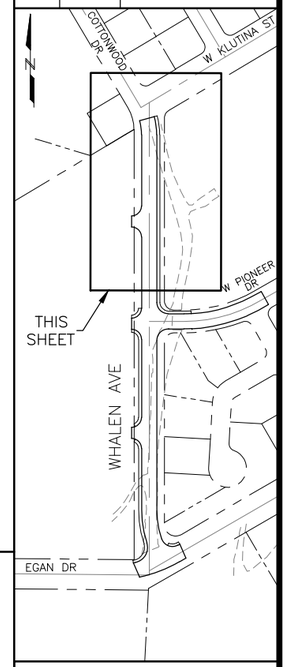
SHEET NO.	TOTAL SHEETS
U4	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
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FOR
CITY OF VALDEZ, ALASKA

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

WATER MAIN #1
PLAN AND PROFILE
STA 107+25 TO EOP

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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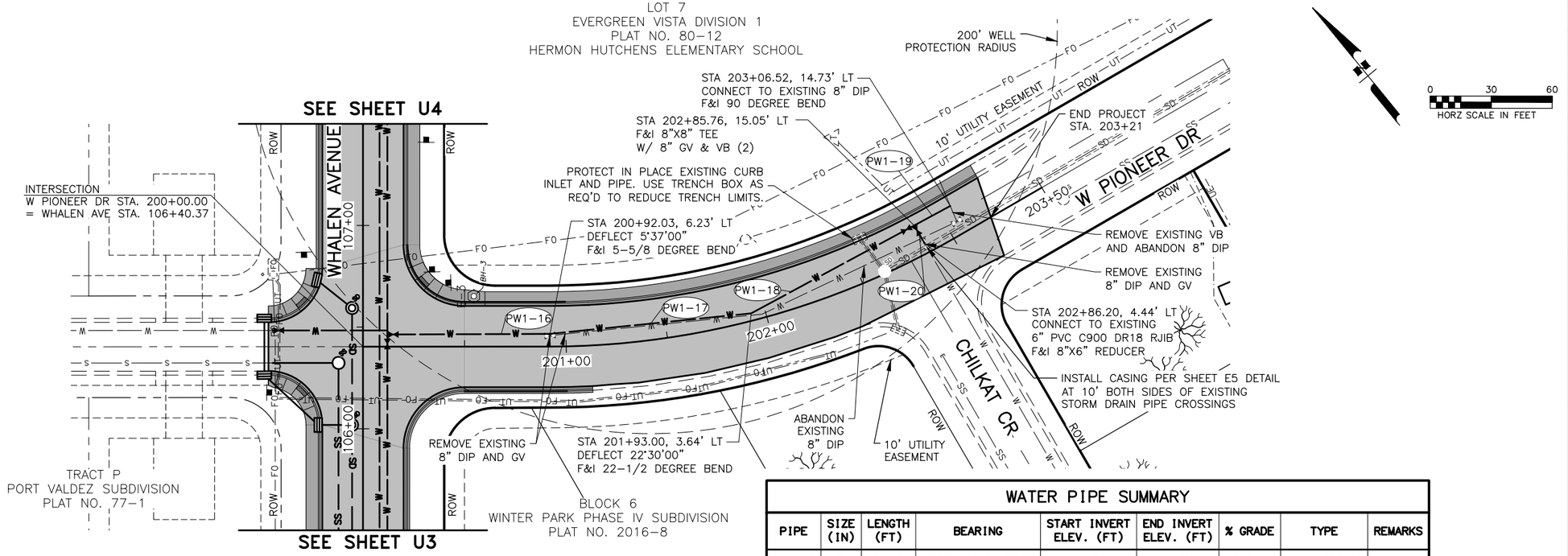
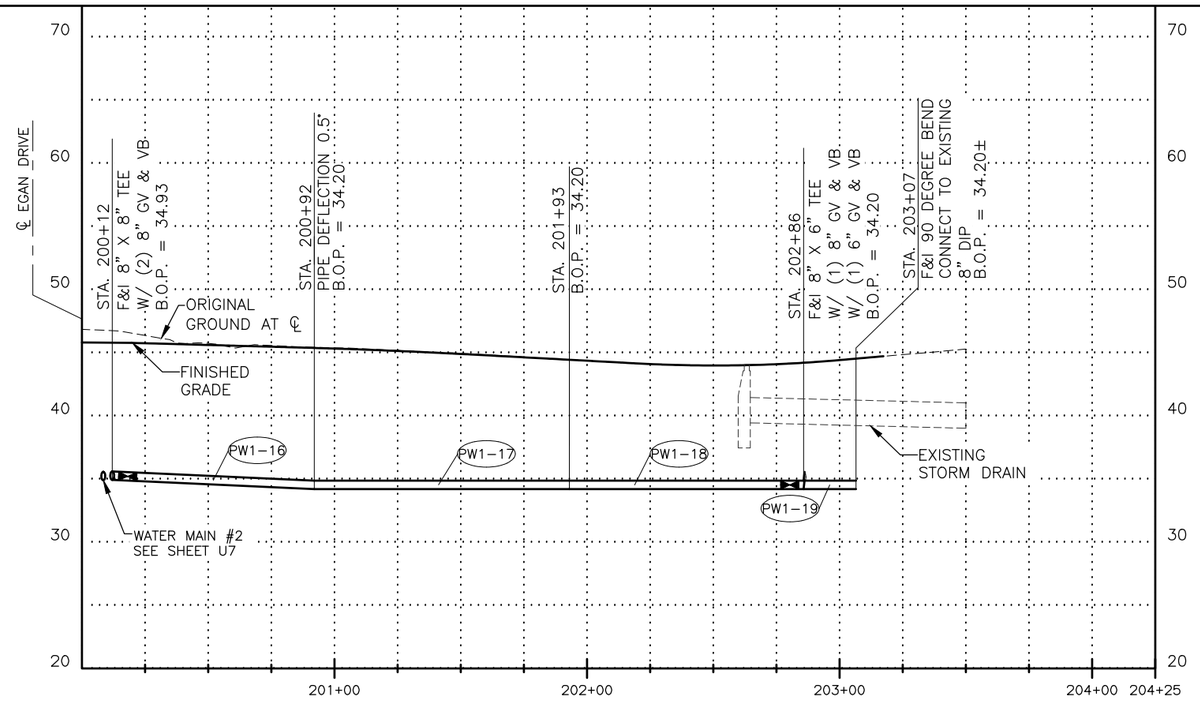
LAYOUT U4 | SCALE | 4/28/2022 12:01 PM | DRAFTED BY BRIAN.LEWIS



WATER PIPE SUMMARY

PIPE	SIZE (IN)	LENGTH (FT)	BEARING	START INVERT ELEV. (FT)	END INVERT ELEV. (FT)	% GRADE	TYPE	REMARKS
PW1-16	8	80.0	S51° 04' 15.35"E	34.93	34.20	0.91%	HDPE SDR 11	
PW1-17	8	99.5	S56° 41' 45.35"E	34.20	34.20	0.00%	HDPE SDR 11	
PW1-18	8	91.1	S79° 11' 45.35"E	34.20	34.20	0.00%	HDPE SDR 11	
PW1-19	8	20.2	S79° 11' 45.35"E	34.20	34.20±	0.00%	HDPE SDR 11	
PW1-20	8	10.0	S08° 55' 44.65"W	34.20	34.89±	-6.90%	HDPE SDR 11	



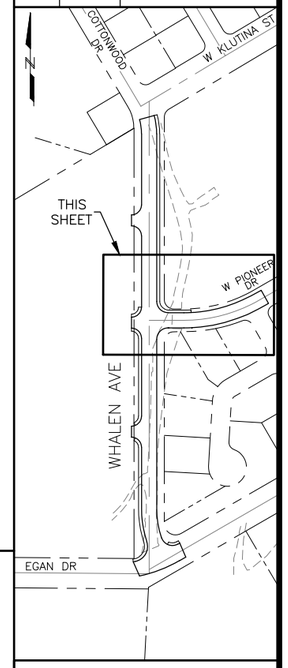
SHEET NO.	TOTAL SHEETS
U5	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
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FOR
CITY OF VALDEZ, ALASKA

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4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

**DOMESTIC WATER MAIN #1
PLAN AND PROFILE STA
200+00 TO STA**

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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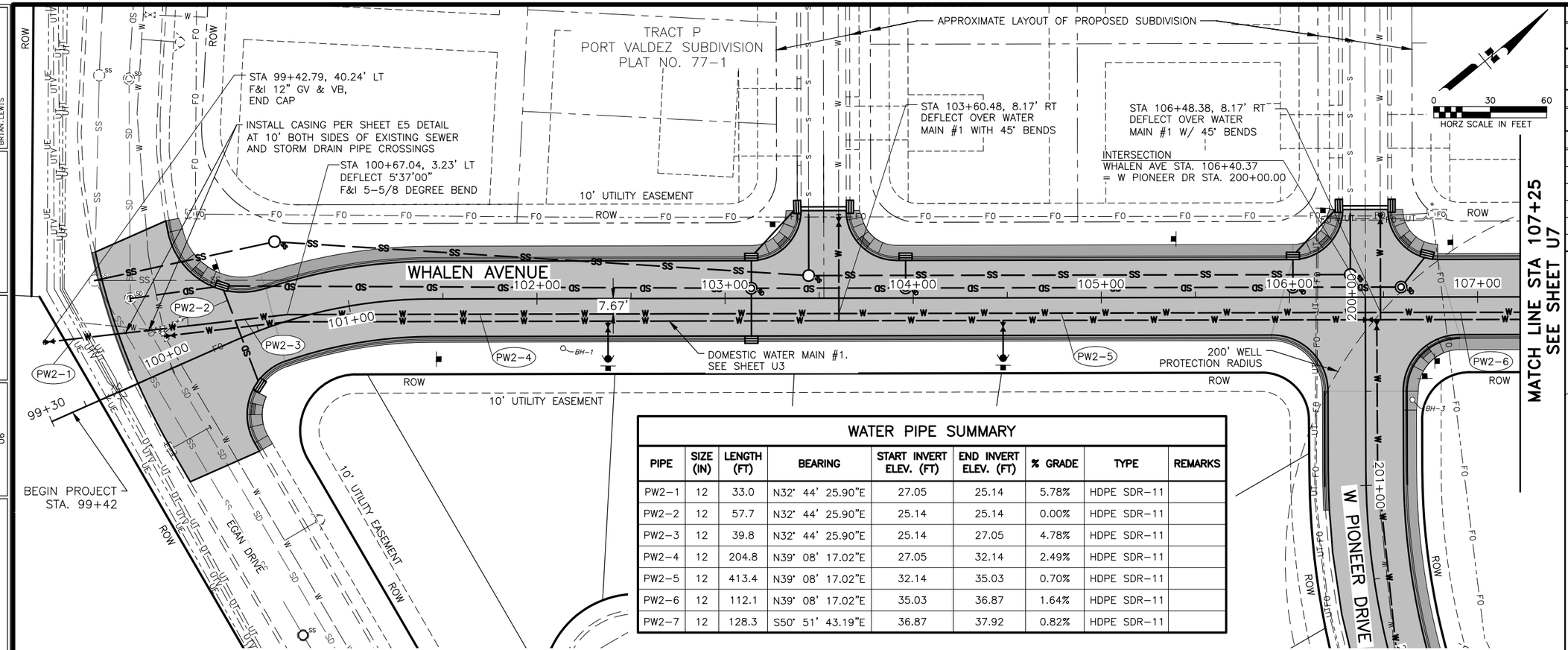
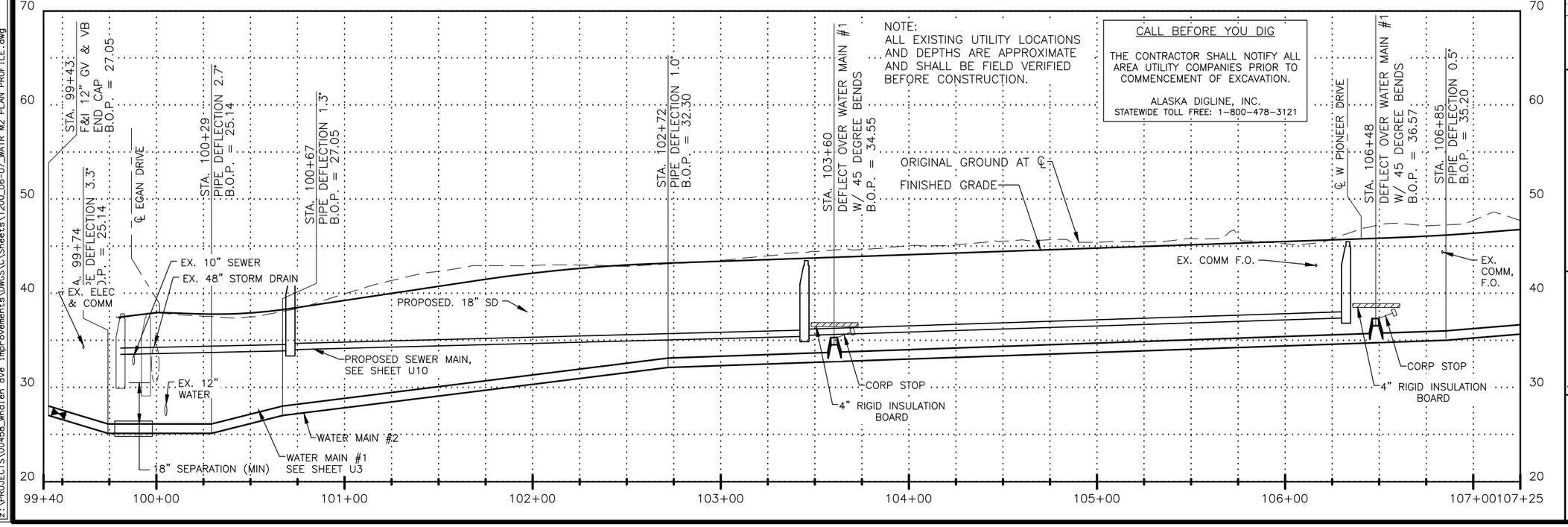
DRAFTED BY: BRIAN.LEWIS | SCALE | LAYOUT U5 | 4/27/2022 10:44 AM

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_U6-U7_WATR W2 PLAN PROFILE.dwg
DRAFTED BY BRIAN.LEWIS | SCALE | LAYOUT U6 | 4/27/2022 10:36 AM



WATER PIPE SUMMARY

PIPE	SIZE (IN)	LENGTH (FT)	BEARING	START INVERT ELEV. (FT)	END INVERT ELEV. (FT)	% GRADE	TYPE	REMARKS
PW2-1	12	33.0	N32° 44' 25.90"E	27.05	25.14	5.78%	HDPE SDR-11	
PW2-2	12	57.7	N32° 44' 25.90"E	25.14	25.14	0.00%	HDPE SDR-11	
PW2-3	12	39.8	N32° 44' 25.90"E	25.14	27.05	4.78%	HDPE SDR-11	
PW2-4	12	204.8	N39° 08' 17.02"E	27.05	32.14	2.49%	HDPE SDR-11	
PW2-5	12	413.4	N39° 08' 17.02"E	32.14	35.03	0.70%	HDPE SDR-11	
PW2-6	12	112.1	N39° 08' 17.02"E	35.03	36.87	1.64%	HDPE SDR-11	
PW2-7	12	128.3	S50° 51' 43.19"E	36.87	37.92	0.82%	HDPE SDR-11	



NOTE:
ALL EXISTING UTILITY LOCATIONS AND DEPTHS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL NOTIFY ALL AREA UTILITY COMPANIES PRIOR TO COMMENCEMENT OF EXCAVATION.

ALASKA DIGLINE, INC.
STATEWIDE TOLL FREE: 1-800-478-3121

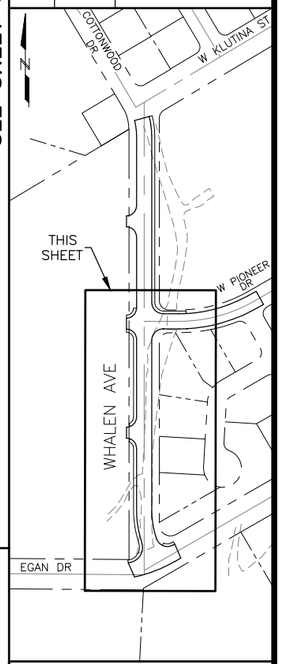
SHEET NO.	TOTAL SHEETS
U6	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
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FOR
CITY OF VALDEZ, ALASKA

CITY OF VALDEZ, ALASKA
OPPORTUNITIES IN EVERY SEASON

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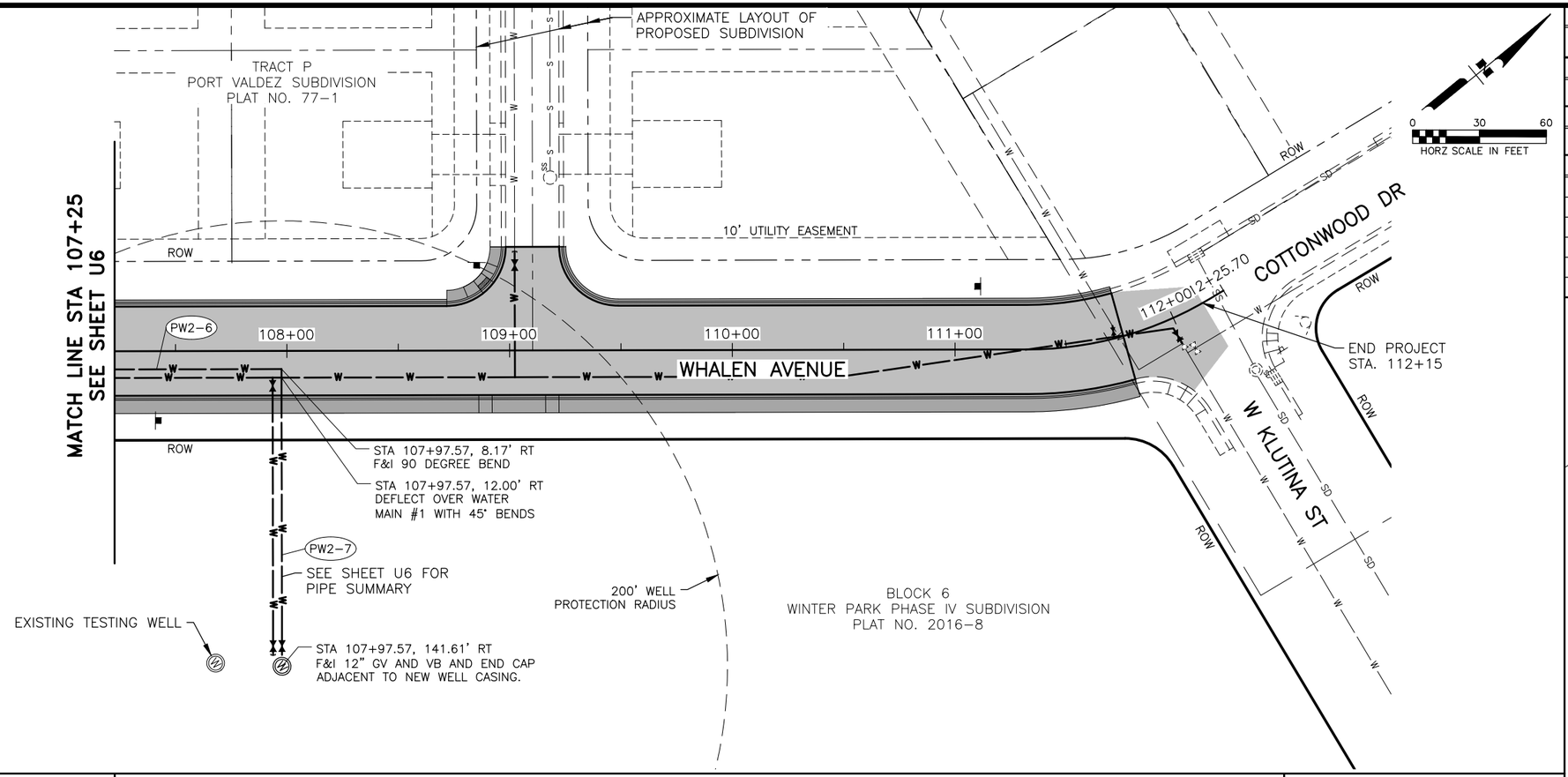
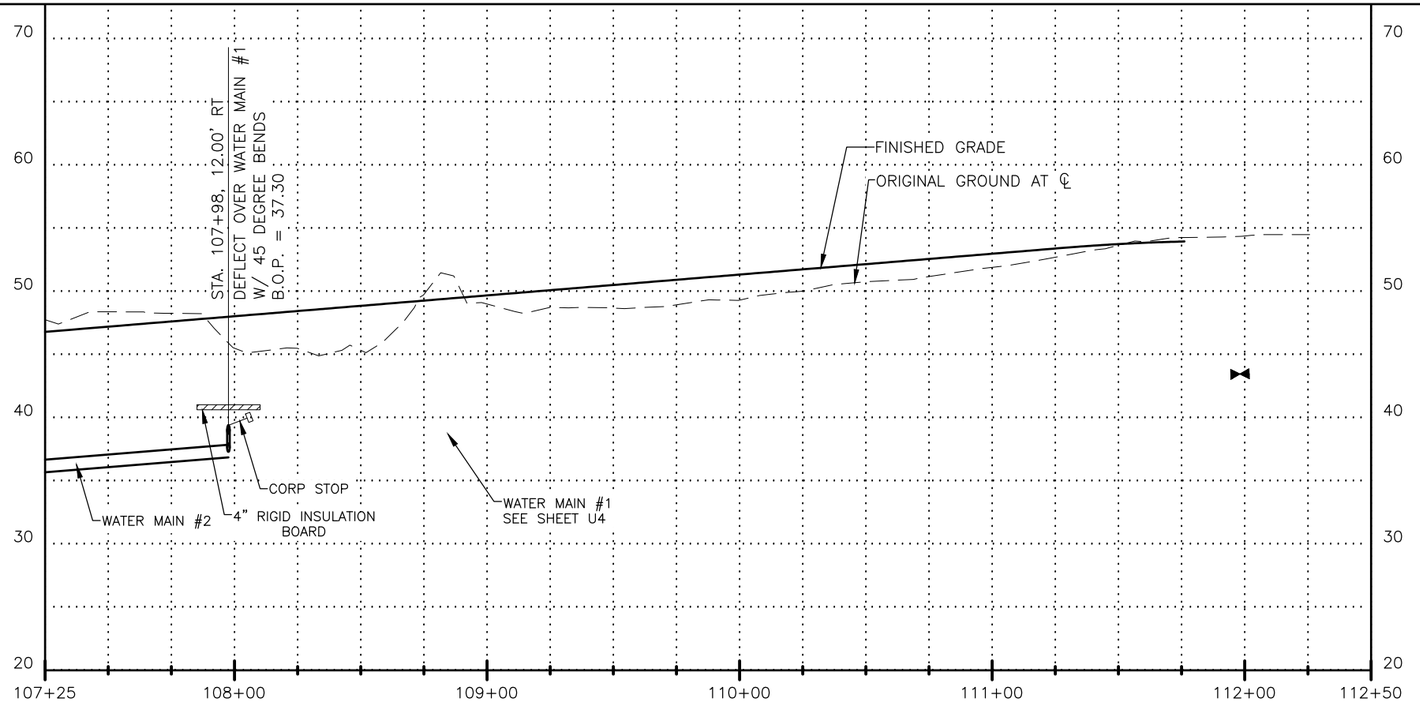
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

WELL AND TANK
WATER MAIN #2
PLAN AND PROFILE
BOP TO STA 107+25





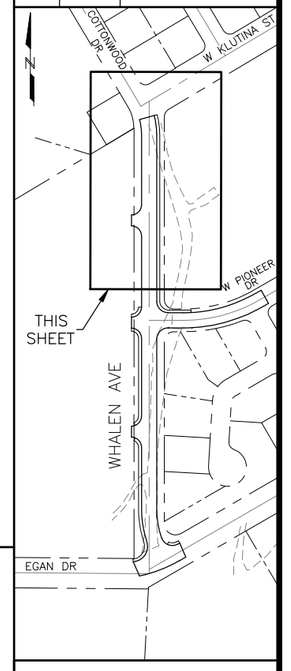
SHEET NO.	TOTAL SHEETS
U7	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



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CITY OF VALDEZ

WHALEN AVENUE

WELL AND TANK
WATER MAIN #2
PLAN AND PROFILE
STA 107+25 TO EOP

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION	SCALE	LAYOUT U7	4/27/2022 10:36 AM	DRAFTED BY BRIAN.LEWIS

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PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
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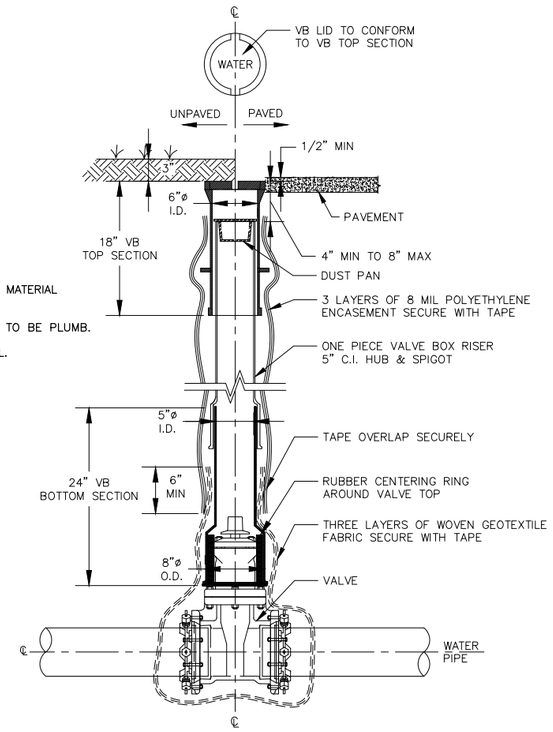
LAYOUT U8
SCALE
DRAFTED BY PETER.MAMROL



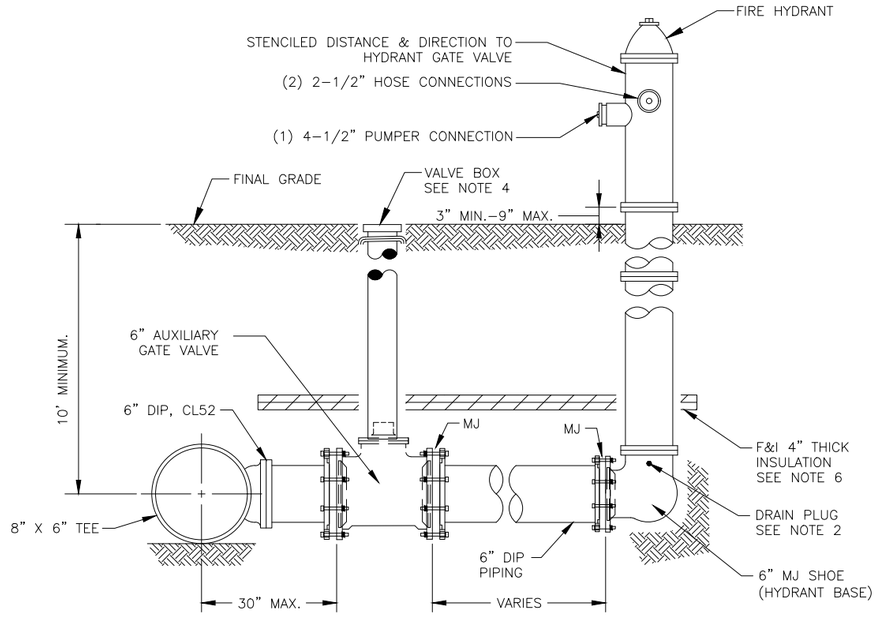
NOTES:

1. SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. VALVE BOX ASSEMBLY IS TO BE PLUMB.
3. DIMENSIONS ARE NOMINAL.

VALVE INSTALLATION NOTES:

1. LID AND TOP SECTION SHALL BE MUELLER MVB DUCTILE IRON ADJUSTABLE TOP OR APPROVED EQUAL.
2. EXTENSION PIECE AND BASE SECTION SHALL BE MUELLER MVB COMPOSITE OR APPROVED EQUAL.
3. VALVE BOX DUST PAN SHALL BE THE PRODUCT OF THE VALVE BOX MANUFACTURER.
4. FURNISH AND INSTALL RUBBER GASKET/NSF 61 BETWEEN ALL FLANGES.

TYPICAL VALVE BOX (VB)
NTS



HYDRANT INSTALLATION NOTES:

1. HYDRANT BARREL SHALL BE INSTALLED PLUMB AND THE LEG SHALL BE INSTALLED LEVEL.
2. DRAIN PLUG SHALL BE INSTALLED BY CONTRACTOR.
3. ALL HYDRANTS SHALL BE PAINTED RED.
4. AUXILIARY GATE VALVE & VALVE BOX SHALL BE INSTALLED TO ELEVATION ACCORDING TO DETAIL FOR TYPICAL VALVE & VALVE BOX ASSEMBLY.
5. FURNISH AND INSTALL RUBBER GASKET/NSF 61 BETWEEN ALL FLANGES.
6. 4" (R-20 EQUIVALENT) EXTRUDED POLYSTRENE, 60 PSI, RIGID BOARD INSULATION. 4' WIDE CENTERED OVER THE PIPE WITH STAGGERED INSULATION SEAMS. INSTALL ENTIRE LENGTH FROM THE MAIN TO THE HYDRANT SHOE, INCLUDING AROUND THE VALVE BOX BASE AND EXTENSION.

SINGLE PUMPER 'L' BASE HYDRANT ASSEMBLY DETAIL
NTS

SHEET NO.	TOTAL SHEETS
U8	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

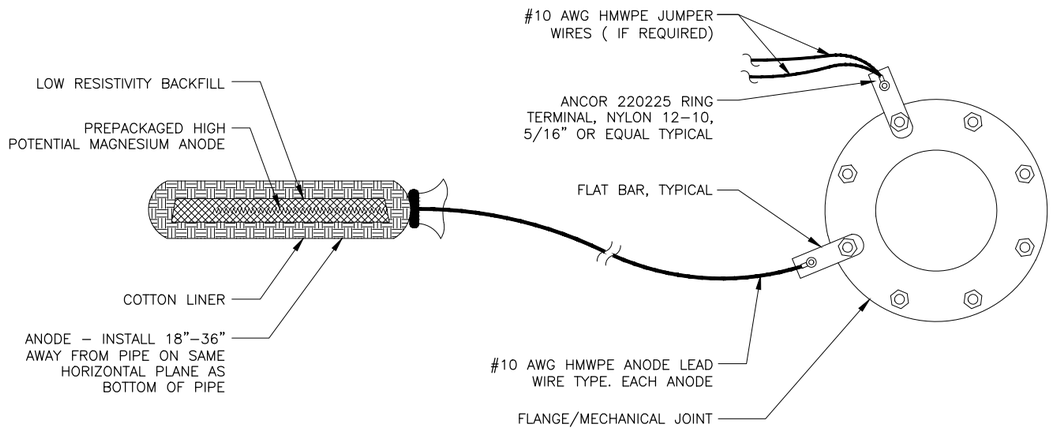
95% PS&E REVIEW

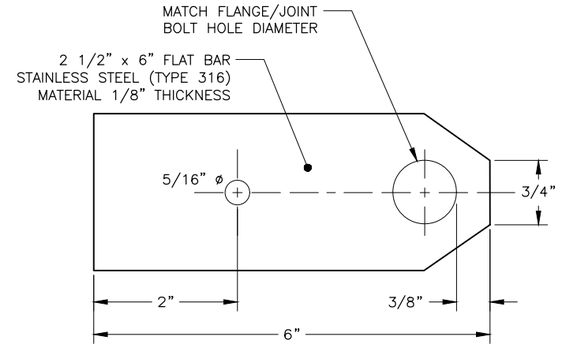
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

WATER MAIN DETAILS





ANODE WIRE CONNECTION DETAIL

NTS

ANODE WIRE CONNECTION NOTES:

1. CONTRACTOR TO FABRICATE FLAT BAR.
2. INSTALL FLAT BAR ON BODY SIDE OF FLANGE OR MECHANICAL JOINT. REMOVE COATING AT THE FLAT BAR LOCATION PRIOR TO INSTALLATION. METAL TO METAL CONTACT IS REQUIRED. REPAIR VISIBLE COATING DAMAGE WITH DENSYL TAPE AND PRIMER.
3. CONNECT WIRE WITH COMPRESSION RING CONNECTOR AND 1/4 ø x 1" STAINLESS STEEL BOLT (TYPE 316) WITH WASHER AND SELF LOCKING NUT.
4. TWO #10 AWG HMWPE JUMPER WIRES REQUIRED TO CONNECT EACH VALVE/HYDRANT.
5. WRAP ELECTRICAL INSULATION TAPE AROUND RING CONNECTOR AND BOND STRAP (WIRE END ONLY). DENSYL TAPE OR APPROVED EQUAL.
6. WRAP ELECTRICAL INSULATION TAPE A MINIMUM OF 3" DOWN ON WIRE INSULATION TO ENCAPSULATE CONNECTION.

SHEET NO.	TOTAL SHEETS
U9	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION

PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

95% PS&E REVIEW

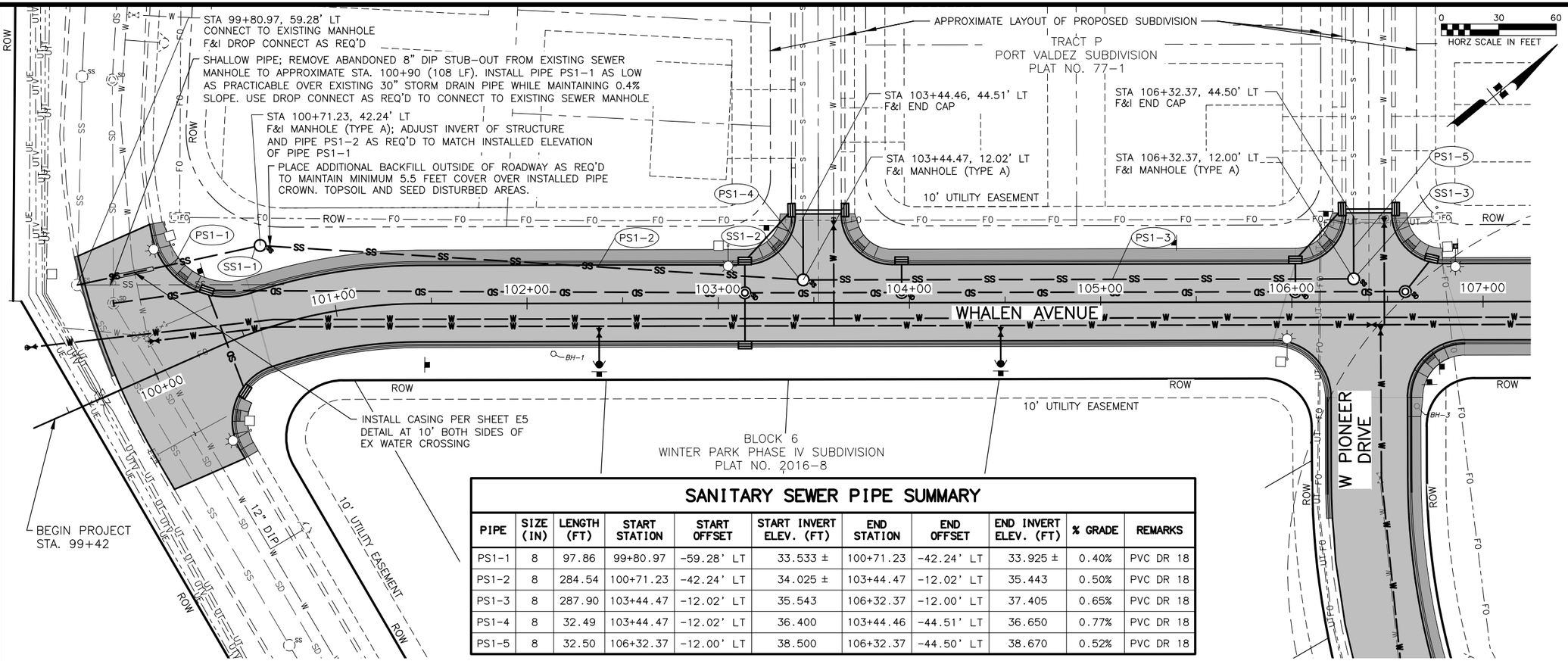
4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

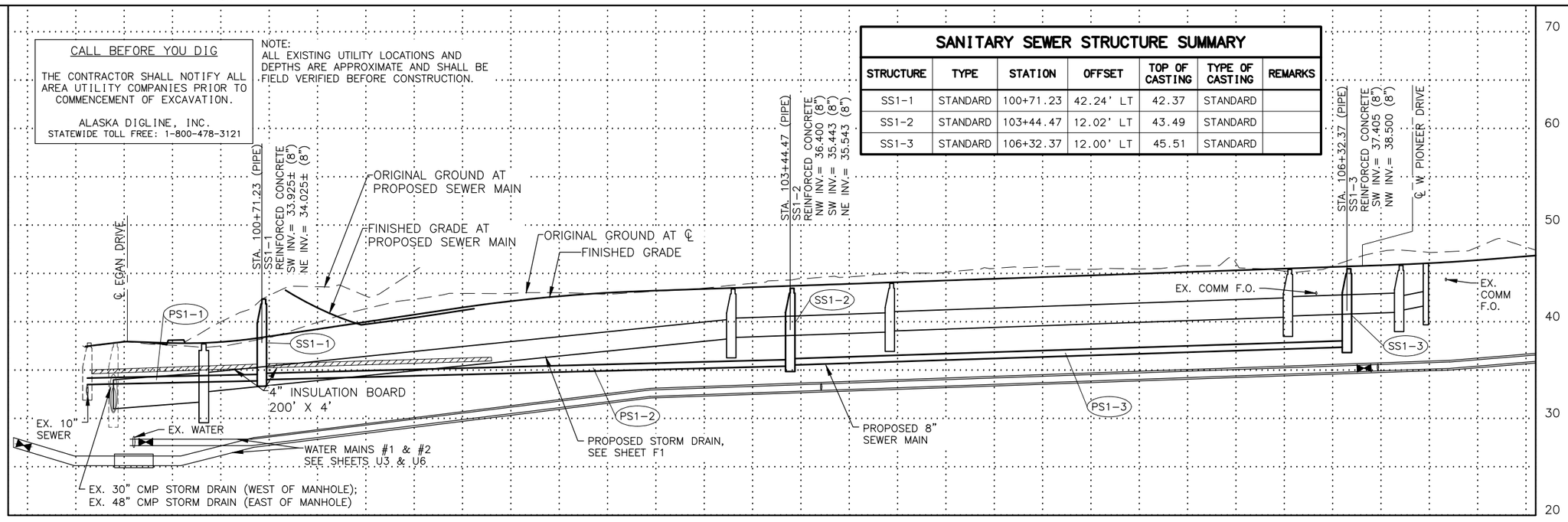
UTILITY DETAILS

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK
DRAWING LOCATION
Z:\PROJECTS\00458_whalen ave improvements\DWGS\C\Sheets\1200_U8-U9_WATR DETAILS.dwg
2/10/2022 7:04 PM | LAYOUT U9 | SCALE | DRAFTED BY PETER.MAMROL



SANITARY SEWER PIPE SUMMARY

PIPE	SIZE (IN)	LENGTH (FT)	START STATION	START OFFSET	START INVERT ELEV. (FT)	END STATION	END OFFSET	END INVERT ELEV. (FT)	% GRADE	REMARKS
PS1-1	8	97.86	99+80.97	-59.28' LT	33.533 ±	100+71.23	-42.24' LT	33.925 ±	0.40%	PVC DR 18
PS1-2	8	284.54	100+71.23	-42.24' LT	34.025 ±	103+44.47	-12.02' LT	35.443	0.50%	PVC DR 18
PS1-3	8	287.90	103+44.47	-12.02' LT	35.543	106+32.37	-12.00' LT	37.405	0.65%	PVC DR 18
PS1-4	8	32.49	103+44.47	-12.02' LT	36.400	103+44.46	-44.51' LT	36.650	0.77%	PVC DR 18
PS1-5	8	32.50	106+32.37	-12.00' LT	38.500	106+32.37	-44.50' LT	38.670	0.52%	PVC DR 18



SANITARY SEWER STRUCTURE SUMMARY

STRUCTURE	TYPE	STATION	OFFSET	TOP OF CASTING	TYPE OF CASTING	REMARKS
SS1-1	STANDARD	100+71.23	42.24' LT	42.37	STANDARD	
SS1-2	STANDARD	103+44.47	12.02' LT	43.49	STANDARD	
SS1-3	STANDARD	106+32.37	12.00' LT	45.51	STANDARD	

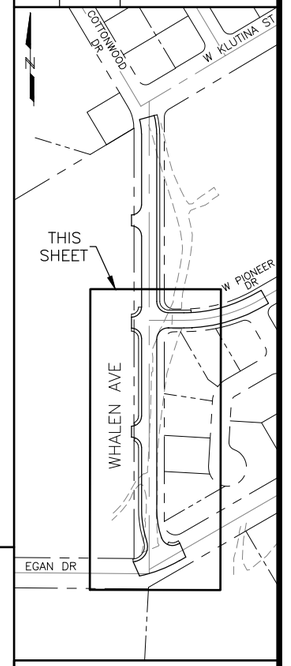
SHEET NO.	TOTAL SHEETS
U10	U10

ADDENDUM NO.

ATTACHMENT NO.

REVISIONS

NO.	DATE	DESCRIPTION



PLANS DEVELOPED BY:
KINNEY ENGINEERING, LLC
FOR
CITY OF VALDEZ, ALASKA

CITY OF VALDEZ, ALASKA
OPPORTUNITIES IN EVERY SEASON

95% PS&E REVIEW

4/28/2022

CITY OF VALDEZ

WHALEN AVENUE

SANITARY SEWER PLAN AND PROFILE

DRAFTED BY: BRIAN.LEWIS
SCALE:
LAYOUT: U10
4/27/2022 1:16 PM

PLANS PREPARED BY: KINNEY ENGINEERING, LLC 3909 ARCTIC BLVD. SUITE 400 ANCHORAGE, AK 99503 : COA# AECL 1102 : PROJECT LOCATION: VALDEZ, AK

DRAWING LOCATION
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City of Valdez
Modifications and Additions to the Standard Specifications

Project: Pavement Management Phase II – Whalen Avenue

Project Number: 20-310-1200 / Contract Number: 1801

Table of Contents

City of Valdez
Modifications and Additions to the Standard Specifications

Project: Pavement Management Phase II - Whalen Avenue

Project Number: 20-310-1200 / Contract Number: 1801

DIVISION 10 STANDARD GENERAL PROVISIONS

SECTION 10.04 SCOPE OF WORK

Article 4.13 Street Closures

Add the following:

The Contractor may request full road closures, lane closures, and major traffic sequencing events. The Contractor's request must be submitted to the Engineer in writing a minimum of 14 working days before the planned event. The request shall include a description of the proposed event, the event date, and a proposed Traffic Control Plan (TCP) for the event. TCPs shall meet the requirements of Section 70.15, Traffic Maintenance. The Contractor shall allow 7 days for the Engineer to review any proposed event or subsequent changes/corrections and shall not begin the event before written approval is given.

The Contractor shall maintain access to residents and businesses throughout construction.

The Contractor shall provide and maintain a continuous pedestrian and bicycle route along W. Egan throughout construction.

Unless otherwise determined by the Engineer and on an approved TCP, do not restrict traffic during the times listed below:

1. Monday through Friday: 0530 hrs to 0800 hrs and 1630 hrs to 1900 hrs.

2. Around any Holiday:

    a. If a holiday falls on Sunday, Monday, or Tuesday, the above stipulations apply from 1200 hrs on the Friday before the holiday to 0300 hrs on the day after the holiday.
    b. If a holiday falls on Wednesday, the above stipulations apply from 1200 hrs on the Tuesday before the holiday to 0300 hrs on the Thursday after the holiday.
    c. If a holiday falls on Thursday, Friday, or Saturday, the above stipulations apply from 1200 hrs on the day before the holiday to 0300 hrs on the Monday after the holiday.

3. During planned events including but not limited to Relay for Life and Gold Rush Days.

Unless otherwise determined by the Engineer and on an approved TCP, lane restrictions needed to construct water, sanitary sewer and storm drain shown in the drawings may not exceed the following:

1. Open Trench Water, Sewer, Storm Drain: Continuous four hundred (400) linear feet measured along the centerline of the trench as specified in Section 20.07.

Article 4.14 Maintenance and Drainage

Add the following:

For dust and mud control, the Contractor shall maintain all excavations, embankments, stockpiles, access roads, waste areas, borrow areas, and all other Work areas free from excess dust and mud to avoid causing a hazard or nuisance to others.

The Contractor shall provide water or other dust palliatives and appropriate distribution equipment as required for dust control on their haul roads and Work areas. The Contractor shall assure that all loose material and debris has been removed from haul vehicles prior to their leaving or entering the site to minimize spills of material on road surfaces.

All existing paved areas and roadways adjacent to the project construction site or used as haul roads, shall be kept clean of dirt, mud, and debris resulting from the Contractor's Work during the construction period as directed by the Engineer.

Dust and mud control are subsidiary to the 70.15 Traffic Maintenance pay item.

Article 4.15 Utilities

Add the following:

The Contractor shall coordinate work with CVEA and show it in the project schedule submitted at the preconstruction conference, in successive progress schedules, in the Storm Water Pollution Prevention Plans (SWPPP), and on Traffic Control Plans.

Add the following new article:

Article 4.21 Work Incidental to the Contract

Certain items of Work, not covered in the Bid Proposal, are incidental to the cost of the Contract. These items shall include, but are not limited to, the following:

1. Locating and verifying utilities.

2. Shoring utility and power poles and protecting overhead and underground utilities.

3. Removing and replacing concrete barriers.

4. Providing safe hauling routes for transporting excavation material, classified fill, other construction materials, and site access.

5. Dewatering roadway excavation and pipe trenches, unless payment is provided elsewhere.

6. Resetting disturbed property corners or monuments.

7. Removing and reinstalling manholes and catch basins unless identified as a bid item.

8. Removing and replacing storm drain and subdrain pipes and cleanouts unless identified as a bid item.

9. Removing and delivering salvaged electrical equipment.

10. Furnishing and installing bonding and grounding conductors for electrical installations unless identified as a bid item.

11. Performing post-construction cleanup.

12. Reimbursing utilities for associated inspection or relocation.

13. Furnishing and placing asphalt for tack coat unless identified as a bid item.

14. Saw-cutting.

15. Repairing existing infrastructure outside of demolition limits damaged by Contractor.

16. Protecting in place, working around, or removing and resetting items noted as such in the Drawings.

17. Exposing, protecting, and working around existing utilities not designated for temporary relocation.

18. Furnishing and installing ground rods and ground rod clamps.

19. Providing and utilizing as required, appropriate spill response materials for the types and quantities of hazardous materials transported.

20. Providing and utilizing trench shields.

21. Furnishing and installing Fiber Roll, Silt Fence or other BMPs, as required.

22. Furnishing and installing connections to existing storm drain, unless identified as a bid item.

23. Removing trees, as necessary to perform the Contract Work.

24. Applying for and receiving approval from the utility company for respective shoring and other utility support and protection techniques to be employed. The Contractor shall be responsible for all costs associated with the support and protection of all existing utilities within the project corridor during construction.

25. Removing and replacing, prior to construction completion, Mulch or Shredded Bark used in place of topsoil.

26. Removing and replacing, prior to construction completion, cobbles used in place of topsoil and seed.

27. Installing flexible delineators at the end of culverts, ends of retaining walls, field inlets, and other locations that may be hazardous or should be delineated for snow removal operations as determined by the Engineer.

28. Performing Work required for other items indicated on the drawings or in these specifications, but not specifically listed as a Bid Item in these Contract documents.

SECTION 10.05 CONTROL OF WORK

Add the following Article:

Article 5.34 Work Plan

The Contractor shall submit a project Work Plan for approval by the Engineer within 7 days after the Contract documents are fully executed. The Contractor shall coordinate the Work Plan with the Traffic Control Plan and the Construction Progress Schedule. Work shall not proceed until the Engineer has approved the Work Plan in writing.

Work Plan shall at a minimum address the following:

1) The Contractor shall divide the improvements into major phases including water, sewer, storm drain, and roadway. Use short duration single lane closures if needed for any lane closures for pavement demolition, grading, shoulder work, and paving operations. Maintain two-way traffic when feasible. When two-way traffic cannot be maintained one lane of flagger-controlled traffic shall be provided. See Section 70.15 for additional traffic control requirements

   No deviation from the phasing plan is allowed unless contractor proposes and receives written approval for an alternate Phasing Plan from the Engineer. If an alternate phasing plan is developed it is required to meet the following objectives:

   a. Phasing shall be planned so that at least one point of access remains unimpeded for residents and emergency vehicles.

   b. Customers, commercial delivery vehicles, and emergency vehicles shall have uninterrupted access.

2) The location and duration of full road closures, lane closures, and major traffic sequencing events for each phase.

3) Signage & Detour Routes for work zones and phasing shall be developed by the Contract as part of the Traffic Control Plan.

4) Coordination with any and all construction projects in the immediate area.

SECTION 10.07 MEASUREMENT AND PAYMENT

Delete Article 7.1 Method of Measurement in its entirety and replace with the following:

Article 7.1 Method of Measurement

All Work completed under the Contract shall be measured by the Engineer using United States Customary system of measure. The cost of the weighing system will be subsidiary to the material being measured.

When any vehicle delivers to the project classified fill or backfill of any kind, bedding material, leveling course, pavement materials, or any other material measured by weight, the driver of the vehicle shall give to the inspector a legible original computer-generated or machine-printed weight ticket.

The weight shall be measured using one of the following methods:

a. Commercial Weighing system. Permanently installed and certified commercial scale that meets the requirements for the project weighing system.

b. Project Weighing System. Approved automatic digital scale and scale house. All scales are subject to approval according to the Weights and Measures Act, AS 45.75.

Spring balances and belt conveyor scales shall not be used to determine pay weight. The Contractor may use proportioning (batch) scales for weighing material for payment when the batching equipment includes an approved and certified automatic weighing, cycling, and monitoring system.

Weigh scales used with a storage silo may be used to weigh the final product for payment, provided the scales are approved and certified.

Vehicle scales shall be maintained with the platform level and rigid bulkheads at each end. The platform must be long enough to permit simultaneous weighing of the hauling vehicle including coupled vehicles, in a single draft. Double draft weighing is not allowed.

Scale Requirements. The Contractor shall:

(1) Ensure that vehicle scale(s) are installed and maintained to the standards listed in the National Institute of Standards and Technology (NIST), Handbook 44, Specifications, Tolerances and other Technical Requirements for Commercial Weighing and Measuring Devices, as adopted by AS 45.75.050(d);

(2) Contact the Division of Measurement Standards/Commercial Vehicle Enforcement (MSCVE) to coordinate scale inspections before use, at required intervals or as directed by the Engineer, and for clarification or possible exceptions to this section.

(3) Ensure that a weatherproof housing is provided to protect the scale indicating/recording equipment and allows the scale operator convenient access to the weigh indicator, scale computer, ticket printer, and sequential printer;

(4) Use competent personnel to operate the scale system.

(5) Furnish and maintain on-site, NIST Class-F cast iron test weights in denominations of 500lb and/or 1000lb. The required minimum for vehicle scales is 4000lbs; the required minimum for hopper scales is 2000lb. Test weights shall have a recognized calibration certificate on file which is dated no more than two years from date of Notice to Proceed. Test weights will be used as directed by the Engineer or MSCVE for initial accuracy calibration testing and may be used for subsequent scale testing or inspection. Projects accessible by direct road access from the communities identified on the dot.alaska.gov/mscve website, 5 days before bid opening, are exempt from the requirement to furnish and maintain on-site test weights;

(6) Provide the following information on any scale used to weigh materials for payment:

(a) Owner of the scales and scale locations;

(b) Manufacturer's name, model serial number, maximum capacity, and type of scales (single beam, double beam, self-reading, etc.)

(c) Date(s) the scales were installed and/or adjusted;

(d) Scale service company inspections and accuracy checks (attach copy);

(e) Division of Measurement Standards inspections and accuracy checks (attach copy); and

(f) Time and dates of notification of any malfunctions

Electronic Computerized Weighing System. The Contractor shall use an electronic computerized weighing system (ECWS) with the following minimum capabilities:

(1) Computer. A computer with a self-reading scale system that includes the scale load cell, a sealed direct reading weight indicator, scale computer, ticket printer, and sequential printer, and that can record a complete shift's transaction in an electronic format approved by the Engineer.

The computer must store project numbers, all pay item descriptions for multiple projects and products that are weighed, and the following information for each hauling vehicle used on the project:

(a) Vehicle identification number marked on the vehicle;

(b) Tare weight; and

(c) Maximum allowable gross vehicle weight (MAVW).

During weighing operations, the ECWS must compare each vehicle's gross weight to its MAVW. If the vehicle exceeds its MAVW, the system must alert the scale operator that an "overload" exists. The system must not issue a ticket for an overload.

The computer must have a battery backup and protection for power surges or brown outs. The computer system must retain all stored data during a power outage and must operate during a power outage to allow the scale operator to shut down the hard drive without losing information.

(2) Tickets. The ECWS must have a ticket printer that prints a legible, serially numbered weigh ticket for the Engineer with the following information on each ticket in the order listed:

(a) Project number;
(b) Item number and description;
(c) Date weighed;
(d) Time weighed;
(e) Ticket number;
(f) Vehicle Identification Number;
(g) Maximum allowable gross vehicle weight, as permitted by Valdez City Code Sections 10.04.040;
(h) Gross weight;
(i) Tare weight;
(j) Net weight;
(k) Pit location and name of scale operator;
(l) Subtotal item net weight for each haul unit since start of shift; and
(m) Accumulated item net weight for all haul units since start of shift.

Tickets must show all weights in pounds in accordance to NIST Handbook 44, and in tons reported to two decimal places. The City will not pay for the portion of the load in excess of the legal gross weight.

After printing, the weigh ticket must automatically advance to a perforation so it can be torn off and handed to the driver. Each ticket shall be initialed by the scale operator before handoff to the driver.

(3) Sequential Printer. A sequential printer that prints out all transactions (keystrokes) made by the computer concurrently with the ticket printer. For permanent commercial scales, the printer may print at the end of the company's daily shift with the Engineer's approval. The printer must print all scales transactions including tares, voided tickets, and data changes made by the scale operator. The printer must allow for advancing the paper manually so that the scale operator can write notes on the paper when special situations occur, such as voided tickets, incorrect vehicle identification number used, etc. The scale operator shall also note these special situations in the Scales Diary.

The sequential printout shall be submitted to the Engineer at the end of each shift.

(4) Data Files. Submit electronic data files to the Engineer at the end of each shift, with all ticket information produced during the shift recorded. These Data files must be complete and correct without conversion or manipulation.

(5) Scale Diary. The scale operator shall keep a Scale Diary in an electronic format acceptable to the Engineer. The scale operator shall complete the Scale Diary with the following information: dates of action, type of material, source, time the scale opened and time the scale closed, times of scale balance, ticket sequence, time the haul for each material started and stopped, voided ticket numbers, vehicle identification numbers, times of tare and tare weights, and the scale operator's signature. The Scale Diary shall include the following information on any scale used to weigh materials for payment:

(a) Owner of the scales and scale locations;

(b) Manufacturer's name, model serial number, maximum capacity, and type of scales (single beam, double beam, self-reading, etc.);

(c) Date(s) the scales were installed and/or adjusted;

(d) Scale service company inspections and accuracy checks (attach copy);

(e) Division of Measurement Standards inspections and accuracy checks (attach copy); and

(f) Time and dates of notification of any malfunctions.

The Scale Diary shall be given to the Engineer at the end of each shift. The Scale Diary is the property of the City.

The Contractor shall adhere to the following Weighing Procedures:

The scale operator shall tare hauling vehicles and record tare weights at least once daily; perform additional tares and record additional tare weights as directed by the Engineer; perform tares in the presence of the Engineer when requested; and ensure that each hauling truck displays a unique, legible identification mark.

The Engineer will calculate the MAVW for each vehicle and list all vehicles and their MAVW(s) in the scale house. The MAVW is either the maximum allowable legal weight determined by the Engineer when the Contractor cannot haul overloads, or the manufacturer's recommended maximum allowable gross vehicle weight as certified by the Contractor when vehicles are allowed to haul overloads at the direction of the Engineer. Only MAVWs that the Engineer has provided in writing shall be used. Tickets may not be issued to a vehicle until the Engineer provides the MAVW.

No payment will be made for any material weighed without using the ECWS, unless the Contractor obtains the Engineer's prior written authorization. If the ECWS malfunctions or breaks down, weights shall be manually weighed and recorded for up to 48 hours as directed by the Engineer. The manual weighing operation shall meet all other Contract requirements.

The system must generate a report either during or at the end of the day or shift that summarizes the number of loads and total net weight for each date, project, and product. The scale operator shall submit the original report to the Engineer at the end of each shift.

No payment for any hauled material on a given date will be made until the following are delivered to the Engineer:

a. Sequential printout;

b. Daily data; and

c. Scale Diary.

The Contractor will not receive payment for any material hauled in a vehicle that does not conform to the requirements of 17 AAC 25, the State of Alaska Administrative Permit Manual, and this Article. The Contractor shall dump material from non-conforming vehicles until they conform, then reweigh the vehicles.

When a weighing device indicates less than true weight, the Contractor will not receive additional payment for material previously weighed and recorded. When a weighing device indicates more than true weight, all material received after the last previously correct weighing accuracy test will be reduced by the percentage of error that exceeds 0.5 percent.

If the Engineer incurs extra construction engineering expenses from checking non-machine data entries or other data irregularities, the total value of those expenses will be deducted from the value of the Contract item before payment.

The Contractor shall accept natural variations in the specific gravity of aggregates, without adjustment in Contract unit price

Article 7.5 Progress Payments

Add the following:

Any request for payments for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for payment by Jan. 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

Article 7.7 Final Payments

Add the following:

Any request for final payment for work accomplished within the calendar fiscal year (January 1st to December 31st) must be received by the city no later than January 31st of the following year. Failure to provide a request for final payment by January 31st for work accomplished the previous year will delay payment. Failure to provide a request for payment by January 31st for work accomplished the previous year will be subject to a penalty. Penalty may be assessed at a minimum of $1000 and up to 5% of the invoice not to exceed $10,000.

Add the following new Section:

SECTION 10.08 VALUE ENGINEERING CHANGE PROPOSALS BY CONTRACTOR

Article 8.1. Purpose and Scope.

The purpose of this section is to encourage the Contractor to propose changes to Contract designs, materials, or methods based on the Contractor's experience and ingenuity. The Value Engineering Change Proposals (VECPs) contemplated are those that may result in immediate savings to the City under this Contract without impairing essential functions and characteristics of the Project, including, but not limited to: service life, economy of operation, ease of maintenance, desired appearance, and safety. Cost savings on this project resulting from VECPs offered by the Contractor and accepted by the City shall be shared equally between the Contractor and the City.

Article 8.2 Submitting Proposals

The Contractor shall submit all VECPs in writing. The Contractor shall submit the following with each VECP:

1. A statement that the proposal is submitted as a VECP under this Section;

2. A description of the difference between the existing Contract requirements and the proposed change, stating the comparative advantages and disadvantages of each, including effects on service life, economy of operations, ease of maintenance, desired appearance, and safety;

3. Drawings or specifications that show the proposed revisions relative to the original Contract requirements. The Contractor may submit schematics for conceptual approval of the proposal;

4. A detailed and complete cost estimate comparing the original estimated costs for performing the work under the existing Contract and under the proposed VECP;

5. A summary of the Contractor's development costs for the VECP, including costs for designing, testing, preparing, and submitting the VECP;

6. A description and estimate of added costs the City may incur in implementing the VECP, such as review, testing, and evaluation of the VECP and Contract administration costs;

7. A date by which the City must make a decision to obtain the cost savings projected in the VECP. The date identified must allow a reasonable time for the City to conduct an adequate review and evaluation of the VECP and process a Change Order without affecting the Contractor's schedule. At a minimum the date must allow the City three (3) weeks to review the submittal;

8. A statement of the probable effect the VECP would have on the Contract completion time. The City's approval of the VECP shall not change the Contract completion date unless a change to the completion date is specifically provided for in the Change Order authorizing the VECP; and

9. A description of any previous use or testing of the proposed change and the conditions and results. If the proposal was previously submitted on another City project, indicate the date, project name and number, and the action taken by the City.

Article 8.3 Submittal Conditions

VECPs will be considered only when all of the following conditions are met:

1. The Contractor has not based any bid prices on the anticipated acceptance of a VECP. If the VECP is rejected, the Contractor shall complete the work at the Contract prices.

2. VECPs, regardless of their approval status, become the property of the City. The Contractor shall submit VECPs without use or disclosure restrictions. The City shall have the right to use, duplicate, or disclose the VECP and any data necessary to use the VECP on the Project, on any other project, and on any other Contracts. The Contractor shall identify any trade secret information, patented materials, or proprietary processes that restrict use of the VECP.

3. The City is the sole judge as to whether a VECP qualifies for consideration and evaluation. It may reject any VECP that does not allow a reasonable time for adequate review and evaluation by the City or that requires excessive time or costs for review, evaluations, or investigations, or which is not consistent with the City's design standards and policies, safety considerations, land use restrictions, permit stipulations, right-of way limitations, or other essential criteria for the project. The City may reject a VECP without obligation to the Contractor if it contains proposals that are already under consideration by the City or that have already been authorized for the Contract.

4. If additional information is needed to evaluate a VECP, the Contractor shall provide it in a timely manner. Failure to do so may result in rejection of the VECP.

5. The Contractor may submit VECPs for an approved subcontractor if the City makes reimbursement to the Contractor.

6. If the Contractor hires a design professional to prepare the proposal, they must be registered in the State of Alaska. That professional must seal the documents and provide evidence of Professional Liability Insurance with limits acceptable to the City.

7. The Contractor shall not implement proposed changes before the City accepts the VECP.

8. The City shall not consider VECPs to share in cost savings due to changes previously ordered or authorized under other Contract sections or for work already done.

9. The Engineer will reject all unsatisfactory work resulting from an accepted VECP. The Contractor shall remove all rejected work or materials and shall reconstruct the work under the original Contract at the Contractor's sole expense under Section 10.05.

10. Reimbursement for modifications to the VECP to adjust field or other conditions is limited to the total amount of the original Contract bid prices.

11. The City shall not be held liable for costs or delays due to the rejection of a VECP, including but not limited to the Contractor's development costs, loss of anticipated profits and increased material, or labor or overhead costs.

Article 8.4 Proposal Processing.

1. The Engineer shall accept or reject the VECP, in writing, by the date the Contractor specifies, unless extended by mutual consent. If rejected, the Engineer will explain the reasons for rejection. A VECP may be rejected if the Contractor allows the City insufficient time to adequately review and evaluate it.

2. The Contractor may withdraw or modify a VECP at any time before it is accepted.

3. If the VECP is approved in concept (without final drawings and specifications), the City may either undertake the re-design itself or issue the Contractor a limited notice to proceed, subject to mutual agreement, authorizing the final design. The notice to proceed will include reference to any pertinent design criteria, City policies, and other limitations on the design or construction methods. Approval in concept does not constitute acceptance of the VECP and will not obligate the City to accept or pay for the final design.

4. If the final VECP is accepted, the Engineer will issue a Change Order under Section 10.05 incorporating the VECP into the Contract. The Change order will establish a new lump sum pay item, VECP Incentive, for the division and sharing of net savings.

Article 8.5 Payment

If the City accepts the VECP, payment will be authorized as follows:

1. The City will make a direct payment for the changed work at the unit or lump sum agreed prices in the Change Order. Such prices will include reimbursement of the Contractor's costs to develop and submit the VECP, including overhead and profit.

2. In addition, the City will share the net savings with the Contractor in a separate lump sum contract item, VECP Incentive. The amount of the VECP incentive will be equal to 50 percent (50%) of the net savings to the City. The net savings are the difference between the original Contract price for the affected work and the cost of the revised work. For the purpose of this calculation, the cost of the revised work will include costs the City may incur as a result of the VECP, such as review of the proposal, testing and evaluation, and added Contract administration costs. These costs will be estimated and agreed to in the Change Order.

3. The VECP Incentive will be paid on a prorated basis as the revised work is performed.

Add the following New Section:

SECTION 10.09 INTERIM WORK AUTHORIZATION

Article 9.1. Description.

The work under this section consists of the performance of work under an authorized directive. Directives are agreements from the field inspector and/or Engineer to the contractor that identify changes and additions of work necessary to complete the job. This item is to help facilitate payment of changes before the change orders are complete through the City system. Directives are needed to continue work flow on extra work within the original scope of work negotiated between the City and the contractor, additions to

quantities listed in the current bid schedule with the contract agreed unit prices, and value engineering brought forth to the City that is in the benefit of the City.

Article 9.2. Method of Measurement.

Method of measurement for this item shall be contingent sum for all labor, materials, and equipment required to complete work as directed by the Engineer.

Contingent Sum. Authorized additions of existing unit prices items, agreed lump sum amounts, and possible addition of items not on the current bid schedule with agreed fair unit prices.

Article 9.3. Basis of Payment.

Payment for the Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07 Measurement and Payment, of this Specification, and shall include full payment for all Work described in this Section.

Payment will be made under the following unit:

Pay Item	Pay Unit
Interim Work Authorization	Contingent Sum

Add the following New Section:

SECTION 10.10 MOBILIZATION AND DEMOBILIZATION

10.1 Description

A. Move personnel, equipment, supplies, and incidentals to the project site;

B. Establish offices, buildings, and other facilities, except as provided under other sections;

C. Perform other work and operations and pay costs incurred, before beginning construction;

D. Complete similar demobilization activities; and

E. Furnish required submittals such as as-builts, O&M Manuals, certificates, payrolls, civil rights reports, and warranties.

10.2 General Requirements:

A. Comply with the Alaska Department of Labor and Workforce Development (DOLWD) requirements for Worker Meals and Lodging, or Per Diem; as described in their July 25, 2005 memo WHPL #197 (A2) and the State Laborer's and Mechanic's Minimum Rates of Pay (current issue). On Federal-aid projects, PL 109-59, 119 STAT. 1233, Sec. 1409(c) also applies.

B. Ensure subcontractors comply with the Federal and State DOLWD requirements.

C. Ensure facilities meet the Alaska Administrative Code 8 AAC 61.1010 and 8 AAC 61.1040 Occupational Safety and Health Standards, 18 AAC 31 Alaska Food Code, and U. S. Code of Federal Regulations 29 CFR Section 1910.142 Temporary Labor Camps.

D. Do not consider the cost of Meals and Lodging, or Per Diem in setting wages for the worker or in meeting wage requirements under AS 23.10.065 or AS 36.05.

10.4 Measurement

A. When 4% of the original contract amount from other bid items is earned, 40% of the amount bid for mobilization and demobilization, or 4% of the original contract amount, whichever is less will be paid.

B. When a total of 8% of the original contract amount from other bid items is earned, an additional 40% of the amount bid for mobilization and demobilization, or an additional 4% of the original contract amount, whichever is less, will be paid.

C. The remaining balance of the amount bid for Mobilization and Demobilization will be paid after all contract work is completed and approved and submittals required under the Contract are received and approved.

10.5 Basis of Payment

Payment will be made under:

ITEM	UNIT
Mobilization and Demobilization	Lump Sum

DIVISION 20 EARTHWORKS

SECTION 20.01 GENERAL

Add the following new Article:

Article 1.8 Excavation Plan

The Contractor shall submit an excavation plan to the Engineer a minimum of ten (10) days prior to the start of excavation activities. **The Contractor shall not begin work without an approved excavation plan. No payment on the contract shall be made without an approved excavation plan.** The excavation plan shall address, but not be limited to, the following:

1. Excavation methods and sequencing.
2. Dewatering - locations, methods, equipment, and water treatment.
3. Shoring – locations, methods, and equipment.
4. Traffic control as required in Section 70.15 Traffic Maintenance

Deviations from the plan shall be submitted to Engineer, for approval, a minimum of ten (10) days prior to the planned changed.

The excavation plan is subsidiary to work completed under Division 20 pay items and no separate payment will be made.

SECTION 20.04 EXCAVATION FOR TRAFFIC WAYS

Article 4.1 General

Add the following:

Test rolling for subgrade stability and uniformity determination is required. The contractor shall complete test rolling according to Section 20.40.

Article 4.7 Measurement

Add the following:

Test rolling is subsidiary to other items of work in this Section and will not be measured for separate payment.

Corrective action will be measured and paid for under pay items shown in the bid schedule.

SECTION 20.05 CLASSIFIED FILL AND BACKFILL

Delete this section in its entirety and replace with the following:

Article 5.1 General

The Work under this Section consists of performing all operations necessary to furnish, place, and compact classified fill and backfill.

Article 5.2 Material

Classified fill and backfill shall contain no lumps, frozen material, organic matter, or other deleterious matter, and shall be durable and sound. It shall have a plasticity index not greater than six (6) as determined by ASTM D-424 and shall conform to one of the following types as required by the Drawings and Specifications. The coarse aggregate material conforming to the requirements specified below shall have a percentage of wear not to exceed thirty (30) after five hundred (500) revolutions, as determined by the current requirements of ASTM C-131.

The portion of the material retained on a #4 sieve shall be known as coarse aggregate. Both coarse and fine aggregates shall conform to the quality requirements of AASHTO M-147.

L.A. Wear,%	AASHTO T 96	50, max.
Liquid Limit	ATM 204	25, max.
Plasticity Index	ATM 205	6, max.
Degradation Value	ATM 313	40, min.

A. Type II

Materials furnished by the Contractor for use as Type II classified fill and/or backfill shall be graded within the limitations delineated below:

Type II

U.S. Std. Sieve	Cumulative % Passing by Weight
4"	100
2"	85-100
1"	-
3/4"	-
#4	15-60
#16	-
#200	2-6

* In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than fifteen percent (15%) of that fraction passing the #4 sieve.

Type II. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the following gradation as tested by ATM 304:

Sieve	Percent Passing by Weight
No. 4	20-60%
No. 200	0-6%, determined on the minus 3-inch portion of the sample

B. Type II-A

Materials furnished by the Contractor for use as Type II-A classified fill and/or backfill shall be graded within the limitations delineated below:

Type II-A

U.S. Std. Sieve	Cumulative % Passing by Weight
2"	100
1"	-
3/4"	-
#4	15-60
#16	-
#200	0-6

* In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than twenty percent (20%) of that fraction passing the #4 sieve.

Type IIA. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the following gradation as tested by ATM 304:

Sieve	Percent Passing by Weight
No. 200	0-10% determined on the minus 3-inch portion of the sample

C. Type III

Materials furnished by the Contractor for use as Type III classified fill and/or backfill shall be approved sand or gravel with a maximum of ten percent (10%) passing the #200 sieve.

Article 5.3 Construction

The subgrade shall be cleared of all debris and organic material. All depressions or holes below the general area surface level, whether caused by removal of debris or unacceptable material, or otherwise, shall be backfilled with approved material and compacted to specified density and to a level, uniform surface before the placement of other layers. Embankment shall not be placed on frozen ground, nor on ground having a slope greater than one vertical to four horizontal (slope 1:4).

The specified material shall be constructed at the locations and to the lines and grades indicated on the Drawings. The material shall be placed and spread uniformly in successive layers not exceeding twelve inches (12”) in loose thickness. The Engineer may approve lifts of greater thickness provided the equipment and method used will consistently achieve the specified density. The layers shall be carried up full width from the bottom of the fill to avoid the necessity of widening the edges after the center has been brought to grade. Each layer shall be compacted to not less than ninety-five percent (95%) of the maximum density at optimum moisture as determined by the method of testing noted in Section 20.01, Article 1.5 – Compaction Standards. Reasonable time shall be provided the Engineer to make field density determinations prior to placement of successive layers of material. Finish the subgrade surface so it will not vary more than 0.10 foot when tested using a 10-foot straightedge nor vary more than 0.10 foot from the established grade.

Blading, rolling, and tamping shall continue until the surface is smooth, free from waves and irregularities, and conforms to elevations shown on the Drawings. If imported material is excessively wet contractor shall remove and replace material as directed by the engineer at no additional cost to the owner. If at any time the material becomes excessively wet, it shall be aerated by means of blade graders, harrows, or other suitable equipment until the moisture content is satisfactory. The surface shall then be compacted and finished as specified above.

Contractor shall submit a processing and blending plan to the Engineer for review and approval prior to utilization of classified fill or backfill from more than one source. The plan must be accompanied by materials analysis reports for each material source and fully describe how the material will be placed and blended to ensure that timely and accurate in-place density testing can be achieved.

The maximum dimensions of any particle of the embankment material shall not be greater than two-thirds (2/3) of the compacted thickness of the layer in which it is placed unless specified elsewhere. The top six inches (6”) of embankment material for roads, streets, parking lots, and bike trails, shall be Type II-A classified fill and backfill. Oversize material shall be removed. Portions of any layer in which the embankment material becomes segregated shall be removed and replaced with satisfactory material or shall be added to and remixed to secure proper gradation as directed by the Engineer. No separate payment will be made for any material removed or regraded in areas where material becomes segregated.

The Engineer may permit lifts in excess of twelve inch (12") thickness when classified fill or backfill is placed over swampy or saturated ground, or where he is satisfied that the Contractor's method and equipment will consistently produce the specified density.

Embankments for bike trail sections will be brought to grade in one (1) single lift for embankments less than eighteen inches (18”) to finish grade. Trail embankments over eighteen inches (18”) shall be brought to grade in lifts as directed by the Engineer.

Article 5.4 Measurement

Classified fill or backfill material, obtained from borrow pits, will be measured in tons (2000 lbs.) of material delivered and placed in accordance with these Specifications. The measurement may include moisture up to a maximum of four percent (4.0%) of dry weight of the material. When tests by the Engineer indicate that moisture contents in excess of four percent (4.0%) may be occurring consistently, the frequency of testing will be increased as necessary and the results averaged over a period of one week. When this average is greater than four percent (4.0%), the tonnage as measured over the above period, shall be reduced by the difference. No credit will be due the Contractor when moisture content is less than four percent (4.0%). Testing shall be done in accordance with Section 20.01, Article 1.3 – Applicable Standards.

Imported classified fill and backfill will be weighed on a scale certified by the State of Alaska. Weight tickets will be serialized and witnessed at the time of weighing by a Contractor-furnished weighman. The Engineer may at any time verify load weights and the weighing process.

Where excavation of unsuitable material beyond the lines and grades shown on the Drawings is ordered in writing, the measurement of classified backfill will include the material required for replacement. No measurement will be made for quantities placed beyond the lines and grade authorized or for quantities placed outside the limits of required excavation.

The Contractor and the Engineer shall verify daily the quantity of material delivered to the Project site. Weight tickets not presented at time of delivery will require special verification by the Contractor before payment can be made.

Article 5.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment for the placement and compaction of usable excavation shall not be paid under this Section.

Payment shall be made under the following units:

ITEM	UNIT
(Type) Classified Fill and Backfill	Ton

SECTION 20.06 LEVELING COURSE

Delete this section in its entirety and replace with the following:

Article 22.1 General

The Work under this Section consists of performing all operations necessary to complete construction of the leveling course on the prepared subbase.

Article 22.2 Material

The leveling course shall consist of crushed gravel, rock, sand, or other approved material. The aggregate shall be free from lumps, balls of clay, or other objectionable matter, and shall be durable and sound. The portion of the material retained on a No. 4 sieve shall be known as coarse aggregate. Both coarse and fine aggregates shall conform to the quality requirements of. ATM 304 (Method A) Sieve Analysis of Fine and Coarse Aggregates and Material Finer Than No. 200 Sieve in Mineral Aggregates by Washing. Meet AASHTO T 104 using sodium sulfate solution.

PROPERTY	BASE COURSE	SURFACE COURSE	TEST METHOD
L.A. Wear,%	50, max.	45, max.	AASHTO T 96
Degradation Value	45, min.	45, min.	ATM 313
Fracture,%	70, min.	70, min., 1 Face	ATM 305
Liquid Limit	---	35, max.	ATM 204
Plastic Index	6, max.	10, max.	ATM 205
Sodium Sulfate Loss,%	9, max. (5 cycles)	9, max. (5 cycles)	AASHTO T 104

Upon written approval by the Engineer, recycled asphalt concrete pavement (RAP) may be substituted for leveling course, on an inch for inch basis. All RAP shall conform to Division 40, Section 40.09 – Recycled Asphalt Pavement. RAP which has been derived from environmentally contaminated aggregates shall not be accepted.

A. Coarse Aggregate

The coarse aggregate material conforming to the requirements specified above shall have a percentage of wear not to exceed thirty-five (35) after five hundred (500) revolutions, as determined

by the current requirements of ASTM C-131. It shall consist of angular fragments reasonably uniform in density and quality, and reasonably free from thin and elongated pieces, dirt, and other objectionable material. At least fifty percent (50%) of the coarse aggregate particles shall have two or more mechanically fractured faces.

B. Fine Aggregate

The fine aggregate shall consist of material free of organic or other objectionable matter. The fine aggregate, either naturally combined with the coarse aggregate or separately obtained and mixed therewith, shall be of such character that the composite material will conform to the gradation and other requirements specified.

C. Gradation

The composite mixture of coarse aggregate and fine aggregate, processed as hereinafter specified, shall conform to the following gradation limits as required by the Drawings:

Leveling Course

U.S. Std. Sieve	Cumulative % Passing by Weight
1"	100
3/4"	70-100
3/8"	50-80
#4	35-65
#8	20-50
#50	6-30
#200	*0-6

*In addition to the grading limits stipulated above, fractions passing the #200 sieve shall not be greater than seventy-five percent (75%) of the fractions passing the #50 sieve.

Article 22.3 Construction

The leveling course shall be placed to the lines, grades, and thicknesses shown on the Drawings and shall consist of the materials hereinbefore specified. The leveling course shall provide a smooth stabilized surface on which to place the pavement.

A. Preparation of Subbase

Subbase preparation shall consist of dressing, shaping, wetting, and compacting of the subbase to a minimum density of ninety-five percent (95%) in accordance with Section 20.01, Article 1.5 - Compaction Standards. Surfaces shall be cleaned of all foreign substances and debris. Any ruts or soft yielding spots that may appear in the subbase surface shall be corrected by loosening, removing and adding approved material, reshaping, and recompacting the affected areas to the line, grade, and to the specified density requirements.

B. Surveying

Subbase and leveling course control stakes shall be wooden bluetops set to finish subbase. The subbase bluetops will be the reference used by the Contractor to set top of leveling course. Subbase bluetops shall be set at breaks in grade and on even grade at intervals not to exceed fifty feet (50’),

with additional stakes at vertical curves. Side control will be from the lip or gutter, or in the case of strip paving, additional bluetops shall be provided.

C. Placing

The approved leveling course material shall be deposited and spread in a uniform layer to the required contour and grades and to such loose depth that when compacted to the density required will achieve the specified thickness. The material shall be spread uniformly on the prepared subbase from moving vehicles or spreading boxes, then leveled to the required contour and graded with blade graders. Portions of the layer which become segregated in spreading shall be remixed to the required gradation.

D. Compacting

The leveling course shall be compacted to a minimum of ninety-five percent (95%) of maximum density. In all places not accessible to the rolling equipment, the mixture shall be compacted with tamping equipment. Blading, rolling and tamping shall continue until the surface is smooth and free from waves and inequalities. If at any time the mixture is excessively moistened by rain, it shall be aerated by means of blade graders, harrows or other approved equipment until the moisture content is such that the surface can be recompacted and finished as above. The finished leveling course shall be maintained by the Contractor in the above condition until the pavement is applied.

E. Smoothness Test

The surface of the leveling course, when finished, shall not show any deviation in excess of three-eighths inch (3/8”) when tested with a ten-foot (10’) straightedge applied parallel with, and at right angles to, the centerline of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement.

Contractor shall obtain written approval from the Engineer for the final leveling course grade prior to pavement placement.

Article 22.4 Measurement

The leveling course shall be measured in tons of materials delivered and placed in accordance with these Specifications. The measurement may include moisture up to a maximum of four percent (4.0%) of dry weight of the material. When tests by the Engineer indicate that moisture contents in excess of four percent (4.0%) may be occurring consistently, the frequency of testing will be increased as necessary and the results averaged over a period of one week. When this average is greater than four percent (4.0%), the tonnage as measured over the above period, shall be reduced by the difference. No credit will be due the Contractor when moisture content is less than four percent (4.0%). Testing shall be done in accordance with Section 20.01, Article 1.3 – Applicable Standards.

Article 22.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Leveling Course	Ton

SECTION 20.13 DISPOSAL OF UNUSABLE OR SURPLUS MATERIAL

Article 13.1 Construction

Add the following:

Contractor to dispose of material as directed by the Engineer.

Article 13.2 Construction

Add the following:

When asbestos-cement pipe is encountered and has to be removed from the trench and disposed of, the Contractor is hereby notified that Federal regulations governing the removal and disposal of asbestos are NESHAP 40 CFR, Part 61, Subpart M, and OSHA 29 CFR 1910. The Alaska Department of Environmental Conservation requirements include, but are not limited to 18 AAC 50, Air Quality Control Regulations, and 18 AAC 60, Solid Waste Management Regulations. The Alaska Department of Labor governing regulations include but are not limited to Occupational Safety and Health Standard, Subchapter 04.0103: Asbestos; 8 AAC 61.600.790 Article 8; and Alaska Workers Right to Know, AS 18.60. Asbestos-cement pipe removed from the trench must be handled and disposed in accordance with the applicable Federal and State regulations. Asbestos cement pipe must be disposed of and declared at the COV Landfill, or another facility equipped to handle hazardous waste.

Article 13.3 Measurement

Add the following:

Measurement for the removal, handling, and disposal of asbestos-cement pipe shall be per linear foot of asbestos-cement pipe removed from the project, regardless of pipe diameter.

Article 13.4 Basis of Payment

Add the following:

Payment for the removal, handling, and disposal of asbestos-cement pipe shall be included with and subsidiary to the 70.16 Remove Pipe pay item.

SECTION 20.22 GEOTEXTILE FABRIC FOR EMBANKMENT SEPARATION

Replace

Article 22.2 Materials

Replace Article 22.2 in its entirety and replace with the following:

Geotextile fabrics furnished as required in the Drawings shall meet conform to the following specifications, based on AASHTO M288-06. Additional requirements follow:

			Class 1		Class 2	
Property	Test Methods	Units	Woven Elongation < 50% [a]	Non-Woven Elongation ≥ 50% [a]	Woven Elongation < 50% [a]	Non-Woven Elongation ≥ 50% [a]
Grab Strength	ASTM D 4632	Lbs (#)	315	200	250	160
Sewn Seam Strength	ASTM D 4632	Lbs (#)	285	182	225	140
Tear Strength	ASTM D 4533	Lbs (#)	115	80	90	56
Puncture Strength	ASTM D 6241	Lbs (#)	620	435	495	310

[a] As measured in accordance with ASTM D 4632.

A. Type A Geotextile (Separation)

Type A Geotextile is used for separation. The Type A Geotextile shall be a woven pervious fabric constructed from long chain polymeric filaments such as polypropylene, polyethylene, polyester, polyvinylidene chloride or polyamide formed into a stable network such that the filaments or yarns retain their relative position to each other. The geotextile shall be inert to commonly encountered chemicals and shall be free from defects.

Woven geotextile shall be a pervious sheet of yarn woven into a uniform pattern with distinct and measurable openings. Edges of the cloth shall be salvaged to prevent the outer yarn from pulling away from the cloth.

Acceptance of geotextile material is to be determined according to ASTM D-4873.

Geotextile manufacturer shall provide a letter certifying that its geotextile product meets the specified requirements.

Type A Geotextile shall meet the physical and mechanical properties listed below:

Property	Test Methods	Units	Requirements
Permittivity	ASTM D 4491	Sec -1	0.02 [a]
Apparent Opening Size	ASTM D 4751	mm	0.60 max avg roll value
Ultraviolet stability (retained strength)	ASTM D 4355	%	50% after 500 h of exposure

a Default value. Permittivity of the geotextile should be greater than that of the soil. The Engineer may also require the permeability of the geotextile to be greater than that of the soil.

B. Type B Geotextile (Reinforcement)

Type B Geotextile is used for reinforcement. Type B Geotextile shall consist of a regular grid structure formed by biaxially drawing a continuous sheet of select polypropylene material; it shall have aperture geometry and rib and junction cross sections sufficient to permit significant mechanical interlock with the material being reinforced.

Type B Geotextile shall have high flexural rigidity and high tensile strength at ribs and junctions of the grid structure.

Type B Geotextile shall maintain its reinforcement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal practices, and to all forms of biological or chemical degradation normally encountered in the material being reinforced.

Type B Geotextile supplied shall be Class 1 unless otherwise specified in the Contract Documents and shall meet the physical and mechanical properties listed below:

Index Properties	**Test method**	**Units**	**MD value[1]**	**XMD value[1]**
Aperture dimensions	Direct measurement[2]	in.	1.0	1.4
Minimum rib thickness	Direct measurement[2]	in.	0.03	0.03
Tensile strength @ 2% strain	ASTM D6637-01	lb/ft	280	450
Tensile strength @ 5% strain	ASTM D6637-01	lb/ft	580	920
Ultimate tensile strength	ASTM D6637-01	lb/ft	850	1,300
Structural integrity				
Junction efficiency	GRI-GG2-05	%	93	

Flexural stiffness	ASTM D5732-01	mg-cm	250,000	
Aperture stability	US Army COE[3]	N-m/deg	0.32	
Durability				
Resistance to installation damage (SW/SP/GP soil)	ASTM D6637-01	%	95/93/90	
Resistance to long-term degradation	ASTM D6637-	%	100	
Resistance to UV degradation	ASTM D4355-	%	100	

1. Minimum Average Roll Values (MARV) in accordance with ASTM D4759-01
2. Direct Caliper Measurement
3. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 in. x 9 in. sample restrained along its perimeter in accordance with the US Army Corps of Engineers' prescribed methodology for the measurement of torsional rigidity.

Article 22.3 Construction

Add the following to Article 22.3.B Geotextile Placement:

Place geotextile to avoid ponding and direct infiltrated water to edges and ditches of intersections and roadways. Do not place geotextile vertically unless directed by the Engineer. Where low cover storm drain pipes and associated rigid foam insulation board exist within the structural section of the road omit geotextile requirement for the portions covered by rigid foam insulation or as directed by the Engineer.

SECTION 20.27 DEWATERING

Article 27.1 General

Add the following:

Work under this Section also includes dewatering trenches according to Section 20.31 Trench Dewatering.

Article 27.3 Construction

Add the following:

Dewatering of trenches shall be according to Section 20.31 Trench Dewatering

Article 27.4 Measurement

Add the following:

Payment for dewatering trenches shall be included with and subsidiary to the respective water / sewer / storm drain pipe pay items. No additional measurement will be made for dewatering of trenches.

Add the following Section:

SECTION 20.32 PIPE CASING

Article 32.1 General

The Work under this Section consists of performing all operations necessary for furnishing and placing a casing by trenchless or open trench method under structures, roadways, railroad tracks, or runways.

Article 32.2 Materials

Materials shall be as required by the Contract Documents.

Article 32.3 Construction

Method of installing a pipe casing shall be optional to the Contractor, except that prior to commencing jacking or augering operations, the Contractor shall furnish a work plan to the Engineer and show that his planned method of installation has worked satisfactorily in other areas under similar conditions. The excavation at both ends of the casing shall be considered incidental to this bid item and no separate payment shall be made.

A vertical and horizontal tolerance shall be as shown on the Drawings, provided that the Contractor will be responsible, and use such fittings as are required to adjust alignment and grade to accomplish the connections.

The pipe within the casing (barrier pipe) shall be arrested from movement by sand filling or wood slats and banding.

Article 32.4 Measurement

Measurement shall be from end to end of pipe casing acceptably installed and completed. No measurement will be made for trench excavation and backfill where casing is installed. No compensation will be made for casing installations abandoned or aborted due to deviations in excess of allowable tolerances.

Article 32.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment and shall include full payment for all Work described in this Section, including arrestment of pipe.

Payment shall be made under the following unit:

ITEM	UNIT
Furnish and Install Casing	Linear Foot

Add the following Section:

SECTION 20.40 TEST ROLLING

Article 40.1 General

Work under this section includes all material, labor, and equipment to perform test rolling for subgrade stability and uniformity determination.

Article 40.2 Equipment

The Contractor shall use a test roller conforming to the following:

- Tandem axle, dual wheel dump truck.
- Tire pressure shall be no less than 90 percent of the manufacturer's recommended maximum inflation.
- The minimum gross weight of the loaded truck shall be 60,000 pounds (37,000 kg). Provide a weigh slip.

Article 40.3 Construction Activities

The Contractor shall perform test rolling in the presence of the Engineer at the bottom of the excavated road structural section, after surface preparation, and before placing classified fill and backfill. Do not perform test rolling in trenches on or directly above storm drain pipes.

Procedure.

1. Operate equipment at a rate not to exceed three (3) to five (5) mph (4.8 to 8.0 km/hr) or a comfortable walking pace. Adjust the speed to allow the Engineer to measure any deflections and/or areas of rutting.
2. Operate the test roller in a pattern so that all affected areas are loaded with at least one pass.
3. After test rolling, check the subgrade for conformance to the Drawings, and correct all surface irregularities. Re-shape the subgrade within tolerances specified in 20.05.

Article 40.4 Evaluation

Test rolling shall be evaluated as follows:

1. Rutting.
    - Up to one (1) inch (25 mm) is acceptable, as long as the requirements of Section 20.05 are met.
    - Exceeding one (1) inch (25 mm) but not more than six (6) inches (150 mm) will require reshaping and additional compaction.
    - Exceeding six (6) inches (150 mm) will require corrective action as directed by the Engineer.

2. Deflection (pumping).

    - Up to one (1) inch (25 mm) is acceptable.

    - Exceeding one (1) inch (25 mm) but not more than two (2) inches (50 mm) is acceptable provided there is no soil cracking or lateral soil movement. Soil cracking and lateral soil movement is not acceptable and will require corrective action.

    - Exceeding two (2) inches (50 mm) will require corrective action as directed by the Engineer.

Upon completion of soil reshaping and additional compaction the Contractor shall perform additional test rolling in the presence of the Engineer.

Article 40.5 Measurement

Method of measurement shall be lump sum for all Test Rolling work described in this Section and shall consist of providing all labor, material, and services to implement the test rolling. The lump sum measurement shall be for the required excavation in its entirety and regardless of the number of excavation phases. Separate measurement will not be made for multiple excavations or excavation phases.

Down time or delays caused by equipment failure is included in the measurement and no additional payment will be made.

Article 40.6 Basis of Payment

Payment for the Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07 Measurement and Payment, of this Specification, and shall include full payment for all Work described in this Section.

Payment shall be made under the following unit:

ITEM	UNIT
Test Rolling	Lump Sum

DIVISION 30 CONCRETE

SECTION 30.02 PORTLAND CEMENT CONCRETE, CURB AND GUTTER AND VALLEY GUTTER

Article 2.5 Basis of Payment

Add the following pay item:

ITEM	UNIT
P.C.C. Curb and Gutter (All Types)	Linear Foot

SECTION 30.03 PORTLAND CEMENT CONCRETE SIDEWALKS

Delete Article 3.1 and replace with the following:

Article 3.1 Description

The Work covered under this Section consists of all Work necessary for the provision of Portland Cement Concrete sidewalks and aprons.

Article 3.4 Measurement

Add the following:

Apron: Aprons shall be measured as PCC Sidewalks, per square yard, complete and in place.

Article 3.5 Basis of Payment

Add the following after the first paragraph:

Payment for Aprons shall be made under PCC Sidewalk pay items shown in the bid schedule for the thickness specified.

SECTION 30.07 PORTLAND CEMENT CONCRETE CURB RAMPS

Delete this section in its entirety and replace with the following:

Article 7.1 General

The Work under this Section consists of performing all operations pertaining to furnishing and constructing Portland Cement Concrete curb ramps, backing curbs, and detectable warning tiles in conformance with the Drawings. The ramps shall comply with the Americans with Disabilities Act Title II as identified in 28 CFR Part 35 – Nondiscrimination on the Basis of Disability in State and Local Government Services.

The Work covered under this Section shall also include construction of curb ramps, backing curbs and detectable warning tiles in asphalt sidewalks and pathways, as required.

Article 7.2 Materials

A. General

The Portland Cement Concrete (P.C.C.) materials and installation shall conform to the requirements of CVSS Section 30.03 – Portland Cement Concrete Sidewalks and the Drawings. The P.C.C. shall have a slump range of four to seven inches (4" to 7") to permit solid placement of the detectable warning tiles. An overly wet mix will cause the detectable warning tiles to float. Contractor shall not add color to the concrete unless specified in the Drawings. The Contractor shall not apply a troweled pattern to the curb ramps. Contractor shall provide a coarse broom finish for the ramps perpendicular to direction of pedestrian traffic.

P.C.C. Curb Ramp thickness shall be six-inches (6"). Six-inch thick ramps and landings shall be reinforced with #3 rebar at 16" on center, each way.

B. Detectable Warning Tile

Each detectable warning tile shall have a truncated domed surface twenty-four inches (24") in depth for the width of the ramp. The truncated domes shall have a height of two-tenths inch (0.2"), a diameter of nine-tenths inch (0.9"), a center-to- center spacing of one and six-tenth inches (1.6") minimum and two and four-tenth inches (2.4") maximum, and a base-to-base spacing of sixty-five one-hundredth inch (0.65"), measured between the most adjacent domes. Contractor shall provide gray cast iron detectable warning tiles, conforming to ASTM A-48 Class 30B with federal yellow power coat finish manufactured by:

Neenah Foundry Company, Inc.
4107 E. Madison Street
Phoenix, AZ 85034
Phone: 1-866-765-0850; OR

East Jordan Iron Works, Inc.
301 Spring Street
East Jordon, MI 49727
Phone: 1-800-626-4653

Local Contacts:
Ferguson Enterprises, Inc.
151 East 95th Avenue
Anchorage, Alaska 99515
Phone: 907-273-2100
Fax: 907-273-2110

OR

Hughes Supply, Inc.
440 West 40th Avenue
Anchorage, Alaska 99503
Phone: 907-563-3315
Fax: 907-562-2175
or an approved equal.

Article 7.3 Construction

The Contractor shall construct each curb ramp and install the detectable warning tiles in conformance with the Contract Documents and the manufacturer's recommendations. No later than five (5) days prior to construction of the curb ramps, Contractor shall submit to the Engineer, for review and approval, a layout drawing for each curb ramp to resolve issues related to pattern repeat, tile cuts, expansion joints, control joints, ramp curves, ramp end returns and surface interfaces, and truncated dome spacing.

Contractor shall install and finish the P.C.C. in accordance with the Contract Documents prior to installation of the detectable warning tiles. Contractor shall tamp the tiles with a small sledge hammer with a two-inch by six-inch by twenty-inch (2" x 6" x 20") wood tamping plate, or lightly vibrate into the fresh concrete to ensure that the tile's field level (base of truncated dome) is flush with the adjacent concrete and top back of curb. Contractor shall ensure that the tile's field level is flush with the adjacent concrete surface, proper water drainage is provided, and potential tripping hazards are eliminated. Contractor shall ensure that the back edge of the detectable warning tiles form a smooth arc and is parallel to the top back of the curb.

Immediately after the tile placement, Contractor shall check and adjust accordingly the tile's field level to be flush with the adjacent concrete surface. Following final field-level adjustment(s), place suitable twenty-five (25) pound weights, conforming to the manufacturer's recommendations, on each tile and additional weights at tile-to-tile joints as necessary to provide a solid contact between the tile underside and the concrete.

During and after the tiles installation and concrete curing time, Contractor shall ensure that there is no walking, leaning, or any external forces placed on the tiles, thereby causing a void between the underside of the tile and the concrete.

After the concrete has cured, Contractor shall remove protective plastic wraps. If "concrete bleeding" occurs between the tiles, Contractor shall remove the residue without damage to the tile surfaces, in accordance with the manufacturer's recommendation.

Contractor shall maintain, on-site, an electronic level, a five-foot (5') diameter circle template, and a three-foot by five-foot (3'x5') rectangular template. Template may be of any material, including paper. Contractor shall, when requested, demonstrate to the Engineer that there are adequate landing and turning areas that meet the dimensions and slopes required on the Drawings.

Backfill and grade areas disturbed by curb ramp construction and restore ground surface as shown on Drawings.

Article 7.4 Tolerances

In accordance with the Americans with Disabilities Act Public Rights-of-Way Accessibility Guidelines (PROWAG), dimension not stated as "maximum" or "minimum" are absolute. All dimensions are subject to conventional industry tolerances, except where the requirement is stated as a range with specific minimum and maximum end points.

Conventional industry tolerances recognized by the ADAAG include those for field conditions that may be a necessary consequence of a particular manufacturing process. Information on specific tolerances may be available from industry or trade organizations, code groups, building officials, and published references.

(Example: American Concrete Institute Standard Specifications for tolerances for concrete construction and materials (ACI-117)).

Article 7.5 Measurement

P.C.C. Curb Ramp shall be measured per each curb ramp installed including all concrete, detectable warning tiles, and backing curb furnished, constructed, finished, and accepted in place.

Article 7.6 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 – Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment for restoration of existing ground surface disturbed by curb ramp construction will be made under the appropriate pay item "A.C. Pavement," "P.C.C. Sidewalk," "or "Seeding," as applicable. No separate payment shall be made for backfilling and grading in preparation for surface treatments. No separate payment shall be made for backfilling and grading in locations where the existing surface is gravel.

Payment shall be made under the following unit:

ITEM	UNIT
P.C.C. Curb Ramp (Parallel)	Each
Detectable Warnings	Each

DIVISION 40 ASPHALT

SECTION 40.02 ASPHALT CONCRETE PAVEMENT

Delete this section in its entirety and replace with the following:

Article 2.1 Description

The Work under this Section consists of the performance of all Work required for the construction of asphalt concrete pavement on a prepared base.

Article 2.2 Material and Testing

A. Asphalt:

The Contractor shall submit a certified analysis of the asphalt from the refinery laboratory to the Engineer for review and approval. A copy of the certified analysis shall accompany each shipment of asphalt to the asphalt mixing plant. The Engineer may make check acceptance tests of the asphalt binder, and, if the asphalt binder is not in accordance with the certified analysis, it shall be rejected.

1. For Class A asphalt concrete, the asphalt cement or binder required by this specification shall conform to the following AASHTO designations.

   Meets AASHTO M-320 and the following:

Performance Grade of Asphalt binder	PG 64-28
Softening Point, minimum (AASHTO T-53)	125˚ F
Toughness, minimum (ASTM D-5801)	110 in-lbs
Tenacity, minimum (ASTM D-5801)	75 in-lbs

2. For other classes of asphalt concrete, the asphalt cement or binder required by these Specifications shall conform to the requirements of AASHTO M-320 and Certified Performance Grade Asphalt Binder PG 52-28.

B. Aggregates

1. Class A asphalt concrete

   Coarse aggregate is all mineral retained on the No. 4 sieve.

   The aggregate retained on the No. 4 sieve shall contain at least ninety percent (90%) by weight of particles having a minimum of two mechanically fractured surfaces.

   Coarse Aggregate: Particles retained on the No. 4 sieve. Remove all natural fines passing the No. 4 sieve before crushing coarse aggregates for the asphalt concrete grading. The grain-size distribution for the asphalt concrete shall consist entirely of aggregate produced from an aggregate crushing process. Crush only aggregate that is free from clay conglomerates, vegetative matter or other deleterious material. Crush only aggregate which consists of sound, tough, durable rock of uniform quality and is not coated with silt or clay. Aggregates shall meet the following requirements;

Property	Test Method	Requirement
Percent Sodium Sulfate Loss	ASTM C-88	9% maximum
(5 cycles)		
Percent Fracture	ASTM D-5821	90% minimum
(Two Surfaces)		
Flat & Elongated Particles	ASTM D-4791	
3 to 1	-----	15% max.
5 to 1	-----	5% max.
Nordic Abrasion	ADOT&PF	12% maximum
	Alaska Test Method 312	
Absorption	AASHTO T-85	2% maximum

Fine Aggregate: Particles passing the No. 4 sieve. Remove all natural fines retained on the No. 4 sieve before crushing fine aggregate for the asphalt concrete grading. Crush only aggregate that is free from clay conglomerates, vegetative matter or other deleterious material and that consists of sound, tough, durable rock of uniform quality not coated with silt or clay.

The grain-size distribution for the asphalt concrete shall consist entirely of aggregate produced from an aggregate crushing process and be non-plastic as determined in accordance with AASHTO T-90 (Determining the Plastic Limit and Plasticity Index of Soils). Meet the quality requirements of AASHTO M-29, including S1.1, Sulfate Soundness and the following:

Property	Test Method	Requirement
Uncompacted Void Content of Fine Aggregate (Fine Aggregate Angularity)	AASHTO T-304	45% minimum

2. Class D and E asphalt concrete

Coarse aggregate for Class D and E asphalt concrete is all mineral retained on the No. 4 sieve. The aggregate retained on a No. 4 sieve shall contain at least eighty percent (80%) by weight of crushed pieces having two or more mechanically fractured surfaces.

All coarse aggregate shall be free from coatings of clay, silt, or other objectionable matter and shall not contain clay balls or other aggregation of fine material. Coarse aggregate shall be tested for soundness in accordance with the requirements of ASTM C-88, or will have proven sound through adequate record of service.

When aggregate grading is such that the material will tend to segregate in stockpile or handling, it shall be supplied in 2 or more sizes. Each size of aggregate required to produce the combined graduation specified shall be placed in individual stockpile at the plant site and separated by bulkheads or other means. When it is necessary to blend 2 or more aggregate sizes, the blending shall be done through separate bins at the cold elevator feeders, and not in the stockpile.

Fine aggregate is composed of all mineral matter passing the No. 4 sieve. It shall consist of natural and/or manufactured material derived by crushing gravel.

The aggregate particles shall be clean, tough, durable, moderately sharp, and free from coating of clay, silt, or other objectionable matter and shall not contain clay balls or other aggregations of fine material. Fine aggregate shall be tested for soundness in accordance with the requirements of ASTM C-88, or shall have a satisfactory soundness record. When tested for soundness, the number of cycles shall be five (5), the solution shall be sodium sulphate; the maximum loss shall be nine percent (9%) by weight. Fine aggregates shall be maintained in individual stockpiles, suitably separated to prevent intermingling.

C. Mineral Filler

Mineral Filler shall conform to the requirements of ASTM D-242.

Article 2.3 Composition of Mixes

A. General Requirements

Paving mixtures prepared under these Specifications shall be composed of aggregate and paving asphalt within the limits set forth in the following table:

Asphalt paving mixtures prepared under these Specifications shall be composed of aggregate and asphalt cement within the limits set forth in the following table:

Percentages by Weight Passing Sieves - Wearing Course

Sieve Size	Class A	Class D	Class E
1”	-----	-----	-----
3/4"	100	-----	100
1/2"	68 – 82	100	78 – 96
3/8”	52 – 64	75 – 92	66 – 86
#4	36 – 46	50 – 68	46 – 66
#8	26 – 36	32 – 50	34 –52
#16	16 – 28	20 – 38	24 – 42
#30	10 – 20	14 – 30	16 – 32
#50	6 – 16	10 – 24	10 – 24
#100	4 – 12	7 – 16	7 – 16
#200	3 – 8	3 – 9	3 – 9
Asphalt Cement *	5.0 – 7.0	5.0 – 7.0	5.0 – 7.0

*By weight of total mix

Target values for the gradation of the Job Mix Design shall be within the Broad Band Limits depicted in the table above.

B. Additive Materials

A "non-stripping" additive shall be added to the asphalt in the amount determined by ATM T-414 or one-fourth percent (0.25%) by weight of the asphalt, if approved by the Engineer. Such additive material shall be of quality and grade acceptable to the Engineer.

C. Job Mix

The Contractor, at his expense, shall submit to the Engineer for approval, a job mix formula within the limits specified above, for each class of mix designated by the Contract. Within each mix design the Contractor shall provide correction factor ignition points generated in accordance with AASHTO T-308. The aggregate gradation of the job-mix formula, when plotted upon an aggregate grading chart, shall closely approximate the shape of average gradations for the limits specified. For that portion of the aggregate passing No. 4 sieve, gradings which range from at or near the maximum of one (1) sieve to at or near the minimum of the next sieve will not be permitted. The Engineer may require increased asphalt content up to one-half percent (0.5%) above that indicated by Marshall Design Criteria. Upon requiring increased asphalt content, the lower limit of percent voids and the upper limit of percent voids filled shall be waived.

D. Maximum Permissible Variations

Tolerances to the approved Job Mix Formula shall not exceed the permissible variations presented in the following table. The Job Mix Formula band shall mean the approved Job Mix Formula plus-or-minus (±) the numeric values for the maximum permissible variations.

Maximum Permissible Variation

(Percent by Weight of Total Aggregate)

Sieve Size	Class A Asphalt	Class D & E Asphalt
3/8” and Larger	± 6.0	± 5.0
#4	± 5.0	± 5.0
#8	± 5.0	± 4.0
#s 16, 30 & 50	± 4.0	± 4.0
#100	± 3.0	± 3.0
#200	± 2.0	± 2.0
Asphalt	± 0.4	± 0.4

When these permissible variations are applied to the “Class A Asphalt Concrete” Job Mix formula, the broad band limits in Subsection A, above, may be exceeded only as follows:

1. The three-quarter inch (3/4”) and No. 200 sieves shall not exceed the broad band limits in SubArticle 6.3.A - General Requirements;

2. All other sieves may exceed the broad band limits in SubArticle 6.3.A - General Requirements for the respective sieve sizes in the above table provided that the Job Mix Formula band is not exceeded.

When these permissible variations are applied to the “Class D or Class E Asphalt Concrete” Job Mix formulas, the individual sieve shall not exceed the Broad Band limits in SubArticle 6.3.A – General Requirements, above.

Maximum temperature shall not vary more than twenty-five degrees (25º) Fahrenheit from the approved Job Mix Formula design.

E. Test Methods

The job-mix shall be determined according to the Marshall Method, as set forth in The Asphalt Institute Manual series no. 2 (M5-2), Fourth Edition.

Upon compaction and testing of the job-mix specimens, the mixture shall conform to the aforementioned specifications within the following limits:

	Class A Asphalt	Class D/E Asphalt
Stability (Marshall) Pounds Minimum	1200	1200
Flow (Marshall) Maximum	8 to 16	8 to 16
Percent Voids	2.5 to 4.5	3 to 5
Percent Voids Filled with Asphalt	70 to 80	75 to 85

Article 2.4 Equipment

A. General

All equipment furnished by the Contractor shall be maintained in a sound mechanical condition. Equipment shall be serviced and lubricated away from the paving site; units that drip fuel, oil and/or grease shall be removed from the Project until such leakage is corrected to the satisfaction of the Engineer.

B. Asphalt Mixing Plant

All plants, used by the Contractor, shall be designed, coordinated and operated to produce a mix uniformly within the job- mix tolerances as listed herein and in accordance with AASHTO M-156. The plant may be either a weightbatch type or a volumetric proportioning, continuous/drum mixing type, provided the equipment has demonstrated that it is suitable for producing finished mixtures complying with the job-mix formula specified herein.

The plant shall be equipped with the necessary equipment for storing, handling, drying, heating and mixing the aggregate and asphalt. Satisfactory means shall be provided for aggregate and asphalt control as to quantity and temperature. Adequate safety measures shall be provided on stairs, gears, pulley, chains, sprockets, and all other dangerous moving parts.

Contractor shall calibrate the asphalt plant not more than thirty (30) days in advance of production and furnish copies of the data to the Engineer at least one day prior to asphalt concrete production. Aggregate and asphalt cement sampling locations meetings OSHA safety requirements shall be provided. Proportioning (batch) scales shall not be used for weighing material for payment. Weight scales used in conjunction with a storage silo may be used to weight the final product for payment, provided the scales are certified by the State of Alaska. The asphalt plant shall maintain a current Air Quality Permit issued by the State of Alaska.

C. Pavers

Asphalt pavers shall be self-propelled units provided with a heated vibratory screed. Grade and cross slope shall be controlled through the use of automatic grade and slope control devices. The paver screed control system shall be automatically actuated by the use of an erected string-line or a mobile string-line (ski) at least thirty feet (30') in length on the high side of the paver. Grade control shall be used on either (a) both the high and low sides, or (b) grade control on the high side and slope control on the low side.

The Contractor may request a waiver for the screed control system (string-line or ski) if he or she believes the paving grade poses an unreasonable obstacle in the form of extreme horizontal or vertical curves or unusual cul-de-sac and/or street configuration.

For trails, pavers shall be capable of placing the required thickness in one lift with a minimum paving width of five feet (5'), truck-towed spreader-type equipment will be permitted, providing the width and depth requirement can be met.

The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the asphalt concrete mixture uniformly in front of the screed without segregation and/or tearing.

The term "screed" includes any strike-off device operated by cutting, crowding, or other action which is effective on mixes at workable temperatures, without tearing, shoving, or gouging, and which produces a finished surface of an even and uniform texture. The screed shall be adjustable as to level and section and shall have provisions for vibration and heat.

The screed assembly shall produce a finished surface of the required smoothness, thickness, and texture without tearing, shoving, displacing or segregating the asphalt concrete mixture. Screed extensions used for paving a constant width shall be heated and vibrated. Auger extensions shall be within one and one-half feet (1.5') of the screed extension on both sides.

The paver shall be capable of placing courses in thicknesses of from one-half inch (1/2") to at least three inches (3"), and, in width, be adjustable in increments of six inches (6") and one foot (1').

The use of a pick-up machine to transfer the asphalt concrete mixture from a windrow to the paver hopper will be permitted, provided the pick-up machine is capable of collection of the windrowed material without damage to the underlying course. The Engineer will not allow the continued use of the pick-up machine if segregation, excessive temperature loss, or any detrimental effects are observed.

Paver shall be equipped with a means of preventing the segregation of the coarse aggregate particles from the remainder of the bituminous concrete mixture while being carried from the paver hopper over the slat-conveyor to the auger chamber. The mechanism to accomplish this must be approved in writing by the paver manufacturer and may consist of chain curtains, deflector plates, or other devices and may be any combination of these.

The following specific requirements apply to the following identified bituminous pavers:

1. Blaw-Knox bituminous paver shall be equipped with the Blaw-Knox Materials Management Kit (MMK).
2. Cedarapids bituminous paver must have been manufactured in 1989 or later.
3. Caterpillar bituminous pavers shall be equipped with the following deflector plate models: 6630, 6631, or 6640.

Contractor shall provide a Certificate of Compliance that verifies the required mechanism has been installed to prevent bituminous paver segregation.

The Engineer shall approve all mechanisms proposed by Contractor for preventing paver segregation of coarse aggregate prior to the bituminous paver's use on the project.

D. Rollers

Rollers shall be self-propelled, reversible, and equipped to maintain clean and straight contact surfaces. Heat shall be maintained on pneumatic tires by skirting or other approved devices.

The number, weight, and type of rollers furnished shall be sufficient to obtain the required density and surface requirements while the mix is in a workable condition. One pneumatic and a minimum of one vibratory roller shall be furnished and operated in a workmanlike manner by the Contractor. There shall be at least one operator for each roller.

Pneumatic Tired Rollers:

Pneumatic tired roller shall ride on not less than seven uniformly sized and uniformly inflated smooth tires mounted on wheel rims of twenty inch (20") minimum diameter. The rear group of tires shall align behind and cover the spaces between the forward group of tires. Tires shall be inflated, and the roller ballasted, to provide a uniform (plus or minus five [5] pounds per square inch) minimum ground contact weight of seventy (70) pounds per square inch, unless a lower weight is requested in writing by the Engineer. If a pneumatic roller experiences a pick-up problem, the Contractor shall be required to add an effect release agent to the tire watering tank.

Steel-Drum Rollers: Steel-wheel roller may be of two (2) types:

Two-axle static drum rollers, 8 to 22 tons in weight.

Two-axle vibratory drum rollers, 8 to 22 tons in weight.

All rollers shall be equipped with power units of not less than four (4) cylinders and under working conditions shall develop a compression in the rear wheels of two hundred fifty (250) to three hundred fifty (350) pounds per inch of roller width. Rollers shall be in good working condition and be free from backlash, faulty steering mechanism, or worn parts. Rollers shall be equipped with adjustable scrapers to keep the drums clean and with efficient means of keeping the drums/wheels wet to prevent mixes from sticking to the drums. Rollers/Drums shall be free of flat areas, openings or projections which will mar the surface of the pavement.

E. Haul Trucks

Vehicles used for the transportation of hot-mix asphalt from the plant to the Project shall have tight metal bottoms and shall be free from dust, screenings, petroleum oils, volatiles, and other mineral spirits which may effect the mix being hauled. The truck beds shall be cleaned as often as required, but at least once a day. After this operation the truck bed shall be elevated and thoroughly drained; no excess solution shall be permitted.

When requested by the Engineer, trucks shall be equipped with covers of canvas, insulated boxes, or other suitable material, and be of sufficient size and weight to protect the load from adverse weather conditions and to maintain the required mix temperatures.

F. Truck Scales

Hot mix asphalt shall be weighed on platform scales furnished by the Contractor or on public scales at the Contractor's expense. The scales shall be satisfactory to the Engineer and shall comply with all State Laws governing the use of scales. The scales shall be tested and sealed by an authorized public official, at the expense of the Contractor, as often as the Engineer may deem necessary to ensure their accuracy. Batch plant proportioning scales may be used in lieu of truck scales only with the written approval of the Engineer.

G. Hand Tools

Only lutes or asphalt rakes shall be used during the spreading operation and when finishing by hand.

Tamping irons shall weigh not less than twenty-five (25) pounds and shall have a bearing area not exceeding forty-eight (48) square inches. Mechanical compaction equipment, satisfactory to the Engineer, may be used instead of tamping irons.

H. Straightedges

Straightedges ten (10') and sixteen feet (16') in length, to test the finished surface, shall be provided by the Contractor. The sixteen foot (16') straightedge shall be used on straight sections and the ten foot (10') straightedge on vertical curves or crown.

Article 2.5 Construction

A. Weather Limitations

Asphalt concrete mixture shall not be placed when it is raining or when rain is imminent, on a saturated surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or finishing of the mixture. Asphalt concrete mixture shall not be placed unless the surface temperature is forty-five degrees (45º) Fahrenheit or warmer and the ambient air is at least thirty-two degrees (32º) Fahrenheit and not descending. Air temperature shall be measured in the shade away from heat sources at the paving site.

B. Preparation of Area to be Paved

The area to be paved shall be true to line and grade, having a smooth dry, compacted surface prior to the start of paving operations. The area to be paved shall be free from all loose asphalt and foreign material.

Contractor shall notify the Engineer, a minimum of twenty-four (24) hours prior to paving, that the newly constructed, rotomill planed, or existing surface, has been prepared in conformance with the Drawings and Specifications and are ready to be paved. Engineer or his representative shall inspect the grade through the use of string line, straightedge, levels, or any other means necessary. Upon determining the grade that has been proposed for paving is in conformance with the Drawings and Specifications, Engineer will provide written authorization for the Contractor to proceed with the paving. The Contractor shall not initiate paving prior to receiving written authorization to proceed.

Contractor shall adjust all utilities to finished grade prior to paving in accordance with 50-5, 55-5, and 60-8 unless approved by the engineer in writing not less than 48 hours in advance of paving.

The surface of the Leveling Course, when finished, shall not demonstrate any deviation in excess of three-eighths inch in ten feet (3/8" in 10') parallel with, and at right angles to, the centerline, or more than five-eighths inch (5/8") total from centerline to face of curb of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement.

Existing paved surfaces shall be cleaned of loose material by sweeping with a power broom, supplemented by hand sweeping, if determined necessary by the Engineer.

After rotomilling of a section of the roadway has been completed, that section shall be inspected by the Engineer for areas of distress or failure. Areas requiring repair shall have the remaining pavement removed, and the distressed area shall be excavated to the depth and limits directed by the Engineer. The excavated area shall be backfilled, as directed by the Engineer, with crushed aggregate Leveling Course material and/or Asphalt Concrete leveling course in conformance with the Drawings and

Specifications. Pavement surface irregularities, remaining from the rotomilling effort, that extend more than three-quarters inch (3/4") below the milling indentations shall be pre-leveled and brought into conformance with the tolerances established in Article 6.6 - Density and Surface Requirements. Pre-leveling shall be completed with an approved Class D asphalt concrete in accordance with this Section and include the furnishing, hauling, placing, and compaction of the asphalt concrete.

Contact surfaces of curbing, gutters, manholes, and other structures shall be painted with a thin, uniform coating of asphaltic cement or approved equal material prior to the mixture being placed against them. Butt joints on previously placed cooled pavement shall be saw cut and tack coated prior to continuing the paving operation.

Contractor shall not pave against newly placed concrete curbing until said curbing has cured for a minimum seven (7) days. For the purpose of paving operations only, curb curing time may be reduced to seventy-two (72) hours only upon receipt of Contractor's written certification that Type III Portland High-Early-Strength cement concrete was used in, properly placed, and appropriate curing compounds were applied to the adjacent curb and gutter.

C. Preparation of Paving Asphalt

The asphalt shall be heated at the paving plant to a temperature at which it can be properly handled through the pumping system, but at no time shall the temperature of the asphalts exceed that recommended by the asphalt supplier or manufacturer, or be greater than three hundred twenty-five degrees (325º) Fahrenheit or less than two hundred fifty degrees (250º) Fahrenheit.

D. Preparation and Handling of Aggregates

The aggregate for the asphalt concrete mixture shall be heated and dried to a temperature compatible with the mix requirements specified. The burner on the dryer shall be properly adjusted to avoid damage to the aggregate and to avoid the presence of unburned fuel on the aggregate. Any asphalt concrete mixture in which soot or fuel is present shall be wasted and no payment made.

Drying operations shall reduce the aggregate moisture content so that the moisture content of the asphalt concrete mixture, sampled at the point of acceptance for asphalt cement content, shall be no more than one-half percent (0.5%) (by total weight of mix), as determined by AASHTO T-329. Adequate dry storage shall be provided for the mineral filler.

Aggregates shall be stored at the plant in such a manner that the separate sizes will not become intermixed. Cold aggregate shall be carefully fed to the plant in such proportions that surplus and shortages in the hot bins will not cause breaks in the continuous operations.

Stockpiles and bins shall be sampled for gradation analysis, dust coating, and for other purposes, at the option of the Engineer.

When requested by the Engineer, the Contractor shall provide representative samples from each of the hot bins. Samples shall be used to determine compliance with these Specifications.

1. Drying:

The aggregate shall be thoroughly dried and heated to provide a paving mix within a tolerance specified herein. The moisture content of the heated and dried aggregate shall not exceed one-half percent (0.5%).

Dust collected during the drying operation may be fed uniformly back into the hot aggregate prior to screening, provided a position mechanical feed is used which will control the feed back to the quantity specified by the Engineer.

2. Screening:

Aggregates shall be screened into sizes that may be recombined into a gradation meeting the requirements of the job-mix formula. Screens shall have normal capacities slightly in excess of the production capacity of the mixer and rated capacity of the dryer.

3. Hot Aggregate Storage:

Hot screened aggregate shall be stored in such a manner as to minimize segregation and loss of temperature.

E. Mixing Plants and Controls

All plants shall be equipped with a positive means to govern the time of mixing. Mixing time shall not be altered unless requested by the Engineer.

Frequent gradation analysis of the hot aggregates of the completed mix shall be made to be certain that the materials being used and produced are within the tolerances of the job-mix formula and the specifications of the mix being used. If the mix is found to be outside the hot-mix formula tolerances or outside the specification limits, corrections shall be made in quantities measured from the hot bins and suitable changes made at the cold bin feeders. It shall be the responsibility of the Contractor to furnish a finished product in accordance with the Contract Documents. Tests conducted by the Engineer are for quality acceptance purposes only and are not authorized for use in plant calibration. Plant metering systems and scales shall be calibrated to the accuracy specified in AASHTO M-156.

Batch Type Plant: When the mix is produced in a batch type plant, the aggregate shall be accurately weighed in the proper proportions to provide the batch weight.

The asphalt shall be heated to provide a material sufficiently fluid to produce a uniform coating on every particle of aggregate within the specified mixing time. The temperature of the aggregates and asphalt immediately prior to mixing shall be approximately that of the completed batch. In no case shall the temperature of the asphalt and aggregate vary more than twenty-five degrees (25º) Fahrenheit when placed in the mixing chamber.

A dry mixing period of not less than ten (10) seconds shall precede the addition of the asphalt to the mix. Excess wet mixing shall be avoided. Wet mixing shall continue as long as is necessary to obtain a thoroughly blended mix. The minimum percent of coated particles used to establish the mixing time interval shall be ninety-five percent (95%) as determined by AASHTO T-195.

Continuous Type Plant: Continuous mix and drum plants shall in general be controlled in the same manner as batch plants.

The determination of mixing time shall be by weight method under the following formula unless otherwise approved:

$$\text{Mixing time in seconds} = \frac{\text{Pugmill Dead Capacity in Pounds}}{\text{Pugmill Output in Pounds Per Second}}$$

The weights used for computing mixing time shall be determined for the job, from tests made by the Contractor and shall conform to the recommendations of the manufacturer. Mixing temperature shall not exceed that recommended by the asphalt cement manufacturer without the written approval of the Engineer. To aid in determining the proper temperature of the completed batch, current viscosity data shall be available at the plant at all times.

F. Transportation of Mix

The dispatching of the hauling vehicles shall be so scheduled that all material delivered may be placed and rolled in daylight. When variations in size of loads, speed of trucks, length of haul, and conditions of trucks interfere with orderly continuous operations, the Engineer may order suitable corrections to be made.

G. Mechanical Spreading

Contractor shall submit a Paving Plan for the Engineer's review a minimum of five (5) working days prior to initiating paving operations. The plan shall consist of at least the following items:

1. Paving schedule to include sequence of operations.
2. Operational details to include:
    a. Plant operating capacity and target production rate. Process control testing frequency for gradation, moisture, asphalt cement content, and compaction.
    b. Number and capacity of trucks, cycle time, and delivery rate.
    c. The manufacturer and model of the paver and pick-up machine to include information on grade followers, sensors, operating speed, and production rate of the pavers.
    d. Number, type, weight, and operating speed of rollers, including replacement roller.
    e. Location and method of constructing longitudinal and transverse joints.
    f. Construction plan for paving intersections and driveways.
3. The asphalt concrete shall be placed on the road surface at a temperature not less than two hundred fifty degrees (250º) Fahrenheit or greater than three hundred degrees (300º) Fahrenheit. Additionally, the maximum temperature to which the asphalt concrete is heated shall not exceed the supplier's recommendation. The asphalt concrete temperature shall be measured directly behind the paver screed at the time of placement.

The asphalt concrete mixture shall be laid upon a surface approved in writing by the Engineer, spread and struck-off and compacted to the thickness specified in the Drawings and specifications. Asphalt pavers shall be used to distribute the asphalt concrete mixture in lanes of such widths as to hold to a practical minimum the number of longitudinal joints required.

Longitudinal joints and edges shall be constructed to true line markings. Lines shall be established parallel to the center line for the paver to follow in placing individual lanes. The paver shall be operated and positioned to closely follow the established line. When backing trucks to the finisher, care shall be taken not to jar the paver.

The texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of the screed, tamping, feed screws, hopper feed, etc., shall be checked frequently to assure uniform spreading of the mix. Segregation of the material shall not be permitted. If segregation occurs, the spreading operation shall be immediately suspended until the cause is determined and corrected.

Any irregularities left by the paver shall be corrected by trimming directly behind the machine by use of lutes or covered rakes. Immediately after trimming, the edges of the course shall be thoroughly compacted by tamping. Distortion of the pavement during this operation shall be avoided.

Edges against which additional pavement is to be placed shall be vertically formed to true line. A lute or covered rake shall be used immediately behind the finisher, when required to obtain a true line and vertical edge. Any irregularities in the surface of the pavement course shall be corrected directly

behind the paver. Excess material forming high spots shall be removed by a shovel or lute. Indented areas shall be filled with hot-mix and smoothed with the back of a shovel pulled over the surface. Fanning of material over such areas shall not be permitted.

On longitudinal joints, the paver shall be positioned so that in spreading, the material overlaps the edge of the lane previously placed by one or two inches (1" or 2") and is sufficiently high to allow for compaction. The coarse aggregate in the material overlapping the joint shall all be raked out into the cold lane as soon as possible behind the paver and broomed up and wasted. In no case shall scattered rocks be rolled into the surface of either lane.

Asphalt concrete mixture which is contaminated or segregated will be rejected.

When multiple lifts are specified in the Contract, the final lift shall not be placed until all lower lifts throughout that section, as defined by the Paving Plan, have been placed and accepted. Paving shall not begin until all adjacent curb has been poured for at least seven (7) days when Type I/II cement is used or three (3) days when Type III cement is used.

H. Hand Spreading

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the asphalt concrete mixture shall be spread, raked, and luted by hand tools. For such areas, the asphalt concrete mixture shall be placed to the required compacted thickness and density.

I. Compaction

Immediately after the asphalt mixture has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.

The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving.

Initial rolling shall be done with a steel-drum roller with the drive roll operating toward the paver, and/or a suitable pneumatic tired roller. Initial rolling shall be completed while the bituminous mat temperature is above two hundred twenty-five degrees (225º) Fahrenheit.

Following the initial rolling at least three coverages of the pavement shall be completed with a pneumatic tired roller, while the mat temperature is above one hundred seventy-five degrees (175º) Fahrenheit.

Final rolling shall be completed with a steel–drum roller and shall continue until roller marks and further compression are not evident in the pavement and specified density has been achieved.

Unless otherwise directed, rolling shall begin at the sides and proceed longitudinally parallel to the road center line, each trip overlapping one-half the roller width, gradually progressing to the crown of the road. When paving in echelon or abutting a previously placed lane, the longitudinal joint should be rolled first followed by the regular rolling procedure. On superelevated curves the rolling shall begin at the low side and progress to the high side by overlapping of longitudinal trips parallel to the centerline.

Any displacement occurring as result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the asphalt mixture.

To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

Rollers or other vehicles shall not be parked or left standing on pavement that has not cooled sufficiently to prevent indentation by wheels.

J. Joints

The Contractor shall not construct longitudinal joints in the driving wheel paths. The Contractor shall align the joints of the top layer of pavement to either the centerline of the road or to lane lines. The Contractor shall offset the longitudinal joint in the top layer of pavement not more than six inches (6”) from centerline of edge of stripe. Joints shall be constructed to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture and smoothness as other sections of the course. The Contractor shall offset the longitudinal joints in the top layer from the joint in the layer immediately below by at least four inches (4”).

When joining existing pavement and new pavement, the old pavement shall be cut in a neat line with a power driven saw.

Improperly formed joints resulting in surface irregularities shall be removed full depth, replaced with fresh asphalt concrete mixture, and thoroughly compacted. Rolling of joints after the material has cooled below one hundred seventy degrees (170º) Fahrenheit shall not be allowed. All pavement removal shall be precut to a neat line with a power-driven saw.

A tack coat of asphalt cement or asphalt emulsion shall be applied on all cold joints and allowed to break prior to placing fresh asphalt concrete mixture against the joint. This Work shall be completed by Contractor just prior to paving.

Transverse joints shall be formed by saw cutting back on the previous run to expose the full depth of the course or by using a removable bulkhead. Transverse joints shall not be perpendicular to centerline, but shall be skewed between fifteen and twenty-five degrees (15º and 25º).

K. Repair and Replacement

Asphalt concrete mixture that becomes contaminated with foreign material or is in any way defective as determined by the Engineer shall be removed. Skin patching will not be permitted. Defective materials shall be removed for the full thickness of the course. The pavement shall be cut so that all edges are vertical, the sides are parallel to the direction of traffic, and the ends are skewed between fifteen and twenty-five degrees (15º and 25º). Edges shall be coated with a thin tack coat of material. Fresh asphalt concrete mixture shall be placed in sufficient quantity so that the finished surface will conform to grade and smoothness requirements. The asphalt concrete mixture shall be compacted to the density specified. Any area determined to have an excess or deficiency of asphalt concrete shall be corrected by full depth removal and replacement. No payment shall be made for material replacing defective material. All costs associated with the patching of defective areas shall be borne by Contractor.

L. Vehicular Traffic

Contractor shall not allow vehicular traffic on the asphalt mat surface until the mat surface has cooled to below one hundred twenty degrees (120º) Fahrenheit. Any portion of the asphalt concrete mixture that becomes loose and broken, rutted, or damaged in any way due to vehicular traffic on the asphalt mat surface prior to it cooling to below one hundred twenty degrees (120º) Fahrenheit, shall be removed and replaced with fresh hot asphalt concrete, which shall be compacted to conform with the surrounding area at the specified density.

Article 2.6 Density and Surface Requirements

The complete pavement shall have a density equal to or greater than ninety-six (96) percent of Maximum Density (Marshall Method), except for trail pavement which shall have a density equal to or greater than ninety percent (90%). Maximum Density shall be determined in accordance with the test procedures specified in Section 40.01, Article 1.2 - Applicable Standards. The compacted specimens on which the Maximum Density is determined, shall be produced from a laboratory specimen made from the same days mix, and as close to the lay down temperature as practicable.

When requested by the Engineer, the Contractor shall, without charge, provide the Engineer with test samples of asphalt concrete cored from the completed pavement. All cores shall be at least four inches (4") in diameter and the core holes will be patched by the Contractor within seventy-two (72) hours.

The final surface shall be of a uniform texture conforming to true grade, and cross sections in accordance with the Contract Documents. The thickness of the course shall be in accordance with the Drawings and Specifications. Where curb and gutter is present the compacted pavement surface shall be one-eighth inch plus or minus one-eighth inch (1/8"±1/8") above the top front edge of curb. The specified position of the pavement surface shall be achieved through proper grading of the subgrade, in order not to exceed the design thickness of the pavement.

Prior to the delivery of the first load of asphalt to the Project, the Contractor shall furnish straightedges to the Inspector for checking surface uniformity. Irregularities in the finished pavement surface shall not exceed three-sixteenths of an inch (3/16") within ten feet (10'), or five-sixteenths of an inch (5/16") within sixteen feet (16'). Non-conforming surfaces shall be subject to rejection by the Engineer. Irregularities which develop before the completion of rolling shall be remedied by loosening the surface mix, removing or adding material as may be required, and rerolling.

For trails, a ten foot (10') straightedge, supplied by the Contractor, shall be used to check the paving surface. Surface irregularities shall not exceed one inch in ten feet (1" in 10'). Non-conforming surfaces shall be subject to rejection by the Engineer. Irregularities which develop before completion of rolling shall be remedied by loosening the surface mix, removing or adding material as may be required, and rerolling.

Article 2.7 Measurement

Asphaltic concrete will be paid for by one of the methods as defined in the paragraph below and as designated in the Bid Schedule.

A. Measurement by the Ton

Measurement of hot-mix asphaltic paving materials, unless otherwise provided, shall be weighed on truck scales in accordance with Article 6.4, SubArticle F – Truck Scales. Asphalt concrete pavement shall be measured per ton (2,000 lbs) based on the amount of hot mix asphaltic material actually used in the completed and accepted work modified as follows: the quantity paid for shall not exceed one hundred and five percent (105%) of tonnage determined on the basis of the average core density, the specified neat line thickness, and the completed area of asphaltic concrete pavement. In addition, the

Owner will not pay for that portion of any load in excess of the legal gross weight for the vehicle delivering the load.

B. Measurement by the Square Yard

Measurement of hot-mix asphaltic paving materials, unless otherwise provided, shall be measured by the completed and accepted work. The area measured will be that which is shown on the Drawings plus any additional areas as authorized by the Engineer in writing.

The tolerance for thickness of asphaltic concrete under square yard measurement shall be plus or minus one-fourth inch (1/4") from design mat thickness, as shown on the typical section. This one-fourth inch (1/4") variance shall be the exception only with the average variance for the job being plus or minus one-eighth inch (±1/8") from the design mat thickness. All asphaltic concrete placed outside the variables allowed will be corrected by the Contractor at his expense.

C. Measurement by the Linear Foot

Measurement of hot-mix asphaltic paving materials for bike trails, unless otherwise provided, shall be per linear foot along the centerline of the constructed trail. The thickness of asphalt shall not be less than the thickness shown in the typical section as noted on the Drawings.

Providing tack coat as required throughout the project shall not be measured and this material and labor is subsidiary to the A.C. Pavement (Class E) pay item.

Article 2.8 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Providing tack coat as required throughout the project is subsidiary to the A.C. Pavement (Class E) pay item.

Payment shall be made under the following units:

ITEM	UNIT
A.C. Pavement (Class E)	Ton

DIVISION 50 SANITARY SEWERS

SECTION 50.01 GENERAL

Article 1.1 Scope of Work

Add the following:

Construction is to be completed according to the Standard Details, Drawings, these specifications, and special provisions.

The Contractor, by providing a Bid Proposal and entering into a Contract with the Owner has found that the access, easements, rights-of-way, and other work areas designated in the Drawings are adequate to perform the work and/or the Contractor has secured additional work areas at their own expense that is included in the Bid Proposal to complete the work.

Additional areas secured by the Contractor from parties not associated with the Contract are to be memorialized in the form of a right of entry agreement between the Contractor and party having authority to enter an agreement for the work area. A copy of the right of entry agreement is to be provided to the Owner. The right of entry agreement is to extend the indemnification requirements found in the Contract to Contractor obtained work areas.

The Contractor is to restore the area of Work to preconstruction conditions or better except where shown different on the Drawings or required by the Contract Documents. Where preconstruction conditions cannot be obtained such as items that require growth to obtain height, thickness, and other prized attributes then they are to be replaced with standard nursery stock plant material of the same species and type that will grow back to preconstruction conditions and maintained in accordance with the Contract. The Contractor is to secure written approval by the Engineer for replacement material that does not match preconstruction conditions.

Where the requirements in this division call out for an Engineer and there is not anyone assigned the duties of the Engineer, then the City of Valdez is to be consulted for direction.

Article 1.2 Applicable Standards

Add the following:

AASHTO M45	Standard Specification for Aggregate for Masonry Mortar
AASHTO M306	Standard Specification for Drainage, Sewer, Utility, and Related Castings
ASTM A74	Standard Specification for Cast Iron Soil Pipe & Fittings
ASTM 438	Traverse Testing of Gray Cast Iron
ASTM C564	Standard Specifications for Rubber Gaskets for Cast Iron Soil Pipe & Fittings
ASTM C923	Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes & Laterals
AWWA C600	AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances
AWWA C900	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch through 12 inch for Water Transmission and Distribution
AWWA C905	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 inch through 48 inch for Water Transmission and Distribution

Delete Section 50.02 in its entirety and replace with the following section:

SECTION 50.02 FURNISH AND INSTALL PIPE

Article 2.1 General

The Work under this Section consists of the performance of all operations pertaining to furnishing and installing pipe for sanitary sewer systems.

The Work under this Section consists of performing all Work required for furnishing and installing an operational piping system in a workman like manner meeting applicable standards. The Contractor is to install piping systems in accordance with these Specifications, manufacturer's recommendations, and in conformity with the lines and grades as shown on the Drawings. Where the previously stated requirements are in conflict the more stringent requirement is to govern.

Article 2.2 Submittals

Submittals are to be provided to the Engineer for review and acceptance as stated in Division 10, Section 10.05, Article 5.6 – Product Data. The Contractor is to clearly demarcate items to be incorporated into the Work. Submittals for pipe and fittings should include, but is not limited to the following information:

- Manufacturer pipe submittal cut sheets
- Manufacturer fitting submittal cut sheets
- Detectable underground warning tape and trace wire
- HDPE welder certificates
- Trace wire

Article 2.3 Materials

A. General

All piping is to be in accordance with the Contract Documents conforming to the size and class shown and specified. Changes in class are to be made within one half of a pipe length of the station indicated on the Drawings. The use of pipe containing asbestos materials is prohibited. Detectable underground warning tape is required for installation of all pipe types. Warning tape must not be less than five (5) mil, foil backed, six inches (6”) wide vinyl tape, colored green, with “Caution Buried Sewer Line Below” continuously printed in black along the tape length.

B. Ductile Iron Pipe

Ductile iron pipe is to conform to ASTM A 746 (AWWA C 151) with a cement mortar lining conforming to AWWA C-104. Cast and ductile iron fittings and pipe bells are to conform to AWWA C110 or AWWA C-153. Rubber gasket joints for ductile iron pipe fittings are to conform to AWWA C-111.

C. Cast Iron Pipe

All cast iron pipe and fittings are to be hub and spigot service weight soil pipe conforming to the requirements of ASTM A74. Gaskets are to conform to the requirements of ASTM C564.

D. Concrete Pipe and Fittings

Reinforced concrete pipe and fittings must conform to the requirements of ASTM C 76. Non-reinforced concrete sanitary sewer pipe is to conform to ASTM C 14.

E. Concrete Pipe Joints

Joints for concrete pipe are to conform to ASTM C-14 and ASTM C-443. Joints are to be of the "O" Ring type and be subject to the approval of the Engineer as to configuration. All repair clamps are to be approved stainless steel clamps.

F. High Density Polyethylene Pipe (HDPE)

HDPE and fittings are to be manufactured in accordance with AWWA C906. In addition to the requirements of AWWA C906, HDPE is to be manufactured from PE4710 polyethylene compounds that meet or exceed ASTM D3350 Cell Classification 445574. All HDPE pipe and fittings must be certified by the NSF for potable water service. HDPE pipe and fitting material compound are to contain color and ultraviolet (UV) stabilizer meeting or exceeding the requirements of Code C per ASTM D3350. Electrofusion fittings are not allowed. All fittings will have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

The pipe is to be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It is to be uniform in color, opacity, density and other physical properties.

Butt fusion of the pipe and fittings is to be performed in accordance with the pipe manufacturer's recommendations as to equipment and technique. The fusion operation is to be performed by an

individual who has demonstrated the ability to fuse polyethylene pipe in the manner recommended by the pipe supplier.

G. Polyvinyl Chloride Pipe (PVC)

Four inch (4”) through twelve inch (12”) PVC Pipe must conform to the requirements of AWWA C900 and as otherwise required by the Contract Documents. Dimension Ratio (DR) 18 pipe must be used for C900 PVC pipe, unless otherwise specified.

Fourteen inch (14”) through sixteen inch (16”) PVC Pipe must conform to the requirements of AWWA C905 and as otherwise required by the Contract Documents. DR 21 must be used for C905 PVC pipe, unless otherwise specified. Pipe greater than sixteen inches (16”) in diameter will not be allowed unless approved by the COV’s Engineering Director.

H. Cleanouts

Building sewer cleanouts are to be restrained at the wye to the surface. Horizontal piping does not need to be restrained.

I. Polyethylene Encasement

Polyethylene encasement material for pipe is to be eight (8) mils thick and conform to AWWA C105. Polyethylene encasement is to include a VBio film system incorporating corrosion control additives and Microbiologically Influenced Corrosion (MIC) control additives as provided by US Pipe or approved equal.

J. Trace Wire

Tracer wire for sewer lines is to be #10 AWG high-strength copper clad steel with a 30-mil HDPE insulation jacket (color blue) and have a 600-pound average tensile break load. Tracer wire is to be manufactured by Copperhead Industries or an approved equal. Grounding rods are to be a minimum of 24” inches long and copper clad. The direct burial grounding clamps are to be EK17 as manufactured by Erico or approved equal. All splice connections are to be constructed using 3M DBR watertight connectors or approved equal. DryConn Waterproof Direct Bury Lugs as manufactured by King Innovation, or approved equal, are to be used to splice into the main line tracer wire.

K. Material Limitations

Cast iron pipe may be used for repairs that are less than ten feet (10’) long for sewer extensions.

Repair clamps or pipe couplers are to be ridged with at least three inches (3”) bearing on each side of the coupled pipe joint.

Article 2.4 Construction

A. Excavation and Backfill

Excavation and backfill for furnishing and installing sanitary sewer pipe is to be in accordance with Division 20, Section 20.07 - Trench Excavation and Backfill. The Contractor must remove and dispose

of all sewage-saturated soils encountered within the trench area. All sewage-saturated soils are to be considered unsuitable material, not to be used as fill material anywhere within the COV and must be disposed of at the COV Landfill. There is to be no separate payment and is considered incidental to the pay item under construction for removal and disposal of sewage-saturated soils.

B. Pipe Grade and Alignment

Piping is to be laid at the grade and alignment shown on the Drawings. For projects that do not require Drawings, the Contractor must ensure a functioning sanitary sewer system meeting the minimum separation, slope and burial requirements.

Minimum slopes for gravity sewers are as follow:

Pipe Diameter	Slope	
4"	2.08%	.0208 feet per foot
6"	1.00%	.0100 feet per foot
8"	0.40%	.0040 feet per foot
10"	0.28%	.0028 feet per foot

The minimum standard depth of bury for gravity sewer is eight feet (8'). Where this cannot be achieved, the sewer pipe is to be laid at the minimum slope to achieve the greatest depth of bury possible. Where the depth of bury is reduced to five and one-half feet (5 ½'), but greater than four and one-half feet (4 ½') the sewer pipe is to be fully encapsulated with a minimum of three inches of rigid foam. Pressure sewer is to have a minimum cover of ten feet (10') with no reduction allowance for insulation.

Pipe installation with less than minimum separation, slope or bury will be cause for rejection.

Allowable variances for individual pipe sections from established line and grade must not be greater than those listed in the table below, provided that such variance does not result in a level or reverse sloping invert.

Diameters (Inches)	Allowance Tolerance (Feet)
8-12	0.03
14-16	0.04
18+	0.05

During the progress of the Work, the Contractor shall provide instruments such as transits, levels, laser devices, and other facilities for transferring grades from offset hubs or for setting batter boards or other construction guides from the control points and bench marks provided by the Contractor. The Contractor is to provide qualified personnel to use such instruments and who have the duty and responsibility for placing and maintaining such construction guides. Backfill over a section of pipe to provide a platform for transit, level alignment and grade observations is subject to the approval of the Engineer. If intermittent backfilling is allowed, backfilling is to be accomplished in accordance with Division 20, Section 20.07 - Trench Excavation and Backfill.

C. Pipe Laying

In all cases pipe installation is to proceed from lower to higher elevations with the spigot ends of the pipe at the lower end of each pipe segment. Each pipe is to be laid true to line and grade. Joints may not deflect or be offset. The alignment of the installed pipe is to appear visually straight so that a full circle of light can be seen between manholes.

Each section of pipe is to be handled carefully, placed accurately; and joined in accordance with the pipe manufacturer's recommended standards. Each section of pipe is to be properly supported to ensure true alignment and an invert which is smooth and free from roughness or irregularity.

The Contractor is to stagger the joints for sanitary sewer pipe such that no sewer pipeline joint is closer than nine feet (9') measured horizontally (outside of pipe to outside of pipe) from its intersection with water mains encountered in the Work.

The Contractor shall take every precaution to preclude foreign debris from entering the sanitary sewer system. Temporary screening techniques of the downstream manholes proposed for use by the Contractor must first be reviewed and approved by the Engineer prior to their use in the Work. Contractor is responsible for removing and cleaning any foreign debris that enters the sanitary sewer system. All costs associated with the removal of foreign debris from the sanitary sewer system resulting from the Contractor's activities is considered incidental to the Contract.

At all times, when Work is not in progress, open ends of pipe and fittings are to be securely and satisfactorily closed so that no undesirable substance will enter the pipe or fittings.

The pipe is to be laid in trenches when the trench bottom and sides to one foot (1') above the pipe are in a thawed state. The trench is to be immediate backfilled with completely thawed material. The trench is to be backfilled at the end of the work shift during freezing and near freezing temperatures to prevent the pipe zone from freezing. Tracer wire must be installed on all non-metallic pressure sewer pipes.

Tracer wire must be brought to the surface near sewer structures. The warning tape must be continuously laid with the pipe and be at least twenty-four inches (24") and no more than thirty-six inches (36") above the pipe.

D. Polyethylene Encasement

The polyethylene encasement is to be installed in strict conformance with Method A described in the most current editions of AWWA C105/ANSI A21.5 and the Ductile Iron Pipe Research Association's "A Guide for the Installation of Ductile Iron Pipe."

Bedding and backfill material around pipelines with polyethylene encasement is to be placed using protective measures such as shields, guards, coating systems, and/or other methods as needed to protect the polyethylene encasement from becoming torn, punctured or otherwise damaged during the Work. Damage to the integrity of the polyethylene encasement must be either repaired or the pipeline removed, and the polyethylene encasement replaced as directed by the Engineer. Costs for repair and/or replacement of damaged polyethylene encasement is to be considered incidental to the installation of the polyethylene encasement and/or the installation of the pipeline protected by the encasement.

E. Bedding of Sanitary Sewer Pipe

All pipe is to be bedded with Class C bedding, unless another material is authorized in writing by the COV. Bedding is to be laid the full width of the ditch and compacted to a minimum of ninety-five percent (95%) of the maximum density.

Sanitary sewer pipe bedding is to extend six (6) inches below and above the pipe and constructed in accordance with the plans and COV Specifications and Details.

Laying Instructions for Concrete Pipe with "O" Ring Bell End Joint To allow a watertight joint and to ensure an installation which will allow the pipe to perform as designed, the following recommendations of the pipe manufacturer are to be observed:

1. Spigot groove and bell surface is to be clean and free of foreign material.

2. Apply joint lubricant freely to the bell including the tapered surface and completely coat the rubber gasket.

3. After placing gasket in groove, run a small tool completely around between gasket and groove to equalize gasket stretch.

4. Exercise care at first contact of the pipe. Avoid bumping which may damage spigot. Stop any swaying motion before contact is made.

5. To couple pipe, insert spigot slowly and carefully straight into bell, to allow the gasket to cushion the initial contact and center the spigot as it enters the tapered portion of the bell.

6. Completed joints should have spigot inserted into the bell in conformance with the pipe manufacturer’s recommendations. Sewer collectors are to be laid in a straight run with no deflections or alignment changes except at manholes. Sewer services alignment changes are to happen through fittings.

7. Check all around pipe for rolled or "fish mouthed" gaskets after coupling.

8. Do not pick up and drop coupled pipe to adjust grade.

9. Ensure that the pipe is not supported only at the bell nor is the pipe barrel resting on a high spot. The bottom quarter of the pipe is to be uniformly supported through its length in order for the pipe to resist the design loads.

F. Laying Instructions for Other Pipe - All other pipe is to be laid in accordance with the manufacturer's published recommendations and as directed by the Engineer.

Article 2.5 Testing

A. General

The Contractor is to provide all materials, equipment, and labor related to testing that is acceptable to the Engineer and COV. Testing, retesting, and any required repairs to pass testing of the installed sewer pipe is an obligation of the Contractor to perform and is incidental to the bid item under construction. After testing, if repairs are needed then the previous testing will be considered void and the segment of pipe in which the repair took place is to be retested.

The Contractor may test any portion of the installed sewer pipe at any time for their convenience, but acceptance testing is to be performed in the presence of the Engineer or Inspector and a COV representative. The Engineer will provide the Contractor written confirmation that acceptance testing is satisfactory.

All sanitary sewer pipe installed is subject to either an infiltration test or an exfiltration test and lamping or closed-circuit television (CCTV) inspection.

The Contractor is to clean and flush all sanitary sewer pipe installed prior to testing and substantial completion inspection. Testing for the purpose of acceptance will be done after trenches are backfilled, planned surrounding utilities have been installed and the road structural section is in place. It is recommended to complete testing prior to installation of curb and gutter and pavement.

Exfiltration testing is the standard method of testing. Infiltration testing may occur when requested by the Contractor and if the Engineer finds that the groundwater and soil conditions are satisfactory to complete an infiltration test.

All wyes, tees, and pipe ends are to be plugged or capped and secured to withstand the test pressures. Plugs or caps are to be readily removable and their removal is to provide a bell suitable for extending the sanitary sewer extension.

The Contractor shall take precautions to prevent sewage from entering the new sanitary sewer pipeline until it has been inspected, tested and accepted for operation by the Engineer. The Contractor may request inspection, testing, and acceptance of incremental segments of the Work. An incremental segment is considered buried sewer pipe between two completed manholes.

Before the Contractor requests the Inspector to perform conformance testing on any portion of the Work, the Contractor is to complete tests and observations to assuage themselves that the Work is ready for inspection. At the discretion of the Engineer, the Contractor will be required to pay for all Owner related costs associated with conformance testing when the inspection fails more than once.

B. Hydrostatic Exfiltration Test

Upon completion of a section of sanitary sewer between manholes the Contractor is to plug all ends of the pipe, including service piping prior to commencing testing.

A minimum head of six feet (6’) of water above the crown at the upper end of the test section is to be maintained for a period of four (4) hours during which time it will be presumed that full absorption of the pipe body has taken place and thereafter for a further period of one (1) hour for

the actual test of leakage. During this one-hour period, the measured loss must not exceed the rate of fifty (50) gallons per inch diameter per mile per twenty-four (24) hours.

The above listed leakage rate is also to be applied to infiltration from ground water and infiltration or exfiltration in greater amounts will be cause for rejection of the sanitary sewer.

The maximum length of sanitary sewer for the above allowable leakage test is one thousand feet (1,000'). If it is not apparent that leakage test results between any two (2) manholes is satisfactory, then the Engineer may require subsequent tests to establish the more exact location of the leakage areas. Any section of sanitary sewer between any two (2) manholes that does not meet the above requirements will be rejected.

C. Low Pressure Pneumatic Exfiltration Test

Safety braces are required to hold plugs in place and to prevent a sudden release of compressed air. Due to the large forces that could be exerted by an escaping plug during the testing of the pipe, workmen must not be allowed in the manholes in which plugs have been placed while internal pipe pressure is above atmospheric pressure such as while testing is in progress. The Contractor's testing equipment is to be arranged in such a manner that a pressure relief device will prohibit the pressure in the pipeline from exceeding ten pounds per square inch (10 PSI).

All air used to pressure up the line being tested is to pass through a single above ground control panel. The above ground air control equipment is to include a shutoff valve, pressure relief valve, input pressure gauge, and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 PSI. The continuous monitory gauge is to be no less than three inches (3”) in diameter with a minimum division of 0.10 PSI and an accuracy of plus or minus three percent (±3%) (Miljoco Part # P3508L02 or equal). Two separate hoses connected to their own dedicated plug connection are to be used to:

- connect the control panel to the sealed line for introducing low-pressure air, and
- a separate hose connection for constant monitoring of air pressure build-up in the line.

Air is to be slowly supplied to the test section until the internal air pressure reaches four pounds per square inch (4.0 PSI). Where the groundwater table is above the sewer test section, then the air test pressure is to be increased by the head of ground water above the lowest invert of the test section to a maximum test pressure of 9 PSI. A conversion of 0.43 PSI/ft of head is to be used to convert head pressure to PSI. At least two (2) minutes will be allowed for temperature stabilization before proceeding further.

To obtain the groundwater table height above the lowest invert of the pipe; the Contractor is to install a temporary slotted 3/4” PVC pipe at the exterior of the manhole. The ground water level will be measured from the pipe after minimum of forty-eight hours (48hrs) have passed after installation to allow the ground water to reach equilibrium. The Contractor, as witnessed by the Inspector, is to measure the ground water level. After completion of the testing, the PVC pipe is to be cut off one foot (1’) below grade and buried.

When temperatures have been equalized and the pressure stabilized at 4.0 PSI plus the groundwater pressure increase, the air hose from the control panel to the air supply is to be disconnected. The pressure is to be decreased through bleeding to the test pressure which is to be 3.5 PSI plus the

groundwater pressure increase. Upon reaching the test pressure the Inspector is to begin timing with a stopwatch.

If the pressure drops 1.0 PSI before time expires as found in the table below then the section undergoing testing has failed and must be repaired and/or retested.

Table 1

Nominal Pipe Diameter (Inches)	Minimum test time by length (Minutes:Seconds)							
	100ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
4	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	11:20	11:24	14:15	17:05	19:56	11:47	25:38
16	14:10	19:13	25:38	32:03	38:27	44:52	51:16	57:41
18	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
20	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33

If a pipe diameter is not list in Table 1, then the Contractor is to request, receive, and follow the direction provided by the Engineer. Pipes that are thirty-six inches (36") in diameter or larger at the option of the Contractor, may reduce the testing requirements to joints only.

D. Infiltration Test

Infiltration testing may be allowed at the Engineer's option when the natural ground water table is six feet (6') above the crown of the higher end of the test section. The maximum allowable limit for infiltration is not to exceed the rate of fifty (50) gallon per inch diameter per mile per twenty-four (24) hours.

The Engineer may require the Contractor to repair obvious leaks even though the total leakage of the test section falls within the maximum allowable leakage for the test used.

E. Check Line and Grade

After backfilling and cleaning, but before final acceptance, all sections of installed line are to be checked for line and grade. At the request of the Contractor, the COV inspector will lamp the sewer line to check line and grade after the Contractor makes the lines accessible and safe. A full circle of light must be seen, and no pipe misplaced in line or grade. A physical inspection of the interior of all sanitary sewer line thirty inches (30") in diameter and above will be made before acceptance. Any excess deviation in line and grade must be corrected by the Contractor prior to Final Acceptance of the Project.

Excluding service connections, all size sanitary sewer pipes thirty inches (30") and smaller in diameter may be checked for line and grade by CCTV per the corresponding requirements in the Contract Documents.

Article 2.6 Measurement

Measurement for furnishing and installing sewer pipe is to be per linear foot of horizontal distance of the various sizes as set forth in the Bid Schedule. Measurement will be from center to center of manholes or from center of manhole to center of cleanout, bend, or fitting. Polyethylene encasement will not be measured for payment.

Article 2.7 Basis of Payment

Payment for this Work is to be as specified in Division 10, Section 10.07 – Measurement and Payment, and includes full payment for all Work described in this Section. Testing and any required repairs to pass testing of the installed sewer pipe is an obligation of the Contractor to perform and is incidental to the bid item under construction. Unless specifically identified for payment under a separate bid item, the unit price bid for Furnish and Install Pipe (size, shape, type material, class, and/or gauge) includes all labor, equipment, and materials to furnish and install a functional sanitary sewer system including but not limited to the following incidental items:

- polyethylene encasement;
- asphalt surfacing removal and/or replacement;
- concrete sidewalk removal and/or replacement;
- curb and/or gutter removal and replacement;
- clearing and grubbing;
- trench excavation, backfill and compaction;
- excavation dewatering;
- trench support system;
- Class C pipe bedding furnishing and installation;
- pipe, fittings, adapters, or other necessary appurtenances installation;
- surveying;
- testing;
- unusable or surplus material disposal;
- protection, bracing and/or shoring of existing utilities;
- existing drainage patterns restoration;
- removing and replacing existing culverts, fences, landscaping, and other public or private improvements or natural features impacted by the Work;
- finish grading;
- cleanup.

Unit cost payment is to be made on the following basis:

ITEM	UNIT
Furnish and Install Pipe (Nominal Size, Material)	Linear Foot

Add the following Section

SECTION 50.23 SEWER MANHOLE COATING

Article 23.1 General

This section defines the scope of work of the specification which includes executing surface preparation; cleaning; application of specified products; inspection; and lining of existing specified structures and surfaces by a monolithic application of a high build, one hundred percent (100%) solids, structural epoxy system to seal infiltration/exfiltration; repair voids and deterioration; and provide enhanced corrosion protection as a total rehabilitative lining system. Procedures for qualifying and are described herein. All structures scheduled for rehabilitation shall be cleaned, prepared, patched, and/or sealed as required prior to the application of the structural epoxy system.

A. The Contactor shall be responsible for furnishing all labor, supervision, products, materials, and equipment required to complete all rehabilitation work in accordance with this section.

B. All Articles of this Specification are mutually complimentary, and the overall intent is that the Contractor shall provide for everything in his portion of the work required to make a complete and operable job in every respect unless specifically noted otherwise.

C. It is the intent of this Specification to ensure that the work, as completed shall meet all applicable codes, ordinances, rules and regulations of every authority having jurisdiction in the area where the project(s) is located. Failure of the Contractor to point out items that do not meet such requirements does not relieve the Contractor or the Subcontractors of the responsibility of meeting them.

D. All supplies shall be stored and maintained by the Contractor in accordance with manufacturer's recommendations. Materials shall not be exposed to adverse conditions prior to the work. All materials shall be kept in secured area and away from general public access. The Contractor shall review and maintain all Safety Data Sheets (SDS), product labeling, and technical literature at the project site.

Article 23.2 References

A. The latest codes and standards referenced herein and belonging to the following organizations shall be followed:

1. American Society for Testing and Materials (ASTM)

2. National Association of Corrosion Engineers, NACE International (NACE)

3. The Society for Protective Coatings (SSPC)

4. Occupational Safety and Health Administration (OSHA)

5. Resource Conservation and Recovery Act (RCRA)

6. United States Environmental Protection Agency (EPA)

7. Environmental Technology Verification (ETV)

8. International Concrete Repair Institute (ICRI)

9. National Association of Sewer Service Companies (NASSCO)

10. National Sanitation Foundation (NSF)

11. Center for Innovative Grouting Materials and Technology (CIGMAT)

12. American Association of State Highway and Transportation Officials (AASHTO)

Article 23.3 Submittals

A. Product Data

1. Technical data sheets and safety data sheets on each product proposed shall be furnished. The technical data, with quantitative and qualitative values based on ASTM testing results, and/or other 3rd party testing methods shall demonstrate performance conformity with these specifications.

B. Application Data

1. Project specific guidelines and recommendations.

2. Design details for any ancillary systems and equipment to be used on site for surface preparation and application.

3. Confined space entry, flow diversion and/or bypass plans shall be presented by the Contractor to the Engineer as necessary to perform the specified work.

4. Applicator: Company specializing in performing work of this section with minimum one (1) year documented experience and approved by coating material manufacturer. If spraying, contractor must be certified by manufacturer verifying ownership proper equipment and training.

5. Three (3) recent references of Applicator indicating successful application of coating product(s) of the same or similar material type as specified herein, within municipal sanitary sewer manhole environments.

6. Written warranty.

i. Materials and labor shall be warranted with bond by the Contractor of applied material systems for a period of two (2) years from the date of final acceptance of the project, once correctly applied by an approved applicator and inspected.

ii. Failure will be deemed to have occurred if the protective system fails to (a) prevent the internal damage or corrosion of the underlying structure due to bacteriological, chemical, gaseous, erosive and abrasive attack. It does not include excessive atypical non-wastewater induced chemical abuse or atypical acts of God which cause structural damage, (b) seal and protect the substrate

and environment from contamination by effluent, (c) seal and protect from influent.

iii. The Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during said warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the City.

C. Or Equal Submittal

1. In order to be considered as an equal product, said product will have to meet the minimum physical and performance properties described herein as measured by the applicable ASTM standards referenced or other 3rd party referenced testing methods. Testing results must be performed and presented in the form of technical data sheets. Said product manufacturer must provide documentation supporting product's success and history in closed-wastewater-environments for at least ten (10) years.

2. Equal products' technical specifications/data and material safety data must be submitted to the City a minimum of three (3) weeks prior to bid date. Samples of raw material must be submitted in order to cover at least one (1) square foot of surface.

3. Written product pre-approval is required to determine if the prospective product may be bid and utilized on this project(s). A product will be rejected as unacceptable should submittal to the City not be received by the deadline and should the bid package not have enclosed a written approval from the City.

Article 23.4 Products

ACTIVE LEAK CONTROL

A. Active leak control materials are to be utilized to stop running water, infiltration, and other water stop needs.

B. All active leak control materials must be compatible with repair and lining materials.

C. Active leak control materials include the following:
1. Hydraulic cement

i. Quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug, which stops running water and/or seepage through concrete.

ii. Approved material shall exhibit the following physical properties:

Initial Set Time @ 77F	1-3 minutes
Tensile Strength, ASTM C-496	640+ psi
Compressive Strength, ASTM C-109	
1 day	≥ 1,500 psi
28 days	≥ 5,000 psi

iii. Specified material(s) are listed below, or prior approved equal (see Article 23.3 C):

1. Epoxytec Mortartec Hydrxx (#RCHY) by Epoxytec (epoxytec.com)

2. 877.GO.EPOXY 954.961.2395 (fax)

2. Chemical grout

i. Chemical grout material used for grouting active leaks shall be injection hydrophobic polyurethane or equal.

ii. While being injected, the chemical sealant must be able to react/perform in the presence of water.

iii. The cured material must withstand submergence in water, without degradation.

iv. The resultant sealant (grout) formation must be impervious to water penetration.

v. The final sealant must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the sealant.

vi. The final sealant formation must not be biodegradable.

vii. Chemical grouting material final cure must not exceed one (1) hour.

viii. Chemical grouting material must be compatible to other specified top coating and repair material and the final topcoat of the structural epoxy system.

LINING

A. General

1. It is the intent of this section to provide for the waterproofing, sealing, and corrosion protection of manholes and similar underground structures by the safe, quick and economical application of an ultra-high build 100% solids structural epoxy liner.

2. This specification establishes the minimum standard for material and method of application for the structural reinforcement, sealing and corrosion protection of leaking and deteriorated manholes by lining with a 100% solids, high build structural grade epoxy. The structural epoxy liner shall be installed at a minimum thickness of 100 mils (0.1”) Dry Film Thickness (DFT).

3. The structural epoxy lining system will be used on surfaces in order to protect against corrosion and seal from inflow and infiltration.

B. Materials

1. Structural epoxy lining system must be a structural epoxy exhibiting the following features:

i. The structural epoxy must have undergone testing and verified by the US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).

ii. The structural epoxy must be 100% solid, no VOCs.

iii. The structural epoxy must be a high flexural strength, fiber-filled system; a fiber-reinforced-polymer (FRP) formulates technology.

iv. The structural epoxy must be self-priming, requiring no primer.

v. The structural epoxy must adhere to concrete with adhesion testing results in PSI that outperformed the cohesion of concrete on both dry concrete and wet brick (CIGMAT CT-2/3).

vi. The structural epoxy must be moisture tolerant up 100% and fully cure underwater.

vii. The structural epoxy must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the cure and performance properties.

viii. The structural epoxy must be able to be applied by trowel (hand-applied) in order to mobilize and apply in limited access areas.

ix. The structural epoxy must hang with vertical and overhead thickness capability of one-sixteenth (1/16) inch to three-eighths (3/8) inch in one pass without sag.

x. The structural epoxy must have an indefinite recoat window without preparation for simple repair requirements.

xi. The structural epoxy shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems, including severe hydrogen sulfide (up to eight hundred parts per million (800ppm)).

xii. The coating system must be a dense structural epoxy (epoxide) coating system (sixteen thousand pounds per square inch (16,000 psi) or greater) exhibiting elongation (ASTM D2370) of 5% (minimum) to ten percent (10%) (maximum) to ensure properties which withstand minor movement, vibration, and access induced mechanical impact.

2. Approved material shall exhibit the following physical properties:

i. Type	A. FRP-type, hybrid polymer (epoxy/epoxide)
ii. Solids by Volume ASTM D2697	B. 100%
iii Solvent (VOC) ASTM D3960	C. none
iv Adhesion Strength (concrete, dry) CIGMAT CT-2/3	D. substrate failure
v Adhesion Strength (brick, wet) CIGMAT CT-2/3	E. substrate failure
vi Adhesion Strength (steel) ASTM D4541	F. 1,500+ psi
vii Water Absorption ASTM D1653	G. < 0.1 g/sq.m.
viii Acid Exposure (pH 1, H2SO4) CIGMAT CT-1	H. passed
ix Tensile Strength ASTM D638	I. 5,500+ psi
x Flexural Modulus ASTM D790	J. 500,000+ psi
xi Flexural Strength ASTM D790	K. 4,000+ psi
xii Compressive Strength ASTM D695	L. 16,000+ psi
xiii Elongation ASTM D2370	M. 4-6%
xiv Complete Cure	N. 18 hours (77 degrees F)

3. Specified material(s) are listed below, or prior approved equal (see Article 23.3 C):

Epoxytec CPP #RC3 (and/or CPP Sprayable #C311S); by Epoxytec (epoxytec.com); 877.GO.EPOXY (telephone);954.961.2395 (fax)

Article 23.5 Execution

GENERAL

A. All work shall be in strict accordance with the specifications and recommendation including application of all products as required and in accordance with manufacturer's directions.

B. The Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA, EPA, and any other applicable authorities.

C. Products are to be kept dry, in a climate-controlled environment, protected from weather and stored under cover. Products are to be stored and handled according to their safety data sheets. When freezing temperatures are expected in the area, the Contractor shall take measures to keep applied materials warm (as per manufacturer's guidelines) and provide the required heat in the structure before repair work is started.

D. Any invert(s), channels, drains, or other openings shall be covered during construction operations to prevent loose materials from collection.

E. Bypassing and/or blocking of flow shall be done only with prior approval of the Engineer. The Contractor shall be responsible for transporting or pumping water to maintain operation of any flow, treatment, collection or distribution system while repairs or lining to structures are made.

F. The City will supply water necessary for the project to the Contractor at no cost, from locations indicated by the City prior to the start of the project. The Contractor shall be responsible for transporting the water.

G. It shall be the contactor's responsibility to provide traffic control required by the particular location and/or jurisdiction.

H. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.

I. Applicator shall initiate and enforce quality control procedures consistent with applicable ICRI, NACE, and/or SSPC standards and the repair/coating manufacturer's recommendations.

J. Examination

1. Examine surface to receive rehabilitation prior to applying any materials. Notify the Engineer in writing if surfaces are not acceptable for rehabilitation and/or lining.

2. All structures to be repaired and coated shall be readily accessible to the Applicator.

3. Any active flows shall be dammed, plugged or bypassed as required to ensure that the liquid flow is maintained below the surfaces to be coated and that concrete to be coated has not reached moisture levels surpassing ninety percent (90%). Flows should be totally plugged and/or diverted when coating any invert. All extraneous flows into the structures at or above the area coated shall be plugged and/or diverted until the structural epoxy coating has set hard to the touch.

4. Temperature of the surface to be coated must be maintained between sixty-five degrees Fahrenheit (65°F) and one hundred ten degrees Fahrenheit (110°F) during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.

5. New Portland cement concrete structures shall have endured a minimum of twenty-eight (28) days since installation, prior to commencing epoxy structural coating installation.

6. Prior to commencing surface preparation, the Contractor shall inspect all surfaces specified to receive the coating and notify the Engineer, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

CLEANING AND PREPARATION OF SUBSTRATE

A. Surface preparation must be achieved immediately prior to utilizing any repair material and/or coatings; re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

B. All receiving surfaces shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the substrate.

C. Surface preparation shall be performed on all specified surfaces to be lined or rehabilitated. Unless otherwise noted, all newly installed concrete structures should first undergo curing of minimum twenty-eight (28) days prior to surface preparation and rehab/lining execution.

D. Prepare surface to be lined that is suitable for application and adhesion of the specified protective coating system and repair products.

    1. Protrusions such as from burrs, sharp edges, fins, and concrete spatter shall be removed during surface preparation.

    2. Voids and other defects that are at or near the surface shall be exposed during surface preparation.

    3. All concrete that is not sound shall be removed so that only sound concrete remains.

E. Surface preparation must achieve a clean and sound substrate in accordance with SSPC-SP13/NACE No. 6 “Surface Preparation of Concrete.”

    1. High pressure water cleaning or water jetting, and/or pre-approved dry or wet abrasive blasting may be necessary in order to achieve acceptable surface preparation free of all foreign material, laitance, oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, and/or other contaminants.

    2. An ICRI profile of CSP 3 or higher shall be achieved.

    3. For existing structures, surface preparation shall yield a pH of seven (7) or higher.

    4. No surface water or active leaks are to be present. Prepared concrete surfaces shall be tested for residual moisture after cleaning and drying, and prior to the application of the coating. Drying may be required with forced air and/or dry heat to achieve moisture levels below eighty percent 80% prior to coating.

    5. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high-pressure cleaning water if conditions dictate.

F. All materials resulting from the cleaning shall be caught at the base of each structure and removed prior to applying specified products.

G. All loose or defective concrete, mortar, brick, grout, ledges, steps and protruding ledges shall be removed to provide an accessible and uniformed surface prior to application of materials.

ACTIVE LEAK CONTROL PROCEDURE

A. Execution

1. When leaks are not readily identifiable upon cleaning operation, use blowers to dry interior for positive identification of leaks and weeping areas.

2. Hydraulic cement

   i. Hand apply a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and concrete structures. The certified applicator shall apply material in accordance with manufacturers' recommendations.

   ii. The area to be repaired must be clean and free of all debris.

   iii. Proper applications should not require any special mixing of product or special curing requirements after application.

3. Chemical grout

   i. Application of materials shall be by injection method only.

   ii. Mixing and handling of all the chemical grout materials shall be in strict accordance with manufacturer's recommendations.

   iii. All excess chemical grout must be removed from the surface via mechanical grinding means and top patched with Hydraulic cement.

LINING METHOD AND PROCEDURE

A. Execution

1. Application procedures shall conform to the recommendations of the structural epoxy coating manufacturer, including material handling, mixing, safety, and application equipment.

2. Top coating or additional coats of the structural epoxy coating should occur as soon as the prior coat becomes tack free, but no later than the recoat window for the specified material(s). Additional surface preparation procedures will be required if this recoat window is exceeded.

3. Follow all published and manufacturer recommended application methods.

4. If spraying, the Contractor must be certified to spray by the coating manufacturer verifying training and that the spray equipment is approved by the coating manufacturer, specifically designed to accurately ratio and condition the specified structural epoxy coating materials. Refer to the manufacturers' spray instruction and procedure prior to

procuring material and applying any material in order to receive proper material variations and application considerations.

5. Apply at a minimum thickness of 100 mils DFT (0.1 inches).

6. If trowel-applied, properly mix and apply materials to all specified surfaces by hand-applied methods with trowel or trowel-type tools.

    i. Combine two (2) gallons kits, Part B to Part A of the packaged material, mix with a low-speed drill mixer for five (5) minutes until a homogenous blend is achieved.

    ii. Trowel the surface or section: for finishing, allow product to start initial gel (circa 30 minutes at 77 degrees F) and rub down with water to create a smooth, uniform finish.

    iii. Apply at a minimum thickness of 100 mils DFT (0.1 inches).

    iv. Allow twenty-four (24) hours to cure.

Article 23.6 Quality Assurance and Acceptance

A. Surface preparation inspection must take place prior to proceeding to material applications, this applies to both repair and lining applications.

    1. Applicator must record, and submit to coating manufacturer's representative or designated inspector:

        i. pH level

        ii. Moisture content

        iii. Abrasive media type and/or preparation methods

        iv. ICRI conditions

B. During application, Applicator shall regularly perform and record epoxy coating thickness readings with a wet film thickness gage, such as those meeting ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages or other type of measuring probe or similar, to ensure uniform thickness during application

C. Applicator shall perform holiday detection on all surfaces coated with the epoxy coating in the presence of the coating manufacturer's representative or designated inspector. After the epoxy coating has set hard to the touch, surfaces shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at one hundred (100) volts per one (1) mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99).

1. All detected holidays shall be marked by the designated inspector and repaired. Additional epoxy coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations.

D. A final visual inspection shall be made by the Applicator and the coating manufacturer's representative or designated inspector. Any deficiencies in the finished coating shall be marked and repaired by Applicator according to the procedures set forth herein.

Article 23.7 Measurement

Measurement for Coating Interior Sewer Manhole is for each sanitary sewer manhole coated complete. All Work including furnishing and installing all labor and materials in this section is incidental to this item and will not be measured separately.

Article 23.8 Basis of Payment

Payment for the Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07 Measurement and Payment, of this Specification, and shall include full payment for all Work described in this Section. The unit bid price to shall include all labor, equipment and materials necessary to perform the manhole coating work. All other work not listed herein but necessary for the completion of the Work will be subsidiary to the bid item.

Payment shall be made under the following units:

ITEM	UNIT
Coating Interior Manhole	Each

DIVISION 55 STORM DRAIN SYSTEMS

Add the following new Section

SECTION 55.16 STORM DRAIN MANHOLE COATING

Article 16.1 General

This section defines the scope of work of the specification which includes executing surface preparation; cleaning; application of specified products; inspection; and lining of existing specified structures and surfaces by a monolithic application of a high build, 100% solids, structural epoxy system to seal infiltration/exfiltration; repair voids and deterioration; and provide enhanced corrosion protection as a total rehabilitative lining system. Procedures for qualifying and are described herein. All structures scheduled for rehabilitation shall be cleaned, prepared, patched, and/or sealed as required prior to the application of the structural epoxy system.

E. The Contactor shall be responsible for furnishing all labor, supervision, products, materials, and equipment required to complete all rehabilitation work in accordance with this section.

F. All Articles of this Specification are mutually complimentary, and the overall intent is that the Contractor shall provide for everything in his portion of the work required to make a complete and operable job in every respect unless specifically noted otherwise.

G. It is the intent of this Specification to ensure that the work, as completed shall meet all applicable codes, ordinances, rules and regulations of every authority having jurisdiction in the area where the project(s) is located. Failure of the Contractor to point out items that do not meet such requirements does not relieve the Contractor or the Subcontractors of the responsibility of meeting them.

H. All supplies shall be stored and maintained by the Contractor in accordance with manufacturer's recommendations. Materials shall not be exposed to adverse conditions prior to the work. All materials shall be kept in secured area and away from general public access. The Contractor shall review and maintain all Safety Data Sheets (SDS), product labeling, and technical literature at the project site.

Article 16.2 References

B. The latest codes and standards referenced herein and belonging to the following organizations shall be followed:

13. American Society for Testing and Materials (ASTM)

14. National Association of Corrosion Engineers, NACE International (NACE)

15. The Society for Protective Coatings (SSPC)

16. Occupational Safety and Health Administration (OSHA)

17. Resource Conservation and Recovery Act (RCRA)

18. United States Environmental Protection Agency (EPA)

19. Environmental Technology Verification (ETV)

20. International Concrete Repair Institute (ICRI)

21. National Association of Sewer Service Companies (NASSCO)

22. National Sanitation Foundation (NSF)

23. Center for Innovative Grouting Materials and Technology (CIGMAT)

24. American Association of State Highway and Transportation Officials (AASHTO)

Article 16.3 Submittals

D. Product Data

1. Technical data sheets and safety data sheets on each product proposed shall be furnished. The technical data, with quantitative and qualitative values based on ASTM testing results, and/or other 3rd party testing methods shall demonstrate performance conformity with these specifications.

E. Application Data

1. Project specific guidelines and recommendations.

2. Design details for any ancillary systems and equipment to be used on site for surface preparation and application.

3. Confined space entry, flow diversion and/or bypass plans shall be presented by the Contractor to the Engineer as necessary to perform the specified work.

4. Applicator: Company specializing in performing work of this section with minimum one (1) year documented experience and approved by coating material manufacturer. If spraying, contractor must be certified by manufacturer verifying ownership proper equipment and training.

5. Three (3) recent references of Applicator indicating successful application of coating product(s) of the same or similar material type as specified herein, within municipal sanitary sewer manhole environments.

6. Written warranty.

   i. Materials and labor shall be warranted with bond by the Contractor of applied material systems for a period of two (2) years from the date of final acceptance of the project, once correctly applied by an approved applicator and inspected.

   ii. Failure will be deemed to have occurred if the protective system fails to (a) prevent the internal damage or corrosion of the underlying structure due to bacteriological, chemical, gaseous, erosive and abrasive attack. It does not

include excessive atypical non-wastewater induced chemical abuse or atypical acts of God which cause structural damage, (b) seal and protect the substrate and environment from contamination by effluent, (c) seal and protect from influent.

iii. The Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during said warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the City.

F. Or Equal Submittal

1. In order to be considered as an equal product, said product will have to meet the minimum physical and performance properties described herein as measured by the applicable ASTM standards referenced or other 3rd party referenced testing methods. Testing results must be performed and presented in the form of technical data sheets. Said product manufacturer must provide documentation supporting product's success and history in closed-wastewater-environments for at least ten (10) years.

2. Equal products' technical specifications/data and material safety data must be submitted to the City a minimum of three (3) weeks prior to bid date. Samples of raw material must be submitted in order to cover at least one (1) square foot of surface.

3. Written product pre-approval is required to determine if the prospective product may be bid and utilized on this project(s). A product will be rejected as unacceptable should submittal to the City not be received by the deadline and should the bid package not have enclosed a written approval from the City.

Article 16.4 Products

ACTIVE LEAK CONTROL

D. Active leak control materials are to be utilized to stop running water, infiltration, and other water stop needs.

E. All active leak control materials must be compatible with repair and lining materials.

F. Active leak control materials include the following:

2. Hydraulic cement

iii. Quick setting, hydraulic cement compound designed for minor patching, and as a leak stopper and water plug, which stops running water and/or seepage through concrete.

iv. Approved material shall exhibit the following physical properties:

Initial Set Time @ 77F	1-3 minutes
Tensile Strength, ASTM C-496	640+ psi
Compressive Strength, ASTM C-109	

1 day	≥ 1,500 psi
28 days	≥ 5,000 psi

iii. Specified material(s) are listed below, or prior approved equal (see Article 23.3 C):

1. Epoxytec Mortartec Hydrxx (#RCHY) by Epoxytec (epoxytec.com)

2. 877.GO.EPOXY 954.961.2395 (fax)

3. Chemical grout

ix. Chemical grout material used for grouting active leaks shall be injection hydrophobic polyurethane or equal.

x. While being injected, the chemical sealant must be able to react/perform in the presence of water.

xi. The cured material must withstand submergence in water, without degradation.

xii. The resultant sealant (grout) formation must be impervious to water penetration.

xiii. The final sealant must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the sealant.

xiv. The final sealant formation must not be biodegradable.

xv. Chemical grouting material final cure must not exceed one (1) hour.

xvi. Chemical grouting material must be compatible to other specified top coating and repair material and the final topcoat of the structural epoxy system.

LINING

C. General

1. It is the intent of this section to provide for the waterproofing, sealing, and corrosion protection of manholes and similar underground structures by the safe, quick and economical application of an ultra-high build 100% solids structural epoxy liner.

2. This specification establishes the minimum standard for material and method of application for the structural reinforcement, sealing and corrosion protection of leaking and deteriorated manholes by lining with a 100% solids, high build structural grade epoxy. The structural epoxy liner shall be installed at a minimum thickness of 100 mils (0.1") Dry Film Thickness (DFT).

3. The structural epoxy lining system will be used on surfaces in order to protect against corrosion and seal from inflow and infiltration.

D. Materials

1. Structural epoxy lining system must be a structural epoxy exhibiting the following features:

    i. The structural epoxy must have undergone testing and verified by the US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).

    ii. The structural epoxy must be 100% solid, no VOCs.

    iii. The structural epoxy must be a high flexural strength, fiber-filled system; a fiber-reinforced-polymer (FRP) formulates technology.

    iv. The structural epoxy must be self-priming, requiring no primer.

    v. The structural epoxy must adhere to concrete with adhesion testing results in PSI that outperformed the cohesion of concrete on both dry concrete and wet brick (CIGMAT CT-2/3).

    vi. The structural epoxy must be moisture tolerant up 100% and fully cure underwater.

    vii. The structural epoxy must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the cure and performance properties.

    viii. The structural epoxy must be able to be applied by trowel (hand-applied) in order to mobilize and apply in limited access areas.

    ix. The structural epoxy must hang with vertical and overhead thickness capability of 1/16 inch to 3/8 inch in one pass without sag.

    x. The structural epoxy must have an indefinite recoat window without preparation for simple repair requirements.

    xi. The structural epoxy shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems, including severe hydrogen sulfide (up to 800ppm).

    xii. The coating system must be a dense structural epoxy (epoxide) coating system (16,000 psi or greater) exhibiting elongation (ASTM D2370) of 5% (minimum) to 10% (maximum) to ensure properties which withstand minor movement, vibration, and access induced mechanical impact.

2. Approved material shall exhibit the following physical properties:

i.	Type	A.	FRP-type, hybrid polymer (epoxy/epoxide)
ii.	Solids by Volume ASTM D2697	B.	100%
iii.	Solvent (VOC) ASTM D3960	C.	none
iv.	Adhesion Strength (concrete, dry) CIGMAT CT-2/3	D.	substrate failure
v.	Adhesion Strength (brick, wet) CIGMAT CT-2/3	E.	substrate failure
vi.	Adhesion Strength (steel) ASTM D4541	F.	1,500+ psi
vii.	Water Absorption ASTM D1653	G.	< 0.1 g/sq.m.
viii.	Acid Exposure (pH 1, H2SO4) CIGMAT CT-1	H.	passed
ix.	Tensile Strength ASTM D638	I.	5,500+ psi
x.	Flexural Modulus ASTM D790	J.	500,000+ psi
xi.	Flexural Strength ASTM D790	K.	4,000+ psi
xii.	Compressive Strength ASTM D695	L.	16,000+ psi
xiii.	Elongation ASTM D2370	M.	4-6%
xiv.	Complete Cure	N.	18 hours (77 degrees F)

4. Specified material(s) are listed below, or prior approved equal (see Article 23.3 C):

   Epoxytec CPP #RC3 (and/or CPP Sprayable #C311S); by Epoxytec (epoxytec.com); 877.GO.EPOXY (telephone);954.961.2395 (fax)

Article 16.5 Execution

GENERAL

K. All work shall be in strict accordance with the specifications and recommendation including application of all products as required and in accordance with manufacturer's directions.

L. The Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA, EPA, and any other applicable authorities.

M. Products are to be kept dry, in a climate-controlled environment, protected from weather and stored under cover. Products are to be stored and handled according to their safety data sheets. When freezing temperatures are expected in the area, the Contractor shall take measures to keep applied materials warm (as per manufacturer's guidelines) and provide the required heat in the structure before repair work is started.

N. Any invert(s), channels, drains, or other openings shall be covered during construction operations to prevent loose materials from collection.

O. Bypassing and/or blocking of flow shall be done only with prior approval of the Engineer. The Contractor shall be responsible for transporting or pumping water to maintain operation of any flow, treatment, collection or distribution system while repairs or lining to structures are made.

P. The City will supply water necessary for the project to the Contractor at no cost, from locations indicated by the City prior to the start of the project. The Contractor shall be responsible for transporting the water.

Q. It shall be the contactor's responsibility to provide traffic control in accordance with the approved Traffic Control Plan required by the particular location and/or jurisdiction.

R. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.

S. Applicator shall initiate and enforce quality control procedures consistent with applicable ICRI, NACE, and/or SSPC standards and the repair/coating manufacturer's recommendations.

T. Examination

1. Examine surface to receive rehabilitation prior to applying any materials. Notify the Engineer in writing if surfaces are not acceptable for rehabilitation and/or lining.

2. All structures to be repaired and coated shall be readily accessible to the Applicator.

3. Any active flows shall be dammed, plugged or bypassed as required to ensure that the liquid flow is maintained below the surfaces to be coated and that concrete to be coated has not reached moisture levels surpassing 90%. Flows should be totally plugged and/or diverted when coating any invert. All extraneous flows into the structures at or above the area coated shall be plugged and/or diverted until the structural epoxy coating has set hard to the touch.

4. Temperature of the surface to be coated must be maintained between 65 degrees Fahrenheit (65°F) and 110 degrees Fahrenheit (110°F) during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.

5. New Portland cement concrete structures shall have endured a minimum of 28 days since installation, prior to commencing epoxy structural coating installation.

6. Prior to commencing surface preparation, the Contractor shall inspect all surfaces specified to receive the coating and notify the Engineer, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

CLEANING AND PREPARATION OF SUBSTRATE

H. Surface preparation must be achieved immediately prior to utilizing any repair material and/or coatings; re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

I. All receiving surfaces shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the substrate.

J. Surface preparation shall be performed on all specified surfaces to be lined or rehabilitated. Unless otherwise noted, all newly installed concrete structures should first undergo curing of minimum 28 days prior to surface preparation and rehab/lining execution.

K. Prepare surface to be lined that is suitable for application and adhesion of the specified protective coating system and repair products.

    1. Protrusions such as from burrs, sharp edges, fins, and concrete spatter shall be removed during surface preparation.

    2. Voids and other defects that are at or near the surface shall be exposed during surface preparation.

    3. All concrete that is not sound shall be removed so that only sound concrete remains.

L. Surface preparation must achieve a clean and sound substrate in accordance with SSPC-SP13/NACE No. 6 “Surface Preparation of Concrete.”

    1. High pressure water cleaning or waterjetting, and/or pre-approved dry or wet abrasive blasting may be necessary in order to achieve acceptable surface preparation free of all foreign material, laitance, oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, and/or other contaminants.

    2. An ICRI profile of CSP 3 or higher shall be achieved.

    3. For existing structures, surface preparation shall yield a pH of 7 or higher.

    4. No surface water or active leaks are to be present. Prepared concrete surfaces shall be tested for residual moisture after cleaning and drying, and prior to the application of the coating. Drying may be required with forced air and/or dry heat to achieve moisture levels below 80% prior to coating.

    5. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high-pressure cleaning water if conditions dictate.

M. All materials resulting from the cleaning shall be caught at the base of each structure and removed prior to applying specified products.

N. All loose or defective concrete, mortar, brick, grout, ledges, steps and protruding ledges shall be removed to provide an accessible and uniformed surface prior to application of materials.

ACTIVE LEAK CONTROL PROCEDURE

B. Execution

1. When leaks are not readily identifiable upon cleaning operation, use blowers to dry interior for positive identification of leaks and weeping areas.

2. Hydraulic cement

   i. Hand apply a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and concrete structures. The certified applicator shall apply material in accordance with manufacturers' recommendations.

   ii. The area to be repaired must be clean and free of all debris.

   iii. Proper applications should not require any special mixing of product or special curing requirements after application.

3. Chemical grout

   i. Application of materials shall be by injection method only.

   ii. Mixing and handling of all the chemical grout materials shall be in strict accordance with manufacturer's recommendations.

   iii. All excess chemical grout must be removed from the surface via mechanical grinding means and top patched with Hydraulic cement.

LINING METHOD AND PROCEDURE

B. Execution

1. Application procedures shall conform to the recommendations of the structural epoxy coating manufacturer, including material handling, mixing, safety, and application equipment.

2. Top coating or additional coats of the structural epoxy coating should occur as soon as the prior coat becomes tack free, but no later than the recoat window for the specified material(s). Additional surface preparation procedures will be required if this recoat window is exceeded.

3. Follow all published and manufacturer recommended application methods.

4. If spraying, the Contractor must be certified to spray by the coating manufacturer verifying training and that the spray equipment is approved by the coating manufacturer, specifically designed to accurately ratio and condition the specified structural epoxy coating materials. Refer to the manufacturers' spray instruction and procedure prior to procuring material and applying any material in order to receive proper material variations and application considerations.

i. Apply at a minimum thickness of 100 mils DFT (0.1 inches).

5. If trowel-applied, properly mix and apply materials to all specified surfaces by hand-applied methods with trowel or trowel-type tools.

    i. Combine 2 gallons kits, Part B to Part A of the packaged material, mix with a low-speed drill mixer for five (5) minutes until a homogenous blend is achieved.

    ii. Trowel the surface or section: for finishing, allow product to start initial gel (circa 30 minutes at 77 degrees F) and rub down with water to create a smooth, uniform finish.

    iii. Apply at a minimum thickness of 100 mils DFT (0.1 inches).

6. Allow 24 hours to cure.

Article16.6 Quality Assurance and Acceptance

E. Surface preparation inspection must take place prior to proceeding to material applications, this applies to both repair and lining applications.

    1. Applicator must record, and submit to coating manufacturer's representative or designated inspector:

        i. pH level

        ii. Moisture content

        iii. Abrasive media type and/or preparation methods

        iv. ICRI conditions

F. During application, Applicator shall regularly perform and record epoxy coating thickness readings with a wet film thickness gage, such as those meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages or other type of measuring probe or similar, to ensure uniform thickness during application

G. Applicator shall perform holiday detection on all surfaces coated with the epoxy coating in the presence of the coating manufacturer's representative or designated inspector. After the epoxy coating has set hard to the touch, surfaces shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99).

    1. All detected holidays shall be marked by the designated inspector and repaired. Additional epoxy coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations.

H. A final visual inspection shall be made by the Applicator and the coating manufacturer's representative or designated inspector. Any deficiencies in the finished coating shall be marked and repaired by Applicator according to the procedures set forth herein.

Article 16.7 Measurement

Measurement for furnishing and installing all labor and materials in this section shall be for all storm drain manholes and shall be measured by each completed storm drain manhole being rehabilitated.

Article 16.8 Basis of Payment

Payment for the Work shall be in accordance with Division 10 Standard General Provisions, Section 10.07 Measurement and Payment, of this Specification, and shall include full payment for all Work described in this Section. The unit bid price to shall include all labor, equipment and materials necessary to perform the manhole coating work. All other work not listed herein but necessary for the completion of the Work will be subsidiary to the bid item.

Payment shall be made under the following units:

ITEM	UNIT
Coating Interior Storm Drain Manhole	Each

DIVISION 60 WATER SYSTEMS

Delete Section 60.02 in its entirety and replace with the following section:

SECTION 60.02 FURNISH AND INSTALL PIPE

Article 2.1 General

The Work under this Section consists of performing all Work required for furnishing and installing an operational piping system in a workman like manner meeting applicable standards. The Contractor shall install piping systems as specified within these Contract Documents, the manufacturer's recommendations, the American Water Works Association (AWWA) standards, per the Engineer's written directives, and in conformity with the lines and grades as shown on the Drawings. Where the previously stated requirements are in conflict the more stringent requirement is to govern.

Article 2.2 Submittals

Submittals are to be provided to the Engineer for review and acceptance as stated in Division 10, Section 10.05, Article 5.6 – Product Data. The Contractor is to clearly demarcate items to be incorporated into the Work. Submittals for pipe and fittings should at least contain the following items:

- Pipe
- Fittings
- Detectable underground warning tape
- Trace and continuity wire
- Contractor thrust restraint calculations
- Polyethylene baggies and sheeting
- Coatings
    - Pipe layout plan
    - Storage Temperature
    - Surface preparation requirements
    - Coating repair plan
    - Applicator resumes
    - Application equipment
    - Mixing and application time of coating
    - Curing time
- Flushing and testing plan
- Trench shoring equipment and methods
- Survey Personnel qualifications

Article 2.3 Material

A. Ductile Iron Pipe (DIP)

- Ductile iron pipe (DIP) is to be cement mortar lined, conforms to the requirements of AWWA C151, and has a minimum pipe wall thickness meeting Class 52 requirements. The cement mortar lining is

to conform to the requirements of AWWA C104/ANSI A24.1. At least 10% of the pipe delivered is to be gauged full length of the pipe and marked as such.

B. Zinc Coated Ductile Iron Pipe (qualifies as tightly bonded)

- Zinc Coated Ductile Iron Pipe is to be DIP meeting item A of this Article with a metallic zinc coat and a bituminous finish layer in accordance with ISO 8179-1, with the minimum mass of zinc being 150 grams per square meter and a mean mass of 200 grams per square meter of 99.99% pure metallic zinc.

C. Polyurethane Coated Ductile Iron Pipe (qualifies as tightly bonded)

- Polyurethane Coated Ductile Iron Pipe is to be DIP meeting item A of this Article that has been prepared to receive a solventless elastomeric aromatic polyurethane, chemical cure, ASTM Type V coating that is compatible with in-situ soil conditions. Surface preparation is to be in accordance with the coating manufacturer's instructions.
- The polyurethane coating is to have balanced viscosities in their liquid state that does not require agitation during use.
- Coating material is to be Lifelast Durashield 310 or as approved by the Engineer and COV.
- All coating material is to remain in manufacturer's unopened containers and stored per the manufacturer's recommendations until required for use. Each container is to have the following items plainly visible: name of manufacturer, product, date of manufacture, shelf life, and batch number.
- Coating material that has exceeded manufacturer's recommended shelf life or pot life, has been frozen or over heated, is stored in damaged containers, has broken or leaking seals, or has jelled or otherwise deteriorated during storage must not be used.
- Shelf life, temperature, and humidity limitations for each of the coating system components shall be maintained in strict accordance with coating manufacturer's recommendations during shipping, storage, and application.
- Thinning shall not exceed limitations established by manufacturer. Type of thinner shall comply with manufacturer's instructions.

D. Epoxy Coated Ductile Iron Pipe (qualifies as tightly bonded)

- Epoxy Coated Ductile Iron Pipe is to be DIP meeting item A of this article with a high build and high solids epoxy coating system.
- Inspect, clean, and blast surfaces in accordance with SSPC SP-1 or NAPF 500-03- 01 and NAPF 500-03-04. Solvent clean as necessary to remove any deposits of asphalt paint, oil, grease, soil, drawing and cutting compounds, and other soluble contaminants prior to abrasive blasting.
- The following coating system, or Engineer approved equal, shall be used:

Coating Materials	Coating Thickness (DFT) Minimum (mils)	Maximum (mils)
Sherwin Williams Fast Clad ER Epoxy 1st Coat	18	20
Sherwin Williams Fast Clad ER Epoxy 2nd Coat	18	20

Sherwin Williams Fast Clad ER Epoxy 3rd Coat	18	20
Total Dry Film thickness (DFT)	54	60

- All Manufacturer's instructions and safety precautions shall be followed.
- Deliver all coating materials to the job site in their original, unopened containers. Clearly mark packaging with the coating Manufacturer's name, product name, manufacture date, shelf life, batch number, and color.
- Apply all coatings in accordance with SSPC PA-1, this procedure, and the coating Manufacturer's recommendations. If a conflict exists, contact the Engineer for the determination of which is applicable.
- Coats must not be applied whenever the relative humidity exceeds eighty-five percent (85%), or whenever the surface temperature is less than five degrees (5°) Fahrenheit above the dew point of the ambient air. The temperature of the surface shall not be less than sixty degrees (60°) Fahrenheit during application. Ambient and pipe temperatures shall be within the range recommended by the coating Manufacturer.
- Coatings shall be applied to dust free surfaces. Test the surfaces by applying a strip of clear adhesive tape to the surface and rub onto the surface with a finger. When removed, the tape should show little or no dust, blast abrasive, or other contaminants. If found contaminated, clean by compressed air or vacuum cleaning and retest.

E. Polyvinyl Chloride (PVC) Pipe

- Four inches (4") through twelve inch (12") Polyvinyl Chloride Pipe (PVC) is to conform to the requirements of AWWA C900, have a dimensional ratio (DR) of 18.
- Fourteen-inch (14") through sixteen inch (16") PVC Pipe must conform to the requirements of AWWA C905, have a DR of 18. PVC pipe larger than sixteen inches (16") in diameter requires approval from the COV's Engineering Director for use.
- All PVC pipe is to be blue in color. PVC water main and service piping must be installed with an over insertion prevention device equal to EBAA Iron Mega Stop or the Cert-Lok bi-directionally restraint system.

F. High Density Polyethylene Pipe (HDPE)

- High Density Polyethylene Pipe (HDPE) and fittings are to be manufactured in accordance with AWWA C906 with the additional stipulation that the HDPE is to be manufactured from PE4710 polyethylene compounds that meet or exceed ASTM D3350 Cell Classification 445574. HDPE pipe and fitting material compound is to contain color and ultraviolet (UV) stabilizer meeting or exceeding the requirements of Code C per ASTM D3350. Electrofusion fittings will not be allowed. All fittings are to have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

G. Coated Copper Pipe

- Coated copper pipe must be soft-drawn Type K, seamless, annealed copper pipe suitable for use as underground service water connections for general plumbing purposes and ASTM B88 compliant with an approved coating system.

- Approved coatings include factory applied minimum twenty-six (26) mil thick polyethylene or a field applied coating.

H. Field Applied Coatings

- Where a coating is required, field applied coatings may be used for repair of, in conjunction with, or substitution for other coatings. Field applied coatings are to be denso wrap system, trenton wax tape system or viscotaq viscowrap system. The term “system” requires the use of more than one product from the specified manufacturer to be used in concert to seal the pipe from corrosive and/or potentially contaminated environments and water. At a minimum, the system is to fully encapsulate the piping and fittings, fill voids/gaps and adhere to the pipe. The coating system must not interfere with the operation of moving parts.

I. Fittings and Gaskets

- Iron fittings are to have exterior and interior surfaces coated with fusion bonded epoxy in accordance with AWWA C116/A21.13-09, with the only exception being for PVC overstab bell protection devices, which do not need to be coated.
- Romac 501 couplers are not allowed on water lines.
- Unless otherwise indicated on the Drawings, rubber gaskets for iron pipe is to conform to AWWA C111, and rubber gaskets for PVC pipe joints are to conform to ASTM F477.
- Ductile and cast-iron fittings are to be a minimum of two hundred fifty pound (250#) pressure rating, flange, mechanical joint or bell, lined or unlined. Fittings must conform to the requirements of AWWA C110/ANSI A21.10 or C153 A21.53-06.
- Fittings with nut and bolts are to utilize carbon steel or stainless-steel nuts and bolts. Fittings with carbon steel bolts and nuts must conform to the dimensional and material standards as outlined in AWWA C111 and C115 and be factory- coated with a blue fluoropolymer coating system. Fittings with stainless steel bolts and nuts must conform to the dimensional standards as outlined in AWWA C111 and C115 and the material standards in ASTM F593 and F594 with a minimum tensile strength of 75,000 psi. Bolts and nuts must have imprinted markings indicating the material and grade of the metal used in fabrication. Where bolts and nuts for fittings cannot be covered by the above references then the Contractor must submit a deviation request to the Engineer and COV.
- Fittings used with copper pipe are to be rated high pressure (150 psi) per AWWA C800. Brass components in contact with potable water are to comply with Public Law 111-380 (No Lead Rule). Fittings are to accept flared copper pipe or have
- NPT threads for threading into other fittings. Buried Brass fittings are to be field coated in the same manner as coated copper pipe.

J. Thrust Restraint System

- All thrust restraint system components are to be FM Global approved for the intended use or be UL listed. The surfaces of ferrous components are to have a fusion bonded epoxy coating in accordance with AWWA C116/A21.13-09.
- Thrust restraint systems are required where specified on the Drawings and at fittings, valves, and piping deflection points. The length of required restraint is dependent upon the system characteristics (i.e. soils, depth of cover, pipe size, etc...) in which it is installed. The Contractor must submit restraint length computations to the Engineer. Where the Contractor provided computations

and the length shown in the computations do not match the Drawings, then the greater restraint length takes precedent. When the Drawings do not show restraint length at fittings, valves, and piping deflection points and the Contractor does not provide calculations; then the entire length of pipe is to be restrained.

- Where the Contractor proposes to use non-certified (i.e. FM Global, Underwriter Laboratories, ASTM, AWWA) thrust restrain systems they are to field demonstrate to the Engineer and the COV the installation and/or construction of each new restrained joint or restraining system. Field demonstration must show the performance and sustainability of the restraint system to such a degree as to be equal to FM Global or applicable ASTM requirements. The Engineer and the COV will make the final determination of the acceptability of Contractor proposed non-certified thrust restraint. Each approval will be project specific and re-testing is required for each subsequent project proposed use. All costs for approval or rejection of non-certified thrust restraint and restraint systems are to be borne by the Contractor.

    1. Additional Requirements for DIP (with or without coatings)

       Tie back rods and/or tie back rod and shackle assemblies, along with thrust blocks will not be acceptable thrust restraining system.

       Metallic fittings when not bonded and made amalgams to the pipe cathodic protection system requires a separate corrosion protection system.

    2. Additional Requirements for PVC Pipe

       Thrust restrain systems are to meet the standards of ASTM F1674.

       Concrete thrust blocks are required on all bends, tees, deflections and crosses in addition to fittings providing pipe restraint.

       Chemical bonding will not be allowed. Metallic fittings require a separate corrosion protection system.

    3. Additional Requirements for High Density Polyethylene Pipe

       Thrust restraint systems may be heat fusion bonding, flange fittings fusion bonded with metallic backer rings, alpha romac coupler or equal and other couplers with pipe stiffeners.

       Metallic fittings require a separate corrosion protection system. Electro-fusion couplings are not allowed on COV maintained pipe.

    4. Additional Requirements for Copper Pipe

       Copper pipe thrust restraint systems are the use of flared fittings and silver solder brazed joints.

K. Pipe Material Limitations

- Copper is the only pipe material allowed on small diameter (less than 4”) water service connections. Copper pipe for direct bury is limited in size from one inch (1”) to two inches (2”) in nominal diameter.

- Standard jointing of pipe is to be bell to spigot with a gasket appropriate for the service environment.

L. Trace Wire

- Trace wire for water lines is to be #10 AWG high-strength copper clad steel with a 50-mil HDPE insulation jacket (color blue) and have a 600-pound average tensile break load. Tracer wire is to be manufactured by Copperhead Industries or an approved equal.
- Grounding rods are to be a minimum of twenty four inches (24”) in length and copper clad.
- The direct burial grounding clamps are to be EK17 as manufactured by Erico or approved equal.
- All splice connections are to be constructed using 3M DBR watertight connectors, or approved equal.
- DryConn Waterproof Direct Bury Lugs as manufactured by King Innovation, or approved equal, is to be used to splice into the main line tracer wire.

M. Thaw and Continuity Strap Wire

- The wire shall be insulated No. 2 AWG stranded copper conductor rated for 600V. Insulation shall be HMWPE or approved for use in buried low temperature service. Split bolts or mechanical bolt connection of the wires will not be allowed.

N. Warning Tape

- Warning tape must not be less than five (5) mil, foil backed, six inches (6”) wide vinyl tape, colored blue, with “Caution Buried Water Line Below” continuously printed in black along the tape length.

O. Polyethylene Encasement

- Polyethylene encasement material for pipe is to be eight (8) mils thick and conform to AWWA C105. Polyethylene encasement is to include a VBio film system incorporating corrosion control additives and MIC control additives as provided by US Pipe or approved equal.

Article 2.4 Construction

A. Water Flow Interruptions

- All planned interruptions require notifying the Engineer, the COV Fire Department, property owners, property managers and residents a minimum of seventy-two (72) hours and a maximum of one-hundred forty-four (144) hours in advance of the interruption.
- Properties with fire sprinklers require a minimum of three non-holiday and non- weekend days of notice to allow property managers time to mitigate impacts to fire suppression systems.
- Each interruption requires a separate notification. Interruptions not started within the planned interruption period require a new notice and notifying period. Along with notice requirements, planned interruptions may not affect any portion of a previous interruption until a minimum of forty-eight (48) hours has passed the previous interruption.
- The water service outage area is water system infrastructure and project dependent. Upon notifying the COV of a planned interruption, the Contractor will allow the COV up to fourteen (14) working days to clean and operate valves, operate hydrants and complete test shutdowns to establish the limits of the shutdown area. Shutdown does not implicitly mean shut off and the Contractor is to

plan for up to two hundred gallons per minute (200 gpm) of water from the water system to enter the work area after the pipes have been drained.

- The Contractor is to notify the COV where an interruption impacts or has the potential to impact a business establishment that provides food or health care services. Critical health care services as shown on the Drawings or called out in the special provisions are to be provided temporary water at all times.
- It shall be the Contractor's responsibility to coordinate "turn-off" and "turn-on" with the Engineer and the COV.
- Where the supply of water to a COV customer is interrupted in excess of six (6) hours, the Contractor shall furnish and install a temporary water system. If the water service is disrupted in excess of six (6) hours or without notice, the Contractor is to pay the COV fifty dollars ($50) for each impacted residential or business unit for each hour beyond the initial six hour period or the start of an interruption without notice.
- If the interruption surpasses twenty-four (24) hours without reestablishing water service, then the COV, at its discretion, will take action to make repairs to reinstate water service and back charge the Contractor and other responsible parties to reinstate water service. The COV may take further action by limiting the Contractor from working on COV piping and COV controlled services in the future. In addition, the Engineer may consider the Contractor to have substantially violated the terms of the Contract and begin to terminate the Contract as provided for in Division 10, Section 10.05, Article 5.28.

B. Excavation and Backfill

- The Contractor is to provide all excavation, backfill, and compaction necessary to install the pipe. Trench excavation and backfill is to be completed in accordance with Division 20, Section 20.07 - Trench Excavation and Backfill. In addition, trenching and excavation is to meet the requirements of 29 CFR 1926.651 and 1926.652 (OSHA Trench and Excavation).
- All pipes are to be bedded with Class C bedding unless another material is authorized in writing by the COV. Bedding is to be laid the full width of the ditch and compacted to a minimum of ninety-five percent (95%) of the maximum density.
- Water pipe bedding is to extend six (6) inches below and above the pipe and constructed in accordance with the plans and COV specifications / details.

C. Materials Delivery

- Pipe and appurtenances are to be handled in such a manner to ensure delivery to the trench in a sound, undamaged condition. Particular care is to be taken not to damage the pipe, pipe coating, or lining. Before, after, and during installation the engineer is to be provided an opportunity to examine the pipe and appurtenances for damage and defects. Damaged or defective pipe may be rejected. Rejected pipe must be removed from the project and replaced with acceptable material at no additional cost.
- The pipe is not to be strung out along the shoulders of the road for long distances if it causes inconvenience to the public. The amount of pipe strung at the job site is at the discretion of the Engineer.
- Rubber gaskets are to be protected from extended exposure to direct sunlight. Gaskets are to be installed into the piping when the gasket and pipe are above freezing temperature and the gasket is pliable.

D. Connection to existing water lines

- The COV issues permits for, witnesses, records live tap locations and sometimes completes taps on a cost reimbursable basis.
- Mainline taps two inches (2”) and smaller are to be done by the Contractor. The mainline tap must be accomplished with a drilling machine approved for use on the pipe material being tapped, capable of drilling through the tapping saddle and corporation stop and pipe wall.
- Tapping saddles are to be used for all taps with the exception that one-inch (1”) taps into eight inch (8”) and larger DIP can be directly tapped into the pipe.
- Taps are to be made at sufficient distances from each other, tees, bells, joints and other critical areas to prevent compromising the structural integrity of the pipe being tapped. Taps are not to be made any closer than three feet (3’) to each other or to a bell.
- The Contractor is to schedule COV crews for taps larger than two inches (2”).
- COV services requires a minimum of three working days notification in advance of the anticipated need. Reimbursements arrangements are to be made prior to the start of the three working days’ notice. Live taps proposed on mains larger than twelve inches (12”) or constructed of HDPE may require additional time for ordering and receiving of parts.
- The Contractor shall provide all trench excavation, shoring, bracing, backfill and compaction necessary to complete a successful live tap connection. The trench shall be long enough and of sufficient width at the bottom to allow installation of the valve for the live tap connection. The COV will provide the staff, tapping machine, tapping saddle and connection valve. The Contractor shall provide all necessary equipment and manpower to assist COV personnel in moving piping, valves, tapping machines and miscellaneous items into and out of the trench during the entire time COV personnel are working to complete the installation of the water line tap.
- For the safety of COV personnel, trenching and excavation is to be completed such that it meets the more stringent requirements of OSHA and the COV safety program.
- Contractor shall excavate for live tap connections in such a manner that the excavation is ninety degrees (90°) to the main water line, whenever possible.
- The Contractor shall bear the expenses incurred, if a water main within and directly adjacent to the project site should be damaged during construction. The COV, at its option, will allow the Contractor to make repairs, or the COV will make repairs; however, Contractor shall bear the cost of all material, labor, and other expenses associated with the repair.
- Where the Drawings require the connection to an existing valve, the Contractor may choose to use the valve at their risk or replace it at their expense.

E. Installation

- Installation is to follow the requirements of AWWA C600, C605, M23, M41 and M55; these specifications; special provisions; and the COV published guidance documents. The COV will have final say when deciding on which requirement the Contractor is to meet where these documents conflict at no additional cost to the City.
- Deflection at pipe to pipe joints is to be limited to 80% of the maximum deflection angle recommend by the pipe manufacturer for DIP
- Deflection at pipe to pipe joints is to be limited to 0% of the maximum deflection angle recommend by the pipe manufacturer for PVC pipe.

- If the alignment requires deflection in excess of the above limitations, the Contractor shall furnish fittings to provide angular deflections within the limits allowable. Short radius curves and closures are to be formed by shorter lengths of pipe, bevels, factory fittings, or fabricated fittings.
- Where a fitting is provided to change direction, the Contractor is to install a pipe angle marker per the standard details. The marker must be centered over of the fitting.
- The interior of the pipe and accessories are to be thoroughly cleaned of foreign matter before being lowered into the trench. The pipe is to be kept clean during laying operation by plugging.
- Pipe and appurtenances are to be carefully lowered into the trench by means of derrick, ropes, belt slings, or other suitable equipment. Under no circumstances are any of the pipes or appurtenances to be dropped or dumped into the trench. Care is to be taken to avoid abrasion of the pipe coating. Poles used as levers or skids are to be of wood and have broad flat faces to prevent damage to the pipe and coating. Where any part of the coating or lining is damaged, a repair is to be made by the Contractor at their expense and in a manner satisfactory to the Engineer.
- Damage to a factory applied coating on copper pipe is to be repaired with a field applied coating system.
- The trench bottom is to be graded to provide uniform support for the pipe barrel. Water is to be kept out of the trench by pumping, if necessary, until the jointing is completed. When Work is not in progress, open ends of the pipe, fittings, and valves are to be securely plugged so that no trench water, earth, or other substances will enter the pipes or fittings.
- At a distance of not less than forty feet (40’) from a known obstacle or tie-in to an existing pipe, the Contractor is to expose and verify the exact location of the obstacle or pipe so that proper alignment and/or grade may be determined before the pipe sections are laid in the trench and backfilled.
- Pipe ends left for future connections are to be capped and restrained or as directed by the Engineer. The Contractor is to install vertically an eight foot (8') long wood post, directly over the end of pipe.
- Cutting pipe is to be done in a neat and workmanlike manner without damage to the pipe.
- The Contractor is required to use mechanically restrained joints and fittings on all hydrant leads. The Engineer has the option of checking any or all mechanical joints to assure proper torque as specified by the manufacturer.
- All DIPs with affixed fittings are to be encased in one layer of polyethylene encasement. Fittings affixed to non-metallic piping do not need polyethylene encasement. All valve boxes and hydrant barrels are to be encased in three layers of polyethylene encasement.
- Water mains and services are to be constructed to meet all separation requirements of 18 AAC 80.020. Variance from the separation requirements requires a waiver from the Alaska Department of Environmental Conservation and prior approval from the COV.
- The Contractor is to stagger the joints for the water pipe such that no joint is closer than nine feet (9’) from the centerline crossing of water to sewer. In addition, where water and sewer mains and services intersect, the vertical separation between the water and sewer pipe is to be a minimum of eighteen inches (18”) between exterior pipe surfaces.

F. Alignment and Grade

- All adjustments to line and grade are to be done by scraping away or filling the earth under the body of the pipe and not by blocking or wedging up.
- The Contractor shall continually survey line, grade, and location of the pipe and appurtenances with the use of transits and levels during pipe laying operations. Survey is to be completed by qualified

personnel to transfer line, grade, and record required information. The Engineer will determine qualifications based on submittal of work examples and notes being made in the field when compared to note taking requirements as outlined in Division 65. The Contractor is to replace any personnel the Engineer deems to be less than qualified based on work examples provided or work being performed.

- Each piece of pipe is to be laid to within three-one hundredths (0.03) of a foot horizontally and vertically from the design elevation and alignment. Regardless of the limits applied to individual pieces of pipe the accumulated variance of pipe alignment and grade must not be greater than two-tenths foot (2/10' or 0.2'). The Contractor must re-lay the water line when alignment and grade requirements are not met.
- Elevations and locations for each piece of pipe and appurtenances are to be recorded in a field book. The Contractor will furnish to the Engineer a copy of the surveyor's notes and redlined drawings for transfer to record drawings. The Contractor is to make any clarifications or corrections or fill in missing data in the survey notes and redlines when requested.
- The practice of placing backfill over a section of pipe to provide a platform for instruments is to be subject to the approval of the Engineer and be accomplished in accordance with the trench excavation and backfill requirements.

G. Jointing of Ferrious Metal Pipe

- The Contractor has the option of using either mechanical or push-on joints. All joints are to conform to the requirements of ANSI/AWWA C600.
- Metallic pipe is to have two (2) electrical continuity straps installed on each side of every joint for all pipe diameters. Straps are to be welded to a clean, dry surface. Each exothermic wire weld connection is to be protected with one (1) field applied Royston Handy Cap IP or equal. Uncoated surfaces are to be coated with coal tar pitch to the satisfaction of the Engineer.

H. Jointing of HDPE

- All HDPE water main piping and fittings are to be butt-fused in accordance with ASTM D2657. Where the Engineer finds that joint fusion is not feasible the Contractor may connect with metallic fittings. The individual who performs the joint fusion is to have written certification from an HDPE pipe manufacturer or supplier stating he/she has successfully completed an 8-hour (minimum) certification class on joint fusion techniques and procedures. In addition, this individual is to have fused a combined total of more than 5,000 feet of HDPE piping in diameters 4- inches and larger.
- The Contractor shall ensure that each joint is fused at the temperature and pressure recommended by the pipe manufacturer in order to achieve the maximum pressure rating for that joint. All fused joints for HDPE piping and fabricated fittings are to be documented by a computer data logger that records pressure and temperature applied at each fused joint, along with the date and time the joint was fused. Computer printouts, electronic data, and the project station for each field fused joint is to be submitted to the COV through the Engineer.
- The use of electro-fusion couplings to join HDPE piping is not allowed.

I. Jointing of PVC pipe

- The Contractor has the option of using mechanical joints or push-on joints. All joints are to conform to the requirements of AWWA C605.

- The Contractor is to ensure that the spigot end of the pipe is not inserted into the adjoining pipe bell past the pipe manufacturer's recommended insertion limits.

J. Jointing of Copper pipe

- Copper pipe may be joined with the use of silver brazing copper couplers, flared fittings and by swedging and silver brazing. Solder must be lead free silver solder. All joints are to be within the rights-of-ways and/or COV easements, unless given prior approval by the COV.

K. Detectable Warning Tape

- Detectable underground warning tape is required for installation of all pipe types. The warning tape must be continuously laid with the pipe and be at least twenty-four inches (24") and no more than thirty six inches (36") above the pipe.

L. Tracer Wire for Non-metallic Pipe

- Tracer wire is to be grounded at all dead ends, except fire hydrant legs. The trace wire is to be connected to the grounding rod with grounding clamps.
- Tracer wire is to be securely affixed to the top exterior surface of the pipe using PVC pipe tape at 5-foot intervals or less. Tracer wire is to be looped around valves, saddles, curb stops, and other appurtenances in such a manner that there is no interference with the operation of the appurtenances. Tracer wire must be continuous and without splices, breaks, or cuts except for spliced-in connections as approved by the Engineer. All spliced connections must be inspected by the Engineer before being buried.
- Tracer wire must be brought to the surface at all junctions and terminals, including at all valve boxes and fire hydrant legs by splicing into the main line tracer wire. The main line tracer wire must not be broken or cut. Tracer wire is to be spiral- wrapped around the exterior of the valve box riser pipe and brought into the valve box top section. Provide three feet (3') minimum of additional wire neatly coiled within each valve box.

M. Polyethylene Encasement

- The Contractor is to install polyethylene encasement as outlined below.
    1. Cut a section of polyethylene tube approximately two (2) feet longer than the pipe section. Remove all lumps of clay, mud, cinders, or other material that might have accumulated on the pipe surface during storage. Slip the polyethylene tube around the pipe, starting at the spigot end. Bunch the tube accordion fashion on the end of the pipe. Pull back the overhanging end of the tube until it clears the pipe end.

    2. Dig shallow bell hole in the trench bottom at the joint location to facilitate installation of the polyethylene tube. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe.

    3. Move the cable to the bell end of the pipe and lift the pipe slightly to provide clearance to easily slide the tube. Spread the tube over the entire barrel of the pipe. Note: Make sure that no dirt or other bedding material becomes trapped between the wrap and the pipe.

4. Make the overlap of the polyethylene tube by pulling back the bunched polyethylene from the proceeding length of pipe and securing it in place. Note: The polyethylene may be secured in place by using tape or plastic tie straps.

5. Overlap the secured tube end with the tube end of the new pipe section. Secure the new tube end in place.

6. Take up the slack in the tube along the barrel of the pipe to make a snug, but not tight, fit. Fold excess polyethylene back over the top of the pipe.

7. Secure the fold at several locations along the pipe barrel (approximately every three (3) feet).

8. Repair all small rips, tears, or other tube damage with adhesive tape. If the polyethylene is badly damaged, repair the damaged area with a sheet of polyethylene and seal the edges of the repair with adhesive tape.

9. Carefully backfill the trench in according to procedures in AWWA C600 Standard. To prevent damage during backfilling, allow adequate slack in the tube at the joint. Backfill should be free of cinders, rocks, boulders, nails, sticks, or other materials that might damage the polyethylene. Avoid damaging the polyethylene when using tamping devices.

- Damaged polyethylene encasement is to be repaired or the pipeline removed, and the polyethylene encasement replaced at no additional cost.
- The requirements of Method A of ANSI/AWWA A21.5/C105 is to be used to make any clarifications to the installation process as outlined above.

N. Fire Lines

- No connections, other than those for additional fire protection, will be allowed on the fire line outside the building. Domestic water obtained from a fire line will be connected and metered inside the building

O. Relocate Water Main

- Where a water main line or service crosses the location of a sewer, the water main is to be raised or lowered sufficiently to permit a minimum (outside diameter) vertical distance of eighteen inches (18”) from the sewer line.
- The Contractor may employ either of the following methods for raising or lowering a water main.
- Raise or lower lengths of the water main as necessary on either side of an obstacle to allow the main to pass under or over the obstacle, providing the deflection at any pipe joint does not exceed the requirements of this Section, or
- The water main may be raised or lowered using four (4) pipe bends. The bends are not to exceed forty-five degrees (45º). Where the configuration of lowering the water piping differs from the details provided in this Division, the Contractor is to receive prior approval of the Engineer and COV.

Article 2.5 Flushing and Testing

Flushing and testing is to be completed as specified in the requirements of the referenced AWWA standards unless hereinafter modified. A COV representative, the Engineer, and the Contractor must be present for all flushing and testing.

Flushing and testing is to be completed separately and sequentially starting with pre- disinfecting, flushing, hydrostatic testing, disinfection, and continuity. The Contractor is to provide, install and remove fittings, pipes, pumps, hoses, gauges, and other items necessary to perform the flushing and testing.

All water piping, including but not limited to main line, services, fire lines, and fire hydrant legs must be flushed and tested before the piping system can be put into service.

The only exceptions to the chlorination and pressure testing requirements are for non- fire lines constructed of one inch to two inch (1"–2") coated copper pipe that are:

- water extensions connected to an existing water connection or,
- water connections that are connected to an existing main that are constructed in conjunction with a water service extension.

Pipe, gaskets, mechanical joints, fittings, valves, hydrants and other water distribution components found to be cracked or defective through flushing and testing are to be removed and replaced with sound material at the Contractor's expense. When repairs are needed to make corrections pass flushing and testing requirements, the flushing and testing procedures are to be restarted for all test section impacted by the repair.

Each request to supply water for flushing, testing, and disinfecting is to be scheduled in writing with the Engineer and the COV at least forty-eight (48) hours prior to obtaining COV supplied water. Scheduling of flushing, testing, and disinfecting will be subject to water availability. At no additional cost, the Contractor is to modify their schedule to match water availability which may require work on non-working days or outside of normal work shifts.

If the Contractor is not prepared for flushing or testing, they are to provide a cancelation notice to the Engineer and COV at least two (2) hours prior to the scheduled event or the Contractor is to reimburse the COV and Engineer for all expenses incurred by said entities. Expenses will include, but not be limited to, salaries, transportation, and administrative costs.

Earthwork for roadways and sidewalks as well as installation of other utilities that share the same frontage as the water distribution system being tested is to be Substantially Complete prior to flushing and testing.

The Contractor is not authorized to operate the COV water distribution system. Only the COV personnel are authorized to manipulate the existing pipe system to supply water for flushing and testing.

The Contractor shall submit, in writing, for the Engineer to review and approve, a schedule and procedure for the testing and flushing of all newly installed pipe. The plan is to include flush and de-chlorinated water handling and discharge procedures. Water discharge locations must receive approval from the governing authority of the discharge location.

When, in the opinion of the Engineer, the testing and flushing schedule and procedure are deficient, inadequate, improper, or conditions are such that the impact to existing water service areas are adversely affected by service interruptions, the Contractor will be notified in writing by the Engineer. Such notification is to be accompanied by a statement of the corrective action to be taken. Contractor shall adhere to the testing and flushing schedule and comply with such instruction as directed by the Engineer.

A. Pre-disinfecting

The Contractor is to place calcium hypochlorite granules/tablets in the water main as it is being constructed. The following table provides the Contractor the minimum amount of granules/tablets required at the fill point and at an interval of 500' thereafter:

Pipe Diameter (inches)	Calcium Hypochlorite (oz)
4	1.7
6	3.8
8	6.7
10	10.5
12	15.1
14 and larger	D^2 x 15.1

Where D is the inside pipe diameter (ft)

At the completion of the water pipe installation, but prior to flushing, the Contractor is to slowly fill the newly installed pipe, fire hydrants, services, and other appurtenance with water and limit flow velocity to less than one foot per second (1ft/sec). Upon filling the pipe, the Contractor is to wait one hour (1 hr) prior to flushing.

B. Flushing

All newly installed water pipes are to be open-bore flushed through un-restricted outlets. Flush water is to achieve a minimum velocity of three feet per second (3 ft/sec) and the minimum water quantity flushed at the minimum velocity is to equal three times the quantity of water in the piping being flushed.

The Contractor is to configure the flushing operation, where possible, from higher to lower elevation, utilizing higher pressure mains first, allowing the COV to manipulate the water distribution system to achieve higher than normal pressures and flows to the newly constructed main or other appropriate measures to increase flushing velocities.

Flush piping on service water connections are to be connected to the service water extension side of the key box, extended a minimum of two feet (2') above finish grade and remain in place until the Final Acceptance Date.

Flush water must not be directly connected to the sanitary sewer system. When specifically permitted by the COV, flush water discharged to the sanitary sewer system must be de-chlorinated, have flow regulation with metering, and be limited to the sewer system capacity. The sewer system capacity may exclude discharging to sewer regardless of the flow conditions at the proposed discharge point. The sewer capacity is to be provided in the Special Provisions or the Contractor must obtain the sewer capacity from the COV. The flow

provided is based on computer modeling. Actual conditions of the sewer piping may require the Contractor to reduce flow so that the added flow will not cause damage to property.

C. Hydrostatic Testing

All hydrostatic testing will be performed through a test copper. The test station is to be placed at the highest end of the pipe being tested when there is an elevation change in the pipe greater than ten feet (10'). The test pressure is not to exceed the maximum allowable operating pressure of the pipe, fittings, valves, thrust restraints, or other appurtenances of the test section. Use of fire hydrants for testing will not be allowed. The specified test pressure shall be applied by means of an approved pumping assembly connected to the pipe in a manner satisfactory to the Engineer.

When the pressure decreases below the required test pressure during the test period, the pipe being tested will be declared void and will require re-testing.

The Contractor is to incorporate a COV provided test pressure gauge for measuring and determining results of the hydrostatic test. The gauge is to be returned to the COV at the completion of the hydrostatic testing.

The Contractor shall suitably valve-off or plug the outlet to the existing or previously tested water main at his expense prior to making the required hydrostatic test. Prior to testing, all air is to be expelled from the pipe.

If permanent air vents are not located at all high points and dead ends, the Contractor must install and abandon corporation stops at such points so the air can be expelled as the line is slowly filled with water.

All intermediate valves within the section being tested will be closed and reopened during the test. Only static pressure will be allowed on the opposite side of the end valves of the section being tested.

Hydrostatic testing of water lines containing a chlorine mixture above two parts per million (2 ppm) will not be allowed.

The minimum hydrostatic test pressure is to be one hundred fifty pounds per square inch (150 psi) for a minimum duration of thirty (30) minutes for non-fire lines. Fire lines are to be tested at two hundred pounds per square inch (200 psi) for a minimum duration of two (2) hours.

Pumping will be terminated and disconnected upon starting the test. The test pressure at the start of the test is to be maintained for the duration of the test period. Any loss of pressure will be considered a failed pressure test for all pipe types except HDPE.

Newly installed HDPE water main is to be hydrostatically tested to the rated operating pressure of the pipe and appurtenances in two phases. The rated operating pressure of PE4710 HDPE SDR11 piping is two hundred pounds per square inch (200 psi).

Phase 1 – Initial Expansion (4 hours)

Pressurize the test section to the test pressure and maintain for four (4) hours. The contractor is to pump in additional test water into the pipe to maintain test pressure as the pipe expands slightly. It is not necessary to monitor the amount of water added during this phase.

Phase 2 – Pressure Testing (minimum 1 hour)

Immediately following the initial expansion phase the Contractor is to stop adding testing fluid and then reduce pressure by 10 psi. The reduced pressure then becomes the test pressure and is to be held within five percent (5%) for one hour and show no visible leaks to be deemed as having passed the test.

The maximum test duration is eight (8) hours. If the test is not completed in the maximum duration period, then the Contractor is to depressurize the test section completely and allow it to relax for at least eight (8) hours before pressurizing the test section again.

D. Disinfection and Confirmation Testing

The Contractor is to use the Continuous Feed Method to disinfect the newly installed water distribution system:

The chlorinating agent must be applied at a point of not more than ten feet (10') from the beginning of the project. Under no conditions is the chlorinating agent to be introduced through a fire hydrant.

Water is to be fed slowly into the new water line with chlorine applied in amounts to produce an initial water and chlorine mixture in the pipe of not having less than twenty-five parts per million (25 ppm) of free chlorine. During the chlorination process, all intermediate valves and accessories are to be operated by the Contractor.

The Contractor is to discharge water from the end of all main lines, branches, service connections and extensions until the Engineer verifies that all portions of the newly constructed water distribution system has the initial minimum free chlorine level of the water source supply.

The chlorinated water is to be retained in the piping for a minimum of twenty-four hours (24 hrs) and have a minimum residual level of free chlorine of ten parts per million (10 ppm). At the completion of the twenty-four hour (24hr), period the Engineer is to sample the water. If the free chlorine drops below ten parts per million (10 ppm) the Contractor is to restart the flushing and testing.

The Contractor shall provide a plan for concurrence by the Engineer for disposal of chlorinated waters from the disinfection process. The plan must include a method to de-chlorinate and hold the discharge prior to leaving the Contractor's control. Under no circumstances is the solution to be discharged to the sanitary sewer system without prior approval of the sewer COV and the Engineer. Discharges of the spent chlorine solution is to be approved by the authorities have jurisdiction of the receiving facility/site.

After de-chlorination is complete, the Contractor shall provide access and accommodate in its schedule for coliform testing. The Engineer with Contractor support is to collect two sets of acceptable samples, taken 24 hours apart, of water from the disinfected piping at the location(s) required by AWWA C651. The samples are to be tested in as specified in AWWA C651 Standard Methods for the Examination of Water and Wastewater and show the absence of coliform organisms. Samples are to be collected by a qualified person and processed in a certified lab.

All preparation and coordination required for disinfection testing and re-testing shall be the responsibility of the Contractor. Additional compensation or contract time extensions for re-testing due to inadequate disinfection will not be granted.

E. CHLORINATION

Pipe Diameter (ID)	Dosage (oz.) per 100 feet
4”	0.34
6”	0.76
8”	1.34
10”	2.10
12”	3.02
14 and larger	D^2 x 3.02

Where D is the inside pipe diameter (ft)

One Heaping Tablespoon = ½ oz.

This table is to be used as a guide for chlorinating water mains by the calcium

hypochlorite and water mixture method. This dosage takes into account that contractors most frequently use granular HTH, which is sixty-five percent (65%) pure. If another chlorinating agent is used, the dosage must be adjusted. Caution should be exercised against producing too high a concentration of chlorine in the line. Disinfection will not be allowed until all open-bore flush pipes are removed and the water system is sealed.

The Contractor may submit a deviation request to the Engineer for review and approval for alternate disinfection plans that meet the requirements of ANSI/AWWA C-651.

F. Continuity Tests

The Contractor shall perform electrical conductivity tests on all ductile iron mains, service connections and service extensions in the presence the Engineer and a representative of the COV.

The Contractor shall maintain a circuit of six hundred (600) amperes DC current for fifteen (15) minutes. To pass the continuity test, the input current may not exceed ten percent (10%) of the return circuit. All equipment necessary to maintain the circuit will be supplied by the Contractor.

The Contractor will perform line tracing on plastic pipe installed with trace wire.

All continuity and tracing tests will be through wires connected to the main and brought to the surface. The use of water service thaw wires, fire hydrants and valves as substitutes for wires will not be accepted. All wires brought to the surface to complete the continuity test are to be placed in a valve box adjustment sleeve.

Where continuity or tracing is not continuous the Contractor, at no additional cost to the City, must make necessary repairs/corrections.

Continuity and tracing tests must not be performed until all excavations have been completed and backfilled.

G. Test and Air Vent Copper Pipe Removal

The Contractor is to remove all test and air vent copper pipes upon successful completion of the flushing and testing requirements and install a copper disc in the corporation stop in the presence of the Engineer.

Article 2.6 Measurement

Measurement for furnishing and installing water main line and fire line is per linear foot of horizontal distance of the various sizes as set forth in the Bid Schedule. Measurement will be from station to station as staked in the field and as shown on the Drawings, except where the grade exceeds twenty-five percent (25%), in which case measurement will be by actual pipe length.

Connections to existing water lines are measured as a complete unit in place and are subsidiary to furnish and install pipe.

Article 2.7 Basis of Payment

Payment for this Work will be in as specified in Division 10, Section 10.07 - Measurement and Payment, and includes full payment for all Work described in this Section.

All requirements for flushing and testing are incidental to the Work.

Variations from the depth of the connection point indicated in the Drawings will not be grounds for additional compensation.

Unless specifically identified for payment under a separate pay item, the unit price bid to includes all labor, equipment and materials to complete the Work including, but not limited to, the following subsidiary items:

- Removal of pipe, valves and fittings and delivery of non-serviceable portions of removed pipe, valves, and fittings at a Contractor-furnished disposal site;

- delivery of serviceable portions of removed pipe, valves, and fittings to the COV,
- installation of all pipe, tees, crosses, bends, caps, plugs, adapters, reducers, thrust restraint systems, and other fittings;
- potholes & exploratory test pits
- connection to existing water lines
- relocation of water main with bends
- abandoning existing water piping in place
- insulation board at storm/sewer pipe crossings
- installation of pipe angle markers
- installation of thrust blocks;
- adjustment to finish grade;
- protection and/or restoration of all existing utilities;
- maintenance of existing water distribution system flows;
- Trench excavation and backfill;
- Compaction,
- Importing of classified material and disposal of unusable material
- Trench shoring materials and labor
- protection of existing storm drain manholes, storm drain pipe, light and utility poles;
- maintenance and restoration of existing drainage patterns;
- restoration of existing private or public improvement such as but not limited to:
    - driveways;
    - signage, mail boxes, newspaper boxes,
    - trees and shrubs located on private property;
- landscaping, utility markers, survey monumentation;
- cleanup, and miscellaneous items required to complete the Work as shown on the Drawings.

Payment will be made on the following unit bid items:

ITEM	UNIT
Furnish and Install (Size, Type) Water Main	Linear Foot

DIVISION 70 MISCELLANEOUS

SECTION 70.14 STANDARD SIGNS

Delete this section in its entirety and replace with the following:

Article 14.1 General

This Work shall consist of furnishing and installing signs, guide markers, object markers and mileposts. The sign location and type of installation will be as shown on the Drawings or as directed by the Engineer. Work under this Section shall also include removal and relocation, as well as removal and disposal of existing signs, mileposts, and markers. Work under this Section shall also include removal and resetting of sign post assemblies to original location or as directed by the Engineer.

The Work under this Section also includes installing the “Fire Hydrant” sign for any new hydrant installations and coordinating with the City of Valdez and the fire department for the hydrant number to be assigned.

Article 14.2 Materials

Fabricate all standard regulatory, warning, and guide signs for permanent installation with Type IX reflective sheetings that conform to ASTM D4956 and single-span aluminum panel substrates, unless designated otherwise on the Drawings.

All orange construction and maintenance signs shall be fabricated with Type IX (encapsulated lens) reflective sheeting.

All new standard signs for permanent installation shall be of new materials. All sign layouts, with the exception of fire hydrant signage supplied by the City of Valdez, shall be in accordance with "Alaska Sign Design Specifications." Any sign delivered or installed which does not conform to these specifications shall be replaced by the Contractor at no additional cost to the City.

Concrete for sign post foundations shall conform to Class B-3 per Division 30, Section 30.01, Article 1.4 - Mix.

In the following specifications, a sign’s height and width refers to an installed sign’s vertical and horizontal dimensions, respectively, and to the length of the sides for diamond shaped signs.

A. Aluminum Sheet

1. Contractor shall provide sheet aluminum sign panels in one of the following alloys: 6061-T6, 5052-H36, or 5052-H38 that conform to ASTM B-209. The thickness of the aluminum sheet shall be 0.125 inches unless otherwise specified. Alloy and temper designations shall be verified by mill certification.

2. Treat the aluminum base metal sheets with a conversion coating for aluminum conforming to ASTM B-921 or ASTM B-449, Class 2 standards. The cleaned and coated base metal shall be handled only by mechanical device or by operators wearing clean cotton or rubber gloves. After the cleaning and coating operation, the panels shall be protected at all times from contact or exposure to greases, oils, dust, or other contaminants.

3. Use single piece sign panels for all signs up to 48 inches by 72 inches. For signs with one or both dimensions larger than the base 48 inch by 72 inch sign panel, assemble multiple single-piece sign panels according to the following:

4. For signs up to 48 inches high, assemble the single-piece aluminum panels with the 72 inch dimension set horizontally.

5. For signs between 48.01 and 72.01 inches high, assemble the single-piece aluminum panels with the longer dimension set vertically.

6. For signs between 72.01 and 96.01 inches high, assemble two rows of single piece aluminum panels with the 72 inch dimensions set horizontally.

7. The dimensional tolerance of the panels shall be one-sixteenth inch (1/16”). Metal panels shall be cut to size and shape and shall be free of buckles, warp, dents, cockles, burrs, and any other defects resulting from fabrication. All possible fabrication, including shearing, cutting and punching of holes shall be completed prior to the base metal preparation.

B. Sheet Reflective Materials

1. Use reflective sheetings that are part of a matched component system made by a single manufacturer. The system shall include the sheetings, process colors, clear coatings, sealants, electronically cuttable films, protective overlay films, and recommended application equipment.

2. The sheetings shall also pass all performance requirements specified in ASTM D4956 for type IX reflective sheetings, when tested according to the methods specified therein, including the supplementary fungus resistance requirement.

3. The sheeting manufacturer shall furnish third party test results that verify their sheeting materials meet all performance requirements of ASTM D4956. If the results of the accelerated outdoor weathering test are not yet available, furnish the results of the supplementary artificially accelerated weathering test and provide the date the regular test results will be available.

4. Furnish reflective sheetings with a class 1 adhesive backing that meets the requirements of ASTM D4956.

5. Fabricate signs according to the manufacturer’s written recommendations, using the process colors, coatings, sealants, and films made by the manufacturer of the reflective sheetings, and the application equipment recommended by the sheeting manufacturer.

6. Apply the reflective sheetings with no splices to those aluminum panels that can be oriented to fit on a rectangle with the smaller dimension equal to or less than forty eight inches (48”). For all other sign panels, apply the reflective sheetings to form butt splices oriented to most efficiently utilize the sheeting material, except no splices are allowed within two inches (2”) of the edge of a sign and in the length of reflective sheetings.

7. When making the butt splices, match the adjacent pieces as recommended by the manufacturer to assure uniform day color and night appearance. Provide a gap up to one-sixteenth inch (1/16”) wide between the pieces of reflective sheeting.

8. Seal all cut edges of the reflective sheetings with sealant recommended by the sheeting manufacturer, including legends.

C. Letters, Numerals, Arrows, Symbols, Border

1. Letters, numerals, arrows, symbols, border, and other features of the sign messages shall be of the type, size, and series as specified by the Alaska Traffic Manual or the Alaska Sign Design Specifications.

2. Completed letters, numerals, and other units shall be formed to provide continuous stroke width with smooth edges and shall present a flat surface free of warp, blisters, wrinkles, burrs, and splinters.

3. Fabricate the legend on signs using one of the following processes. For signs fabricated using the two screened processes, apply a clear coat over the entire face of each sign using a manufacturer recommended product.

4. For signs with a black legend, apply opaque black ink to form the legend on the reflective sheeting using the silk screened process.

5. For signs with a white legend on a colored background, apply transparent ink to all areas of the white reflective sheeting, except the legend, to form the background using the reverse silk screened process.

6. Apply electronically cut colored films that include adhesive to the reflective sheeting, similar to 1 and 2.

7. Cut the legends from the requisite color of type IX reflective sheetings and apply them to the reflective sheeting. Orient all elements of the legend in the same direction on the reflective sheeting before cutting them out.

D. Frames

1. All rectangular signs, over fifty-three inches (53”) measured along the horizontal axis, and all diamond shape signs sixty inches by sixty inches (60” x 60”) and larger shall be framed unless otherwise specified. The frames shall be constructed of aluminum as indicated on the Drawings. All framing dimensions shall have a one-eighth inch (1/8”) tolerance unless otherwise specified.

2. The frame shall be affixed to the sign with three-sixteenth inch (3/16”) diameter aluminum rivets. The maximum rivet spacing shall be twelve inches (12”) on centers. No rivets shall be placed closer than three-eighths inch (3/8”) from the edge of the aluminum face sheet.

3. All joints of the aluminum frame may be welded with an inert gas shielded - arc welding process using 4043 electrode filling wire in accordance with good shop practice. The width of the fillet shall be equal to the wall thickness of the smallest framing member being welded.

E. Test Procedures and Inspections

1. Adherence
The test panel, after a 72-hour curing time, shall be immersed in 95°F. +3° water for a period of 24 hours. Immediately after removal from the bath, the reflective sheeting shall be sufficiently

bonded so that it cannot be readily removed from the aluminum surface with a one inch (1”) round nose spatula. If the sheeting can be peeled rather than chipped from the surface, the bond is considered unsatisfactory.

2. Solvent Resistance
   Test shall be in accordance with Federal Specification L-S300B 4.3.6

3. Accelerated Weathering
   Test shall be in accordance with Federal Specification L-S 300B 4.3.9.

4. Resistance to Heat, Cold, and Humidity
   Test shall be in accordance with Federal Specification L-S-300B 4.3.10.

5. Tensile Strength and Elongation
   Test shall be in accordance with Federal Specification L-S 300B 4.3.15.

F. Post Materials
   Provide sign posts that conform to the following specifications for installing the post mounted signs specified in the Drawings.

   Perforated Steel Posts.

   1. For sign posts, install perforated steel tubes that conform to ASTM A-653. Provide tubes fabricated from 0.105 inch thick (12 U.S. Standard Gauge) sheet steel zinc coated on both sides to minimum coating thickness designation G-90. Furnish tubes formed with square cross sections and sheet steels rolled from structural grade steel with 50 ksi yield strength.
   2. All tubes shall be perforated along the centerline of each side for their entire length with seven-sixteenth inch (7/16”) diameter holes on one inch (1”) centers. All perforations shall be free from burrs.
   3. Furnish perforated tubes that are straight and feature a smooth, uniform finish without splices. Consecutive one-quarter inch (1/4”) size tubes shall telescope freely for a minimum length of ten feet.
   4. Furnish the tube sizes specified in the Drawings in lengths that will provide one-piece sign posts when the signs are installed according to the Standard Details that apply, regardless of ground cross section.

Article 14.3 Construction

All sign post foundations shall be cast in excavated holes. Depth of embedment shall be as shown on the Standard Details unless otherwise directed by the Engineer.

Surplus excavated material shall be disposed of along the adjacent roadway or as directed by the Engineer.

Cut each perforated tube to provide the sign mounting-height specified in the Section 70 detail that applies. Adjust each tube length to account for the height of the signs, the difference in elevation between the mounting height reference and the top of the foundation, and the one foot length inserted into the foundation. Remove all burrs from the cut end.

Guide Marker reflectors shall be installed after the posts have been set in place.

Sign panels shall be attached to posts, electroliers, traffic signal standards, bridge rails, piers, and abutments with fastening hardware of the types and sizes shown on the Standard Details. On non-frame mounted signs attached to signal pole mast arms the Contractor shall install two inch (2") diameter wind washers, colored to match the sign face, between the fastener head and the sign. Use rust-resistant washers fabricated from a material equal in strength to the sign blank. All fastening hardware shall be furnished by the Contractor. All signs shall be mounted so that they are level.

Existing signs and mile posts that are removed and relocated shall be placed on a new base and shall conform to the Drawings or as directed by the Engineer.

Bases from removed or salvaged signs shall be removed and the ground restored to match the surrounding area. Restoration is considered incidental to the sign bid item.

The Contractor shall remove, and salvage existing signs as shown in the Drawings. This work includes removing the sign, sign post, foundation, and backfilling foundation holes. Contractor shall salvage and deliver signs, posts, and associated hardware designated on the Drawings for Salvage to the City as directed by the Engineer. Contractor shall remove sign from post before removal and delivery to the City. Contractor shall remove the sign(s) and associated hardware without damaging the post or sign face. Contractor shall replace sign components damaged or destroyed due to Contractor's operations at no cost to the City. The City may select salvaged signs for delivery to their maintenance yard. Signs not selected by the COV shall be the Contractor's property.

Inspection: All materials and finished signs are subject to inspection and acceptance in place. All surfaces exposed to weathering shall be free of any defects in the coating that may impair the serviceability or detract from the general appearance or color match. The finished signs shall be clean and free from all chatter marks, burrs, sharp edges, loose rivets, delaminated reflective sheeting, and aluminum marks. No repairs shall be made to the face sheet. All signs not conforming to these Specifications shall be rejected and shall be replaced by the Contractor at no additional expense to the City.

Article 11.4 Measurement

The quantity of Standard Regulatory, Warning, and Guide Signs for permanent installation to be paid for shall be the total square footage of legend bearing sign and panel erected in place, including all posts, bases, and all hardware necessary to install the sign(s) at the designated location. No deductions in quantity for corner rounding shall be made. Nominal dimensions for sign sizes indicated on the Drawings shall be used for the purpose of calculating sign pay quantities.

Removal and relocation of existing signs, posts, bases, and all hardware necessary to install the sign at the designated location shall be measured per each sign, completed and accepted in final position. Sign components damaged or destroyed due to the Contractor's operation shall be replaced by the Contractor at no additional expense to the Owner. Object Markers and Guide Markers shall be measured per each, complete in place. One post equipped with two reflectors shall be considered a single marker. One signpost equipped with two or more signs is a single sign assembly.

Salvage of existing signs, posts, bases, and all associated hardware and delivery to the City shall be incidental to the Contract unless the bid item "Salvage Sign" is provided in the Bid Proposal. When Salvage Sign is provided in the Bid Proposal, Remove and Salvage signs will be measured by each sign, sign post, and foundation removed. Payment will not be made until the remaining hole is backfilled.

Article 11.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment will be made under the following units:

ITEM	UNIT
Standard Sign	Square Foot
Remove and Relocate Signs	Each
Salvage Sign	Each
Remove and Relocate/Salvage Existing Signs	Each

SECTION 70.15 TRAFFIC MAINTENANCE

Article 15.2 Traffic Control Plan

Add the following:

All Traffic Control Plans (TCPs) must include the following information:

1. Project name and number.

2. A designated TCP number and name on each page.

3. For TCPs more than one page, each page must be numbered.

4. The posted speed limit for each roadway.

5. Existing striping width, lane width, and road surfacing.

6. Construction lane widths, striping layout, and temporary pavement marker layout.

7. Provisions for Pedestrian, Bicycle, and ADA travel through the work zone.

8. Dates and times the TCP will be in effect and why it is being used.

9. The Worksite Traffic Supervisor's signature certifying that all TCPs conform to the ATM and the Contract.

10. The Project Superintendent's signature confirming the TCP is compatible with the work plan.

11. The name(s) of the Worksite Traffic Supervisor, his/her alternate and their 24-hour telephone number(s).

12. Signs to be used and the ASDS designation number and size.

13. Location and spacing of all devices and signs.

14. A plan to address any possible slopes, drop offs, paving joints, or similar temporary features that may occur during use of the TCP.

TCPs submitted for approval without all the required information will be rejected.

Article 15.9 Execution

Add the following:

Throughout the project, maintain the existing roadway, pedestrian walkway, or route, and bicycle route or pathway configuration (such as the number of lanes and their respective widths) except for restrictions to traffic allowed in these Special Provisions, the Drawings, or addressed through approved TCPs. A restriction

to traffic is any roadway surface condition, work operation, or traffic control setup that reduces the number of lanes or impedes traffic. **Obtain an approved TCP before restricting traffic.**

Add the following Division:

DIVISION 80 TRAFFIC SIGNALS AND ILLUMINATION

SECTION 80.10 ILLUMINATION

Article 10.1 GENERAL

1.1 Scope of Work

Work shall consist of furnishing and installing, modifying, removing or salvaging one or more illumination systems, electrical equipment on structures, falsework lighting, partial installations for future systems, or combinations thereof, all as required by the Drawings, and as specified. All necessary labor and equipment to provide fully functioning intersection lighting, or roadway illumination is included.

Prior to installation of foundations, junction boxes, and conduits; Contractor shall locate and protect all new and existing underground utilities; including, but not limited to, pipelines, signal systems, thaw wires, lighting systems, storm drain, sanitary sewers, water systems, and telephone, cable television, and electrical cables. Not all of the existing utilities may be present or shown on the Drawings. Contractor shall adjust foundation, junction box, or conduit location if conflict exists with either existing utilities or proposed improvements. No additional monies are paid or owed to Contractor for the adjustment.

Materials furnished shall be new, except such used materials as may be specifically provided for on the Drawings or in the Technical Specifications. Where an existing system is to be modified, the existing material shall be reused on the project, or disposed of as shown in the Drawings, or specified in the Technical Specifications.

All systems shall be complete and in operation with all materials in conformance with Drawings, Specifications and the manufacturer's specifications and recommendations, at the time of final acceptance.

1.2 Regulations and Codes

All material, and workmanship where applicable, shall conform to the standards of the Underwriters Laboratories, Inc., the National Electrical Code, and the National Electrical Safety Code together with local amendments. Within this Division, the term "Code" shall mean the National Electrical Code, and the National Electrical Safety Code together with local amendments.

Where applicable, all electrical equipment shall conform to the standards of the National Electrical Manufacturers Association.

The 1994 Edition of the “Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals” published by the American Association of State Highway and Transportation Officials (AASHTO) shall be referred to in this Division as the 1994 AASHTO design criteria. Similarly, the 2001 Edition AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals” shall be referred to in this Division as the 2001 AASHTO design criteria.

1.3 Equipment List(s) and Drawings

A. The Contractor shall submit for review and approval, within thirty (30) days following award of the Contract, eight (8) collated copies of a portfolio of equipment and materials which he proposes to install. The portfolio(s) shall consist of a table of contents which includes each item's intended use(s) and the following:

1. For materials on the Approved Products List: a description that includes product name, manufacturer, model or part number, and the conditions listed for approval.

2. For materials not on the Approved Products List: catalog cuts that include the manufacturer's name, type of product, size, model number, conformance specifications, and supplemented by other data as may be required, including manufacturer's maintenance and operations manuals, or sample articles.

3. A wind stress certificate from the manufacturer of poles, signal mast arms, and luminaire arms. Contractor shall submit to the Engineer for approval the Wind Stress Certificate that includes the signed stamp of a professional engineer registered in the State of Alaska; and a statement that indicates that the poles and mast arms meet the wind and mast arm loading requirements specified in Section 8005, 8005.1 - General.

4. Contractor shall submit to the Engineer for approval the Materials Certifications for all lighting poles, signal poles, mast arms, connector bolts and anchor bolts, indicating that the steel and galvanizing conform to the requirements in this Division.

The City of Valdez will not be liable for any material purchased, labor performed, equipment used, or delay to the Work before all equipment and materials have been reviewed and approved.

B. The Contractor shall prepare five (5) complete sets of red lined as-built plans which shall be kept current with the construction. These as-built plans shall detail all construction changes made to the Drawings and also include the following information on each appropriate drawing:

1. Location and depth of conduit runs.

2. Station and offset of all junction boxes.

Copies of such as-built plans shall be furnished at least twice a month during construction so that they may be reviewed for accuracy and completeness. The Contractor shall furnish any additional information required to clarify the as-built plans and shall correct all discrepancies. Progress payment for the signal and illumination Work completed shall not be made until accurate as-built plans reflecting the construction progress have been reviewed and deficiencies corrected.

C. Prior to final inspection of the Work, Contractor shall submit four (4) complete sets of Record Drawings to the Engineer, and attach the appropriate sheets of a fifth set in clear envelopes to the inside of each load center.

1.4 Warranties, Guarantees and Instruction Sheets

Manufacturers' warranties, guarantees, instruction sheets and parts furnished with materials used in the Work shall be delivered to the Engineer.

1.5 Maintaining Existing and Temporary Electrical Systems

The Contractor shall maintain the lighting systems, including payment of electrical costs, from the time of the Notice to Proceed until the time of final acceptance except during any authorized stoppages when the City of Valdez shall assume maintenance. Temporary replacement equipment furnished by the Contractor shall be compatible with existing equipment used in the City of Valdez and approved by the Engineer. Representatives of the Contractor and the Owner shall inspect the project prior to the winter shutdown and prior to spring start-up to ascertain those items that need repair and determine responsibility for the repairs.

The Contractor shall furnish and install all materials and miscellaneous hardware required to provide a functional lighting system including electrical load centers. All materials shall conform to the requirements of the Drawings and Specifications, except that the branch conductors may be triplex aluminum with messenger cable if they are installed overhead. Illumination conductors shall be sized so that the voltage at the most remote luminaire is not less than the minimum required for the ballast as recommended by the manufacturer. The Contractor shall install intermediate conductor and supports to energize luminaires at locations without electrical service.

Luminaires used in the system may be the existing fixtures or new fixtures with a light distribution compatible with the proposed lighting configuration.

The load centers to power the temporary lighting and signal systems may be the permanent installations, the existing installations, or temporary installations. The existing load centers may be used only if they are scheduled to remain intact until completion of the project and reused only if they are approved. The Contractor shall provide approved temporary load centers with photoelectrically-controlled lighting circuits whenever a load center is unavailable for use, or when an existing load center that is not approved is retired due to conflict with the Work. An approved load center is any load center UL labeled as Service Equipment, or UL labeled as Industrial Control Equipment and marked" s u i t a b l e for use as service equipment." The Contractor shall provide all Work to modify these load centers as required to provide functional temporary lighting and signal systems, and to install them completing all Work in accordance with the NEC.

Once the Contractor commences Work on the project, he shall provide all maintenance for the existing electrical facilities. The City of Valdez will pay for the electrical power for the above-mentioned electrical systems. The above maintenance does not include any prior damage such as burned out lamps, non-operative detection or other malfunctioning equipment. The Contractor shall present written documentation of all non-functioning and malfunctioning electrical equipment before commencing Work on the project. This malfunctioning equipment shall be inspected jointly by personnel from the Engineer's staff and the Contractor. In the event the Engineer does not receive notice in writing and the Contractor begins Work on the project, this will suffice as evidence that all equipment is functional and operational.

The Contractor shall furnish the Engineer with the name and phone number of the person responsible for maintaining existing and temporary electrical facilities.

The exact location of existing conduit runs, direct burial cable, pull boxes, and all underground utilities shall be ascertained by the Contractor before using equipment that may damage such facilities or interfere with any system.

Where roadways are to remain open to traffic and existing lighting systems are to be modified, the lighting systems shall remain in operation and the final connection to the modified circuit shall be made so that the modified circuit will be in operation by nightfall of the same day the final connection is made.

Temporary electrical installations shall be kept in effective operation until no longer required.

These provisions will not relieve the Contractor in any manner of his responsibilities as provided in Division 10, Section 10.06 - Legal Relations and Responsibilities.

1.6 Scheduling of Work

Work shall be scheduled s o that each new lighting system shall be completed and ready for operation prior to opening to traffic of the corresponding section of new alignment.

Conductors shall not be pulled into conduit until pull boxes are set to grade, crushed rock sumps installed, grout placed around the conduit, and metallic conduit bonded.

1.7 Safety Precautions

Before starting Work on existing series street lighting circuits, the Contractor shall obtain daily, a safety circuit clearance from the serving utility. By-pass switch plugs must be pulled and suitable signs posted at switch boxes before electrical Work begins.

Suitable signs shall be posted at Load Centers when a contractor is working on any of the circuits from that Load Center.

1.8 Definitions

The Definitions in NEMA TS-2, Traffic Controller Assemblies with NTCIP Requirements Version 02.06, shall be used along with the following:

1. Electrolier: The complete assembly of pole, luminaire arm, luminaire, ballast, and lamp.
2. Luminaire: The assembly which houses the light source and controls the light emitted from the light source. Luminaires consist of the optical, electrical, and mechanical/thermal components of the assembly.
3. Lighting Standard: The pole and luminaire arm which must support the luminaire.
4. Vehicle: Any motor vehicle licensed for highway use by the State of Alaska.
5. Anchor bolts apply to Luminaire poles and anchor rods apply to Signal poles. They are used interchangeably in this Division.

1.9 Signs

Reference Division 70, Section 70.14 – Standard Signs.

1.10 Measurement

All Work under this section is incidental to other Work and shall consist of all labor, materials, and equipment necessary to provide temporary illumination, if required by the Engineer.

1.11 Basis of Payment

No separate payment will be made for this item.

Article 10.2 ELECTRICAL EXCAVATING AND BACKFILLING

2.1 General

The excavations required for the installation of conductors, conduits, foundations and other appurtenances shall be performed in such a manner as to avoid any unnecessary damage to the streets, sidewalks, landscaping, and other improvements. The trenches shall not be excavated wider than necessary for the proper installation of the electrical appurtenances and foundations. Excavation shall not be performed until immediately before installation of conduit and other appurtenances. The material from the excavation shall be placed in a position that will not cause damage or obstruction to vehicular and pedestrian traffic nor interfere with surface drainage.

Trench, backfill, and disposal of surplus material shall be performed in accordance with Division 20 – Earthwork.

Excavations after backfilling shall be kept well-filled and maintained in a smooth and well-drained condition until permanent repairs are made.

All excavations shall be filled, and sidewalks, pavement, and landscaping restored at each intersection prior to excavating at any other intersection. Excavations in the street or highway shall be performed in such a manner that not more than one traffic lane is restricted in either direction at any time, unless otherwise provided in the Technical Specifications.

2.2 Construction

The Contractor shall excavate the trench to the proper depth as described herein and as shown on the Drawings.

The excavations shall be backfilled with material suitable to the Engineer. All backfill placed in the roadway area shall be Type II classified backfill as specified in Division 20. All backfill material shall be placed in uniform layers of not more than six inches (6”) in depth and compacted to a density of not less than ninety-five percent (95%) of the maximum density as directed by the Engineer.

The Contractor shall be responsible for the restoration of all surfacing, turf, and native material to the original condition and appearance.

2.3 Saw-cut Trench

Where shown on the Drawings, or as directed by the Engineer, the Contractor shall construct a sawcut trench as detailed in the Drawings. A sawcut trench will be used to cross existing traveled lanes, existing curb and gutter, in median islands, along edges of paved roadways, and in sidewalk areas where a neat cut of the surfacing is required.

The Contractor shall cut the surfacing material full-depth and remove the surfacing material to expose the subgrade materials. The Contractor shall then excavate a trench, dispose of excess and waste materials, and install conduit as described herein.

In sawcuts of asphalt pavement located within the roadway pavement, Contractor shall remove a minimum distance of one foot (1’) back from the edge of the trench, on each side of the trench. Contractor shall remove pavement such that cuts parallel to the direction of travel are not located within the wheel paths.

The entire trench shall be backfilled as specified herein, except non-frost-susceptible sand bedding material shall be used.

The existing surface shall then be restored with like pavement in accordance with Division 40, or Division 30 as applicable.

Where applicable, asphalt tack coat shall be applied to all edges of the existing pavement prior to placing new asphalt. Asphalt pavement less than three inches (3") in thickness shall be placed in one lift, and asphalt pavement three inches (3") and greater in thickness shall be placed in a minimum of two equal lifts.

In median islands, the Contractor may elect to remove and replace the entire surface of the island along the length of the conduit run. If the Contractor elects to remove the entire surface of the island, the Work shall still be considered as sawcut trenching. The layer of pavement under the median islands, if encountered (normally at the street pavement grade), may be broken out.

The Contractor shall be responsible for the restoration of all surfacing, turf, and native material to original condition and appearance.

2.4 Measurement

Measurement for trench and backfill and for sawcut trench shall be per linear foot of horizontal distance of the various widths and depths as set forth in the Bid Schedule. Measurement will be from station to station or from center of device to center of device as staked in the field and as shown on the Drawings.

2.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Work not specifically identified for payment under a separate pay item, but required for normal completion of trench and backfill, will be considered incidental and shall be included in the linear foot cost of the trench.

Payment shall be made under the following units:

ITEM	UNIT
Trench and Backfill (Width) (Depth)	Linear Foot

Article 10.3 REMOVING AND REPLACING IMPROVEMENTS

3.1 General

Improvements such as sidewalks, curbs, gutters, Portland cement concrete and asphalt concrete pavement, base material, lawns and plants, and other improvements removed, broken, or damaged by the Contractor's operations, shall be replaced or reconstructed with the same kind of material as found on the Work or with materials of equal or better quality. The new Work shall be left in a satisfactory serviceable condition.

Whenever a part of a square or slab of existing sidewalk, curb and gutter, or driveway is broken or damaged, the entire square, section or slab shall be removed and the concrete reconstructed as above specified.

The outline of all areas to be removed in concrete sidewalks and driveways and in pavements shall be cut to a minimum depth of one and one-half inches (1 1/2") with an abrasive type saw prior to removing the sidewalk, driveways, and pavement material. The cut for the remainder of the required depth may be made by a method satisfactory to the Engineer. Cuts shall be neat and true with no shatter outside the removal area.

When a foundation is to be abandoned in place, the top of foundation, anchor bolts, and conduit shall be removed to a depth of not less than one foot (1') below surface of sidewalk or unimproved ground. The resulting hole shall be backfilled with material equivalent to and compacted to the density of the surrounding material.

3.2 Measurement

All Work under this section is incidental to other Work and will not be measured or paid for directly.

3.3 Basis of Payment

No separate payment will be made for this item.

Article 10.4 FOUNDATIONS

4.1 General

All foundations for poles, posts and pedestals shall be cast-in-place Portland Cement Concrete. Luminaire poles may be constructed on driven pile foundations.

Unless otherwise shown on the Drawings, all items to be relocated shall be provided with new foundations and anchor bolts of the proper type and size.

The Contractor shall be responsible for contour grading around all post, pole, and pedestal foundations. Final or finished grading shall be such that the earth shall be two inches (2”) below the top of the base and drain away from the base.

Foundations for poles shall be designed for one hundred mile per hour (100-mph) winds with gusts to one hundred thirty miles per hour (130 mph) in conformance with the requirements of the 1994 AASHTO design criteria for luminaire poles and ten foot (10’) signal pedestal poles and the 2001 AASHTO design criteria for signal poles.

The entire controller foundation and the top twelve inches (12”) of pole or post foundations shall be formed and the top given a smooth steel trowel finish. Conduits shall be located in the center of the pole-post foundations with clearance allowed for bushings.

Except signal pole foundations constructed in accordance with Standard Details 80-10 and 80-11, the tops of all pole foundations shall be set so that the bottom center of the base plates are between four (4”) and six inches (6”) above finished grade at the pole's offset. The top of any foundation located on a slope shall be constructed such that the finished slope passes through the top center of the uphill edge of the foundation. The area two feet (2’) up and down slope of the edge of the foundation shall be graded so that no portion of the foundation projects above the surrounding slope and so that water will drain away from the foundation. For forty-two inch (42”) signal pole foundations, the clearance between the top of the foundation to the bottom of the leveling nut shall not exceed one inch (1”).

4.5 Driven Pile Foundation

Driven pile foundations shall not be used for signal poles.

Contractor shall supply driven pile foundations of the size and length indicated. Contractor shall ensure that the top surface of the anchor plate is three inches (3") above finished grade at luminaire pole locations or as indicated in the Drawings.

After welding on the pile cap adapter and anchor plate to the driven steel pile, Contractor shall cold galvanize the pile cap, the pile cap adapter, anchor plate, and the top three feet (3’) of the steel pile including pile cap and anchor plate. Contractor shall furnish galvanization that complies with Federal Specification DOD-P-210354A (Galvanizing Repair Spec) and is U.L. listed. Contractor shall prepare steel surfaces and apply the cold galvanizing compound in accordance with the manufacturers’ recommendations. Five days prior to applying the cold galvanizing compound, Contractor shall provide the Engineer a copy of the manufacturers’ instructions.

4.6 Measurement

Foundations will be measured as units, complete and in place.

4.7 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment will be made under the following units:

ITEM	UNIT
Driven Pile Luminaire Pole Foundations	Each

Article 10.5 MAST ARMS, POLES, STEEL PEDESTALS AND POSTS

5.1 General

A registered professional engineer shall design the structures and provide stamped shop drawings and calculations. Submit the stamped drawings and calculations for each pole to the Engineer for approval. Design for the complete-in-place structure including the supported hardware.

In the stamped calculations, indicate the edition of Standard Specifications to which the poles are being designed and provide the input data used to design each pole and mast arm, including: design wind speed, cross section shape, yield strengths of the component materials, dimensions of the pole components, and a summary of the loads used.

On the stamped shop drawings, provide design wind speed and the details for building the luminaire poles, signal poles and mast arms, including: materials specifications, slip fit joint dimensions, pole component dimensions, welds that will be made, and the welding inspection that will be done.

Contractor shall submit the mill certifications for the steel items (piles, plates, bolts, and other related items) to the Engineer or designated representative for written approval. Written approval is necessary for acceptance of and payment for the items identified in this Section.

All manufacturing processes starting with initial mixing and melting through the final shaping, welding and coating processes must be undertaken in the United States. Manufacturing includes smelting, rolling, extruding, machining, bending, grinding, drilling, painting and galvanizing. This does not apply to raw materials such as iron ore, pig iron, and processed, pelletized and reduced iron ore.

No exception to the practices mandated by AASHTO shall be allowed.

Poles shall not be relocated or re-used unless Contractor obtains written approval of the Engineer or designated representative.

The Contractor shall verify the shaft lengths and mast arm connector plate locations of all poles to insure the Drawing mounting heights of luminaires and traffic heads are met.

Damage to the galvanized or painted surface of existing poles to be relocated or reused in place and damage to the galvanized or painted surface that occurs during shipping or during the construction process, shall be repaired in accordance with Section 80.16, Article 16.3 – Galvanizing or Article 16.4 – Painting for Steel Structures, as appropriate prior to final acceptance of the poles and mast arms. Holes greater than five-eighths inches (5/8”) in diameter in the shafts of existing poles, due to removal of equipment, shall be repaired. Holes shall be repaired by tapping the hole, coating all exposed edges with zinc rich paint, and plugging the hole with a screw-in type steel plug of the correct size. The plug shall be galvanized, or shall be completely covered with zinc rich paint. Holes less than five-eighths inch (5/8") diameter shall be ground smooth so there are no notches or cracks, and coated with zinc rich paint. Plugging holes and repainting damaged galvanized or painted surfaces shall be incidental to the Project and no additional payment shall be made.

5.2 Poles and Arms

A. Calculations: Signal Poles and Arms Less Than 15’ and Luminaire Poles and Arms

Street lighting poles, including luminaire arms and head mounting brackets, shall be designed and fabricated to the 1994 AASHTO design criteria.

Minimum design wind velocity shall be the greater of one-hundred miles per hour (100 mph) or the AASHTO recommendation based upon a fifty (50) year mean recurrence interval dependent upon project location. A factor of 1.3 shall be used in design calculations to account for wind

gusts. The design for luminaire poles shall include a traffic sign with an area of sixteen (16) square feet, located with its centroid nine feet (9') above the base of the pole.

Should project plan loading develop shear or moments greater than those related to the above loading, special design poles are required. Those "Special Design" poles will require calculation submitted to the Engineer for approval prior to use on the project.

Direct-embedded luminaire poles are no longer allowed.

B. Signal Poles and Arms Less Than 15' and all Luminaire Poles and Arms

Poles, prior to installation, shall be straight, with a permissive variation in sweep not to exceed one-quarter inch (1/4") per ten feet (10') of pole length.

A backing plate consisting of a metal sleeve shall be provided at all butt welded, transverse joints. The sleeve shall be No. 12 U.S. standard gauge steel minimum, and made from steel having the same chemical composition as the steel in the pole.

The metal sleeve shall have a minimum length of three inches (3"). The sleeve shall be centered at the joint and have the same taper as the pole outside the sleeve in full contact with the inside of the standard throughout the sleeve length and circumference. The weld metal at the transverse joint shall extend to the sleeve, making the sleeve an integral part of the joint. In round poles, standard steel pipe or tubing may be substituted for the tapered backing sleeve, at the discretion of the Engineer.

All welds shall be continuous. All welding practices shall conform to current AWS Code, AWS D1.1, latest edition.

All exposed welds, except fillet welds shall be ground flush with the base metal.

1. Poles

Poles less than fifteen feet (15') in length shall be round or multisided (greater than sixteen [16] sides), and constructed of No. 11 or heavier U.S. standard gauge steel or four inch (4") standard (Schedule 40) pipe or conduit, with the top designed for a post-top slip-fitter. Standard pipe shall conform to the specifications of ASTM A53. The tops of tapered poles shall have a four and one-half inch (4 1/2") outer diameter. Pedestrian pushbutton posts shall be constructed of two and one-half inch (2 1/2") standard (Schedule 40) pipe and meet the requirements of ASTM A53. Multi-sided poles shall not be used without prior approval of the Traffic Engineer.

Luminaire poles fifteen feet (15') or longer shall be round and fabricated from sheet steel of weldable grade.

Poles may be fabricated of full length sheets or shorter sections. When two pieces are used, the longitudinal welded seams shall be directly opposite one another. When the sections are butt-welded together, the welded seams on adjacent sections shall be placed to form continuous straight seams from base to top of pole.

All exposed edges of the plates which make up the pole base assembly shall be finished smooth, and all exposed corners of such plates shall be neatly rounded to one and one-half inch (1 1/2") radius, unless otherwise shown on the Drawings. Anchor holes in the base plate shall be round. Slotted holes shall not be used. Slotted shafts shall be provided with slip fitter shaft caps of either galvanized steel or cast aluminum.

2. Arms

Arms less than fifteen feet (15') in length shall be round or multisided, and constructed of No. 11 or heavier U.S. standard gauge steel, or four-inch (4") standard (Schedule 40) pipe or conduit. Standard pipe shall conform to the specifications of ASTM A53.

Luminaire arms fifteen feet (15') or longer shall be round or multisided and fabricated from sheet steel of weldable grade.

Arms may be fabricated of full-length sheets or shorter sections. Each section shall be fabricated from not more than two (2) pieces of sheet steel for lengths up to forty feet (40'). Where two (2) pieces are used, the longitudinal welded seams shall be directly opposite one another. When the sections are butt-welded together, the welded seams on adjacent sections shall be placed to form continuous straight seams from base end of arm.

Luminaire pole plate to pole shaft connection shall be of the "closed box" type with top and bottom plates of the box forming a continuous stiffening ring around the pole. Gusset assemblies for this connection shall be butt-welded together. Vent holes, necessary for galvanizing, shall be used.

All exposed edges of the plates which make up the base of the arm shall be finished smooth and all exposed corners of such plates shall be neatly rounded to one-eighth inch (1/8") radius, unless otherwise shown on the Drawings. Bolt holes in the mast arm base plate shall be round. Slotted holes shall not be allowed. Mast arm ends shall be provided with slip-fitter shaft caps of either galvanized steel or cast aluminum.

C. Traffic Signal Poles and Arms Between 15' and 65'

Traffic signal structures shall be designed and fabricated to the 2001 AASHTO design criteria with interim revisions and the Standard Details.

Fabricate signal and lighting structures from tapered steel tubes with a round or sixteen (16) sided cross section. Orient handholes located near the base of poles to face downstream of traffic flow.

Provide traffic signal poles, lighting poles, and signal mast arms in lengths evenly divisible by five (5) feet.

Furnish poles and mast arms up to forty (40) feet long in one piece. Poles and mast arms longer than forty (40) feet may be furnished in one piece or in two (2) segments with a slip type field splice. For slip type joints, provide a minimum overlap of two and one half (2.5) feet or the overlap specified in the Drawings, whichever is greater. In mast arms, locate these splices at least one foot away from the Drawing location of signal heads and signs. In signal poles, locate the edge of the female section at least six (6) inches above the top of the signal mast arm connection.

Fabricate tubes with walls up to one-half (1/2) inch thick from the prequalified base metals listed in AWS D1.1. Fabricate elements greater than one-half (1/2) inch thick from steel that conforms to AASHTO M270 and meets the Fracture Critical Impact Test requirements for Zone 3. The Engineer will not accept structures that use laminated steel elements.

Fabricate the cross section of each tube from no more than two (2) pieces of steel. When using two (2) pieces, place the longitudinal welded seams directly opposite one another. Place the welded seams on adjacent sections to form continuous straight seams from the base to the top of the pole.

When tenons are needed to install traffic signals and luminaires, make them from two-inch (2”) nominal schedule 40 pipe that conform to ASTM A 53 Grade B.

The Engineer does not allow holes made for lifting purposes in the ends of tubular segments, except in the free ends of luminaire mast arms. To add lift points, weld them to the tube opposite the longitudinal seam weld on the outside of female segments and on the inside of male segments. Before shipment, remove lift points added to the outside of the tubes, grind the area smooth with the base metal, and hot stick repair the finish in accordance with Section 80.16, Article 16.3 – Galvanizing or Article 16.4 – Painting for Steel Structures, as appropriate. Lift points added to the inside of tubes in place may be left in place.

The Engineer will reject poles and mast arms that are:

1. Not fabricated according to these specifications or the approved shop drawings,
2. Bowed with sweeps exceeding three-quarters (3/4) inch throughout the length of the pole, mast arm, or segment, if furnishing a two (2) piece pole or mast arm,
3. Out of round. Sections are out of round when the diameters of round members or the dimension across the flats of multisided members exceed two percent (2%) of the dimension specified on the shop drawings.

MATERIAL REQUIREMENTS			
	Between 15' & 35'	Between 40' & 50'	Between 55' & 65'
ALL ASSEMBLIES			
Steel Through ½" Thick	ASTM A572 or A596		
Steel Over ½" Thick	AASHTO M270 F3 (50 ksi)		
Finish	AASHTO M111 & M232		
Mastarm Bolts	AASHTO M164		
Anchor Rods	Article 5.4 – Signal Pole Anchor Rods & Bolts		
POLE (LOWER SECTION)			
Design Length	21.5'		
Section Shape	Round		
Simplex Height	20'		
Fixed End Diameter	15.0" O.D.	17.0" O.D.	19.0" O.D.
Taper	0.14"/ft		
Tube Thickness	0.375"		
Base Plate	24"x24"x2.25"		
Bolt Circle	24"		
Signal Arm Plate	20"x20"x2.25"	22"x22"x2.25"	24"x24"x2.25"
Top Ring Thickness	0.375"		
Bottom Ring Thickness	0.375"		
Gusset Plate Thickness	0.375"		
Handhole Cover Thickness	10 ga		
Pole Skirt Thickness	10 ga		
MASTARM			
Design Length	35'	50'	65'
Section Shape	Round		
Taper	0.14"/ft		
Tube Thickness	See Illumination Details		
Mastarm Rise	3.0 Degrees		
Base Plate	20"x20"x2.25"	22"x22"x2.25"	24"x24"x2.25"
Bolt Circle	20"	22"	6 Vertical O.C.
Mastarm Bolts	1.5" x 4.5"		

D. Poles and Arms Greater than 65'

Refer to the project-specific Technical Specifications and Drawings.

5.3 Welding

Perform welding to conform to the 2001 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with interim revisions; current American Welding Society code; the latest edition of AWS D1.1 – Structural Welding Code - Steel; the Standard Drawings; and the following:

1. Make welds continuous. Grind exposed welds flush with the base metal at slip fit joints for the length of the slip fit joint plus one half the diameter of the female section.

2. On steels five-sixteenths (5/16) of an inch thick and thicker, inspect one hundred Percent (100%) of CJP welds by either radiography (RT) or ultrasound (UT).

3. Inspect a random twenty-five percent (25%) of PJP and fillet welds by magnetic particle (MT). If a defect is found, inspect one hundred percent (100%) of the PJP and fillet welds made to fill the order. In steels less than 1/8 inch thick, complete the tests according to AWS D1.1.

4. Only visually inspect welds made on luminaire arms.

5.5 Finishing

Finish the edges of poles and mast arms to conform to the following requirements prior to galvanization in accordance with Section 80.16, Article 16.3 – Galvanizing. Neatly round the following features to the radius specified.

1. On holes through which electrical conductors pass, provide a one-sixteenth (1/16) inch radius on both the entrance and exit edges,

2. On pole base plates, provide a one-eighth (1/8) inch radius on edges along which plate thickness is measured and a smooth finish on all other exposed edges,

3. On the ends of tubes that form slip type joints, complete the following tasks on the two surfaces that contact one another. First, provide one-sixteenth (1/16) inch radii on the inside and outside edges of the female and male segments, respectively. Then for the length of the joint plus one half the diameter of the female section grind down welds until they feature a radius concentric with the mating surface and remove material protruding from the two surfaces.

Provide caps to cover the free ends of poles and mast arms.

5.6 Identification Tags

Identify critical information for poles and arms with visible permanent aluminum tags that contain the information shown in the Pole Markings Table. The measurements shown are for illustration purposes only. Use tags large enough to include required information using one-quarter (1/4) inch high text, three-eighths (3/8) inch of space between successive lines of text, and at least three-eighths (3/8) inch of space between the edges of the tag and the text. Secure the tags with two one-eighths (1/8) inch blind rivets at the base of poles and the underside of mast arms. If furnishing a two piece signal mast arm with slip type joint, mark both pieces with the same message. Provide the holes for the blind rivets before galvanizing.

POLE MARKINGS TABLE

STRUCTURES		MEASUREMENTS	TAG MARKINGS
Signal Poles			
a)	Signal mast arm length	45 ft./55 ft.	SMA 45/*SMA 55*
b)	Luminaire mast arm length	22 ft./18 ft.	LMA 22/*LMA 18*
c)	Pole height	36 ft.	PH 36
d)	Intersection number (if more than one) - pole number		1 - P 4
e)	Sum of signal mast arm moments about centerline of signal pole		SM 4000/*SM 3200*
f)	Design wind speed	100 mph	DWS 100
Light Poles			
a)	Luminaire mast arm length	15 ft./15 ft.	LMA 15/*LMA 15*
b)	Pole height	37 ft.	PH 37
Signal Mast Arm			
a)	Mast arm length	40 ft.	SMA 40
b)	Intersection number (if more than one) - pole number		1 - P 4
c)	Sum of signal mast arm moments about centerline of signal pole		SM 3740
d)	Design wind speed	100 mph	DWS 100
Luminaire Mast Arm			
a)	Mast arm length	18 ft.	LMA 18
b)	Pole number (if unique arm design)		P 4

Note:
Italic type indicates additional Tag Markings if poles have 2 luminaire or 2 signal mast arms.

5.7 Plumbing

Plumbing shall be accomplished by adjusting the nuts on the anchor bolts prior to grouting. A slight raking of the pole will be provided by plumbing the side away from the road. Shims or other similar devices for plumbing or raking will not be permitted.

5.9 Galvanizing

All signal poles, mast arms, and pedestal poles shall be hot dipped galvanized in accordance with Section 80.16, Article 16.3 – Galvanizing.

5.10 Measurement

Fixed-base luminaire poles shall be measured as units complete and in place, including all hardware, all wiring within the poles, and grouting of the base.

Slip base luminaire poles shall be measured as units complete and in place, including slip base adapter, all hardware, and all wiring within the pole.

Signal mast arm poles and signal pedestal poles shall be measured as complete and installed with all hardware, all wiring within the pole, and either grouting of the base or base plate skirt as appropriate.

Combination signal-luminaire poles shall be measured as complete and installed with all hardware, luminaire brackets, all wiring within the pole, and base plate skirt.

Pedestrian push button poles shall be measured as complete and installed with all hardware, all wiring within the pole, and grouting of the base.

All luminaires, luminaire arms, signal heads, pedestrian signal heads, pedestrian pushbutton assemblies, signal mast arms, signs and optical preemption detectors shall be installed and accepted when poles are measured for payment, but shall not be included in payment for poles. These items shall be considered separate pay items, and measured under the appropriate Sections of these Specifications. All other hardware; including wiring within the pole, repair of galvanization when damaged, and grouting of the base; shall be considered incidental to the pay items, and shall not be measured for payment.

Signal and luminaire arms will be measured as units complete and in place, including labor, equipment, and material necessary to make a complete and functioning unit.

All luminaires, signal heads, signs and optical preemption detectors shall be installed and accepted when mast and luminaire arms are measured for payment, but shall not be included in payment for mast or luminaire arms. These items shall be considered separate pay items, and measured under the appropriate sections of these Specifications. All other hardware, including wiring within the arms, shall be considered incidental to the pay items for signal mast arms or luminaire arms, and shall not be measured for payment.

5.11 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following units:

ITEM	UNIT
Fixed Base Luminaire Pole (24’ Length)	Each
Luminaire Arm (8’ Length)	Each

Article 10.7 CONDUIT

7.1 General

Contractor shall run electrical conductors in conduit, except for overhead wiring, wiring inside poles and when otherwise called for in the Drawings. All conduit and fittings shall be galvanized, rigid type manufactured of mild steel or wrought iron conforming to U.L. Underwriters Laboratory Standard UL-6 and hot dip galvanized in accordance with American National Standards Institute specification ANSI C-80.1. If called for in the Drawings, rigid non-metallic type conduit shall conform to the applicable UL Standard UL-651 or UL-651A. Only one type of conduit shall be used in any one run from one junction box to another. Where non-metallic conduit is to be installed, the conduit runs between a load center and the nearest junction box shall be of the rigid metal type.

Conduit and fittings to be installed on the surfaces of poles or in structures and foundations shall be rigid metal type as specified above for underground installations.

Couplings for new rigid metal conduit shall be threaded. Where existing conduit is intercepted and extended, twist-on compression type couplings will be allowed. Set-screw couplings are not allowed on the project.

Conduit in foundations for ground rods shall be one inch (1”) diameter.

Contractor shall join conduits together with standard threaded couplings using a pipe wrench to ensure tight joints. Provide NPT threads on the ends of all shop and field cut conduits. Slip joints and straight threads shall not be used. Cut conduits with a rolling pipe cutter to ensure a square end and proper threading. Before threading, ream the cut ends to remove the sharp edge and all burrs. Thread the ends to within one thread of the factory threaded length and then paint the cut end and threads with a zinc rich paint overlapping the original galvanized finish. Galvanized coatings that have been cut or damaged shall be repaired in conformance with Section 80.16, Article 16.3 - Galvanizing.

Until wiring is started, all conduit ends shall be capped with standard pipe caps or approved plug and coupling combinations. When caps are removed, the threaded ends shall be provided with approved conduit grounding bushings.

Contractor shall lay conduit to a minimum depth of thirty inches (30”) below finished grade. See Division 20 for backfill requirements.

Clean all debris and moisture out of conduits before installing conductors or cables. If the conduit is for thaw wire only, then:

Fittings for use in below-grade storm drains shall be suitably rated as NEMA 7, complete with gaskets for watertight installations.

Provide suitable conduit seals and sealant to make connections to junction boxes installed with manholes watertight.

Junction boxes for installation in manholes shall be NEMA Type 7, with gasketed covers for watertight installations.

Couplings and all threaded connections shall be provided with Teflon tape or approved water treatment applied to threads before tightening.

Bottom of trenches for non-metallic conduit shall be relatively free of sharp irregularities which would cause pinching and excessive bending of the conduit. The first six inches (6”) of backfill shall be free of rocks exceeding the one inch (1”) maximum dimension.

Conduit entering the bottom of concrete junction boxes shall terminate with a ninety degree (90º) sweep inside the box wall. Conduit openings shall terminate not less than five inches (5") above the bottom of all boxes and a minimum of six inches (6") below the top of the Type I and Type IA boxes and twelve inches (12") below the top of Type II and Type III boxes. Conduits entering through the junction box wall shall extend a minimum of two inches (2") inside the box wall, and be a minimum of six inches (6") above the bottom.

All foundations shall be furnished with conduits as shown in the Drawings. The conduits shall extend a maximum of four inches (4") vertically above the foundation and slope towards the hand-hole opening.

Conduit runs shall avoid drainage collection points where possible. At low points in all conduit runs, a one-half inch (1/2") drain hole shall be drilled in the bottom of the lower straight section of the sweep elbow and sump containing approximately two cubic feet of coarse concrete aggregate material shall be installed. Additional drains shall be placed adjacent to all junction boxes and structures, regardless of the method of conduit placement employed. Drilled holes in conduit shall be deburred inside and out to prevent scraping of conductors. The exterior of the one-half inch (1/2") hole shall be wrapped with approved filter cloth material and secured as directed or approved by the Engineer.

Conduits for future use shall be provided with grounding bushings, bonded to ground, and capped with an approved plastic insert type or expandable rubber plug. A polypropylene pull rope with two hundred pound (200 lb) minimum tensile strength shall be installed in all conduits which are to receive future conductors. At least two feet (2') of pull rope shall be doubled back into the conduits at each end.

Contractor shall mark all underground conduits with a continuous strip of 4-mil-thickness, six inch (6") width polyethylene marker tape. Contractor shall mark the tape with a black legend on a red background and buried nine inches plus or minus three inches (9" ± 3") below the finished grade. Contractor shall place two strips of marker tape side-by-side under all road crossings.

Where new junction boxes are placed in existing rigid metal conduit runs, the conduit shall be fitted with threaded bushings and bonded.

Conduit leading to soffit, wall or other lights or fixtures below the grade of the junction box shall be sealed by means of an approved sealing fitting and sealing compound.

Existing underground conduit without conductors to be incorporated into a new system shall be cleaned with a mandrel or cylindrical wire brush and blown out with compressed air.

The Contractor, at his expense, may use conduit of larger size than shown on the Drawings, and where used, it shall be for the entire length of the run from outlet to outlet. Reducing couplings are not permitted.

When extending existing conduits or installing junction boxes in existing conduit runs, extend the conduit into the proposed junction box or foundation using drains, elbows and bonding as required for new installations. When adjusting junction boxes, shorten or lengthen existing conduits to meet clearance requirements. Complete extensions and modifications to existing conduits using the same size and types of materials.

Contractor shall clean all debris and moisture out of conduits before installing conductors or cables.

All abandoned conduits shall be removed from junction boxes.

All knockouts for new conduit or removed conduit shall be grouted.

All knockouts for conduits entering through the side of junction boxes shall be grouted.

Cut off abandoned conduits flush with the inside wall or bottom of junction boxes. Contractor shall

remove all conductors prior to abandoning conduit.

For thaw wire systems, one inch (1") liquid tight flexible metal conduit (LFMC) shall be used in manholes and oil & grit separator facilities.

7.2 Measurement

Measurement for furnishing and installing conduit is per linear foot of the size and type set forth in the Drawings and Bid Schedule. Measurement is the horizontal distance from center of device to center of device, or from station to station. Measurement shall include all fittings, couplings, pull wires, caps and elbows, and bonding and grounding conductors, which shall be considered incidental to conduit installation.

Conduits installed in manhole and catch basins will not be measured, but rather the following distances will be considered standard unless determined otherwise by the Engineer:

Manhole	forty feet (40')
Catch Basin	sixteen feet (16')

7.3 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section. Payment for trench, backfill, and wire are separate bid items.

Payment shall be made under the following units:

ITEM	UNIT
GRC Steel Conduit (2")	Linear Foot

Article 10.8 JUNCTION BOXES

8.1 General

The Work under this Section consists of performing all operations pertaining to removing and adjusting existing junction boxes to grade and for furnishing and installing a new junction box of the type specified. This Work shall include all excavation, bedding material, and bonding and grounding hardware.

Type I junction boxes shall not be used.

Junction boxes shall be installed at the approximate locations shown on the Drawings. The Contractor, at his expense, may install additional junction boxes to facilitate his Work. Junction boxes shall be located so they are not in the roadway, sidewalk, driveway, or pathway surfaces, unless otherwise noted in the Drawings. Where practical, junction boxes shown in the vicinity of curbs shall be placed a minimum of two feet (2') from the back of curb. Junction boxes shall not be located in areas where drainage collects or flows, including side slopes.

8.2 Materials

Contractor shall provide precast reinforced concrete boxes (junction boxes) with cast iron lids, of the sizes and details shown on the Drawings.

Contractor shall provide precast reinforced concrete additions (junction box extensions) of the sizes and details shown on the Drawings with dimensions confirmed by field measurements.

Illumination junction boxes shall be pre-cast reinforced concrete with cast iron lids of the sizes and details shown on the Drawings.

All Portland concrete cement utilized in the adjustment of the Junction Box shall conform to the requirements as specified in Division 30. The joint sealing compound utilized to seal the joint between the electrical vault's lid and walls shall be Ram-Nek Flexible Plastic Gasket or an approved equal.

8.3 Construction

All junction boxes with metal covers shall have the covers effectively grounded with a four foot (4') tinned copper braid for Type I and Type IA Junction Boxes or a six foot (6') tinned copper braid for Type II and Type III Junction Boxes. Use only stainless steel bolt assembly components to attach bonding braid to the cover (lid). Bond junction box lids to the grounding conductor using copper braid with a cross sectional area equal to an 8 AWG conductor and eyelets spaced at six inch (6") intervals.

The entire bottom of all junction boxes shall be bedded in coarse concrete aggregate material of a minimum depth of eighteen inches (18").

Top of junction boxes shall be one-quarter inch (1/4") below the sidewalk grade or top of adjacent curb. When located in an unpaved section adjacent to a paved shoulder the junction box shall be located one inch (1") below the finished grade and shall be installed one-quarter inch (1/4") below the surface in paved areas. Junction boxes located in areas requiring grading shall be adjusted as directed by the Engineer.

Junction boxes located in seeded areas shall be adjusted to two inches (2") below the surface.

Junction boxes shall be located immediately adjacent to the pole or fixture they serve and at additional intervals to reduce the distance between junction boxes to:

1. Four hundred (400) feet maximum for 25 pair interconnect cable.
2. Two hundred (200) feet maximum for any other conduit runs.

3. If the limitations require additional junction boxes they shall be located on equal spacing's subject to the above limitations.

Emboss the word LIGHTING on the lids of all junction boxes containing only lighting or thaw wire conductors, or only lighting and signal controller power conductors. Emboss the word TRAFFIC on the lid of all other junction boxes.

No later than forty-eight (48) hours prior to commencement of Work on adjustment of the Junction Box, Contractor shall contact the Engineer.

Prior to replacement of the Junction Box, Contractor and Engineer shall inspect the vault lid and vault structure to verify adjustments. Any Work, personnel, and/or materials required to properly correct problems shall be at Contractor's expense.

8.4 Measurement

The method of measurement is the actual number of junction boxes removed, adjusted to grade and accepted, and the actual number of new junction boxes of the specified types furnished, installed, and accepted.

Adjusting the Junction Box to finish grade shall include all labor, materials, and equipment. This shall include all required usable and unusable excavation, classified fill and backfill material, compaction, concrete cutting and removal, and required personnel. If the adjustment of the Junction Box necessitates pulling new cable to meet the specifications, all Work associated with pulling new cable, including the cost of the new cable and the work to pull the cable up into the pole/mast arm, is considered incidental to the bid item "Junction Box (Type)".

8.5 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following units:

ITEM	UNIT
Junction Box (Type)	Each

Article 10.9 EXPANSION FITTINGS

9.1 General

Expansion fittings, as detailed on the structure Drawings, shall be installed where the conduit crosses an expansion joint in the structure. Each expansion fitting shall be provided with a bonding jumper of stranded, No. 6 AWG, copper wire.

Expansion-deflection fittings shall be waterproof and permit a three-quarter inch (3/4”) expansion and contraction and a three-quarter inch (3/4”) deflection without deformation.

9.2 Measurement

Expansion fittings shall be considered as incidental to other Work.

9.3 Basis of Payment

No separate payment for these items is allowed.

Article 10.10 CONDUCTORS

10.1 General

Conductor sizes shall be based on the American Wire Gauge (AWG). Sizes shall conform to the Drawings or, when not shown, to the Conductor Termination Table below. Conductors shall be seven-conductor No. 14 AWG (7C-#14 AWG) for all vehicle heads, and five-conductor No. 14 AWG (5C-#14 AWG) for all pedestrian heads.

Conductor Termination Table

CONDUCTORS/ CABLE	CIRCUIT	WIRE COLOR	AWG NO.	BAND LEGEND
7	Vehicle Red Arrow Vehicle Yellow Arrow Vehicle Green Arrow Common Neutral Spare Spare Spare	Red Orange Green White White/Black Black Blue	14	Head Number
7	Vehicle Red Arrow Vehicle Yellow Arrow Vehicle Flashing Yellow Arrow Vehicle Green Arrow Common Neutral Spare Spare	Red Orange Black Green White White/Black Blue	14	Head Number(s)
7	Vehicle Red Vehicle Yellow Vehicle Green Common Neutral Spare Vehicle Yellow Arrow Vehicle Green Arrow	Red Orange Green White White/Black Black Blue	14	Head Number(s)
5	Pedestrian Don't Walk Pedestrian Walk Common Neutral Spare Spare	Red Green White Orange Black	14	Head Number
5	Photo Elec. Control PEC Load to Contactor Neutral Spare Spare	Black Red White Orange Green	14	PEC
3	Pedestrian Pushbutton Neutral Spare	Black White Red	14	Head Number Located Under

CONDUCTORS/ CABLE	CIRCUIT	WIRE COLOR	AWG NO.	BAND LEGEND
3	Flashing Beacon Ckt 1	Black	14	Head Number
	Flashing Beacon Ckt 2	Red		
	Neutral	White		
3	Preemption Confirmation Light	Black	14	"PRE" Conf Lt
	Neutral	White		
	Spare	Red		
3	**Luminaire**	Black	8	Circuit Number
	Luminaire	Red		Circuit Number
	Luminaire	White		
3	Service to Controller	Black	6	"SIG"
	Neutral	White		No Band
	Spare	Red		No Band
3	Sign Luminaire	Black	8	SIGN
	Sign Luminaire	Red		SIGN
	Sign Spare	White		

All insulated conductors shall consist of uncoated, stranded copper conforming to the specifications of ASTM B8, except for detector loop lead-in which shall consist of stranded, tinned copper.

Grounding conductors shall be bare copper of the gauge required by the Code and may be stranded, solid or braided.

Conductors used for the following purposes shall conform to the referenced specifications.

10.2 Control Cables

Vehicular signal faces, pedestrian signal faces, pedestrian pushbutton detectors, flashing beacons, preemption devices, and photo electric controls shall be wired with signal cable conforming to IMSA 20-1.

The three-conductor No. 20 AWG (3C-#20 AWG) cable shown on the Drawings shall be used in an optically activated preemption system. The cable shall be sheathed in a black PVC jacket and include three (3) No. 20 AWG insulated conductors, and one (1) No. 20 AWG drain wire enclosed within an aluminized polyester shield. All conductors shall be stranded, individually tinned copper. The cable shall contain one yellow, one blue, and one orange insulated conductor. The cable shall be rated for 600 volts operation and be suitable for direct bury, installation in a conduit, and direct exposure to the atmosphere. Cable shall be a GTT Company's No. 138 Opticom cable, or approved equal.

10.3 Power Conductors and Cables

Power conductors and cable shall conform to ICEA Publication No. S-66-524, NEMA Publication No. WC7, and U.L. Standards. Conductors shall be insulated with chemically cross-linked polyethylene conforming to U.L. type XHHW or XHHW-2. Insulation shall be rated for six hundred (600) volt operation.

Three (3) conductor cables shall have black, white, and red colored conductors. All single-wire conductors

and cables shall have clear, distinctive and permanent markings on the outer surface throughout the entire length giving the manufacturer's name or trademark, the insulation type-letter designation, the conductor size, voltage rating and the number of conductors if a cable.

Highway and sign illumination cable shall consist of insulated conductors with a low density, high molecular weight polyethylene jacket.

Power cables with conductors No. 6 AWG and larger shall be PVC or neoprene jacketed.

Load center control circuit wiring shall be No. 12 AWG XHHW.

Conductors in controller cabinets that carry the full signal load circuit shall be No. 10 AWG or larger.

All cabinets shall be wired with conductors sized to handle the amperage drawn under full cabinet use.

Illumination tap conductors that run from the fused disconnect kit in the pole base to the luminaire shall be No. 10 AWG.

Temporary overhead illumination conductors shall be Triplex #6 Aluminum with black cross-linked polyethylene insulation.

INTERCONNECT TERMINATION TABLE

Telemetry Cable: Type PE-39, #19 AWG, Solid Copper

Pair #	Tip	Ring	Pair #	Tip	Ring
1	White	Blue	14	Black	Brown
2	White	Orange	15	Black	Slate
3	White	Green	16	Yellow	Blue
4	White	Brown	17	Yellow	Orange
5	White	Slate	18	Yellow	Green
6	Red	Blue	19	Yellow	Brown
7	Red	Orange	20	Yellow	Slate
8	Red	Green	21	Violet	Blue
9	Red	Brown	22	Violet	Orange
10	Red	Slate	23	Violet	Green
11	Black	Blue	24	Violet	Brown
12	Black	Orange	25	Violet	Slate
13	Black	Green			

10.6 Measurement

In this Article, the word “structure” means a pole, junction box, load center, or controller cabinet, and the word “cable” also refers to single conductors, when individual conductors are in the bid schedule. Each cable the Contractor installs shall be measured in horizontal feet from the center of a structure to the center of the adjacent structure, or from station to station. All terminations, markings, slack and other incidental supplies required to meet the provision of the Specifications are not measured, and are considered incidental to the Contract.

Wire and cable within poles, cabinets, and other devices are included under those bid units.

10.7 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment will be made under the following units:

ITEM	UNIT
(No. of Conductors) (Size of Conductors) (Type of Cable)	Linear Foot

Article 10.11 WIRING

11.1 General

Conductors in fixtures and cabinets shall not be spliced and shall be cabled together with self-clinching nylon ties. All conductors, including spares shall be attached to terminal blocks with "spade" type terminal lugs.

Conductors shall not be pulled into conduit until junction boxes are set to grade, crushed rock sumps installed, grout placed around the conduit, and rigid metal conduits are bonded to ground.

Conductors shall be pulled by hand or by commercially built cable pulling equipment that is specially designed for that purpose. The cable pulling device shall be equipped with a force limiting circuit and force gauge. The cable-pulling device shall be approved by the Engineer before it is allowed to be used. Powdered soapstone, talc, or other inert lubricant shall be used in placing the cables and conductors in conduit.

When new conductors are to be added to a conduit with existing conductors, all conductors shall be removed and the conduit cleaned with a mandrel or brush. Then both old and new conductors shall be pulled through as a unit. In a new installation, all conductors shall be pulled through the conduit as a unit.

Contractor shall leave at least three feet (3') of slack, but not more than four feet (4'), for each conductor at each lighting and combination pole, and in each junction box, splice location, and controller base. Where lighting conductors are contained in a conduit within the pole, the slack is not required.

Contractor shall install a nylon pull rope in all conduits where cable is replaced and/or removed.

The neutral for pedestrian push button circuits shall be separate from the signal light circuit neutral.

All control/signal conductors shall be run continuously without splices from a terminal block located in a cabinet, compartment, or signal head, to a similarly located terminal block.

Contractor shall splice illumination cable in pole bases and shall use approved fuse kits only. Contractor shall not use wire binding screws, studs or nuts.

With the prior approval of the Engineer, Contractor may use illumination cable splices in junction boxes. Contractor shall join the individual conductors by the use of non- insulated, overlap type pressure connectors insulated with mastic-lined shrink tubing. Contractor shall not use wire binding screws, studs or nuts. Contractor shall stagger splices to minimize overall diameter.

Illumination cable conductor splices shall be encapsulated in a rigid, two-piece, transparent, snap together, plastic mold specifically designed for each splice type. Molds shall have dimensions suitable for the splice, encase the cable outer protective jackets, be rated for six hundred (600) volts, and have fill and vent funnels for epoxy resin. Contractor shall fill the splice mold bodies, with epoxy resin, that are resistant to weather, aromatic and straight chain solvents, and does not sustain combustion.

Splices shall be insulated by: 1) a heat shrink tubing internally coated with an approved sealing compound or, 2) a cast of self-curing epoxy resin which is compatible with the wire insulation to form a weatherproof joint. Each insulated kit shall encompass only one cable and include the outer protective jacket(s).

All cables and single wire conductors shall be permanently identified using labels in all pole bases and cabinets, at each detector loop tail/lead in cable and illumination cable splices and in junction boxes.

Contractor shall furnish the two types of identification tags listed below that require a written legend, and write the legends specified neatly and legibly, using a black marking pen specified by the

manufacturer. Contractor shall ensure that legends conform to Section 80.10, Article 10.10 Conductor Termination Table, or as shown on the Drawings or detailed in the Technical Specifications. Contractor shall replace, at no expense to the Owner, all identifications tags that the Engineer deems are illegible.

Use identification cable ties for labeling loop detector tails and for each set of paired loop lead-in conductors in the controller cabinet. Furnish identification cable ties made of nylon that have a nonmagnetic stainless steel locking device embedded in the head and a tag attached "flag style" to the head. The cable ties shall consist of a single strap with a minimum size tag of three-quarters inch by five-sixteenth inch (3/4" x 5/16").

To label all other cables, use cable tags made of nylon reinforced vinyl that is impervious to the elements and will not tear. Provide tags with a four inch by one and three-quarters inch (4" x 1 3/4") minimum size that are attached flag style at one corner to a single strap. Furnish yellow tags for labeling all signal and interconnect cables and red tags for labeling lighting and feeder cables.

Contractor shall remove abandoned conductors/cables.

The control and power cables shall be terminated as shown in 80.10, Article 10.10 Conductor Termination Table. Three conductor power cables shall always have a spare. The white or red conductor shall be left as a spare, when the circuit is either four hundred eighty (480) volt or a neutral is required, respectively.

Terminate all spare conductors on terminal blocks.

11.2 Measurement

Work performed under this article is considered incidental to other Work.

Removal and disposal of abandoned conductors is not measured for payment and is incidental to other Work. All splices, pull wire-string, cable tags, connectors, and fused disconnects are also considered incidental and no payment shall be made.

11.3 Basis of Payment

No separate payment is allowed for this item.

Article 10.12 FUSED SPLICE CONNECTORS

12.1 General

A fused, quick disconnect, splice connector shall be installed between the line and luminaire ballast tap conductors in the base of every pole equipped with a luminaire.

The connector shall be weather tight and consist of two halves: a single unit line side socket and load side plug. The plug and socket assembly shall be designed so that the fuse remains in the load side plug without exposing live metal parts when the connector separates. Coil springs shall not be a part of the current carrying circuit.

Contractor shall provide fuses that are ten (10) ampere, midget (13/32" x 1 1/2") ferrule type with a fast acting current limiting (KTK type) design.

The Contractor shall install the fused connectors so they are readily accessible from the handhole. Tap conductors shall be installed so there is no slack when their ends touch the top of the foundation.

12.2 Measurement

Work performed under this article is considered incidental to other Work.

12.3 Basis of Payment

No separate payment is allowed for this item.

Article 10.13 BONDING AND GROUNDING

13.1 General

Metallic cable sheaths, metal conduit, non-metallic conduit grounding wire, ballast and transformer cases, service equipment, sign switches, metal poles and pedestals shall be made mechanically and electrically secure to form a continuous system, and shall be grounded. Bonding and grounding jumpers shall be copper wire or copper braid of the same cross-sectional area as No. 8 AWG for all systems.

Bonding of slip-base type standards and pedestals shall be by means of two conductors from the conduit, one attached with a ground rod clamp to an anchor bolt and the other connected to the lower portion of the shaft. Bonding of standards with frangible coupling type bases shall be made by attaching one conductor from the conduit to the lower portion of the shaft. The attaching bolt shall be weather resistant and be a minimum of three-sixteenth inches (3/16") in size. The conductor for the shaft shall be forty-eight inches (48") long.

One side of the secondary circuit of step-down transformers shall be grounded.

Grounding of metal conduit, service equipment and neutral conductor at service point shall be accomplished as required by the Code and the serving utility, except that grounding electrode conductor shall be No. 6 AWG, or equal.

Unless otherwise sized on the Drawings, Contractor shall install a bare #8 AWG copper wire in all non-metallic and metallic type conduits for bonding purposes. When wire is pulled into or out of existing conduit and the conduit does not have an existing bare #8 AWG copper wire, Contractor shall install the ground wire.

Contractor shall splice grounding conductors with irreversible compression type connectors listed for the purpose.

Contractor shall install grounding bushings with insulated throats on the ends of all metallic conduits. All non-metallic conduits, except for detector loop home runs, shall have a bushing installed. Contractor shall allow for bushings when installing conduits in foundations.

Contractor shall replace all missing or damaged conduit grounding bushings, conduit bonding jumpers and junction box lid braided bonding jumpers.

Contractor shall provide a minimum #10 AWG green grounding insulated conductor in the pole shaft of all poles with luminaires, and shall terminate the conductor in the lighting fixture.

Bond junction box lids to the grounding conductor using copper braid with a cross sectional area equal to an 8 AWG conductor and eyelets spaced at six inch (6") intervals.

An integral bare ground shall not be used in any cable.

Contractor shall ensure that the grounding conductor, between all ground rods, is continuous or spliced with irreversible ground rated splices.

Contractor shall install a three-quarter inch by ten foot (3/4" x 10') copper clad steel ground rod in the foundation space of a two-piece vault style traffic signal controller

foundation. If two-piece vault style controller foundation isn't being installed, then install ground rod within Type 3 junction box adjacent to controller cabinet base.

Contractor shall use only stainless steel bolt assembly components to attach bonding braid to the cover (lid).

Furnishing and installing bonding and grounding conductors for electrical installations is incidental to this

Contract and no additional payment is made.

13.2 Measurement

Work performed under this article is considered incidental to other Work.

13.3 Basis of Payment

No separate payment is allowed for this item.

Article 10.14 LOAD CENTERS

14.1 General

City of Valdez shall make application for service and pay for engineering and application fees. Contractor shall provide post mounted load center and meter base and coordinate with HEA to energize.

When the positioning of the load center is not detailed on the Drawings, the location shown is approximate and the Contractor shall determine the exact location from the Engineer or the serving utility.

If a junction box is not shown on the Drawings adjacent to or within five feet (5') of any new or reconstructed load center, contact the Engineer immediately for clarification. A j- box of the appropriate size and type for the new system is required to be installed with the load center.

Where Contractor is required to install the service on a utility-owned pole, the positioning of the riser and service equipment is determined by the serving utility.

The serving utility shall approve load center meters, complete with manual circuit closing device and sealing rings. Contractor shall not mount meter sockets on doors.

All accessible sections containing non-metered conductors shall have sealing provisions that will accept Brooks Type 623 seal (0.047 stainless bail).

Contractor shall ensure that the load center is located ten to fifteen feet (10' to 15') from the power source, with a two inch (2") minimum conduit stubbed to within two feet (2') of the power source, and at a minimum depth of forty-two inches (42"). The conduit shall contain a pull-rope, and the end capped and marked with a two by six inch (2" x 6") board. Contractor shall coordinate exact location with the serving utility.

Contractor shall stub service conduit through base as shown on the Drawings.

Prior to the load center being energized by the serving utility, Contractor shall arrange to have it inspected and approved by the Engineer. Once the Engineer has provided approval, a City of Valdez Inspector will provide the final authorization for energizing the load center. The certificate of electrical inspection, attached to the load center, indicates that the load center may be energized.

At all new and existing load centers, which require modification, the Contractor shall furnish conduit, conductors, contactors, breakers, transformers, and all necessary materials to complete the installation of the service, and upgrade to current code requirements.

Contractor shall label the load center as a unit by an Approved Independent Electrical Testing Laboratory (such as UL, ETL, CSA, etc.) defined by ANSI Standard Publication Z34.1 "Third Party Certification Programs for Products, Processes and Services" and conform to applicable published standards noted herein, the Drawings, and Technical Specifications. Contractor shall label the load center as service entrance equipment. All Work shall conform to the latest edition of the National Electric Code as last amended and adopted by the City of Valdez.

All lighting load centers shall contain a multi-pole, 3-position control switch to provide selection of photocell operation. Contractor shall label switch positions "Auto," "Off" and "On." In the "Off" and "On" positions of the switch, Contractor shall ensure all leads to the photo control device are de-energized. Contractor shall install the switch inside the load center, accessible only through one of the lockable doors.

Contractor shall provide UL-approved and listed circuit breakers. Contractor shall provide an enclosed operating mechanism that is:

1. trip-free from operating handle on overload
2. trip-indicating

3. plainly marked with trip and frame size.

Multiple-pole circuit breakers shall have a common trip. Contractor shall ensure that all circuit breakers are quick-make, quick-break on either automatic or manual operation, and shall meet the requirements of the serving utility. Contractor shall ensure that the contacts are silver alloy enclosed in an arc-quenching chamber. An ambient temperature range of from -40° to +160° Fahrenheit shall not influence overload tripping of breakers.

The contactors shall have contacts rated to switch thirty (30) or sixty (60) AMP inductive loads as the Drawings specify and are normally open. Contractor shall provide mechanical armature type contactors consisting of an operating coil, a laminated core, a laminated armature, contacts, and terminals with contacts made of fine silver, silver alloy, or superior alternative materials and rated for four hundred eighty volts (480V).

Contractor shall provide the lighting contactor coil(s) rated for operation at two hundred forty (240) VAC.

Contractor shall connect ground bus of load center to ground rod(s) with #6 soft drawn bare copper and approved connectors.

Dimensions given are typical. Slight variations are allowable, subject to Engineer's approval.

Contractor shall submit four (4) copies of manufacturer's shop drawings for Engineer approval.

Contractor shall indicate the interrupting rating on panel schedules for each location.

On panel schedules for each location, Contractor shall indicate service rating of 120/240V, 3 wire; 240/480V, 3 wire; 100 AMP or 200 AMP.

Contractor shall provide a typed circuit directory for each load panel inside of the load center door, protected with a laminated plastic cover, describing each circuit, with even and odd numbered circuit breaker positions shown on separate parts of the directory. Contractor shall provide a power and control 1-line diagram protected by a laminated plastic cover inside the load center. Contractor shall include the following information on the directory and one-line diagram: Load Center Identification (A, B, etc.), Project Name, Municipal Project Number and Service Voltage.

Contractor shall ensure that the wiring configuration conforms to the appropriate electrical diagram, and as the panel schedule indicates for each intersection. Contractor shall complete a load center summary per appropriate detail drawing for each load center location.

Contractor shall ensure that all terminals are suitable for AL/CU termination, sized in accordance with ampere ratings.

Contractor shall provide #12 AWG XHHW as the load center control wiring.

Contractor shall ensure that the utility section is isolated from main load section and the distribution load sections by non-removable metal barriers, and equipped with landing lugs for utility termination.

The meter section shall contain a meter safety socket with safety shield and provisions for manual bypass of the meter. Contractor shall provide a link or lever type bypass with no external screws, bolts, or nuts. Horn and sliding types are not acceptable.

External screws, bolts, and nuts are not acceptable.

Contractor shall provide exterior ScotchCAL 220 labels with ownership and purpose, safety labels, interior identification labels, wiring diagram, and installation instructions with the load center enclosures.

Contractor shall label in a prominent manner all switches and circuit breakers for circuit and direction.

Contractor shall ensure the lighting contactor coil is rated for operation at 240 VAC.

Contractor shall install load centers having 30 milliamp (ma) ground fault circuit breakers with ratings for all heat trace circuits as indicated on the Drawings.

Contractor shall label each load center with durable, weather resistant identification tags inscribed with: Maximum Fault Current A, Calculated ___/___/___.

Load Centers shall be equipped with a hasp for padlocks.

14.2 Illumination Control

Contractor shall install photoelectric controls capable of switching multiple lighting systems directly.

The photoelectric control shall consist of a photoelectric unit that shall cause a contactor to be energized, thus controlling the lighting circuit. Contractor shall install photoelectric units on the load center, unless the Engineer requires pole mounting of the photoelectric unit because a load center mounted unit will not work properly due to ambient light sources. If required, Contractor shall provide photoelectric units for pole top mounting with a slip fitter, terminal block and with cable supports or clamps to support pole wires. Load center mounted photoelectric units shall be installed using three-quarter inch (3/4") GRC and mounted a minimum of eighteen inches (18") above the load center. There will be no separate payment for providing the required photoelectric units.

Photoelectric Unit:

1. The photoelectric unit shall consist of a light sensitive element connected directly to a normally closed, single pole throw control relay without intermediate amplifications.
2. The unit is either the horizontal sensing or zenith sensing type and shall conform to the following:
    a. The supply voltage rated is sixty (60) hertz (Hz), one hundred five to two hundred seventy-seven (105-277) volts.
    b. The maximum rated load is a minimum of one thousand eight hundred (1,800) volt-amperes.
    c. The operating temperature range is from minus forty degrees (-40°F). to one hundred fifty degrees (+150°F).
    d. The power consumption is less than ten (10) watts.
    e. The base of the unit has a 3-prong, EEI-NEMA standard, twist-lock plug mounting.
3. Units for highway lighting shall have a "turn-on" between one (1) and five (5) foot candles and a "turn-off" at between one and one-half and five (1½ and 5) times "turn-on."
4. Contractor shall ensure measurements conform to the procedures set forth in EEI-NEMA Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices Used in the Control of Roadway Lighting.
5. The photoelectric control unit shall plug into a phenolic resin twist lock receptacle, adjusted to north sky set in a cast aluminum-mounting bracket with a threaded base. When installed on the load center, Contractor shall ensure the bracket is coupled to the end of a rigid metal conduit. When installed on the top of steel poles, Contractor shall ensure the bracket is installed in the center of the rain cap, secured with a locknut

and made watertight with a fillet of silicone caulking compound. When installed inside the load center, Contractor shall ensure the installation conforms to the manufacturer's recommendations and that all load center penetrations/openings are silicon sealed.

6. Contractor shall screen photoelectric units to prevent artificial light from causing cycling.

The load center shall contain a 2-pole, 3-position on/off/auto switch. In the "on" and "off" positions, Contractor shall ensure the switch interrupts all hot leads to the photocell.

14.3 Step Up/Step Down Transformer

Step up/step down transformers in four hundred eighty (480) volt circuits shall be two hundred forty to one hundred twenty (240-120) volt, sixty (60) Hz type with volt-ampere ratings as shown on the Drawings. Transformers shall carry rated volt-amperes continuously without exceeding eighty-five degree Celsius (85°C) temperature rise above twenty-five degree Celsius (25°C) ambient.

Where installed outside of the load center, use a non-ventilated transformer fabricated of aluminum, stainless steel or galvanized steel. Coat enclosures fabricated of sheet metal with moisture resistant paint.

The case shall be fabricated of aluminum, brass, or galvanized steel. The case shall be coated with moisture resistant paint.

The unit shall be filled with a high melting point insulating compound and shall be hermetically sealed to insure satisfactory operation under continuous submersion in water.

Transformer leads shall be insulated with non-hygroscopic material and shall extend at least nine inches (9") outside the case seal.

The primary and secondary sides of the transformer shall be "protected" in the load center.

14.4 Load Center Enclosure

All doors shall be equipped with continuous stainless steel pin hinges, coin latches, and hasp for padlock.

Meter section door shall have a clear lexan meter reading window, 0.187" minimum thickness, with a minimum size of eight by eight inches (8.0" x 8.0"), and shall include a silicon seal to door.

The load center shall be provided with internal mounting facilities for a one-half inch (1/2") anchor bolt installation as well as for use with a standard factory mounting base assembly.

Construction shall be of zinc-coated A60 finish steel with minimum thickness as follows: Exterior Shell - 12 GA.

Interior Doors - 14 GA.

Interior Panels - 14 GA.

Interior Covers - 16 GA.

The load center shall be painted with a two-part urethane paint undercoating inside and out. The final finish shall be a two-part urethane paint, standard white for removable panels and non-gloss silver-gray, Benjamin Moore GN-42, for the enclosure.

The required location for the hand-off-auto switch and the contactor is in the distribution load section.

All non-current carrying parts shall be bonded to ground.

14.5 Post-Mounted Load Center, Type 2 - Underground Service

A post-mounted load center, Type 2, shall be defined in the Construction Drawings by reference to

appropriate Standard Details for the load center, wiring diagram, and panel schedule.

14.8 Measurement

Load centers shall be measured as units, complete and in place. Bases for load center enclosures shall be a separate bid item under "foundations."

Photoelectric units mounted on the load center shall not be measured separately for payment. The Work performed under Article 14.2 – Illumination Control, is considered incidental to Work performed under Articles 14.5 through 14.7, unless a pole mounted photoelectric unit is required.

14.9 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment shall be made under the following units:

ITEM	UNIT
Post-Mounted Load Center Underground Service, Type 2	Each

Article 10.16 MISCELLANEOUS

16.1 Sign Switches

Each sign illumination installation shall be provided with a disconnect switch mounted on the sign standard or structure, as shown on the Drawings. Where the sign lighting is served from a multiple service, each sign structure shall have a 120-volt, 240-volt, or 480-volt circuit breaker, approved by UL as service equipment, and rated as shown on the Drawings.

Enclosures for the sign breaker shall be galvanized or baked enamel NEMA Type 3R, and shall be provided with top hinged cover, hasp for sealing cover and provisions for locking.

16.2 Field Tests

Prior to acceptance of the Work, the Contractor shall perform the following tests on all traffic signal, sign illumination, and lighting circuits, in the presence of the Engineer.

A. Tests

Any fault in any material or in any part of the installation revealed by these tests shall be replaced or repaired by the Contractor at his expense in an approved manner, and the same test shall be repeated until no fault appears.

1. Continuity

Each circuit shall be tested for continuity.

2. Grounds

The test for grounds in each circuit shall consist of the physical examination of the installation to insure that all required grounding bushings, bonding jumpers, and ground rods have been installed and are mechanically firm.

3. Insulation

A megohm test shall be made on each circuit, between circuits and between the circuit and a ground. The insulation resistance shall not be less than 100 megohms or the minimum specified by the manufacturer, measured at 500 volts direct current (VDC). All lamps and magnetometer sensing probes shall be disconnected prior to performing the megger test.

4. Circuit

Every signal indication circuit shall be energized with lamps installed prior to installation of the load switches.

5. Functional

The following tests shall be performed on each signal and lighting system after all of the component circuits have satisfactorily passed the tests for continuity, grounding, insulation integrity and circuitry.

B. Functional Testing

During the test periods, the Contractor will maintain the system or systems. The cost of any maintenance necessary shall be at the Contractor's expense.

1. The functional test for each new or modified traffic signal system shall consist of not less than twenty-four (24) hours nor more than five (5) days of continuous flashing operation.

2. During the functional tests, signals shall not be switched from flashing operation to normal, continuous operation on a Saturday, Sunday, Monday, a Holiday, or the day after a Holiday.

3. The functional test for each lighting system and sign illumination system shall consist of an operational test for five (5) consecutive nights according to the regular lighting schedule.

4. The functional test for each flashing beacon system shall consist of not less than five (5) days of continuous, satisfactory operation.

5. A continuous five (5) day burning test shall be made on each pedestrian overcrossing and undercrossing lighting system before final acceptance.

The initial turn-on shall be made between 9:00 a.m. and 2:00 p.m. unless specified otherwise in the Technical Specifications. Prior to turn-on, all equipment shown on the Drawings shall be installed and operable. This includes, but is not limited to, pedestrian signals and push buttons, signal face backplates and visors, vehicle detectors, highway lighting and all regulatory, warning and guide signs.

16.3 Galvanizing

A. General

Standards, pedestals, posts and cabinets of ferrous materials shall be galvanized in accordance with the provisions of ASTM A123 except that cabinets and cut out boxes may be constructed of material galvanized prior to fabrication.

Iron or steel pipe standards and mast arms shall be hot-dip galvanized after fabrication in conformance with the ASTM A123.

Tie-rods, nuts, washers, clamps, anchor bolts and other miscellaneous ferrous parts shall be hot-dip galvanized after fabrication in accordance with the provisions of ASTM A153. Anchor bolts shall be fully galvanized.

After galvanizing, the bolt threads shall accept galvanized standard nuts without requiring tools or causing removal of protective coatings.

Rigid metal conduit shall be hot dip galvanized in accordance with American National Standards Institute specification ANSI C-80.1.

Galvanized coatings that have been cut or damaged shall be repaired in conformance with ASTM A780.

Lighting and signal structures shall be hot-dip galvanized to meet AASHTO M 111 and these specifications. Galvanizing kettles will be large enough to completely submerge each element, the mast arm, and the pole. Submerge the complete/whole element in the galvanizing process. An element galvanized in sections will not be accepted. After the poles and mast arms are galvanized, remove all excess zinc from all drip lines and points and the surfaces of all tube ends that form slip type joints to provide a smooth finish.

B. Cold Galvanizing

Repair hot-dip galvanized finishes that have been cut or damaged and cold galvanize the tops of pipe pile foundations with a premixed, single component, zinc rich paint that:

1. Meets the requirements of Federal Specification DOD-P-21035A, Galvanizing Repair Specification and ASTM A 780, Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings,

2. Contains ninety-five percent (95%) zinc, by weight, in the dried film, and

3. Is recognized under Underwriters Laboratories, Inc. component program as an equivalent to commercial hot-dip galvanizing.

Apply the paint directly to surfaces devoid of grease, oil, mill scale, rust, and paint. Clean soiled surfaces according to the following Steel Structures Painting Council (SSPC) specifications before applying the paint:

Solvent clean greases and oils according to SSPC-SP1

Power tool clean rust and easy to remove paint according to SSPC-SP3

Sandblast mill scale and firmly adhered paint according to SSPC-SP6 (commercial).

Apply the paint whenever the temperature of the pipe pile is at least five degrees Fahrenheit (5ºF) above the dew point to avoid possible condensation and the relative humidity is less than eighty-five percent (85%). Apply two (2) coats of three
(3) mil wet film thickness, applying the second coat at least twelve (12) hours after applying the first coat. (Each gallon will cover about four hundred and fifty (450) square feet of three (3) mil wet film thickness.)

16.4 Painting for Steel Structures

A. General Requirements. Ship paint in strong, substantial containers, plainly marked with the name, weight, and volume of the paint content, together with the color formula, batch number, and the name and address of the manufacturer.

Reduction and clean-up thinners will be as approved by the coating manufacturer. Ship all thinners in the manufacturer's original containers.

B. The paint shall conform to the requirements outlined below:

1. Prime Coat. A generic single component, moisture cure, polyurethane (SC- MC-U) containing not less than 78% by weight zinc powder. Volume of solids shall be 60% minimum. Pigment type shall be zinc dust. Zinc in dry film shall be 83% minimum, by weight. Weight per liter shall be 2750 g, minimum. Volatile organic compounds (VOC's) shall not exceed 450 g/L.

2. Intermediate Coat. A SC-MC-U containing not less than 480 g/L micaceous iron oxide (MIO). Volume of solids shall be 60% minimum. Pigment color shall contrast between the intermediate and prime coat and the intermediate and top coat. Weight per liter shall be 1550 g minimum. VOC's shall not exceed 450 g/L.3. Top Coat. A single component, moisture cure, aliphatic polyurethane (SC-MC-ALIP-U), containing not less than 480 g/l micaceous iron oxide (MIO). Volume of solids shall be 60% minimum. Pigment color of the top coat shall be FSS FED-STD-595B, color number 26492. The color match shall be evaluated as a general match under a daylight source using ASTM D 1729. Weight per liter shall be 1550 g minimum. VOC's shall be less than 450 g/L.

3. All coatings shall pass the following tests:

a. Corrosion Resistance, ASTM B 117, Salt Spray Test. Minimum of 4000 hours with less than 2 mm creep from scribe. Panels shall be 3 mm minimum thickness cold rolled steel, having SSPC Near White Blast with 25 to 50 □m angular profile.

b. Accelerated Weathering, ASTM G 53. Minimum 400 hours QUV B bulb with no chalking, cracking, or gloss loss greater than 20%.

c. Forward Impact, ASTM D 2794. Minimum 17 Nm impact.

d. Abrasion Resistance, ASTM D 4060. Less than 90 mm loss on CS-17 wheel, 1000 g/load, 1000 cycles.

e. Moisture Resistance, ASTM D 4585. Minimum 1000 hours at 38o C with no change in appearance.

f. Flexibility, ASTM D 522, Cylindrical Mandrel Bend Test. Bend around 12.5 mm diameter mandrel with no cracking.

g. Adhesion, ASTM D 4541. Minimum 3.5 Mpa on a certified pull test.

C. New Equipment.

1. Signal heads, signal head mountings, brackets and fittings, outside of visors, pedestrian push button housings, pedestrian signal head housings and visors, and back faces of backplates, shall be factory finished with two (2) coats of dark olive green enamel. Painting is not required where the color is an integral part of the component material, or powder coated.

2. Interior of signal visors, louvers, and front faces of backplates shall be factory finished with two (2) coats of lusterless black enamel.

3. After erection, all exterior surfaces shall be examined for damage, and such damaged surfaces shall be cleaned and spot coated with primer and finish coat.

D. Reused Equipment.

1. Existing non-galvanized, damaged equipment shall be painted in the field, including Owner-furnished equipment. The equipment shall be washed with a stiff bristle brush using a solution of water containing two tablespoons (2 tbsp/gal) of heavy duty detergent powder per gallon. After rinsing, all surfaces shall be wire brushed to remove all poorly bonded paint, rust, scale, corrosion, grease or dirt. Any dust or residue remaining after wire brushing shall also be removed prior to priming.

2. Factory or shop cleaning methods for metals will be acceptable if equal to the methods specified herein.

3. Immediately after cleaning, all bare metal shall be coated with Pre-Treatment, Vinyl Wash Primer, followed by two (2) prime coats of Zinc Chromate Primer for Metal.

4. Signal equipment, excluding standards, shall be given a spot finishing coat on newly primed areas, followed by one (1) finishing coat over the entire surface.

5. Ungalvanized standards shall be given two (2) spot finish coats on newly-primed areas.

6. All paint coats may be applied either by hand brushing or by approved spraying machines. The Work shall be done in a neat and workmanlike manner. The Engineer reserves the right to require the use of brushes for the application of paint, should the Work done by the paint spraying machine prove unsatisfactory or objectionable.

Galvanized equipment with rusted areas shall be repaired as provided for in Article 16.3 - Galvanizing.

16.5 Measurement

The Work performed under this section is considered incidental to other Work.

16.6 Basis of Payment

No separate payment is allowed for Work performed under this Section.

Article 10.23 LUMINAIRES

23.1 General

LED street luminaires must be CREE LEDway Series Luminaires as manufactured by Cree, Inc. 4600 Silicon Drive, Durham, North Carolina 27703

Component	Location	Model No.
LED Luminaire	Street	STR-LWY-**3M**-HT-**08**-E-UL-SV-700-40K

23.2 Light Distribution

Furnish luminaires having standard I.E.S. light distribution patterns as specified in the Contract Documents.

Prior to installation, Contractor shall check the socket position in the luminaire to verify that it corresponds to the setting indicated in the instructions for the light distribution type shown on the Drawings.

Vertical light distribution shall be short (s), medium (m), or long (l). Cutoff shall be full-cutoff (f), partial-cutoff (p), or non-cutoff (n).

Lateral light distribution shall be Type 1, Type II, Type III or Type IV.

When cutoff fixtures are specified in the Technical Specifications or shown on the Drawings, the optical assembly shall provide ninety-degree (90°) cutoff and shielding. The reflector shall be specifically designed to produce the specified ANSI and IES light distribution when used with one hundred fifty (150) through four hundred (400) watt high pressure sodium lamps. The fixture shall have a flat plate glass lens and no part of the lens shall project below the luminaire's metal housing.

Mast arm mounted luminaires shall be provided with slip-fitters designed for mounting on two-inch (2”) standard pipe.

All gaskets shall be composed of a material capable of withstanding the temperature involved and they shall be securely held in place.

All parts of the luminaire shall be manufactured from corrosion-resistant materials.

Manufacturer's luminaire specifications, shop drawings, and photometric data shall be submitted and approved before installing any luminaire on the project.

23.3 Measurement

Luminaires will be measured as units complete and in place, including all labor, equipment, and materials to provide a complete and functioning unit. No measurement for payment will be made until

the functional test has been completed in accordance with Section 80.16, Article 16.2 – Field Tests.

23.4 Basis of Payment

Payment for this Work shall be in accordance with Division 10, Section 10.07 - Measurement and Payment, and shall include full payment for all Work described in this Section.

Payment will be made under the following units:

ITEM	UNIT
Luminaire, 182W LED, 80 LED, Type 3 Optics	Each

QUANTITY NOTEBOOK AND COMPUTATIONS

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

SUBMITTAL 95% PS&E

PREPARED BY: KINNEY ENGINEERING, LLC
DATE: 4/28/2022

EARTHWORK SUMMARY				
SOURCE	EXCAVATION (TOTAL)	A-4 USABLE EXCAVATION	A-5 UNUSABLE EXCAVATION	A-6 TYPE II-A CLASSIFIED FILL AND BACKFILL
WHALEN CORRIDOR				
(STA. 99+50 TO 112+00) - CY	8,180	1,636	6,544	5,420
W PIONEER CORRIDOR				
(STA. 200+50 TO 203+25) - CY	1,230	246	984	980
SUBTOTAL (CY):		1,882	7,528	6,400
CONTINGENCY (10%)		189	753	640
TOTALS IN CUBIC YARDS (ROUNDED)		2,080	8,290	7,040
LBS/CF				144
TOTALS IN TONS (ROUNDED)				13,690

*ASSUMES 20% USABLE EXCAVATION AND 80% UNUSABLE EXCAVATION

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

UNIT	TOTAL
ACRE	1.50

ITEM NUMBER: 20.02
ITEM NAME: CLEARING & GRUBBING

CALCULATED BY: PJM
DATE: 3/8/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 20.02

CLEARING AND GRUBBING

START STA.	END STA.	WIDTH	AREA (SF)	ACRE	REMARKS
99+54	112+00	80	99,680	2.3	WHALEN AVE, ROW TO ROW
99+54	112+00	25	(31,150)	(0.8)	SUBTRACT OF EXISTING GRAVEL ROAD
			68,530	**1.5**	**ACRE**

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

UNIT	TOTAL
TON	1972.0

ITEM NUMBER: 20.06 LC
ITEM NAME: LEVELING COURSE

CALCULATED BY: PJM
DATE: 3/8/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 206			
LEVELING COURSE			
DESCRIPTION	**AREA (SF)**	**DEPTH (INCH)**	**VOLUME (CF)**
ALL ROADWAY AREA	67,000	4	22334.0
ALL ASPHALT SIDEWALK AREA	3,015	2	503.0
ALL CONCRETE SIDEWALK AREA	6,840	2	1140.0
ALL CURB AND GUTTER (2' WIDTH)	5,540	2	924.0
VOLUME	24,901.0	C.F.	
ESTIMATING FACTOR	144	[LBS / CUBIC FOOT]	
POUNDS	3,585,744		
Contingency 10%	358,574		
TONS	**1972**		

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

	UNIT	TOTAL
ITEM NUMBER: TRENCH EXCAVATION AND BACKF	LF	2,522

ITEM NAME: 20.07

CALCULATED BY: PJM
DATE: 3/8/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 20.07

TRENCH EXCAVATION AND BACKFILL (VARIOUS DEPTHS)

SHEET	LOCATION	LENGTH (LF)	NOTES
F1-F2	STORM DRAIN (ALL SIZES)	968	SINGLE PIPE TRENCH
U10	SANITARY SEWER	737	SINGLE PIPE TRENCH
U3-U5	WATER MAIN #1	1,809	SINGLE & DUAL PIPE TRENCH
U6-U7	WATER MAIN #2	(992)	DUAL PIPE TRENCH
	(SUBTRACT - OVERLAP WITH #1)		
	TOTAL:	**2,522**	

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

ITEM NUMBER: BEDDING MATERIAL (CLASS C)
ITEM NAME: 20.11

UNIT	TOTAL
TON	1,573

CALCULATED BY: PJM
DATE: 3/8/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 20.07

BEDDING MATERIAL (CLASS C)

SHEET	LOCATION	LENGTH (LF)	BEDDING SECTION AREA (SF)	CF	NOTES
F1-F2	STORM DRAIN (ALL SIZES)	968	8.9	8,615	ASSUME 24" PIPE
	(SINGLE PIPE TRENCH)				FOR SECTION AREA
U10	SANITARY SEWER	737	4.4	3,243	
	(SINGLE PIPE TRENCH)				
U3-U5	WATER MAIN #1	817	4.4	3,595	
	(SINGLE PIPE TRENCH)				
U6-U7	WATER MAIN #1 AND #2	992	10.5	10,416	
	(DUAL PIPE TRENCH)				
			VOLUME	25,869	C.F.
			ESTIMATING FACTOR	110	[LBS / C.F.]
			SUBTOTAL:	1430	TONS
			CONTINGENCY (10%)	143	TONS
			TOTAL	**1,573**	TONS

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

UNIT	TOTAL
TON	1,310

ITEM NUMBER: 40.02
ITEM NAME: ASPHALT PAVEMENT

CALCULATED BY: PJM
DATE: 3/10/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 40.02

ASPHALT PAVEMENT

DESCRIPTION	QTY	UNIT
ALL ROAD AREAS (FROM AUTOCAD)	67,000	SF
ROAD ASPHALT THICKNESS	0.25	FT
ROAD ASPHALT VOLUME	16,750	CF
ASPHALT SIDEWALK (FROM AUTOCAD)	3,015	SF
SIDEWALK ASPHALT THICKNESS	0.17	FT
SIDEWALK ASPHALT VOLUME	503	CF

TOTAL ASPHALT VOLUME	17,253	CF
ESTIMATING FACTOR	151	[LBS / C.F.]
POUNDS	2,605,143	
TONS	**1,310**	

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

UNIT	TOTAL
LS	ALL REQ'D

ITEM NUMBER: 70.13
ITEM NAME: TRAFFIC MARKINGS

CALCULATED BY: PJM
DATE: 3/15/2022

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

MMA SURFACE APPLIED

SPEC NO. 70.13	
TRAFFIC MARKINGS	
Stripe	**LF (4" EQ)**
4"W	
4"WS	
4"Y	
4"YS	
4"DY	3,126
4"PM	
8"W	
8"WD	
18"W	
18"Y	
24"W	2,310
12"WD (2/2)	
8"YD	
Total	**5,436**

PROJECT NO: 20-310-1200
PROJECT NAME: WHALEN AVENUE IMPROVEMENTS

REVIEW TYPE: 95% PS&E

UNIT	TOTAL
MSF	11

ITEM NUMBER: 75.04,75.05
ITEM NAME: **SEEDING (TYPE 1) & TOPSOIL (4" DEPTH)**

CALCULATED BY:
DATE:

CHECKED BY:
DATE:
PRINT DATE: 4/28/2022

SPEC NO. 75.04 & 75.05

SEEDING (TYPE 1) & TOPSOIL (4" DEPTH)

80 FOOT ROW WIDTH
30 FOOT ROAD SECTION

ASSUME TOPSOIL AND SEED TO ROW BOUNDARIES
STA. 100+20 TO STA. 111+76

LENGTH: **1156**
WIDTH: **50**

EGAN - ST TERES	LT	1,588	
EGAN - W PIONE	RT	2,583	
ST TERESA - W PIO	LT	1,163	
W- PIONEER - ST TE	LT	903	
W. PIONEER - KLUT	RT	1,248	
ST TERESA - KLUT	LT	370	
SUBTOTAL:		7,855	SF
CONTINGENCY (30%)		2,357	SF
TOTAL:		**11**	**MSF**

CITY OF VALDEZ

WHALEN AVENUE

ENGINEERS ESTIMATE - 95% DESIGN

Date Modified: April 27, 2022

Date Printed: April 27, 2022

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
A-1	10.09	INTERIM WORK AUTHORIZATION	CS	ALL REQ'D	$ 50,000.00	$ 50,000.00
A-2	10.10	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$ 20,000.00	$ 20,000.00
A-3	20.02	CLEARING AND GRUBBING	ACRE	1.50	$ 11,500.00	$ 17,250.00
A-4	20.04	USABLE EXCAVATION	CY	2,080	$ 17.00	$ 35,360.00
A-5	20.04	UNUSABLE EXCAVATION	CY	8,290	$ 17.00	$ 140,930.00
A-6	20.05	TYPE II-A CLASSIFIED FILL AND BACKFILL	TON	13,690	$ 21.00	$ 287,490.00
A-7	20.06	LEVELING COURSE	TON	1,972	$ 38.00	$ 74,936.00
A-8	20.07	TRENCH EXCAVATION AND BACKFILL (VARIOUS DEPTHS)	LF	2,522	$ 38.00	$ 95,836.00
A-9	20.11	BEDDING MATERIAL (CLASS C)	TON	1,573	$ 35.00	$ 55,055.00
A-10	20.13	DISPOSAL OF UNUSABLE OR SURPLUS MATERIAL	CY	8,348	$ 10.00	$ 83,480.00
A-11	20.17	REMOVE EXISTING SIDEWALK	SY	191	$ 20.00	$ 3,820.00
A-12	20.18	REMOVE EXISTING CURB AND GUTTER	LF	448	$ 10.00	$ 4,480.00
A-13	20.19	REMOVE EXISTING PAVEMENT	SY	2,109	$ 3.50	$ 7,381.50
A-14	20.22	GEOTEXTILE, (TYPE B)	SY	11,100	$ 5.00	$ 55,500.00
A-15	20.30	STORM WATER POLLUTION PREVENTION PLAN	LS	ALL REQ'D	$ 30,000.00	$ 30,000.00
A-16	20.32	FURNISH AND INSTALL CASING	LF	80	$ 250.00	$ 20,000.00
A-17	20.40	TEST ROLLING	LS	ALL REQ'D	$ 10,000.00	$ 10,000.00
A-18	30.02	P.C.C. CURB AND GUTTER (ALL TYPES)	LF	2,770	$ 60.00	$ 166,200.00
A-19	30.03	P.C.C. SIDEWALK 4" THICK	SY	760	$ 140.00	$ 106,400.00
A-20	30.03	P.C.C. SIDEWALK 6" THICK	SY	24	$ 180.00	$ 4,320.00
A-21	30.07	P.C.C. CURB RAMP (PARALLEL)	EA	8	$ 8,500.00	$ 68,000.00
A-22	30.07	DETECTABLE WARNINGS	EA	8	$ 70.00	$ 560.00
A-23	40.02	A.C. PAVEMENT (CLASS E)	TON	1,310	$ 250.00	$ 327,500.00

CITY OF VALDEZ

WHALEN AVENUE
ENGINEERS ESTIMATE - 95% DESIGN

Date Modified: April 27, 2022
Date Printed: April 27, 2022

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
A-24	50.02	FURNISH AND INSTALL PIPE (8" PVC DR 18)	LF	737	$ 200.00	$ 147,400.00
A-25	50.03	CONSTRUCT MANHOLE (TYPE A)	EA	3	$ 12,000.00	$ 36,000.00
A-26	50.23	COATING INTERIOR MANHOLE	EA	1	$ 15,000.00	$ 15,000.00
A-27	55.02	FURNISH AND INSTALL CPEP, 18", TYPE S	LF	290	$ 150.00	$ 43,500.00
A-28	55.02	FURNISH AND INSTALL CPEP, 24", TYPE S	LF	628	$ 180.00	$ 113,040.00
A-29	55.02	FURNISH AND INSTALL CPEP, 36", TYPE S	LF	50	$ 300.00	$ 15,000.00
A-30	55.04	CONSTRUCT TYPE 1 MANHOLE	EA	11	$ 10,000.00	$ 110,000.00
A-31	55.06	CONSTRUCT CATCH BASIN	EA	4	$ 7,500.00	$ 30,000.00
A-32	55.07	CONNECT TO EXISTING STORM DRAIN MANHOLE	EA	1	$ 4,000.00	$ 4,000.00
A-33	55.16	COATING INTERIOR STORM DRAIN MANHOLE	EA	2	$ 10,000.00	$ 20,000.00
A-34	60.02	FURNISH AND INSTALL 6" HDPE WATER MAIN	LF	5	$ 170.00	$ 850.00
A-35	60.02	FURNISH AND INSTALL 8" HDPE WATER MAIN	LF	1,809	$ 215.00	$ 388,935.00
A-36	60.02	FURNISH AND INSTALL 12" HDPE WATER MAIN	LF	992	$ 255.00	$ 252,960.00
A-37	60.03	FURNISH AND INSTALL 6" GATE VALVE	EA	1	$ 2,500.00	$ 2,500.00
A-38	60.03	FURNISH AND INSTALL 8" GATE VALVE	EA	11	$ 3,500.00	$ 38,500.00
A-39	60.03	FURNISH AND INSTALL 12" GATE VALVE	EA	2	$ 5,250.00	$ 10,500.00
A-40	60.04	FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (SINGLE PUMPER)	EA	2	$ 12,500.00	$ 25,000.00
A-41	60.17	FURNISH AND INSTALL ANODE	EA	14	$ 600.00	$ 8,400.00
A-42	65.02	CONSTRUCTION SURVEY MEASUREMENT	LS	ALL REQ'D	$ 30,000.00	$ 30,000.00
A-43	65.02	SURVEY MONUMENT INSTALLED IN MONUMENT CASE	EA	2	$ 2,500.00	$ 5,000.00
A-44	65.02	TWO-PERSON SURVEY CREW	HR	60	$ 350.00	$ 21,000.00
A-45	70.03	ADJUST MANHOLE RING	EA	3	$ 1,500.00	$ 4,500.00
A-46	70.06	REMOVE EXISTING CATCH BASIN	EA	1	$ 1,200.00	$ 1,200.00
A-47	70.07	ADJUST MAINLINE VALVE BOX TO FINISH GRADE	EA	4	$ 750.00	$ 3,000.00
A-48	70.12	INSULATION BOARD (R=20)	SF	1,780	$ 5.50	$ 9,790.00

CITY OF VALDEZ

WHALEN AVENUE
ENGINEERS ESTIMATE - 95% DESIGN

Date Modified: April 27, 2022
Date Printed: April 27, 2022

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
A-49	70.13	PAINTED TRAFFIC MARKINGS	LS	ALL REQ'D	$ 15,000.00	$ 15,000.00
A-50	70.14	STANDARD SIGN	SF	103.41	$ 200.00	$ 20,682.00
A-51	70.15	TRAFFIC MAINTENANCE	LS	ALL REQ'D	$ 25,000.00	$ 25,000.00
A-52	70.16	REMOVE PIPE	LF	540	$ 15.00	$ 8,100.00
A-53	75.04	TOP SOIL (AT 4" DEPTH)	MSF	11	$ 2,300.00	$ 25,300.00
A-54	75.05	SEEDING (TYPE 1)	MSF	11	$ 750.00	$ 8,250.00
A-55	80.02	TRENCH AND BACKFILL (2' X 3')	LF	1,430	$ 15.00	$ 21,450.00
A-56	80.04	DRIVEN PILE LUMINAIRE POLE FOUNDATIONS	EA	6	$ 4,200.00	$ 25,200.00
A-57	80.05	FIXED BASE LUMINAIRE POLE (24' LENGTH)	EA	6	$ 4,000.00	$ 24,000.00
A-58	80.05	LUMINAIRE ARM (8' LENGTH)	EA	6	$ 650.00	$ 3,900.00
A-59	80.07	GRC STEEL CONDUIT (2")	LF	1,430	$ 25.00	$ 35,750.00
A-60	80.08	JUNCTION BOX (TYPE 1A)	EA	7	$ 1,000.00	$ 7,000.00
A-61	80.08	JUNCTION BOX (TYPE II)	EA	1	$ 2,200.00	$ 2,200.00
A-62	80.10	1 CONDUCTOR, #8 AWG XHHW	LF	1,430	$ 5.00	$ 7,150.00
A-63	80.10	3 CONDUCTOR, #8 AWG XHHW	LF	1,630	$ 7.00	$ 11,410.00
A-64	80.14	POST-MOUNTED LOAD CENTER UNDERGROUND SERVICE, TYPE 2	EA	1	$ 10,000.00	$ 10,000.00
A-65	80.23	LUMINAIRE, 182W LED, 80 LED, TYPE 3 OPTICS	EA	6	$ 1,800.00	$ 10,800.00

Pay Item Total: $ 3,262,000.00

Project Total Estimate:	$ 3,262,000.00

ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
A-1	10.09	OWNER'S CONTINGENCY	CS	ALL REQ'D	$ 100,000.00	$ 100,000.00
A-2	10.10	MOBILIZATION AND DEMOBILIZATION	LS	ALL REQ'D	$ 125,000.00	$ 125,000.00
A-3	20.02	CLEARING AND GRUBBING	ACRE	1.50	$ 11,500.00	$ 17,250.00
A-4	20.04	USABLE EXCAVATION	CY	2,080	$ 23.00	$ 47,840.00
A-5	20.04	UNUSABLE EXCAVATION	CY	8,290	$ 17.00	$ 140,930.00
A-6	20.05	TYPE II-A CLASSIFIED FILL AND BACKFILL	TON	13,690	$ 21.00	$ 287,490.00
A-7	20.06	LEVELING COURSE	TON	1,972	$ 38.00	$ 74,936.00
A-8	20.07	TRENCH EXCAVATION AND BACKFILL (VARIOUS DEPTHS)	LF	2,569	$ 38.00	$ 97,622.00
A-9	20.11	BEDDING MATERIAL (CLASS C)	TON	1,639	$ 35.00	$ 57,365.00
A-10	20.13	DISPOSAL OF UNUSABLE OR SURPLUS MATERIAL	CY	8,351	$ 17.00	$ 141,967.00
A-11	20.17	REMOVE EXISTING SIDEWALK	SY	191	$ 20.00	$ 3,820.00
A-12	20.18	REMOVE EXISTING CURB AND GUTTER	LF	448	$ 10.00	$ 4,480.00
A-13	20.19	REMOVE EXISTING PAVEMENT	SY	2,109	$ 3.50	$ 7,381.50
A-14	20.22	GEOTEXTILE, (TYPE B)	SY	11,100	$ 5.00	$ 55,500.00
A-15	20.30	STORM WATER POLLUTION PREVENTION PLAN	LS	ALL REQ'D	$ 30,000.00	$ 30,000.00
A-16	20.32	FURNISH AND INSTALL CASING	LF	80	$ 1,500.00	$ 120,000.00
A-17	20.40	TEST ROLLING	LS	ALL REQ'D	$ 10,000.00	$ 10,000.00
						$ -
A-18	30.02	P.C.C. CURB AND GUTTER (ALL TYPES)	LF	2,770	$ 67.00	$ 185,590.00
A-19	30.03	P.C.C. SIDEWALK 4" THICK	SY	760	$ 160.00	$ 121,600.00
A-20	30.03	P.C.C. SIDEWALK 6" THICK	SY	24	$ 188.00	$ 4,512.00
A-21	30.07	P.C.C. CURB RAMP (PARALLEL)	EA	8	$ 8,500.00	$ 68,000.00
A-22	30.07	DETECTABLE WARNINGS	EA	8	$ 140.00	$ 1,120.00
						$ -
A-23	40.02	A.C. PAVEMENT (CLASS E)	TON	1,310	$ 250.00	$ 327,500.00
						$ -
ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	
A-24	50.02	FURNISH AND INSTALL PIPE (8" PVC DR 18)	LF	737	$ 200.00	$ 147,400.00
A-25	50.03	CONSTRUCT MANHOLE (TYPE A)	EA	3	$ 12,000.00	$ 36,000.00
A-26	50.23	COATING INTERIOR MANHOLE	EA	1	$ 25,000.00	$ 25,000.00
						$ -
A-27	55.02	FURNISH AND INSTALL CPEP, 18", TYPE S	LF	286	$ 150.00	$ 42,900.00
A-28	55.02	FURNISH AND INSTALL CPEP, 24", TYPE S	LF	678	$ 180.00	$ 122,040.00
A-29	55.02	FURNISH AND INSTALL CPEP, 36", TYPE S	LF	50	$ 300.00	$ 15,000.00
A-30	55.04	CONSTRUCT TYPE 1 MANHOLE	EA	10	$ 10,000.00	$ 100,000.00
A-31	55.06	CONSTRUCT CATCH BASIN	EA	5	$ 7,500.00	$ 37,500.00
A-32	55.07	CONNECT TO EXISTING STORM DRAIN MANHOLE	EA	1	$ 4,000.00	$ 4,000.00
A-33	55.16	COATING INTERIOR STORM DRAIN MANHOLE	EA	2	$ 25,000.00	$ 50,000.00

						$ -
A-34	60.02	FURNISH AND INSTALL 6" HDPE / DIP WATER MAIN	LF	5	$ 300.00	$ 1,500.00
A-35	60.02	FURNISH AND INSTALL 8" HDPE / DIP WATER MAIN	LF	1,870	$ 235.00	$ 439,450.00
A-36	60.02	FURNISH AND INSTALL 12" HDPE / DIP WATER MAIN	LF	1053	$ 300.00	$ 315,900.00
A-37	60.03	FURNISH AND INSTALL 6" GATE VALVE	EA	1	$ 2,500.00	$ 2,500.00
A-38	60.03	FURNISH AND INSTALL 8" GATE VALVE	EA	10	$ 3,500.00	$ 35,000.00
A-39	60.03	FURNISH AND INSTALL 12" GATE VALVE	EA	2	$ 6,000.00	$ 12,000.00
A-40	60.04	FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY (SINGLE PUMPER)	EA	2	$ 12,500.00	$ 25,000.00
A-41	60.17	FURNISH AND INSTALL ANODE	EA	14	$ 600.00	$ 8,400.00
						$ -
A-42	65.02	CONSTRUCTION SURVEY MEASUREMENT	LS	ALL REQ'D	$ 75,000.00	$ 75,000.00
A-43	65.02	SURVEY MONUMENT INSTALLED IN MONUMENT CASE	EA	2	$ 2,500.00	$ 5,000.00
A-44	65.02	TWO-PERSON SURVEY CREW	HR	60	$ 350.00	$ 21,000.00
						$ -
A-45	70.03	ADJUST MANHOLE RING	EA	3	$ 1,500.00	$ 4,500.00
A-46	70.06	REMOVE EXISTING CATCH BASIN	EA	1	$ 1,200.00	$ 1,200.00
A-47	70.07	ADJUST MAINLINE VALVE BOX TO FINISH GRADE	EA	4	$ 1,250.00	$ 5,000.00
A-48	70.12	INSULATION BOARD (R=20)	SF	1,780	$ 5.50	$ 9,790.00
ITEM NO.	SPEC. NO.	WORK DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	TOTAL BID PRICE
A-49	70.13	PAINTED TRAFFIC MARKINGS	LS	ALL REQ'D	$ 15,000.00	$ 15,000.00
A-50	70.14	STANDARD SIGN	SF	103.41	$ 250.00	$ 25,852.00
A-51	70.15	TRAFFIC MAINTENANCE	LS	ALL REQ'D	$ 25,000.00	$ 25,000.00
A-52	70.16	REMOVE PIPE	LF	540	$ 15.00	$ 8,100.00
						$ -
A-53	75.04	TOP SOIL (AT 4" DEPTH)	MSF	11	$ 2,500.00	$ 27,500.00
A-54	75.05	SEEDING (TYPE 1)	MSF	11	$ 850.00	$ 9,350.00
						$ -
A-55	80.02	TRENCH AND BACKFILL (2' X 3')	LF	1,430	$ 30.00	$ 42,900.00
A-56	80.04	DRIVEN PILE LUMINAIRE POLE FOUNDATIONS	EA	6	$ 4,200.00	$ 25,200.00
A-57	80.05	FIXED BASE LUMINAIRE POLE (24' LENGTH)	EA	6	$ 5,000.00	$ 30,000.00
A-58	80.05	LUMINAIRE ARM (8' LENGTH)	EA	6	$ 1,000.00	$ 6,000.00
A-59	80.07	GRC STEEL CONDUIT (2")	LF	1,430	$ 25.00	$ 35,750.00
A-60	80.08	JUNCTION BOX (TYPE 1A)	EA	7	$ 1,000.00	$ 7,000.00
A-61	80.08	JUNCTION BOX (TYPE II)	EA	1	$ 2,500.00	$ 2,500.00
A-62	80.10	1 CONDUCTOR, #8 AWG XHHW	LF	1,430	$ 5.00	$ 7,150.00
A-63	80.10	3 CONDUCTOR, #8 AWG XHHW	LF	1,630	$ 13.00	$ 21,190.00
A-64	80.14	POST-MOUNTED LOAD CENTER UNDERGROUND SERVICE, TYPE 2	EA	1	$ 10,000.00	$ 10,000.00
A-65	80.23	LUMINAIRE, 182W LED, 80 LED, TYPE 3 OPTICS	EA	6	$ 2,000.00	$ 12,000.00

Pay Item Total:	$		
Project Total Estimate:	$	3,841,475.50	100%
WHALEN GMP HARRIS S&G	$	3,822,293.50	95%
Date: May 31, 2022	$	19,182.00	delta