CONFEDERATED TRIBES OF WARM SPRINGS

DRY CREEK WATER TREATMENT PLANT

CONFEDERATED TRIBES OF
WARM SPRINGS
1855

SCOPE OF WORK

SITE PHOTOS

DAVIS-BACON WAGE DETERMINATION

MEASUREMENT AND PAYMENT

FOR

Septic Tank Replacement

Confederated Tribes of Warm Springs
REQUEST FOR PRICING/ORDER/INVOICE

DATE: _____ PRICING DUE: _____ TRIBAL CONTACT: **Travis Wells** TELEPHONE: **541-553-1472**

DESCRIPTION OF SERVICES: **Replacement Septic Tank**

SITE NAME/LOCATION: **Dry Creek Water Treatment Plant**
Warm Springs, OR

PERFORMANCE TIME: **30 CALENDAR DAYS FROM NTP.**

DAVIS-BACON WAGE DECISION: OR180049 05/04/2018 OR49
http://www.wdol.gov/

PRICING SECTION						INVOICE SECTION		
ITEM	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE	QTY INSTALLED	TOTAL PRICE	PROJ. OFFICER
1	Mobilization: Includes Plumbing Permit	1	LS					
2	4-inch SDR 35 PVC Solid Sewer Line	90	LF					
3	2-way Cleanout	1	EA					
4	Septic Tank	1	LS					
5	Effluent Transport Pipe	220	LF					
6	Abandon Existing Septic Tank	1	LS					
7	Void Filling	10	CY					
8	Asphalt Resurfacing ***(if needed)***	90	SF					
				Total:				

The contractor acknowledges receipt of the following documents that will be incorporated by reference into this agreement upon award.
The documents are listed in order of precedence. In the event of a conflict among the documents, the requirements contained in the document listed first shall govern.

1. Scope of Work, Site Photos, and Wage Determination
2. Site Layout Drawing
3. Existing Facility Asbuilt Drawings P-1 and M-1
4. Specifications

CONTRACTOR: _____

SIGNATURE: _____ **DATE:** _____

CONTRACTOR REQUEST FOR PAYMENT: THE CONTRACTOR PRESENTS A RELEASE OF ALL CLAIMS AGAINST THE TRIBE ARISING BY VIRTUE OF THIS CONTRACT, OTHER THAN CLAIMS, IN STATED AMOUNTS, THAT THE CONTRACTOR HAS SPECIFICALLY EXPECTED FROM THE OPERATION OF THE RELEASE.

SIGNATURE: _____

DATE: _____

Tribal Contract Award/Notice to Proceed:

TRIBAL CONTRACTING OFFICIAL: _____

SIGNATURE / DATE: _____

Dry Creek WTP – Septic Tank Replacement

Site Address

6120 Kahneeta HWY
Warm Springs OR 97761

Directions to Site: From Warm Springs take HWY 3 – Agency Hot Springs Rd to E-300 – Dry Creek Road. Follow to treatment plant located on Deschutes River oxbow upstream of Dry Creek Campground.

Scope of Work

The work to be done under this contract consists of furnishing all labor, materials, permits, and equipment necessary to install a replacement septic tank and abandon the existing tank. The existing 2,000 gallon concrete tank has failed and is no longer providing a water tight container. A replacement 2,000 gallon tank is to be installed adjacent to the failed tank (location to be identified by Contractor), and the scope includes new sewer lines to connect the new tank to the building and the existing drainfield lift station. This request for pricing is to establish unit cost prices and payment will be based on actual quantities installed.

The Contractor is responsible for obtaining a plumbing permit through Warm Springs Tribe and completing replacement per those terms.

Abandonment of the existing septic tank includes filling a significant void adjacent to the tank. There is an existing pile of river rock (approximately 5 yards) that may be used without charge.

The Contract assumes that gravity piping can be installed from the septic tank to the dosing lift station. If adequate grade cannot be achieved and an effluent pump is necessary, that will be negotiated as a separate change order.

Conditions

1. **Davis-Bacon wages apply to this contract** and the applicable wage determination is attached.
2. The estimated quantities listed are based on available information and any variation in quantities greater than 15% must be approved by the Contract Representative (listed below).
3. The Contractor is responsible for locating and protecting all existing utilities.
4. A pre-cover inspection conducted by the Tribal Representative is a requirement of this contract.
5. All debris generated during construction shall be removed from the site.

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6. All areas disturbed by construction activities shall be restored.
7. Gravity Concrete Septic Tank – Minimum required volume is 2,000 gallons.

Submittal Requirements

Required pre-construction submittals:

- Warm Springs Plumbing Permit is required prior to construction.
- Detailed Site Layout and Staking

Post construction submittals are required before issuance of final payment:

- Pre-cover inspection report (completed by Tribe)
- Asbuilt record drawing
- 1-year warranty

Specifications

The project requirements are further defined by the attached specifications:

Section 01270 – Price and Payment
Section 02315 – Excavation, Trenching, and Backfill
Section 02540 – Septic Tank and Piping
Section 02705 – Road Restoration

Contacts

Contract Representative
Confederated Tribes of Warm Springs
GM – Public Utilities
Mr. Travis Wells
541-553-3452

WTP Chief Operator
Confederated Tribes of Warm Springs
Mr. Steven Courtney
541-553-1472

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Site Photos

Figure 1 Existing Septic Tank to be Abandoned. Void and Available Fill Rock are shown.

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Figure 2 Contract Includes Filling of Void Adjacent to Existing Tank. The Estimated Volume is 10 Yards

ED_004384_00001554-00006

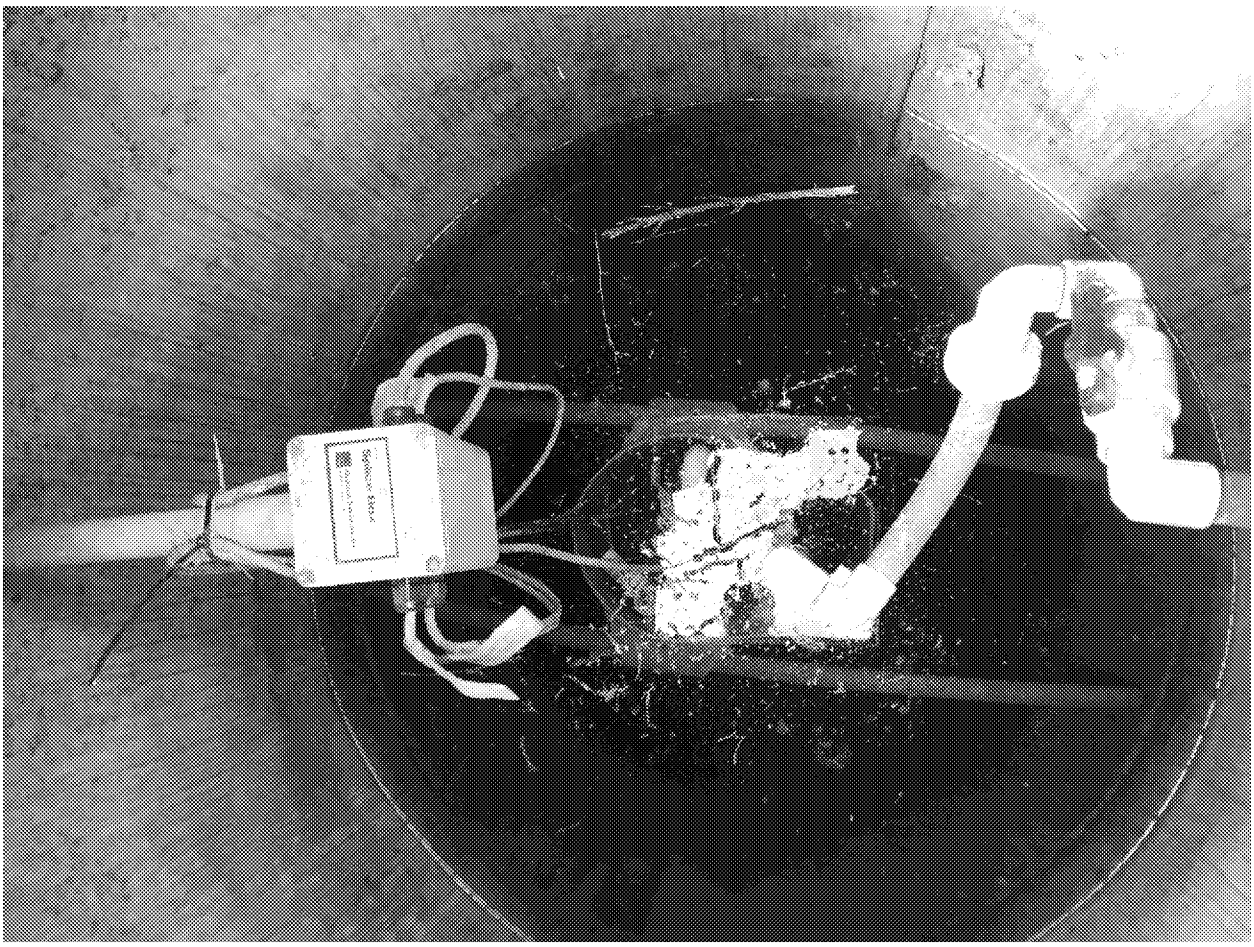

Figure 3 Connect to Existing Drainfield Dosing Lift Station

Wage Determination

General Decision Number: OR180049 05/04/2018 OR49

Superseded General Decision Number: OR20170049

State: Oregon

Construction Type: Building

Counties: Crook, Gilliam, Harney and Jefferson Counties in Oregon.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage

determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018
1	02/02/2018
2	02/23/2018
3	03/16/2018
4	03/30/2018
5	04/27/2018
6	05/04/2018

BROR0001-026 06/01/2017

CROOK AND JEFFERSON COUNTIES

	Rates	Fringes
BRICKLAYER	$ 36.03	20.81
TILE FINISHER	$ 23.95	13.18
TILE SETTER	$ 31.39	18.08

BROR0001-027 06/01/2017

GILLIAM AND HARNEY COUNTIES

	Rates	Fringes
BRICKLAYER	$ 36.03	20.81
TILE FINISHER	$ 22.59	12.04
TILE SETTER	$ 30.08	15.88

CARP0001-032 06/01/2017

	Rates	Fringes
Carpenters:		
Including Metal stud installation and form work	$ 36.63	16.25

CARP9001-004 06/01/2012

	Rates	Fringes
Acoustical Ceiling Installer & Drywall Hanger	$ 32.90	14.44

ELEC0112-007 06/01/2017

GILLIAM COUNTY

	Rates	Fringes
ELECTRICIAN.....	$ 40.90	20.06

ELEC0112-008 06/01/2015

GILLIAM COUNTY

	Rates	Fringes
ELECTRICIAN (Low voltage wiring for alarms and low voltage wiring for computers.)...	$ 26.75	11.46

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* ELEC0280-020 01/01/2018

CROOK AND JEFFERSON COUNTIES

	Rates	Fringes
ELECTRICIAN.....	$ 41.85	18.95

ELEC0280-021 01/01/2018

CROOK AND JEFFERSON COUNTIES

	Rates	Fringes
ELECTRICIAN (Low voltage wiring for alarms and low voltage wiring for computers.)...	$ 30.13	14.40

ELEC0659-017 01/01/2018

HARNEY COUNTY

	Rates	Fringes
ELECTRICIAN		
Low voltage for computers...	$ 16.00	3%+10.65
Low Voltage Wiring for Alarms.....	$ 27.15	13.31

ELEC0659-018 01/01/2018

HARNEY COUNTY

	Rates	Fringes
ELECTRICIAN.....	$ 33.94	16.76

ENGI0701-027 01/01/2018

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 41.65	14.35
GROUP 1A	$ 43.73	14.35
GROUP 1B	$ 45.82	14.35
GROUP 2	$ 39.74	14.35
GROUP 3	$ 38.59	14.35
GROUP 4	$ 37.51	14.35
GROUP 5	$ 36.27	14.35
GROUP 6	$ 33.05	14.35

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: CRANE: Helicopter Operator, when used in erecting work; Whirley Operator, 90 ton and over; LATTICE BOOM CRANE: Operator 200 tons through 299 tons, and/or over 200 feet boom; HYDRAULIC CRANE: Hydraulic Crane Operator 90 tons through 199 tons with luffing or tower attachments

GROUP 1A: HYDRAULIC CRANE: Hydraulic Operator, 200 tons and over (with luffing or tower attachment); LATTICE BOOM CRANE: Operator, 200 tons through 299 tons, with over 200 feet boom;

GROUP 1B: LATTICE BOOM CRANE: Operator, 300 tons through 399 tons with over 200 feet boom; Operator 400 tons and over

GROUP 2: CRANE: Cableway Operator, 25 tons and over; HYDRAULIC CRANE: Hydraulic crane operator 90 tons through 199 tons (without luffing or tower attachment); TOWER/WHIRLEY OPERATOR: Tower Crane Operator; Whirley Operator, under 90 tons; LATTICE BOOM CRANE: 90 through 199 tons and/or 150 to 200 feet boom; HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (with luffing or tower attachment); BLADE: Auto Grader;Blade Operator-Robotic; Bulldozer: Over 120,000 lbs and above; Bulldozer: D-10, D-11 and similar type; Loader: 120,000 lbs and above; Excavator: over 130,000 lbs and above

GROUP 3: HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (without luffing or tower attachment); LATTICE BOOM CRANES: Lattice Boom Crane-50 through 89 tons (and less than 150 feet boom); Bulldozer: over 70,000 lbs up to and including 120,000; Loader: 60,000 lbs and less than 120,000 lbs; Excavator: over 80,000 lbs through 130,000 lbs

GROUP 4: CRANE: Hydraulic Crane Operator, under 50 tons; LATTICE BOOM CRANE OPERATOR: Lattice Boom Crane Operator, under 50 tons; TRACKHOE/BACKHOE-ROBOTIC: up to and including 20,0000 lbs. with any or all attachments; BLADE: Blade operator; Tractor operator with boom attachment; DRILLING: Churm Drill and Earth Boring Machine Operator; Directional Drill Operator over 20,000 lbs pullback; CRANE: Chicago boom and similar types; Boom type lifting device, 5 ton capacity or less; Asphalt Paver; Mechanic; Bulldozer:

over 20,000 lbs and more than 100 horse and up to 70,000 lbs; Loader: 25,000 lbs and less than 60,000 lbs; Screed; Excavator: over 20,000 lbs through 80,000 lbs.

GROUP 5: TRACKHOE/BACKHOE-HYDRAULIC: up to and including 20,000 lbs.; Open wheeled type; DRILLING: Churm Drill and Earth Boring Machine Operator; Directional Drill Operator less than 20,000 lbs pullback; Concrete Pumper; Concrete Paver; forlkift over 5 ton; Bulldozer: 20,000 lbs or less, or 100 horse or less; Loader: ruber tired type, less than 25,000 lbs; Roller

GROUP 6: LOADERS: (less than 1 cu yd.); Oiler; Crane oiler; forklift; Broom; Roller (Non-Asphalt)

Zone Differential (add to Zone 1 rates):
Zone 2 - $3.00
Zone 3 - $6.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS; MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion Counties, West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22 and all jobs or projects located in Yamhill County, Washington County and Columbia County and all jobs or porjects located in Clark & Cowlitz County, Washington except that portion of Cowlitz County in the Mt. St. Helens "Blast Zone" shall receive Zone I pay for all classifications.

All jobs or projects located in the area outside the identified boundary above, but less than 50 miles from the Portland City Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone I pay for all classifications.

All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the

respective city hall of the above mentioned cities shall receive Zone III pay for all classifications.

IRON0029-013 07/01/2017

	Rates	Fringes
IRONWORKER (Reinforcing and Structural)	$ 36.21	24.66

LABO0737-005 06/01/2017

	Rates	Fringes
Laborers: (Mason Tender-Cement/Concrete)	$ 28.89	13.85

LABO0737-006 06/01/2017

	Rates	Fringes
Laborers: (Mason Tender-Brick)	$ 28.89	13.85

LABO0737-022 06/01/2017

	Rates	Fringes
Laborers:		
GROUP 1	$ 28.86	13.85
GROUP 2	$ 29.94	13.85
GROUP 3	$ 25.00	13.85

LABORER CLASSIFICATIONS

GROUP 1: Form-Stripping

GROUP 4: Grade Checker, Pipelayer

GROUP 5: Flagger

PAIN0055-020 07/01/2013

	Rates	Fringes
Painters:		
Brush, Roller and Spray	$ 21.01	8.83

PAIN0055-023 07/01/2017

	Rates	Fringes
DRYWALL FINISHER/TAPER	$ 36.98	14.44

PLAS0555-006 06/01/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	$ 31.50	17.62

PLUM0290-014 04/01/2017

CROOK, GILLIAM, HARNEY (those portions which lies north and west of a north-south line drawn from the town of John Day to a point five miles east of the town of Burns and three miles south of Burns thence on an airline through the town of Wagontire west to the County lines), JEFFERSON COUNTIES

	Rates	Fringes
Plumbers and Pipefitters.....	$ 43.82	28.28

PLUM0296-007 04/01/2016

HARNEY (Remainder of County)

	Rates	Fringes
Plumbers and Pipefitters.....	$ 28.00	14.32

SHEE0016-016 07/01/2017

	Rates	Fringes
Sheet Metal Worker		
Excluding Metal Roof.....	$ 38.77	19.16

TEAM0037-008 06/01/2017

	Rates	Fringes
Truck drivers:		
GROUP 1.....	$ 27.94	14.37
GROUP 2.....	$ 28.06	14.37
GROUP 3.....	$ 28.19	14.37
GROUP 4.....	$ 28.46	14.37
GROUP 5.....	$ 28.68	14.37
GROUP 6.....	$ 28.85	14.37
GROUP 7.....	$ 29.05	14.37

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Dump trucks, side, end and bottom dumps: up to and including 10 cu. yds.

GROUP 2: Dump trcuks/articulated dumps 6 cu to 10 cu.;

GROUP 3: Dump trucks, side, end and bottom dumps: over 10 cu. yds. and including 30 cu. yds., includes articulated dump trucks

GROUP 4: Dump trucks, side, end and bottom dumps: over 30 cu.

yds. and including 50 cu. yds. and includes articulated dump trucks

GROUP 5: Dump trucks, side, end and bottom dumps: over 50 cu. yds. and including 60 cu. yds. and includes articulated dump trucks

GROUP 6: Dump trucks, side, end and bottom dumps: over 60 cu. yds. and including 80 cu. yds. and includes articulated dump trucks

GROUP 7: Dump trucks, side, end and bottom dumps: over 80 cu. yds. and including 100 cu. yds., includes articulated dump trucks

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SUOR2009-047 11/09/2009

	Rates	Fringes
LABORER: Common or General.....	$ 20.21	5.83
SHEET METAL WORKER (Metal Roofs Installation).....	$ 23.65	6.33
SPRINKLER FITTER (Fire Sprinklers).....	$ 25.00	8.29

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those

classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

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interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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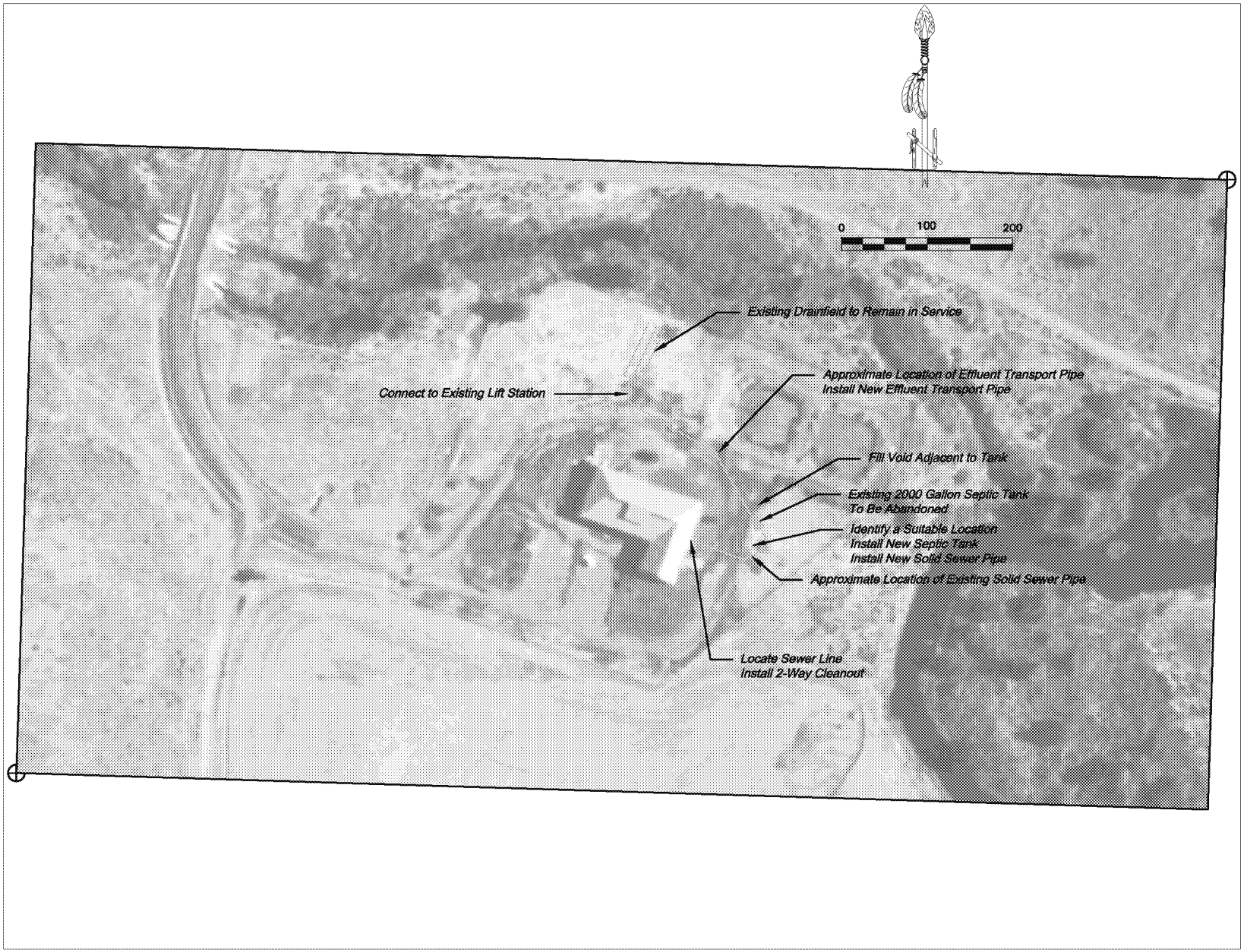
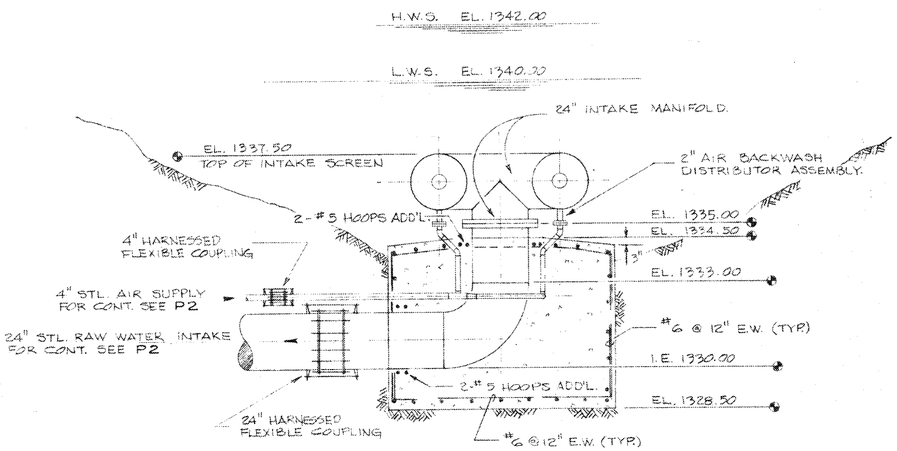
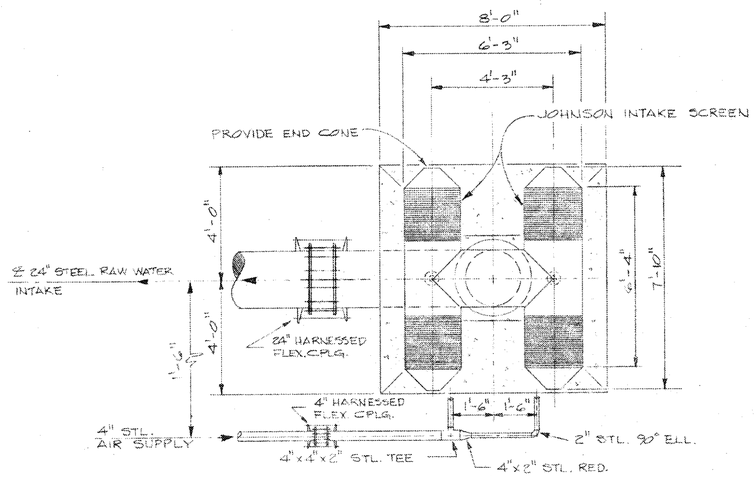
END OF GENERAL DECISION


0
100
200
Existing Drainfield to Remain in Service
Approximate Location of Effluent Transport Pipe
Install New Effluent Transport Pipe
Connect to Existing Lift Station
Fill Void Adjacent to Tank
Existing 2000 Gallon Septic Tank
To Be Abandoned
Identify a Suitable Location
Install New Septic Tank
Install New Solid Sewer Pipe
Approximate Location of Existing Solid Sewer Pipe
Locate Sewer Line
Install 2-Way Cleanout

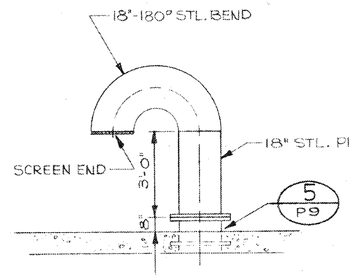


SECTION

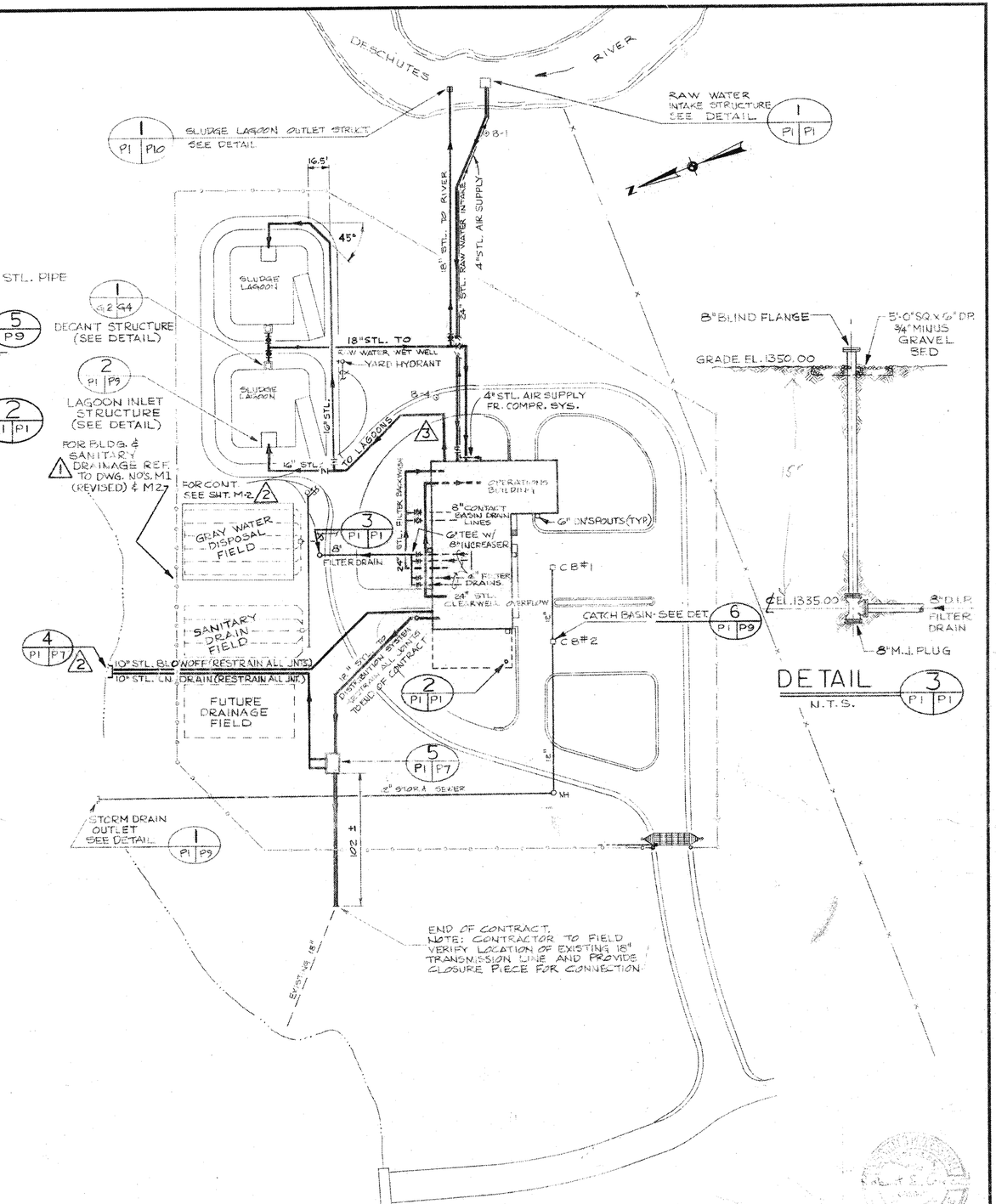


PLAN

RAW WATER INTAKE DETAIL 1 / P1 P1
N.T.S.



VENT DETAIL 2 / P1 P1
N.T.S.



DETAIL 3 / P1 P1
N.T.S.

YARD PIPING PLAN
SCALE 1" = 50'-0"

DATE	NO.	REVISION	BY
1-21-81	3	16" STL. LAGOON PIPING	REG
1-12-81	2	BLOWOFF & DRAIN LINES	REG
1-12-81	1	DRAINAGE FIELDS & FENCE	REG

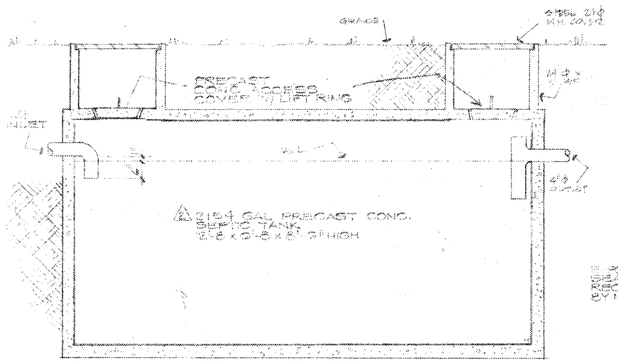
DESIGNED R.E.G. | DRAWN D.J.S. | CHECKED R.E.G. | APPROVED Joseph P. Taylor | SCALE AS SHOWN | DATE JUNE 80 | FILE PT-W12-02-02, 17462

STRAAM Engineers — Portland, Seattle, Los Angeles, Houston, Atlanta, New York, Rockville

CONFEDERATED TRIBES OF WARM SPRINGS
WATER SUPPLY PROJECT
PHASE III: WATER TREATMENT PLANT

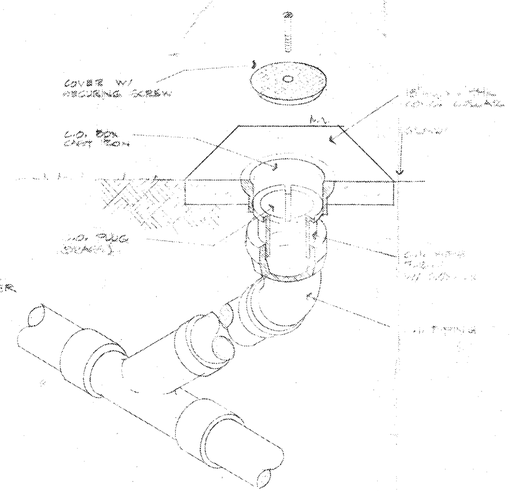
YARD PIPING AND INTAKE
PLAN AND SECTION

P-1 / 12

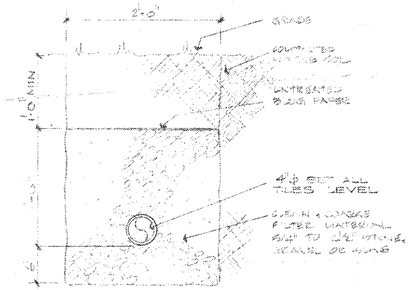


1 / M1 SEPTIC TANK DETAIL
NOT TO SCALE

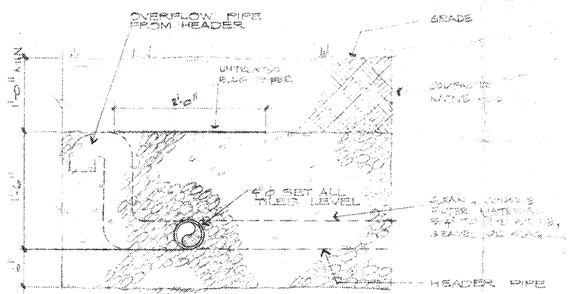
EPOXY GROUT SEAMES AS RECOMMENDED BY MANUFACTURER



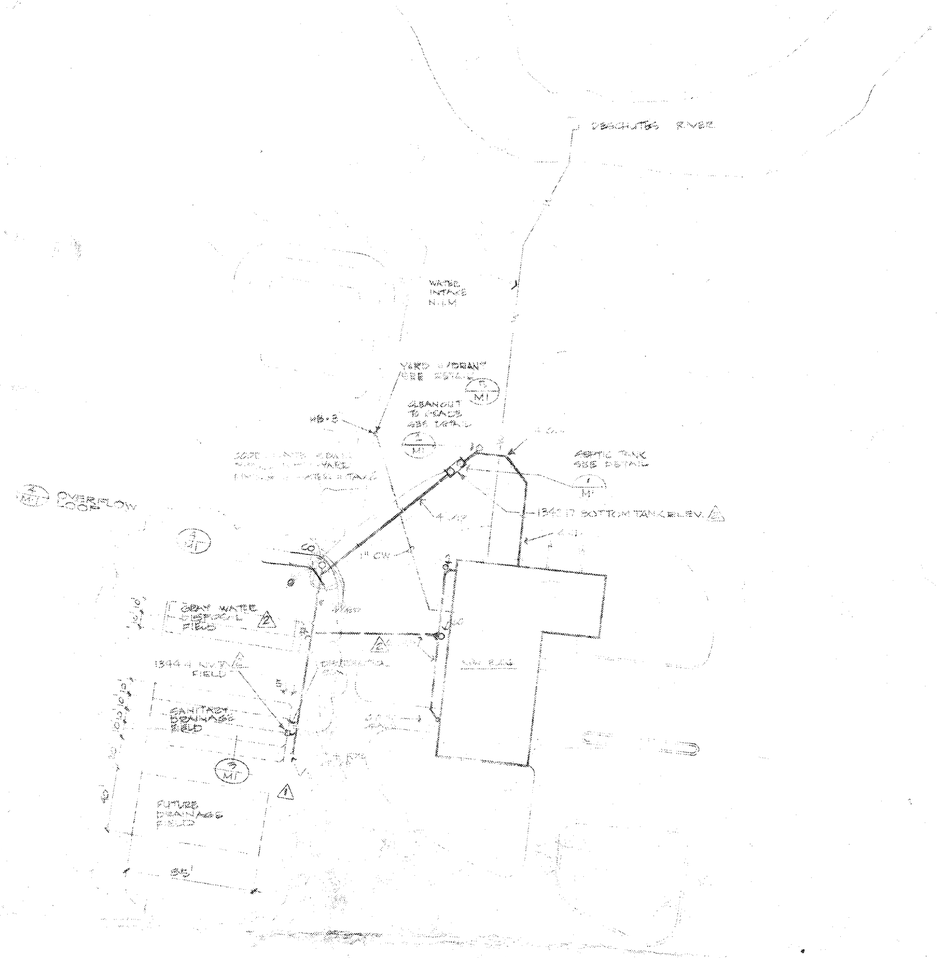
2 / M1 TURF AREA C.O.
NO SCALE TYPICAL ALL LANDSCAPING



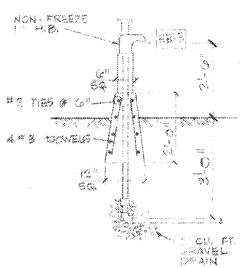
5 / M1 DISPOSAL TRENCH DETAIL
1" = 1'-0"
SANITARY FIELD



4 / M1 DISPOSAL FIELD DETAIL
1" = 1'-0"
GRAY WATER FIELD



SITE PLAN
1" = 50'-0"



5 / M1 YARD HYDRANT DETAIL
NO SCALE

MORRISON, FUNATAKE, INOUYE, ANDREWS, INC.
CONSULTING ENGINEERS
2007 S. E. ASH
PORTLAND, OREGON 97214

REGISTERED PROFESSIONAL ENGINEER 7120 OREGON JAN 16, 1979 ROBERT K. INOUYE

DATE	NO.	REVISION	BY
1-7-81	1	DISPOSAL FIELD REV.	
6-10-82	2	RECORD DRAWING	

DESIGNED SF TH | APPROVED R K I
DRAWN TH | SCALE AS SHOWN | DATE JUNE 80
CHECKED SF | FILE PT W12-02-02, 17474

STRAAM Engineers, Inc.
Portland, Houston, Rockville, Seattle, Milwaukee, New York, Los Angeles, Phoenix, Atlanta, Boise

CONFEDERATED TRIBES OF WARM SPRINGS
WATER SUPPLY PROJECT
PHASE III : WATER TREATMENT PLANT

MECHANICAL SITE PLAN

M1 / 5

SECTION 01270 – PRICE AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Work covered by this section includes method of measurement and basis of payment for all divisions included.

B. Payment for the various items of the Bid Schedules shall include all compensation to be received by the Contractor for furnishing all tools, equipment, materials, labor, supplies, manufactured articles, transportation, permits, and temporary facilities required to complete the work in accordance with contract documents including incidentals.

C. Respective prices and payment shall constitute full compensation for all work completed including incidentals.

D. All items not expressly listed as being provided by others that are necessary for the completion of work shall be furnished and installed by the Contractor.

1.2 ESTIMATED QUANTITIES

A. All quantities stipulated in the bid schedule or other contract documents are approximate and are to be used: (1) as a basis for estimating the probable cost of the work and (2) for the purpose of comparing the bids submitted.

B. The Contractor shall be paid for actual quantities installed based on the quantities measured in the field. The actual amounts of work completed and materials furnished may differ from estimated quantities.

PART 2 - BID SCHEDULE ITEMS

2.1 BID ITEMS

A. Schedule A: Mobilization

1. Site Mobilization

a. Measurement: Lump sum payment per each individual site served under this contract per delivery order.

b. Basis of Payment: Includes cost associated with mobilizing equipment and material to the individual sites, includes payment of applicable taxes, TERO, and permits, and preparation of submittals required for issuance of Notice to Proceed. Payment shall be made after the work at the applicable site has been substantially completed and the as-built drawing has been provided.

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B. Schedule B: Sanitary Sewer Service

2. 4-inch SDR 35 PVC Sewer Service Line

   a. Measurement: By the lineal foot based on the horizontal length installed and measured over the centerline of the pipe.

   b. Basis of Payment: Includes all pipe, fittings, labor, tools, equipment and materials required to construct the sewer mains, including excavation, trenching, removal of nuisance water, laying and jointing pipe, backfilling, flushing, testing, removal and replacement of fences, culverts, protection and/or replacement or repair of utilities which may be impaired by work, disposal of excess excavated material and all other incidentals required to complete the work as specified.

3. 2-Way Cleanouts

   a. Measurement: By each installed.

   b. Basis for Payment: Includes excavation, backfill and compaction, labor, tools, equipment, sewer wye, riser pipe, fittings, frame, cover, and all other incidentals which may be required to complete the work as specified.

4. Septic Tank

   a. Measurement: Lump Sum Payment for complete and operational septic tank.

   b. Basis for Payment: Includes excavation, backfill and compaction, labor, tools, equipment, Oregon DEQ approved septic tank, inlet baffle/tee, risers, and all other incidentals which may be required to correctly install the septic tank as specified.

5. Sewer Effluent Piping

   a. Measurement: By lineal foot of pipe installed measured over the centerline of the pipe.

   b. Basis of Payment: Includes all pipe, fittings, labor, tools, equipment and materials required to construct the sewer mains, including excavation, trenching, removal of nuisance water, laying and jointing pipe, backfilling, flushing, testing, removal and replacement of fences, culverts, protection and/or replacement or repair of utilities which may be impaired by work, disposal of excess excavated material and all other incidentals required to complete the work as specified.

6. Septic Tank Abandonment

   a. Measurement: Lump sum payment for abandonment of tank as specified.

b. Basis for Payment: Includes excavation, backfill and compaction, labor, tools, equipment, pumping and disposal of contents, disposal fees, crushing of tank, site clearing and cleanup, and all other incidentals required to complete the work as specified.

7. Void Filling

a. Measurement: Per cubic yard of material applied to fill void.

b. Basis for Payment: Includes all materials, tools, labor, pumping and disposal of contents, disposal fees, cleanup, compaction and all other incidentals required to fill the void to the ground surface.

8. Asphalt Resurfacing

a. Measurement: Per square foot of asphault roadway resurfaced as needed for installation of sewer pipe.

b. Basis for Payment: Includes all preparation, asphalt, compaction, gravel base, and all other incidentals for resurfacing. Payment will only be made for asphalt placed as necessary to install the sewer piping as specified.

PART 3 – EXECUTION (N/A)

END OF SECTION

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SECTION 02315 – EXCAVATION, TRENCHING AND BACKFILL

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes excavation, trenching and backfill necessary for the construction of the facilities as indicated on the plans including, but not limited to: water mains and service lines, sewer mains and service lines, concrete manholes, septic tanks, and other structures.

1.2 RELATED WORK

A. Section 02540 – Concrete Septic Tank and Piping

B. Section 02705 – Road Restoration

1.3 REFERENCES

A. Manual on Uniform Traffic Control Devices

B. ASTM D698 – Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-in. Drop [Standard Proctor Test]

C. ASTM D2321 – Underground Installation of Flexible Thermoplastic Sewer Pipe

D. ASTM D2487 – Classification of Soils for Engineering Purposes [Unified Soil Classification System]

1.4 SUBMITTALS

A. Imported Bedding Sieve Analysis

B. Compaction Method

C. Detectable Warning Tape

1.5 DEFINITIONS

A. Bedding, Haunching and Initial Backfill zones as defined herein and on the standard pipe trench detailed drawing.

B. Soil Materials as summarized in the table below and defined in ASTM D2321 and ASTM D2487.

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PART 2 - PRODUCTS

2.1 BEDDING, HAUNCHING AND INITIAL BACKFILL MATERIAL

A. Native material if acceptable to Owner.

B. Imported Bedding: Consists of sand, sandy gravel, or fine gravel having a maximum size of ¾-inch and a maximum Plasticity Index of 6.

2.2 WARNING TAPE

A. Detectable 3 inches wide.

B. Printed with "Caution Buried Sewer Line Below" for sewer mains, sewer force mains, and service lines.

PART 3 - EXECUTION

3.1 GENERAL

A. Trenching and excavation work shall be done in accordance with proper emphasis on safety as determined by the Contractor to conform to recommended safety standards such as OSHA 1910 and 1926.

B. A Competent Person, as defined by OSHA 1926, shall be on site at all times when excavation work is being completed.

C. Provide suitable sheeting, shoring, and bracing as required in conformance with OSHA regulations.

D. In accordance with the contract, obtain all permits from appropriate road agency for construction within road right of way.

E. Repair damage resulting from settlement, slides, cave-ins, water pressure, and other causes.

F. The maximum open trench allowed during the day at each location shall not exceed 200 feet, with no open trench allowed overnight unless specifically approved.

G. Cleared trees, brush, or rocks prior to or during construction is considered incidental to excavation work.

3.2 EXCAVATION

A. Remove trees and stumps from excavation and site.

B. Remove and stockpile existing topsoil.

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C. Install facilities as staked, centered in excavation, unless otherwise approved by Owner.

D. Maintain surface drainage away from trenching or excavation.

E. Remove unsuitable foundation materials from excavation as shown on the plans or as authorized by the Owner.

F. Maintain a minimum 1-foot clearance between outer surface of structure being installed and wall of excavation.

3.3 TRENCHING

A. Bottom width:

1. No less than 12 inches or more than 24 inches wider than the outside diameter of the pipe.
2. Where a chain or wheel trencher is approved for use in a rural area, the trench width shall be 4 to 6 inches greater than the outside diameter of the pipe.

B. Depth: Provide minimum cover as specified, or depths shown on plans.

3.4 BEDDING

A. If existing soil cannot provide uniform, stable bearing support, over-excavate 6 inches below bottom of pipe or structure and provide imported bedding material as directed by the Owner.

1. If unsuitable soil is encountered a price for imported bedding material will be negotiated.

B. Unauthorized over excavation shall be backfilled with acceptable bedding material at the Contractor's expense.

3.5 HAUNCHING AND INITIAL BACKFILL

A. General.

1. Provide complete and uniform bearing and support for the pipe, including allowance for bell holes, or structure.
2. Work material under and around the pipe to ensure full pipe support.
3. Prevent movement of the pipe during placement of material.
4. Avoid contact between the pipe and mechanical compaction equipment.
5. Where a trencher is approved, backfill the trench from surface with selected material, free from large clods and all stones larger than 3 inches.

B. No frozen clods, saturated, foreign, or organic materials will be allowed.

C. Hand compact in 6-inch lifts from the bottom of the trench to 12 inches above the pipe crown.

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3.6 BACKFILL & COMPACTION

A. All buried material shall be inspected by technical representative prior to backfilling.

B. Backfill remainder of excavation with native material, free from large clods, stones 8 inches or larger, organic material or frost chunks.

C. All backfill shall be compacted in the specified lifts utilizing mechanical equipment designed for compaction. Compaction methods utilizing mechanical equipment not designed for compaction will not be approved.

D. All methods of compaction shall be approved prior to construction.

E. Compact in 6-inch lifts to a density not less than the density of the surrounding undisturbed soil or not less than 90% of the maximum dry density, determined by ASTM D698.

F. Judgment on compaction will be determine through the use of a nuclear density gauge (comparing the unit weight of the compacted soil to the unit weight of the undisturbed soil) and/or by inspection of the Contractor's compaction effort.

G. In cases where the Contractor performs unacceptable methods of compaction, the work on the project will cease until an acceptable method of compaction has been approved. The Owner has the right to delay work until soil samples along the project alignment are taken for the purpose of developing a proctor for testing the compaction of the soil backfilled in the trench.

H. Compact with mechanical tamper, after initial backfill, to a density not less than 95% of the maximum dry density, determined by ASTM D698 for the entire depth of the trench through a roadway or driveway.

   1. Conform to Section 02705 for all other requirements when restoring roadways.

I. Backfill and compact around manholes, valve boxes, and other appurtenances in 6-inch lifts.

   1. Compact with a mechanical tamper to a density not less than 90% of the maximum dry density, determined by ASTM D698.

J. Backfill around septic tanks in 12-inch lifts.

   1. Compact in a manner that will not produce undue strain on the tank.

K. Repair any trenches improperly backfilled or where settlement occurs, then refill and compact.

L. Restore surface to the required grade and compaction.

M. Remove and dispose of all surplus backfill materials to a location approved by the Owner.

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3.7 WARNING TAPE INSTALLATION

A. Install warning tape over water, sewer or force mains and service lines in trench 2 feet below finished grade.

3.8 REMOVAL OF NUISANCE WATER

A. Remove nuisance water entering the trenches.

B. Nuisance water that can be removed through the use of sump or trash pumps is not considered dewatering.

C. Keep trenches free from water until waterlines, fittings, valves, sewer lines, manholes and other appurtenances are in place and sealed against the entrance of water.

D. Prevent all water, earth or any foreign material from entering any facility.

E. Keep trenches free from water until the facilities are in place, sealed against the entrance of water, and backfill has been placed and compacted above the water level.

3.9 LOCATE EXISTING UTILITIES

A. Field locate all existing underground utilities.

1. Utilize state "811" or "one-call" hotlines.
2. Contact all other utility owners not covered by the state "one-call" hotlines.

3.10 UTILITY CONFLICTS

A. Protect existing utilities from damage during excavation and backfilling operations.

B. Provide temporary support for existing water, gas, telephone, power, or other utility services that cross the trench until backfilling of trench is complete

1. Compact backfill to 90% of Standard Proctor Density under disturbed utilities.
2. Repair or replace any damaged existing utilities, at no additional cost to the project.

C. Water and sewer main crossing and parallel installation

1. Maintain a 10 foot horizontal separation (O.D. to O.D.) for parallel mains.
2. Upon approval by the Owner, water and sewer mains may be installed closer than 10 feet, provided all of the following conditions;
   a. Vertical separation is 18 inches (O.D. to O.D.)
   b. Water main is above the sewer main.
   c. Separate trenches are maintained.

3. Maintain a minimum 18-inch vertical separation (O.D. to O.D.) for crossing mains with the water main above the sewer main.

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a. Lay pipe with joints equidistant from the point of crossing.

4. If it is impossible to meet any of the above separation distances and deviations, one of the following methods shall be adhered to.
   a. Sewer main shall be constructed to water main pressure pipe standards meeting a minimum pressure class of 150-psi.
   b. Either the water main or the sewer main may be encased in a watertight carrier pipe that extends 10 feet on both sides of the crossing. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.
   c. The water main and sewer main installed shall be made of high density polyethylene (HDPE) pipe to eliminate the joints and possibility of leaks.

D. Water and sewer service crossing and parallel installation.

1. Maintain a 30-inch horizontal separation from water and sewer services.
2. Maintain a 12-inch vertical separation for crossing water and sewer services.

E. Water service line splices or joints will not be permitted within 10 feet of a sewer line crossing.

3.11 MOVING FENCES AND MINOR STRUCTURES

A. Remove and reset culverts, drainage pipes or other minor structures that fall within the alignment of the new construction, to their original location and grade.

B. Visit the project site and determine actual conditions with regard to the existence of old car bodies, abandoned houses, fences, driveways, trees, stumps, brush, sidewalks, approaches, and other miscellaneous obstacles to construction.

1. Unless specifically referenced in a bid item, no separate payment will be made for the removal or replacement of these items.

END OF SECTION

SECTION 02540 – CONCRETE SEPTIC TANK AND PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This section covers multiple compartment rectangular precast septic tanks. Also included is the piping from the home to the septic tanks along with cleanouts and septic tank abandonment.

1.2 RELATED WORK

A. Section 02315 – Excavation, Trenching and Backfill

1.3 REFERENCES

A. ASTM C1227 – Standard Specification for Precast Concrete Septic Tanks

B. ASTM C1644 – Standard Specification for Resilient Connectors Between Reinforced Concrete On-Site Wastewater Tanks and Pipes

C. ASTM D2665 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings

D. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings

1.4 SUBMITTALS

A. Septic tank (including wire mesh detail)

B. Septic tank riser and concrete plug

C. Solid sewer pipe and fittings

D. Cleanout

1.5 QUALITY ASSURANCE

A. The materials and construction methods specified herein are minimum requirements. Where the appropriate state/local septic codes require more stringent materials or execution methods, they shall apply.

PART 2 - PRODUCTS

2.1 SEPTIC TANKS

A. Septic Tank Requirements

1. Min. reinforced concrete wall thickness 2 ½ inches

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2. Minimum capacity below outlet 2000 gallons, or as specified on the bid schedule
3. Concrete compressive strength 4000 psi

B. Rectangular tanks

1. Minimum width of 36 inches
2. Constructed with the longest dimension parallel to the direction of flow.

C. Reinforce throughout with 6-inch x 6-inch – 10/10 wire mesh.

D. Monolithic construction joints or interlocking V-notch, shiplap, or tongue and groove joints below the liquid level.

E. Inlet and Outlet

1. Provide tanks with inlet and outlet connections for 4-inch Schedule 40 PVC DWV.
   a. Inlet connection: Cast in place rubber boot with stainless steel clamp.
   b. Outlet connection: Cast in place 4-inch schedule 40 PVC DWV coupling.

2. Provide inlet with an open-end sanitary tee or baffle made of approved materials.
   a. Extend top of tee or baffle above the liquid level, keeping a minimum of 1 inch clearance from the top of the tank.
   b. Extend bottom of tee or baffle to at least 6 inches below the liquid level.

3. Provide outlet with open-end schedule 40 PVC DWV sanitary tee and pipe.
   a. Extend top of tee above the liquid level, keeping a minimum of 1 inch clearance from the top of the tank.
   b. Extend bottom of tee below the liquid level to a depth equivalent to 40% of the liquid depth.
   c. Provide long sweep elbow cut as shown in the detail drawings for gas deflection.

4. The outlet invert shall be at least 1 inch lower than the inlet invert.

F. Access Risers and Covers

1. 12-inch diameter access opening over the inlet and the outlet.
2. 12-inch PVC SDR 35 pipe access riser attached to the septic tank with a cast in place PVC coupling.
3. Reinforced concrete cover, plug type, weighing a minimum of 70 pounds and include a recessed rebar handle.

G. Joint Sealant

1. Butyl rubber based preformed flexible gasket-type sealant conforming to ASTM C990.
2. Acceptable products equivalent to:
   a. RU106 Rubr-Nek LTM as manufactured by Henry Company.
   b. Pro-Stik as manufactured by Press-Seal Gasket Corporation.

2.2 SOLID SEWER PIPE, CLEANOUT AND FITTINGS

A. Pipe: Schedule 40 PVC, DWV conforming to ASTM D2665.

1. End connection: Bell and spigot.

B. Fittings: Schedule 40 PVC, DWV conforming to ASTM D2665.

C. Solvent Cement: Conform to ASTM D2564

D. Cleanout

1. Schedule 40 PVC DWV pipe and fittings conforming to ASTM D2665.
2. 4-inch solvent weld Schedule 40 PVC female adapter.
3. 4-inch diameter threaded slotted white polypropylene flush plug with threaded brass insert as manufactured by Sioux Chief or approved equal.

PART 3 - EXECUTION

3.1 SOLID SEWER PIPE and CLEANOUTS

A. Install solid sewer pipe from the building to the septic tank.

B. Connect to home sewer line.

C. Minimum cover over solid sewer pipe is 12-inches.

D. Minimum slope between the building and the septic tank is 1/8-inch per foot or 6 inches, whichever is greater.

E. 90-degree bends in the pipe between the building and the septic tank are not allowed.

F. Cleanouts.

1. Double Cleanouts: Install at the locations indicated on the plans.
2. Single Cleanouts:
   a. Install one-way cleanouts at a spacing not to exceed 100 feet.
   b. Install one-way cleanouts so that the service can be rodded or snaked in the direction of flow.
3. Construct as shown on the standard details.
4. Install a 4-inch sewer wye in the sewer service line and connect risers of the same material from the wye to the ground surface.
   a. Attach a schedule 40 PVC DWV female adapter to the end of the riser.
   b. Install cleanout so cap is flush with finished grade.

G. Solvent weld all joint connections.

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3.2 TANK INSTALLATION

A. Place tanks at the locations and elevations designated on the plans.

B. Refer to Section 02315 for excavation, backfill, and grading requirements.

C. Place tanks level on a solid flat level subgrade.

1. If over excavation is necessary to remove unsuitable subgrade soils, backfill to proposed grade with sand.

D. Install tanks in accordance with manufacturer's recommendations.

E. Seal joint between precast concrete septic tank sections with joint sealant.

1. Install joint sealant according to manufacturer's instructions.

F. Seal inlet and outlet with temporary plugs until connections are made to the inlet and outlet lines.

G. Set the top of the tank a minimum of 12-inches below finished grade. Do not exceed 24-inch cover depth unless tank is designed for deeper bury depth and Owner approves.

H. Install access risers and terminate so access cover is flush with finished ground surface.

I. Do not drive over the tank during and after construction.

J. Grade over tank to promote positive drainage away from top of tank.

K. Perform leakage test of tank if required by the Owner.

1. Fill tank with water and soak for 24 hours.
2. Refill tank and measure leakage.
3. Repair or replace tank if leakage exceeds one gallon in two hours.

3.3 EXISTING SEPTIC TANK ABANDONMENT

A. Abandon existing septic tanks and/or wet wells where directed by the Owner.

B. Pump tanks prior to abandonment. Dispose the contents in accordance with state and federal requirements.

C. Remove any pipes, plumbing, risers, or pumps and legally dispose of off-site.

D. Puncture the bottom of the tank.

E. Crush the top of the tank and place in abandoned septic tank.

F. Backfill interior of the tank with suitable soil material.

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G. Mark location abandoned septic tanks on the as-built drawing.

END OF SECTION

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SECTION 02705 – ROAD RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes road restoration when existing roadways or driveways are disturbed during the normal course of construction activities.

1.2 RELATED WORK

A. Section 02315 – Excavation, Trenching and Backfill

1.3 REFERENCES

A. ASTM C117 – Standard Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing.

B. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

C. ASTM D698 – Standard Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-inch Drop [Standard Proctor Test].

D. ASTM D4318 – Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

E. ASTM D6938 – Standard Test method for In-Place Density and Water content of Soil and Soil-Aggregate by Nuclear Methods.

1.4 DEFINITIONS

A. Roadways: Driveways, unimproved roads, paved streets, and highways.

B. Roadway Limits: To be established by the Owner and may include highway shoulders and drainage ditches.

1.5 QUALITY ASSURANCE

A. The materials and construction methods specified herein are minimum requirements. Where the appropriate state/local codes require more stringent materials or execution methods, they shall apply.

B. Notify the Owner of any planned deviation from these specifications before proceeding so any price changes or quantity adjustments may be made.

C. Furnish copies of test reports to the Owner.

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PART 2 - PRODUCTS

2.1 BITUMINOUS PATCH

A. Crushed aggregate meeting the following specifications:

SIEVE SIZE	PERCENT PASSING
¾ inch	100
½ inch	75-100
No. 4	45-75
No. 8	30-55
No. 16	20-45
No. 40	10-30
No. 200	3.0-7.0

B. Oil.

1. Prime Coat: MC-70.
2. Tack Coat: CSS-1h.
3. Mixture: PG 58-28, PG 64-22, or PG 64-28.

2.2 GRAVEL

A. The crushed stone or gravel shall consist of sound durable particles.

B. Meet the following characteristics (and limited amounts of fine soil particles):

SIEVE SIZE	PERCENT PASSING
¾ inch	100
No. 4	50-78
No. 8	37-67
No. 40	13-35
No. 200	4.0-15.0
Plasticity Index	4-12
Processing Required	crushed

1. The fraction passing the No. 200 sieve shall not be greater than two-thirds (2/3) of the fraction passing the No. 40 sieve.
2. In no case shall the upper limit specified for the No. 200 sieve be exceeded.

PART 3 - EXECUTION

3.1 GENERAL

A. Compact subgrade prior to placement of identified surface course.

B. Restore disturbed areas of roads or driveways to at least their original condition.

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3.2 ROAD CROSSING

A. Cut pavement prior to excavation with pavement saw, backhoe wheel or approved method.

B. Replace or repair damages to roadway at own expense if the road cut extends beyond the approved road cut width.

3.3 BACKFILL

A. See Section 02315 for backfill requirements.

3.4 ROADMIX BITUMINOUS SURFACE RESTORATION

A. The rate of application of bituminous materials:

1. Prime coat: 0.3 gal/SY max.
2. Tack coat: 0.05 gal/SY max.
3. Mixture: 5.0% ±0.3%.

B. Place in roadway to a depth of 2 inches.

C. Mixing may be done by blade mixing or traveling plant.

D. Spreading may be done by motor grader.

E. Compact with pneumatic tired rollers throughout the spreading operation.

F. Final rolling to be accomplished by steel roller.

3.5 REGRAVELING

A. Regraveling after crossing of an existing road:

1. Remove existing gravel surfacing and stockpile material.
2. Use stockpiled material for backfilling to within 2 inches of finished level.
3. Install final 2 inches with material meeting the requirements of Article 2.2.
4. Compact until a uniform stable surface is attained.

B. Watering and roller compaction.

1. Not required for roadway or driveway crossings.
2. Required when long stretches of roadway are disturbed.
   a. Rolling shall proceed simultaneously with the spreading and watering operations and continue in parallel overlapping strips until the entire area has been rolled at least twice.
   b. Rollers for compaction: pneumatic tired with an effective roller weight of not less than 250 pounds per inch of roller width.
   c. Vibratory compacting equipment may be used in lieu of the above specified rollers.

END OF SECTION

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