Oregon
Theodore R. Kulongoski, Governor

Department of Transportation
Technical Services
Roadway Engineering Section
355 Capitol Street NE, Room 222
Salem, OR 97301-3871
Telephone 503-986-3714
FAX 503-986-3749

DATE: May 6, 2009

Addenda No. 2

TO: **PLAN HOLDERS**

PREPARED BY: Allen Hart

APPROVED BY: Michael Shaad P.E.

SUBJECT: US97: Sand Creek Passing Lanes Section
The Dalles - California Highway
Klamath County
Grading, Paving & Signing Project
(Bids to be opened and read May 14, 2009)

The following changes are made to the Project Bid Booklet:

1. DESCRIPTION OF WORK page - The paragraph under COMPLETION TIME LIMIT is replaced with the following:

There are two Contract Times on this Project as follows:

(1) Complete all Work to be done under the Contract, except for pre-coated aggregate asphalt surface treatment and associated permanent striping, not later than October 15, 2009.

(2) Complete all Work to be done under the Contract not later than August 31, 2010.

2. The following changes are made to the Project Bid Items:

a. Quantity changes:

Number	Item	Quantity Original	Quantity New
60	TEMPORARY FLEXABLE PAVEMENT MARKERS	14500	21500
90	FLAGGERS	3000	3288
110	PILOT CARS	200	272
300	LONGITUDINAL PAVEMENT MARKINGS-PAINT	60500	198222

b. Added items:

Number	Item	Unit	Quantity
370	18 INCH CULVERT PIPE, 5 FT DEPTH	FT	52
380	PRE-COATED AGGREGATE IN ASPHALT SURFACE TREATMENT	TONS	1650
390	AC15-5TR ASPHALT BINDER COAT IN ASPHALT SURFACE TREATMENT	TONS	303
400	PG64-22 IN PRE-COATED AGGREGATE	TONS	12
410	INSTALLATION OF THE ROAD AND WEATHER INFORMATION SYSTEM	LS	ALL
420	CL-6 CHAIN-LINK FENCE	FT	80

Make a copy of and use the new attached Bid Sheets. A Bid **not** including these new Bid Sheets **will be rejected as non-responsive**.

The following changes are made to the Project Special Provisions:

1. DESCRIPTION OF WORK page - The paragraph under COMPLETION TIME LIMIT is replaced with the following:

There are two Contract Times on this Project as follows:

(1) Complete all Work to be done under the Contract, except for pre-coated aggregate asphalt surface treatment and associated permanent striping, not later than October 15, 2009.

(2) Complete all Work to be done under the Contract not later than August 31, 2010.

2. WORK TO BE DONE PAGE – replace the paragraph that starts with "The Work to be done under this Contract consists…". With the following:

The Work to be done under this Contract consists of the following on the US97: Sand Creek Passing Lane Section of the Dalles - California Highway in Klamath County:

1. Construct embankment.
2. Construct Aggregate Base.
3. Construct Pre-Coated Aggregate Asphalt Surface Treatment
4. Construct HMAC Pavement.
5. Install Signs.
6. Install Road and Weather Information Station.
7. Perform additional and incidental Work as called for by the Specifications and Plans.

3. Section 00160.00 – Source of Materials - This Section is replaced with revised Section:

SECTION 00160 - SOURCE OF MATERIALS

Comply with Section 00160 of the Standard Specifications modified as follows:

00160.30 Agency-Furnished Material - The Agency will furnish the listed items at 2557 Altamont Dr., Klamath Falls, OR 97603.

- Weather station cabinet

Pavement sensors will be provided by the Agency from the following individual:

James Wittenberg
Region 4 ITS Support Coordinator
63055 N Highway 97
Bend, OR 97701

(541) 388-6481 x367
cell (541) 815-4947

4. Subsection 00180.50(h) – Contract Time - This Subsection is replaced with revised Subsection:

00180.50(h) Contract Time There are two Contract Times on this Project as follows:

(1) Complete all Work to be done under the Contract, except for pre-coated aggregate asphalt surface treatment and associated permanent striping, not later than October 15, 2009.

(2) Complete all Work to be done under the Contract not later than August 31, 2010.

5. Subsection 00180.85(b) – Liquidated Damages - This Subsection is replaced with revised Subsection:

00180.85(b) Liquidated Damages - Add the following paragraphs:

There are two daily amounts of liquidated damages on this Project as follows:

Liquidated damages for failure to complete the Work on time required by 00180.50(h-1) will be $ 1200 per Calendar Day *. Liquidated damages for failure to complete the Work on time required by 00180.50(h-2) will be $ 1200 per Calendar Day *. If liquidated damages should become payable concurrently under the combination of 00180.50(h-1) and (h-2), liquidated damages will be $ 1200 per Calendar Day *.

* Calendar Day amounts are applicable when the Contract time is expressed on the Calendar Day or fixed date basis

6. Subsection 00195.10(d) – Asphalt Cement Price Adjustment – Replace the paragraph that begins "the pay items for which price....." with the following:

The Pay Items for which price adjustments will be made are:

Pay Item(s)

AC15-5TR Asphalt Binder Coat in Asphalt Surface Treatment
PG64-22 Asphalt in Pre-Coated Aggregate
PG70-28ER Asphalt in HMAC
Emulsified Asphalt for Tack Coat

7. Subsection 00220.40(e) – Lane Restrictions - This Subsection is replaced with revised Subsection:

00220.40(e) Lane Restrictions - Delete subsections (1) and (2) and replace with the following:

(1) Weekdays:

a) During the 2009 construction season, restrict length of lane closure to 3000' maximum length during the following periods:

- Between 10:00 a.m. and 4:00 p.m Monday through Thursday
- Between 10 a.m. and 3 p.m. on Friday

b) During the 2010 construction season, restrict length of lane closure to 3.0 mile maximum length.

(2) Weekends :

Do not close any traffic lanes and remove all barricades and objects from the roadway during the following period:

Between 3 p.m. on Friday and 9:00 p.m. on Sunday.

8. Subsection 00350.10 – Materials - This Subsection is replaced with revised Subsection:

00350.10 Materials - Add the following to the end of this subsection:

Provide manufacturer's certifications complying with 02320.10(c) for the following geosynthetic(s):

Geotextile	Certification Level A
Subgrade	X

9. Section 00405 – Trench Excavation, Bedding, and Backfill - This Section is added after Section 00350 – Geosynthetic Installation. See attachment for full text.

10. Section 00440 – Commercial Grade Concrete - This Section is added after Section 00405 – Trench Excavation, Bedding, and Backfill . See attachment for full text.

11. Section 00442 – Controlled Low Strength Materials - This Section is added after Section 00440 – Commercial Grade Concrete . See attachment for full text.

12. Section 00445 – Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe - This Section is added after Section 00442 – Controlled Low Strength Materials. See attachment for full text.

13. Subsection 00641.10 – Materials - This Subsection is replaced with revised Subsection:

00641.10 Materials - Add the following sentence after the first sentence:

Base aggregate shall be either 1"-0 or 3/4"-0 size.

14. Section 00711 – Pre-Coated Aggregate Asphalt Surface Treatment - This Section is added after Section 00641 – Aggregate Subbase, Base, and Shoulders. See attachment for full text.

15. Subsection 00745.11(a) – Asphalt Cement - This Subsection is replaced with revised Subsection.

00745.11(a) Asphalt Cement – Add the following:

In addition to the requirements in the ODOT Standard Specifications for Asphalt Materials the PG 70-28ER grade for HMAC shall meet the following limit when tested according to AASHTO T 301 "Standard Method of Test for Elastic Recovery Test of Asphalt Materials by Means of a Ductilometer". The samples will be conditioned per AASHTO T 240 "Standard Method of Test for Effect of Heat and Air on a Moving Film of Asphalt (RTFOT) prior to testing per AASHTO T 301. The specified temperature for section 3.3 of the AASHTO T 301 procedure shall be 77°F.

% Elastic Recovery – **50** minimum

16. Subsection 00745.73(d-3) – Profile Index - This Subsection is replaced with revised Subsection.

(3) Profile Index - The profile index is the inch per mile in excess of the 0.2 inch blanking band reported to the nearest whole number. The formula for converting counts to profile index is:

$$\text{Profile Index} = \frac{\text{Total Count (In.)}}{\text{Length of Full 0.10 Mile Segment or of Partial } \_\_^{*}\_\_ \text{ Mile Segment}}$$

* Report to the nearest 0.01 mile.

17. Section 00960 – Common Provisions for Electrical Systems - This Section is added after Section 00940 – Signs. See attachment for full text.

18. Section 00995 – Road and Weather Information System - This Section is added after Section 00960 – Common Provisions for Electrical Systems. See attachment for full text.

19. Section 01050 – Fences - This Section is added after Section 01030 – Seeding. See attachment for full text.

The following changes are made to the Project Plans:

1. Plan sheets 1, 1A, and 5 are replaced with revised plan sheets 1, 1A, and 5.

2. Plan sheets 2A, ITS-814, ITS-815, ITS-816, ITS-817, ITS-818and ITS-819 are added.

These changes will be included in the Contract for this Project. It is understood that your Bid will be submitted accordingly.

Make copies of the new Bid Sheets to replace the Special Provisions Bid Schedule Sheets.

____:____

Attachments: New Bid Sheets
Revised Plan Sheets
New Special Provisions Section
New Plan Sheets

BID SCHEDULE

CONTRACT ID: 14016 PROJECT: US97: SAND CREEK PASSING LANES (ESP)

PROJECT KEY: 16363 ADDENDUM NUMBER: 2

ITEM NO	ITEM DESCRIPTION	QUANTITY AND UNITS	UNIT PRICE (IN FIGURES)	BID AMOUNT (IN FIGURES)
SECTION 0001 TEMPORARY FEATURES AND APPURTENANCES				
0010	0210-0100000A MOBILIZATION	ALL LS		
0020	0225-0100000A TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	ALL LS		
0030	0225-0102000J TEMPORARY SIGNS	950.00 SQFT		
0040	0225-0105000E TEMPORARY BARRICADES, TYPE III	9.00 EACH		
0050	0225-0145000E TEMPORARY PLASTIC DRUMS	300.00 EACH		
0060	0225-0149000E TEMPORARY FLEXIBLE PAVEMENT MARKERS	21,500.00 EACH		
0070	0225-0162000E SEQUENTIAL ARROW SIGNS	2.00 EACH		
0080	0225-0164000E PORTABLE CHANGEABLE MESSAGE SIGNS	2.00 EACH		
0090	0225-0168000T FLAGGERS	3,288.00 HOUR		
0100	0225-0168100E FLAGGER STATION LIGHTING	4.00 EACH		
0110	0225-0172000T PILOT CARS	272.00 HOUR		
0120	0280-0100000A EROSION CONTROL	ALL LS		

BID SCHEDULE

CONTRACT ID: 14016 PROJECT: US97: SAND CREEK PASSING LANES (ESP)

PROJECT KEY: 16363 ADDENDUM NUMBER: 2

ITEM NO	ITEM DESCRIPTION	QUANTITY AND UNITS	UNIT PRICE (IN FIGURES)	BID AMOUNT (IN FIGURES)
0130	0280-0110000E CONSTRUCTION ENTRANCE	4.00 EACH		
0140	0290-0100000A POLLUTION CONTROL PLAN	ALL LS		

SECTION 0002 ROADWORK

0150	0305-0100000A CONSTRUCTION SURVEY WORK	ALL LS		
0160	0310-0106000A REMOVAL OF STRUCTURES AND OBSTRUCTIONS	ALL LS		
0170	0320-0100000A CLEARING AND GRUBBING	ALL LS		
0180	0330-0105000K GENERAL EXCAVATION	25,500.00 CUYD		
0190	0331-0106000J 12 INCH SUBGRADE STABILIZATION	7,000.00 SQYD		
0200	0340-0100000Q WATERING	500.00 MGAL		
0210	0350-0105000J SUBGRADE GEOTEXTILE	49,500.00 SQYD		

SECTION 0003 BASES

0220	0620-0120000J COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	44,000.00 SQYD		
0230	0641-0201000M PLANT MIX AGGREGATE BASE	79,500.00 TON		

SECTION 0004 WEARING SURFACES

BID SCHEDULE

CONTRACT ID: 14016 PROJECT: US97: SAND CREEK PASSING LANES (ESP)

PROJECT KEY: 16363 ADDENDUM NUMBER: 2

ITEM NO	ITEM DESCRIPTION	QUANTITY AND UNITS	UNIT PRICE (IN FIGURES)	BID AMOUNT (IN FIGURES)
0240	0730-0100000M EMULSIFIED ASPHALT FOR TACK COAT	50.00 TON		
0250	0745-0422000M LEVEL 4, 1/2 INCH DENSE LIME TREATED HMAC	35,000.00 TON		
0260	0745-0642000M PG 70-28ER ASPHALT IN HMAC	2,205.00 TON		

SECTION 0005 PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES

0270	0840-0100000E DELINEATORS, TYPE 1	80.00 EACH		
0280	0840-0106000E MILEPOST MARKER POSTS	2.00 EACH		
0290	0857-0101000L CONTINUOUS RUMBLE STRIPS	2.40 MILE		
0300	0860-0200000F LONGITUDINAL PAVEMENT MARKINGS - PAINT	198,222.00 FOOT		

SECTION 0006 PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

0310	0905-0100000A REMOVE EXISTING SIGNS	ALL LS		
0320	0910-0100000K WOOD SIGN POSTS	960.00 FBM		
0330	0940-0113000J TYPE "G" SIGNS IN PLACE	10.00 SQFT		
0340	0940-0124000J TYPE "W1" SIGNS IN PLACE	172.00 SQFT		

BID SCHEDULE

CONTRACT ID: 14016 PROJECT: US97: SAND CREEK PASSING LANES (ESP)

PROJECT KEY: 16363 ADDENDUM NUMBER: 2

ITEM NO	ITEM DESCRIPTION	QUANTITY AND UNITS	UNIT PRICE (IN FIGURES)	BID AMOUNT (IN FIGURES)
0350	0940-0134000J TYPE "Y1" SIGNS IN PLACE	36.00 SQFT		

SECTION 0007 RIGHT-OF-WAY DEVELOPMENT AND CONTROL

0360	1030-0108000R PERMANENT SEEDING	8.00 ACRE		

SECTION 0008 ADDED BID ITEMS

0370	0445-010018AF 18 INCH CULVERT PIPE, 5 FT DEPTH	52.00 FOOT		
0380	0715-9Z90000M PRE-COATED AGGREGATE IN ASPHALT SURFACE TREATMENT	1,650.00 TON		
0390	0715-9Z90000M AC 15-5TR ASPHALT BINDER COAT IN ASPHALT SURFACE TREATMENT	303.00 TON		
0400	0715-9Z90000M PG64-22 IN PRE-COATED AGGREGATE	12.00 TON		
0410	0990-9Z90000A INSTALLATION OF THE ROAD AND WEATHER INFORMATION SYSTEM	ALL LS		
0420	1050-0135000F CL-6 CHAIN-LINK FENCE	80.00 FOOT		
	TOTAL BID			

42V-088

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Drg. Nos.
1B Thru 1B-3 Incl.	Survey Data Control

No.	REVISION	DATE	BY
1	Changed B.O.P. Location and Project Length	05-03-09	M.A.S.
2	Added Township	05-03-09	M.A.S.

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

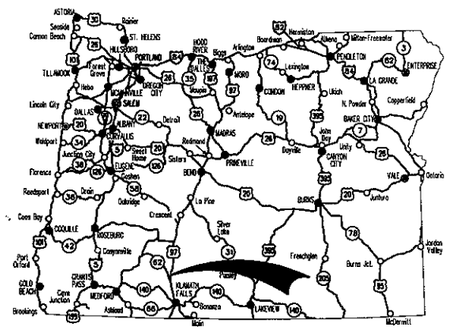
PLANS FOR PROPOSED PROJECT

GRADING, PAVING AND SIGNING

US97: SAND CREEK PASSING LANES SEC.

THE DALLES - CALIFORNIA HIGHWAY

KLAMATH COUNTY
MAY 2009



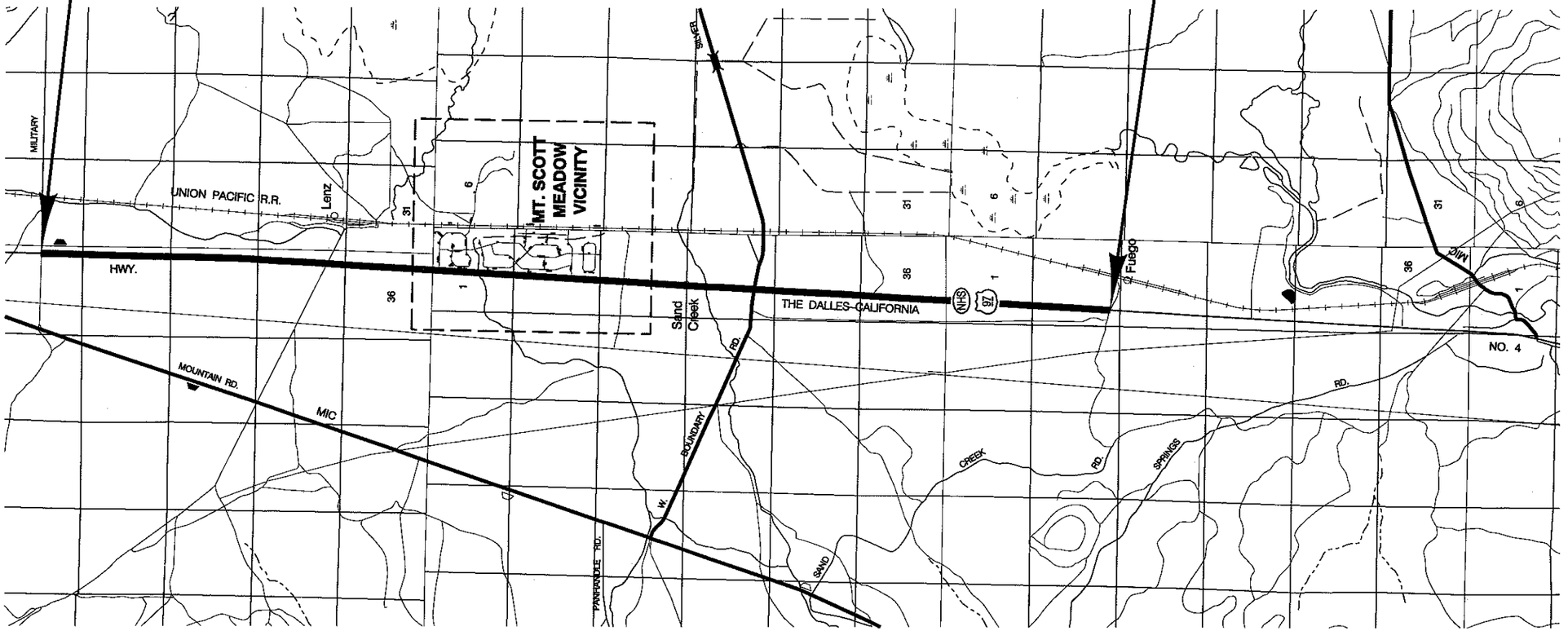
1 Overall Length Of Project - 12.33 Miles

ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

1 **BEGINNING OF PROJECT**
X-NH-S004(133)
STA. 1568+00 (M.P. 219.58)

END OF PROJECT
X-NH-S004(133)
STA. 2219+00 (M.P. 231.91)



OREGON TRANSPORTATION COMMISSION

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Janice Wilson	COMMISSIONER
Alan Brown	COMMISSIONER
David Lohman	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: Michael L. Morris 5/4/09
Signature & date

Michael L. Morris, Region 4 TCM
Printname and title

Concurrence by ODOT Chief Engineer

US97: SAND CREEK PASSING LANES SEC.
THE DALLES - CALIFORNIA HIGHWAY
KLAMATH COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-NH-S004(133)	1

FY09SP04-001

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1:1200 - 001

INDEX OF SHEETS, CONT'D.

SHEET NO.	DESCRIPTION
1 2 & 2A	Typical Sections
2B	Details
3 Thru 7 Incl.	General Construction
	PERMANENT SIGNING
S-11180	Permanent Signing Detail
	INTELLIGENT TRANSPORTATION SYSTEMS
2 ITS-814	Weater Station Legend & Symbols
ITS-815	Weater Station Site Plan
ITS-816	Weater Station Details
ITS-817	Weater Station Details
ITS-818	Pavement Sensor Installation Details
ITS-819	Fence & Battery Enclosure Details

Standard Drg. Nos.

3
RD300 - Trench Backfill, Bedding, Pipe Zone and Multiple Installations
RD316 - Sloped Ends for Metal Pipe
RD326 - Coupling Bands for Corrugated Metal Pipe
RD380 - Aluminum & Steel Corrugated Pipe Fill Height Tables

RD610 - Asphalt Pavement Details

RD1000 - Construction Entrances

TM200 - Sign Installation Details
TM201 - Miscellaneous Sign Placement Details
TM204 - Flag Board Mounting Detail
TM221 - Signing Details Milepost Markers
TM222 - Installation Details Milepost Marker Posts

TM500 - Pavement Marking Standard Detail Blocks
TM570 - Traffic Delineators
TM571 - Traffic Delineators Steel Post Details
TM576 - Traffic Delineator Installation For Non-Freeways

TM601 - Multi-Post Breakaway Sign Supports (Details)
TM602 - Triangular Base Breakaway Sign Support (Multi-Directional Slip Base Design)
TM635 - Breakaway Sign and Luminaire Supports (Location Guidelines)
TM670 - Wood Post Sign Supports
TM671 - 3 Second Gust Wind Speed Isotach
TM676 - Sign Attachments

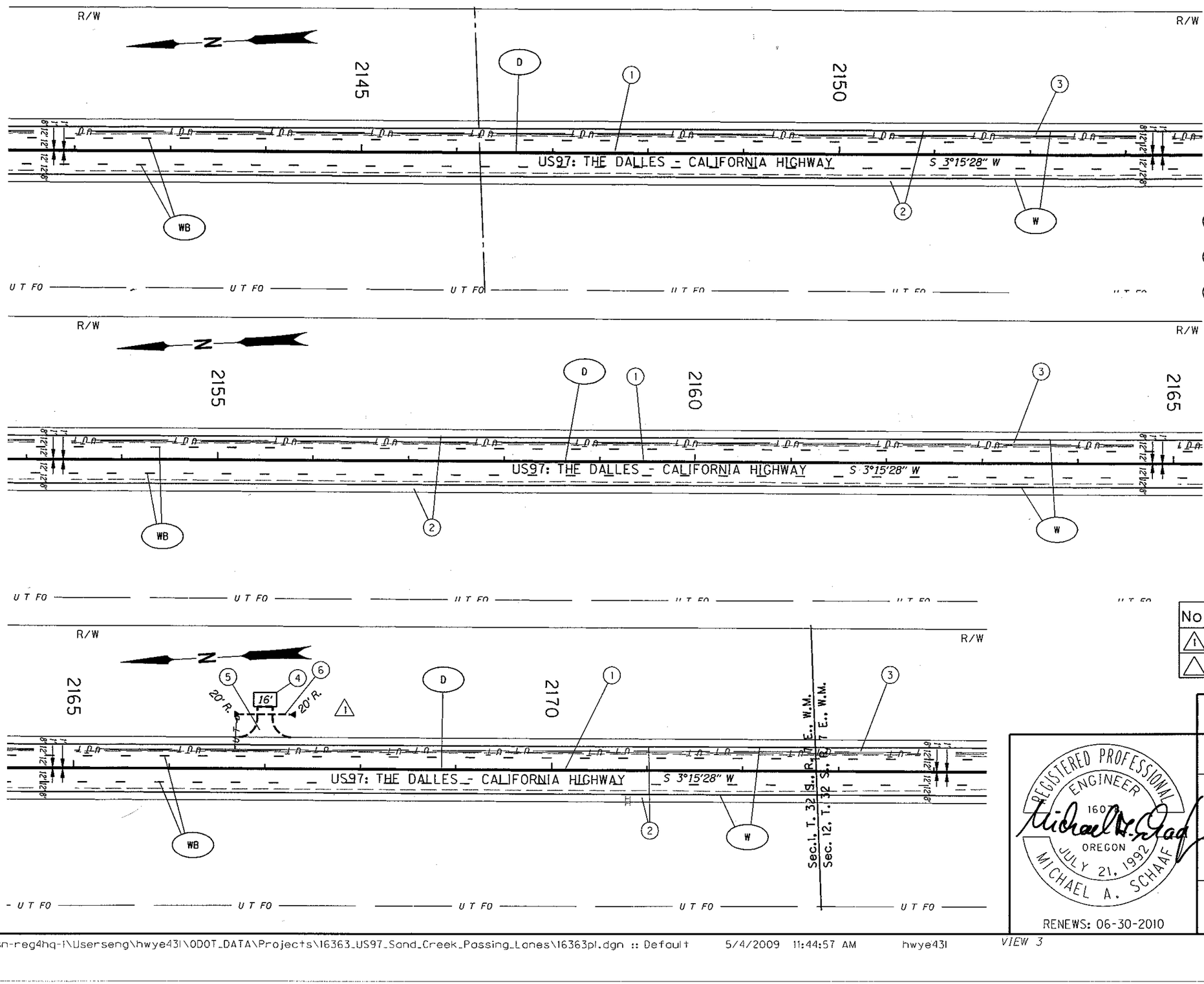
TM700 - Tables, Abrupt Edge, and PCMS Details
TM710 - 2 Lane, 2 Way Roadways
TM715 - Non-Freeway Multi-Lane Sections
TM717 - Non-Freeway Multi-Lane Sections
TM750 - Temporary Barricades
TM775 - Temporary Sign Supports

R/W Map No. 6B-14-6 and 6B-14-7

No.	REVISION	DATE	BY
1	Added Typical drg.	05-03-09	M.A.S.
2	Added RWIS drg.	05-03-09	M.A.S.
3	Added Standard drg.	05-03-09	M.A.S.

US97: SAND CREEK PASSING LANES SEC.
THE DALLES - CALIFORNIA HIGHWAY
KLAMATH COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION		1A



(1) See sht. 3, note 2

(2) See sht. 3, note 3

(3) See sht. 3, note 4

(4) Sta. 2167+00.65' Lt.
Const. RWIS

(5) Const. approach

(6) Sta. 2167+00. Lt.
Inst. 18" culvert pipe - 52'
1:6 sloped ends, 5' depth
Aluminized or galvanized
iron steel - plate thkn. - 0.064"
uncoated

W — Inst. 4" white line

D — Inst. double no-pass

WB — Inst. 4" white broken line

No.	REVISION	DATE	BY
1	Added RWIS, Approach & Pipe	05-03-09	M.A.S.

REGISTERED PROFESSIONAL ENGINEER
160
Michael A. Schaaf
OREGON
JULY 21, 1992
MICHAEL A. SCHAAF
RENEWS: 06-30-2010

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

US97: SAND CREEK PASSING LANES SEC.
THE DALLES - CALIFORNIA HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael A. Schaaf
Designed By - Jason L. Armstrong
Drafted By - Joseph J. Rodriguez

GENERAL CONSTRUCTION

SHEET NO. 5

SECTION 00405 - TRENCH EXCAVATION, BEDDING, AND BACKFILL

Comply with Section 00405 of the Standard Specifications.

SECTION 00440 - COMMERCIAL GRADE CONCRETE

Comply with Section 00440 of the Standard Specifications.

SECTION 00442 - CONTROLLED LOW STRENGTH MATERIALS

Comply with Section 00442 of the Standard Specifications.

SECTION 00445 - SANITARY, STORM, CULVERT, SIPHON, AND IRRIGATION PIPE

Comply with Section 00445 of the Standard Specifications modified as follows:

00445.80(a) Pipes - In the length bullet, add ", to the nearest foot" after the word "applicable".

SECTION 00711 – PRE-COATED AGGREGATE ASPHALT SURFACE TREATMENT

Section 00711.00, which is not a Standard Specification, is included for this Project by Special Provision.

00711.00 Scope - This work consists of applying asphalt and pre-coated graded aggregates as shown or directed.

The chip seal design will be designated in the Plans or Special Provisions.

Materials

00711.10 Aggregates - Provide pre-coated asphalt aggregates conforming to the following requirements:

(a) Size Designation - Provide the size of aggregate for the single application asphalt surface treatment design designated in the plans or Special Provisions.

(b) Fractured Faces - Provide aggregates consisting of broken stone, crushed gravel or a combination of both. Crush aggregate such that at least 90% by weight of the total aggregate retained on the No. 8 and larger sieves is fractured on two faces, as determined according to AASHTO TP 61.

(c) Grading - Perform sieve analysis according to AASHTO T 27 and T 11. Provide grading for the designated single application asphalt surface treatment design according to the following:

Sieve Size	**Designated Size 3/8" - #10 Percent Passing (By Weight)**
1/2"	100
3/8"	85-100
No. 4	0-15
No. 8	0-8
No. 40	0-2
No. 200 Wet	0-1

(d) Unit Mass (Weight) of Aggregate - Provide aggregate with a minimum unit weight of 90 pounds per cubic foot according to AASHTO T 19.

(e) Soundness - Provide coarse and fine aggregate material meeting the soundness testing requirements using sodium sulfate salt according to AASHTO T104. The weighted percentage loss shall not exceed 12% by weight.

(f) Durability - Provide aggregates meeting the following durability requirements:

Test	Test Method ODOT	Test Method AASHTO	Maximum Values
Abrasion		T 96	30.0%
Degradation (coarse aggregate) Passing No. 20 Sieve	TM 208		30.0%
Sediment Height	TM 208		3"

(g) Harmful Substances -Provide aggregates meeting the following harmful substances requirements:

Test	Test Method ODOT	Test Method AASHTO	Limits
Lightweight Pieces		T 113	1.0% maximum

Wood Particles	TM 225	0.1% maximum
Elongated Pieces (Coarse Aggregate at a ratio of 5:1)	TM 229	10.0% maximum
Cleanness Value	TM 227	75 minimum

(h) Taking Aggregates from Agency Stockpiles -When it is specified that aggregates are to be taken from Agency-controlled stockpiles, take the material in an orderly manner. Do not contaminate the materials. Salvage all material possible from the area which the material is taken. Shape unused portions of a stockpile to neat lines. The Contractor will be charged for materials wasted through negligence or used without authority.

(i) Stockpiling Contractor-Furnished Aggregates on Agency Property - Aggregates may be temporarily stockpiled at approved sites on Agency property provided the areas used are as small as practicable. Restore the site to its original condition after the materials have been removed. Any contamination during storage or from reloading operations will be cause for rejection.

00711.11 Asphalt - Provide AC15 - 5TR asphalt as specified for the single application asphalt surface treatment (binder coat) design designated in the Special Provisions.

Provide asphalt conforming to the requirements list below. The following materials specification is for AC15-5TR, an asphalt product manufactured specifically for use in hot asphalt chip seals. AC15-5TR must contain 5% scrap tire rubber.

AC15-5TR	Test Method	Min	Max
Viscosity @ 60C, P	ODOT TM430	1500	
Kinematic Viscosity @ 135C, cSt	AASHTO T201		2000
Penetration @ 25C, 100g, 5 sec, dmm	AASHTO T49	90	140
Elastic Recovery, %	ODOT TM429	55	
Force Ductility Ratio @ 4C, 5cm/min, cm	ODOT TM 427	0.30	
Cleveland Open Cup Flash Point (C)	AASHTO T48	260	

00711.12 Asphalt and Additives for pre-coated chips -Use PG 64-22 asphalt to coat chips unless otherwise specified in the Contract documents. Provide asphalt conforming to the requirement of ODOT's publication, "Standard Specifications for Asphalt Materials". Copies of the publication are available from ODOT's Pavement Services Engineer. The applicable specifications are those contained in the current publication on the date the Project is advertised. Testing of the asphalt used on this Project will be at the discretion and expense of the Agency.

Obtain samples of asphalt according to AASHTO T 40 at the frequency indicated in the MFTP. Samples will be tested at the ODOT Materials Laboratory, or other laboratory as designated by the Agency.

00711.15 Aggregate Production Quality Control - Provide quality control during production of aggregate according to Section 00165. Sampling and Testing shall be performed by a CAgT at the minimum frequency schedule indicated in the MFTP according to Section 00710.15.

(a) Quality Control Compliance - Evaluate aggregates for compliance according to the following:

(1) Gradation - Analyze gradation statistically according to Section 00165. A stockpile contains specification aggregate when the Pay Factor (PF) for each sieve size calculated according to 00165.40 is equal to or greater than 1.00. Each required sample represents a sublot. When the results from Table 00165-2 yield a Pay Factor of less than 1.00 for any sieve size, the material is non-specification. The Engineer will reject any stockpile of aggregate containing non-specification material unless the non-specification material is removed from the stockpile. Do not add additional material to such a stockpile until enough non-specification material is removed so that the PF for each sieve size is equal to or greater than 1.00.

(2) Other Tests - Stop production, make appropriate operational adjustments, and remove all failing material from the stockpile whenever a quality control test result, other than sieve analysis, does not meet Specifications. Document operational adjustments made and notify the Engineer prior to resuming production.

(3) Preproduced Aggregate - Compliance of aggregates produced and stockpiled before the award of this Contract will be determined by either of the following:

Continuing production records meeting the requirements of 00711.10 and 00711.15.

Sampling according to AASHTO T 2 and testing the entire stockpile at the minimum frequency schedule indicated in the MFTP. The material shall meet the requirements of 00711.10 and 00711.15.

(b) Materials on Hand - Payment for stockpiled materials on hand may be allowed as described in 00195.60 subject to meeting the requirements of 00711.10 and 00711.15.

00711.16 Acceptance of Aggregate - The Contractors quality control tests will be used for acceptance of aggregates if verified by the Agency's quality assurance program. The Agency will perform aggregate production quality assurance according to the following:

(a) ODOT Administered Projects - Quality assurance testing on ODOT administered projects will be performed according to Section 00165, the MFTP according to Section 00710.16 and the ODOT Quality Assurance Manual.

(b) Projects Administered by Other Agencies - The quantity of quality assurance testing on projects administered by other Agencies will be at the discretion of the Agency or as designated in the Special Provisions.

00711.16 Coated Aggregate
In accordance with the bid schedule, aggregate will be pre-coated with liquid asphalt meeting the following requirements:

a) Aggregate used in the pre-coating shall meet all the requirements of untreated aggregate. **Aggregate samples shall be submitted to the asphalt binder supplier to test aggregate source for compatibility characteristics.**

b) Use PG 64-22 grade liquid asphalt meeting the requirements of Section 00745.11(a).

c) Application of the asphalt will be through utilization of an asphalt hot plant. Process to a minimum coating of 98% on the plus #4 material.

d) Liquid asphalt coating shall be uniform and will be applied at a target rate of 0.70%, with a tolerance of +/- 0.2% of total weight of mass. Any coated materials containing excess liquid asphalt that cause the large aggregate to bind together will be subject to rejection. Any coated aggregate that shows visually too little asphalt will be subject to rejection.

e) Mixing temperature shall be in accordance to asphalt supplier recommendation. The recommended asphalt temperature should be around 325 degrees F. and a dryer temperature of 190 to 230 degrees F.

f) Determination of the asphalt content will be in accordance with the Standard Specifications for Highway Construction, and the Meter Method (ODOT TM 321) outlined in the Manual of Field Test Procedures, the test frequency shall be 500 tons. Asphalt Plant must be calibrated in accordance with ODOT TM322 prior to the start of production. Contractor shall verify asphalt content by the incinerator method (ODOT TM 323) at a rate of 1 test / 2500 tons

g) Moisture content will be taken by the contractor at a rate of 1 test / 1000 tons at time of discharge from the mixing plant. Maximum moisture content shall be 0.8% (WAQTC TM6)

h) The engineer will perform verification testing as deemed necessary.

i) In the event materials not meeting specifications are accepted for use, a price adjustment will be initiated.

j) Chip seal aggregate shall be precoated, cooled, stockpiled and cured a minimum of one week before application.

k) Batches or lots of the precoated aggregates shall be stored piled in individual piles in order for the precoated chips to be turned with a loader to accelerate cooling and to increase uniformity of the coating on the aggregates. Should this procedure not be followed, the precoated aggregates will clump together, will not be uniformly coated and

the heat will burn the coating on the aggregate.

l) Systematic turning of the piles is necessary until the aggregates have cooled to avoid building heat and burning the asphalt coating. Should problems occur with the cooling process the contractor and Project Manager will work to resolve the issue. Excessive clumping may require re-screening of the product prior to acceptance. Final acceptance of the Asphalt Coated Aggregate will be completed at the stockpile site.

Equipment

00711.20 Equipment - Provide a pressure distributor, hauling vehicles, chip spreader, compactors, power brooms and other necessary equipment to insure efficient operation and construction to meet specified results. Provide equipment in sufficient number and capacities that will provide coordinated and uniform progress of the work.

Provide two-way radio communication between the asphalt distributor and chip spreader.

00711.21 Asphalt Distributor - Provide sufficient number of distributors designed, equipped, maintained and operated so the asphalt material may be applied uniformly at even heat, and in a continuous operation. The distributor shall be capable of applying the asphalt on variable surface widths up to 16 feet, at readily determined and controlled rates from 0.05 - 2.0 gallons per square yard, and with uniform pressure. The variation allowed from any specified rate shall not exceed 0.02 gallons per square yard. Provide distributor equipment that includes a tachometer, pressure gages, accurate volume measuring devices and a thermometer for measuring temperature of tank contents and shall have a **Computer Rate Control (CRC)** installed. Provide distributors equipped with a positive power unit for the asphalt pump, and full circulation spray bars adjustable both laterally and vertically. Set the bar height for triple lap coverage. Provide verification to the engineer demonstrating the equipment is calibrated properly.

00711.22 Chip Spreaders - Provide self-propelled, computerized screenings chip spreaders equipped with a screenings hopper in the rear, belt conveyors to carry the screenings to the front of the spreader hopper. Rear screens may be removed at the direction of the engineer if excess build-up occurs. The screenings spreader shall be capable of providing a uniform spread rate over the entire width of the traffic lane in one application. Provide chip spreaders equipped with an aggregate segregator assembly. Provide chip spreaders of adequate width to provide full coverage of the specified panel and without placing joints in the travel lanes. Chip Spreader must contain surface temperature thermometer. Thermometer must read continuous surface temperatures in advance of rock placement, and be visible by chip spreader operator. Provide verification to the engineer demonstrating the equipment is calibrated properly.

00711.23 Compactors - Provide self-propelled pneumatic-tired and steel-wheeled rollers in good condition and capable of operating at speeds compatible with the surface treatment operation. A minimum of three pneumatic-tired rollers shall be used for multiple pass operations and 5 for continuous operations. In addition, one steel-wheeled roller will be required for surface treatment at the discretion of the Engineer.

(a) Pneumatic-tired Rollers - Provide self-propelled, tandem or multiple axle, multiple wheel type pneumatic-tired rollers with smooth-tread pneumatic tires of equal size. The tires shall be staggered on the axles at such spacings and overlaps that will provide uniform compacting pressure for the full compacting width of the roller. The minimum load per tire shall be 2,800 pounds, with tire inflation pressures of 45 to 100 psi. Air pressure shall be maintained to not vary more than +/- 5 psi in each tire per machine.

(b) Steel-wheeled Rollers - Provide steel-wheeled rollers with a gross static weight of at least 8 tons.

00711.24 Power Brooms - Provide pickup or non-pickup type power brooms equipped with a positive means to control vertical pressure.

Labor

00711.30 Quality Control Personnel - Provide a certified technician in the following field: CAgT

Construction

00711.40 Season, Weather & Temperature Limitations - Apply AC-15TR only when the surface temperature in the shade is not less than the appropriate minimum surface temperature of 75 degrees F. A surface temperature of 90 degrees F is preferred and will allow a more continued operation of the distributors.

00711.41 Rate of Progress and Scheduling - Do not apply more surface treatment in any one day than can be broomed the same, unless approved by the Engineer.

00711.42 Preparation of Underlying Surfaces - Immediately before applying the asphalt, clean and dry the surface to be treated in a manner approved by the Engineer. Clean all loose material by brooming, flushing with water or by other approved methods; as directed by the Engineer. If flushing with water is required to clean the surface, Asphalt Surface Treatment will not be placed in that area for a minimum of one week.

00711.43 Sequence of Operations - Construct the single application asphalt surface treatment with a single spread of asphalt followed immediately with a single spread of pre coated aggregate and initial rolling, unless otherwise directed by the Engineer. When placing binder coat at intersections, turn pockets, gore points and other irregular areas the asphalt application shall not be in excess of what can be covered within the appropriate temperature range of the asphalt.

00711.44 Application Rates - Apply the asphalt and spread the aggregate within the following ranges of rates for the specified surface treatment design. The exact application and spread rate will be determined by the Engineer.

Pre Coated Aggregate Spread Rate: 10 to 20 lbs/yd2

AC15 - 5TR Asphalt Binder Application Rate: 0.35 to 0.45 gal/yd2

00711.45 Applying Asphalt Binder Coat- Apply asphalt at the rates specified in 00711.44 and according to the following:

Do not apply asphalt to more than one-half the width of the travel way at one time with the remaining width remaining open to traffic. Apply the asphalt with a pressure distributor conforming to 00711.21, unless otherwise permitted. Apply the asphalt to the prepared surface with the asphalt temperature between 330 degrees F and 360 degrees F or as recommended by the manufacturer. A manufacturers representative must be on site during placement of Ashphalt Surface Treatment. If requested by the Engineer, demonstrate that the distribution of the asphalt does not vary between the individual nozzles by more than 15% transversely from the average, and no more than 10% longitudinally from the specified rate of application.

Immediately following application of bituminous material, the precoated chips shall be applied and spread with a self propelled mechanical spreader so that the asphalt temperature range is between 130 and 180 degrees F. The chip spreading equipment shall be capable of applying a uniform application of cover material.

Asphalt binder shall not be applied during rain or imminent threat of rain. If an unexpected shower arises during operations, the asphalt distributor should be shut off immediately and placement of aggregate continued until all asphalt has been covered. This area should be rolled well and watched carefully after opening to traffic. After a rain, operations shall be suspended until the pavement has completely dried a minimum of 3 days, unless otherwise modified by the Engineer.

Do not apply asphalt a greater distance than can be immediately covered by aggregates. Aggregates must be placed on the asphalt within the asphalt temperature range of 130 to 180 degrees F. Cover material shall be applied at the rate specified in 00711.44. The actual amount selected within this range will be determined in the field based on appearance of the chip seal after initial rolling.

Place building paper over the treated surface at the beginning of the initial spread for each distributor to insure that the nozzles are operating properly before the uncovered surface is reached. Remove and dispose of building paper in accordance with the manufactures recommendations.

When joining edges against areas with screenings, the joint shall be swept clean of excess screenings prior to the adjacent application of asphalt rubber binder. Transverse joints shall be constructed in a manner that does not allow overlap.

The longitudinal joint between adjacent applications of screenings shall coincide with the line between designated traffic lanes. At longitudinal joints with screenings, the edge shall be broomed back and blended to eliminate any difference in elevation. They shall be free from

ridges and depressions and have a uniform appearance consistent with the adjacent sealed surface. All defects shall be corrected at the contractors expense.

00711.46 Hauling and Spreading Aggregates - Spread aggregates at the rates specified.

Do not operate hauling and spreading equipment on uncovered asphalt. Carefully operate hauling equipment at all times, at moderate speeds that will not damage the new chip seal or create a hazard to the traveling public. Route hauling equipment and pilot lines as uniformly as possible over the full width of the new surface in place.

Calibrate the spreader for the various sizes of aggregate to be used. Following calibration, verify the rate of application by a method acceptable to the Engineer. Periodically verify the gate opening to ensure that a consistent spread rate is maintained.

Immediately following the application of the asphalt, cover the asphalt surface with aggregate unless otherwise authorized by the Engineer. Aggregate shall be applied at the rate specified in 00711.44. The exact rate will be determined by the engineer. Maintain the rate of spread of this aggregate within 5% of specified rate.

Provide coverage without gaps or overlapping adjacent coverages. Do not construct longitudinal joints within the travel lanes.

Construct neat transverse cut off of aggregates and remove any excess aggregates from the surface prior to resuming operations.

00711.47 Shaping and Compacting -After the aggregates have been placed on the asphalt, spread or remove all piles, ridges, or uneven distribution to ensure against rough spots in the final surface.

Sufficient rollers shall be used for the initial rolling to cover the width of the aggregate spread in one pass. The first pass shall be made immediately behind the cover material spreader as the aggregate is placed. Should spreading be stopped for an extended period (greater than two minutes), the cover material spreader shall be moved ahead or off the surface of the chip seal, so that all cover material may be immediately rolled. Compact the surface with a minimum of two to three coverages with three or more pneumatic tired rollers immediately behind the chip spreader. Continue compacting until the material is interlocked, firm and bound with the underlying asphalt. Perform two to three coverages with pneumatic-tired rollers and one pass with a steel wheeled roller if required by the Engineer. The sequence of roller coverages may be adjusted at the discretion of the Engineer.

Operate rollers at speeds such that the rollers maintain a close proximity to the spreader.

In the event aggregate and asphalt begin to pick up excessively under traffic or from the rolling operation, immediately cover and roll the area with additional quantities of aggregate.

Maintenance

00711.60 Power Brooming - Following the application of the surface treatment, carefully broom the entire surface to remove loose aggregate. Discontinue the operation if brooming damages the surface treatment. Use a minimum of four power brooms. Removal of excess screenings from the roadway and shoulder shall be completed before uncontrolled traffic is permitted on the completed asphalt surface treatment.

Subsequent brooming the following two days may be directed by the Engineer to ensure that the surface is free of loose aggregate that could cause vehicle damage.

One week following completion of a full width section of Asphalt Surface Treatment, broom the shoulder area to remove excess aggregate.

On bridges, barrier areas, minimum width median areas, and curbed areas, use a pick-up type power broom. On bridges, sidewalks and other areas off the roadway, remove all loose aggregates to the satisfaction of the Engineer. Loose screenings shall be disposed of at least 150 feet from the nearest waterway and areas shall be provided and identified for this purpose.

Contractor liable for any rock damage claims for seven calendar days following each application of surface treatment.

Measurement

00711.80 General -

The quantities of precoated aggregate will be measured by the ton in accordance with 00190.10.

The quantities of AC15-5TR asphalt binder will be measured by the ton according to 00190.10.

The quantities of PG 64-22 asphalt in Pre-Coated Aggregate will be measured by the ton according to 00190.10 and the Meter Method according to the MFTP.

When indicated by the appropriate pay item in the Schedule of Items, separate measurement will be made for the additional labor and other additional costs in constructing single application asphalt surface treatment on connections to public roads and streets, on approaches to private properties, and guardrail flares. Measurement will be on a unit basis, per each, by actual count of each location where the connections, approaches, and guardrail flares are constructed and accepted.

Payment

00711.90 General - The accepted quantities will be paid for at the Contract unit price per unit of measurement for the following items:

Pay Item Unit of Measurement

(a) Pre-coated Aggregate in Asphalt Surface Treatment..... Ton
(b) AC15-5TR Asphalt Binder Coat in Asphalt Surface Treatment..... ...Ton
(c) PG64-22 in Pre-coated Aggregate .....Ton

Unless a pay item is included in the Schedule of Items for asphalt surface treatment of connections, approaches, and guardrail flares, the treatment will be considered incidental with no
separate or additional payment being made for this work.

Payment will be payment in full for preparing the road surface, providing all materials in final position,
flushing, brooming, and for all equipment, labor, and incidentals necessary to complete the work as specified.

SECTION 00960 – Common Provisions for Electrical Systems

Comply with Section 00960 of the Standard Specifications with the following addition:

00960.42 (f) – Conduit Sweeps - The conduit sweeps used for the telephone service shall have a radius of 36".

00960.29 Lubricant and Sealant for Conduit Thread – Use a conductive compound providing anti-seize and corrosion protection of conduit threads. Use Thomas & Betts "KOPR-SHIELD" or approved equal.

00960.30 Sealing Compound for Conduit – Use Gardner-Bender "Duct Seal", Ideal Industries "Duct Seal" or approved equal.

00960.31 Circuit Breakers – Shall be in accordance with 02920.41. Circuit breakers shall be UL 489 listed.

SECTION 00995 – ROAD AND WEATHER INFORMATION SYSTEM

Section 00995, which is not a Standard Specification, is included in this project by special provision.

00995.00 Scope – This work consists of installing a Road and Weather Information Station (RWIS) according to these special provisions and as shown. Such incidental materials necessary to complete the project, not specified herein, shall be furnished and installed by the Contractor under this bid item.

Install the wood poles, weather station cabinet, photovoltaic panels, control cabinet and assembly, and common electrical materials according to Sections 00995 and 00960 of the Special Provisions.

See Section 00160.30 for Agency furnished material provided under this contract.

00995.01 Submittals – Prior to installation, submit at least three copies of the following information to the Engineer for approval:

- Photovoltaic Panels — Specifications-Cutsheets, Wiring Diagrams, Equipment Mass, Mounting Instructions
- Solar Panel Hardware — Mounting Instructions, Specifications-Cutsheets
- Control Panel — Wiring Diagram, Panel Layout Drawing
- Photovoltaic Charge Controller — Specifications-Cutsheets, Users Manual, Wiring Diagram
- DC Load Controller — Specifications-Cutsheets, Users Manual, Wiring Diagram
- DC Disconnect — Specifications-Cutsheets, Wiring Diagram
- Terminal Box — Specifications-Cutsheets, Wiring Diagram
- Batteries — Specifications-Cutsheets
- Enclosures — Specifications-Cutsheets, Equipment Mass
- Circuit Breakers — Specifications-Cutsheets

Materials

00995.10 General – Materials shall meet the following requirements:

00995.20 Battery Enclosure - The enclosure shall be UL 50 Type 3R (ventilated). The enclosure shall be constructed from anodized aluminum, powercoated aluminum, 304 stainless steel, or 316 stainless steel. Vents shall be placed near the top of the enclosure to prevent the buildup of gases.

The enclosure shall be pad lockable to prevent the access of non-authorized individuals.

The battery enclosure's racks or trays shall be rigid, designed to support the cells.

The battery racks shall be substantial and made of metal, treated so as to be resistant to deteriorating action by the electrolyte and provided with non-conducting members directly supporting the cells or with continuous insulating material other than paint on conducting members or other construction such as fiberglass.

The battery trays are frames, such as crates or shallow boxes of wood or other nonconductive material, constructed or treated so as to be resistant to deteriorating action by the electrolyte.

The battery enclosure shall be ground mounted.

00995.21 Control Panel Enclosure – Provide a traffic style 336 or 336S pole mountable enclosure for housing the solar equipment. The enclosure shall be UL 50 Type 3R listed. The enclosure shall consist of Housing #2 and Mounting #2 Cage assemblies as defined in ODOT's Standard Specification for Microcomputer Signal Controller. Provide the housing requirements listed in Section 2 with the exception of the light fixture and police panel. Provide an aluminum panel for mounting to the back of the enclosure at the EIA 483 mm rack. This is to serve as a backplane for mounting the solar panel equipment to as described in 00995.32.

00995.22 Terminal Blocks - All terminal blocks shall comply with UL 1059 and be rated for their intended use.

00995.23 Nameplates - All major components within the control panel shall be identified by a nameplate. The nameplates shall be $1/16^{th}$ inch thick laminated plastic stock with white surface and black core. Letter height of the inscription shall be $1/4^{th}$ inch minimum. Enclosures themselves shall not be labeled.

00995.24 Circuit Breakers - Provide five (minimum) circuit breakers for power distribution. Circuit breakers shall be rated at 110V DC, 6 A. The circuit breakers shall be UL 489 listed and DIN rail mounted.

00995.25 Wood Poles – All wood poles shall conform to ANSI O5.1, Wood Poles, for Class 4 machine shaved Pacific Coast Douglas fir, and shall be treated to AASHTO M 133 and its referenced AWPA Standards, except that only the following preservatives are allowed:

- Creosote
- Pentachlorophenol (any solvent)
- Ammonicacal Copper Zinc Arsenate
- Chromated Copper Arsenate Type A, B, or C

Air dry items with waterborne preservatives, as defined in AWPA P5, a minimum of 30 calendar days before installation. Kiln drying for two calendar days may be substituted for 30 calendar days of air-drying.

Field treat damage or drilled wood surfaces with a preservative listed in the Qualified Products List.

Equipment

00995.30 Photovoltaic Panels – To provide 12V DC power to the weather station provide photovoltaic solar panels with the following capabilities:

Maximum Power:	120 Watts or greater
Maximum Voltage:	17 Volts or greater
Maximum Current:	7 Amps or greater
Open Circuit Voltage:	22 Volts or less
Short Circuit Current:	8 Amps or less
Maximum System Voltage:	600 V
Length:	57 inches maximum
Width:	26 inches maximum
Weight:	35 lbs maximum

Photovoltaic panels shall be UL 1703, Standard for Safety for Flat-Plate Photovoltaic Modules and Panels, listed.

Photovoltaic panels shall be constructed using an anodized aluminum or similar frame. Conversion efficiency of the photovoltaic panel's solar cells shall be 16% or greater.

The solar panels shall be Kyocera Model KC130TM or approved equal. Contractor to verify if a blocking diode is required with the solar panel submitted and install if necessary.

00995.31 Solar Panel Mounting Hardware – Provide mounting hardware to mount the solar panels on the side of the pole. The panels shall mount as two arrays.

All nuts, bolts, and washers shall be stainless steel. Provide security hardware with security wrenches to prevent the theft of the solar panels.

Each mounting assembly shall be rated for wind loads up to 120 mph.

The solar panel mounts shall be UniRac 4002 series or approved equivalent, configuration as shown on the plans and matching the solar panels submitted.

00995.32 Control Panel – Consists of the photovoltaic charge controller, DC load controller, DC disconnect, terminal blocks, and circuit breakers be housed in a UL 50 Type 3R enclosure. The entire assembly shall be UL 508A listed by a UL certified panel shop. The UL 508A panel shop shall document the layout of the cabinet assembly and internal wiring.

00995.33 Photovoltaic Charge Controller - A voltage regulator shall be provided to control the charging of the batteries by the photovoltaic panels. It shall meet the following requirements:

Voltage Configuration: 12V DC

Maximum Charging/Load Current: 60A DC continuous

Charge Regulation: Solid State

Short Circuit Protection: Electronic with auto-reset

LCD Meter Panel: Battery Voltage
DC amperage
Cumulative amp hours
Amp hours since last reset

Temperature Range: -67 to 170 degrees F

Mounting: Panel/Wall

Wire Size: Capable of accepting at least a 6 AWG conductor

Temperature Compensation: Provide an external battery temperature sensor to adjust the charge control setpoints

Listing UL 1741, Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

The Photovoltaic Charge Controller shall be a Xantrex C60 with optional CM LCD Meter Panel and BTS/35 temperature sensor or approved equal.

00995.34 DC Load Controller - A voltage regulator shall be provided to regulate the DC load. It shall meet the following requirements:

Voltage Configuration: 12V DC

Maximum Charging/Load Current: 60A DC continuous

Charge Regulation:	Solid State
Short Circuit Protection:	Electronic with auto-reset
LCD Meter Panel:	Battery Voltage DC amperage Cumulative amp hours Amp hours since last reset
Temperature Range:	-67 to 170 degrees F
Mounting:	Panel/Wall
Wire Size:	Capable of accepting at least a 6 AWG conductor
Load Control:	Low voltage disconnect and reconnect
Listing	UL 1741

The DC Load Controller shall be a Xantrex C60 with optional CM LCD Meter Panel or approved equal.

00995.35 DC Disconnect - The DC Disconnect provides a means for disconnecting the solar and battery system's circuits. It also provides overcurrent protection. The DC Disconnect shall come with two optional 60A breakers for protecting the solar and battery circuits and one 15A breaker for load distribution. Provide the optional DC bonding block for grounding. The DC Disconnect shall be UL 508 listed.

The DC Disconnect shall be Xantrex D175 or approved equal.

00995.36 Terminal Box – Provide a NEMA Type 3R rated enclosure with terminals to combine the solar panels into one circuit. Each solar panel input circuit shall be protected by a fuse. Fuse type shall be Bussman MDA 15A. The unit shall be UL 1741 listed. The Terminal Box shall be a Xantrex CB-10H15-3R or approved equal.

00995.40 Batteries – To provide temporary power, a battery backup system shall be provided. The battery backup system shall meet the following requirements:

- 6V DC or 12V DC absorbed glass mat (AGM) sealed deep cycle lead acid. 6V DC batteries may be used to form a 12V DC base system.
- Provide a minimum of 1344 Amp-hours at rated capacity. This includes four days autonomy, temperature de-rating, and discharge limit.
- Shall consist of all clamps, connectors, wiring, etc. to form a complete system.

- The batteries shall have a designed maintenance-free life of 5 to 7 years.
- Shall have battery straps for securing the batteries to the battery enclosure.
- Shall have at least 1 inch of separation between batteries for ventilation.

Construction

00995.50 Installation – Install the equipment as shown and in accordance with these Specifications. Ground the Solar Power System in accordance with Article 690 of NFPA 70, the National Electrical Code.

00995.55 Identification and Marking - All cables and wiring between subsystems shall be clearly and permanently labeled. All conductors shall be marked by means of imprinted tubular white or yellow plastic wire markers placed at the conductor terminations. Attach wire markers at termination points within 2 inches of wire terminations. Marker nomenclature shall be visible without moving wires or markers.

Photovoltaic modules and power source shall be marked in accordance with Article 690 of NFPA 70.

00995.56 Wood Poles - Compact backfill thoroughly around wood poles. Setting depth for wood poles shall be as follows:

	Length of Pole	Depth in Soil
Weather station wood pole	35 feet	6 feet
Solar panel pole	30 feet	6 feet

Measurement

00995.80 Measurement – There will be no separate measurement for work performed for the lump sum pay item "Installation of the Road and Weather Information System".

Payment

00995.90 Payment – Payment will be made at the contract lump sum amount for the installation of the Road and Weather Information System which includes:

Installation of wood poles, weather station cabinet, battery enclosure, control cabinet, batteries, trenching and backfill, conduit, junction boxes, grounding and bonding, conductors and other miscellaneous electrical work in accordance with Special Provision 00960.

Installation of the photovoltaic panels and assembly.

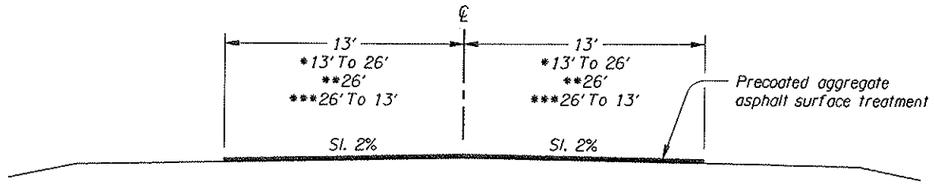
Incidentals, equipment, materials, tools, and labor necessary to complete the work as specified.

SECTION 01050 - FENCES

Comply with Section 01050 of the Standard Specifications modified as follows:

01050.43(c) Intermediate End Posts - Add the following sentence to the end of this subsection:

Contrary to the details shown on the standard drawings, space intermediate end posts a maximum of 300 feet apart.



STA. 1568+00 To STA. 1576+00
*1576+00 To 1586+00
**1586+00 To 1636+00
***1636+00 To 1639+00
1639+00 To 2086+00

No.	REVISION	DATE	BY
1	Added sheet	05-03-09	M.A.S.

REGISTERED PROFESSIONAL ENGINEER
16078
OREGON
JULY 21, 1992
MICHAEL A. SCHAAF
RENEWS: 06-30-2010

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

US97: SAND CREEK PASSING LANES SEC.
THE DALLES - CALIFORNIA HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael A. Schaaf
Designed By - Jason L. Armstrong
Drafted By - Joseph J. Rodriguez

TYPICAL SECTIONS

SHEET NO. 2A

SYMBOLS

- Direction of traffic
- Telephone pedestal
- Junction box

LEGEND

- (RWS) Install Road and Weather Information Station. See Details on Dwgs. ITS-816 and ITS-819.
- (JB 1A) Install 17 in. x 10 in. x 12 in. (min. dimensions) polymer concrete junction box with concrete apron. See details on Dwg. ITS-816.
- (JB 2A) Install 22 in. x 12 in. x 12 in. (min. dimensions) polymer concrete junction box with concrete apron. See details on Dwg. ITS-816.
- (S) Install (S=size) inch electrical conduit.
- (GR) Install 8 ft. ground rod(s).
- (SC) Saw cut pavement. See ITS-818 for details.
- (S1) Install pavement sensor (state furnished). See ITS-818 for installation details.
- (SP) Sand pocket. See ITS-818 for details.

LEGEND

- [G] Install No. 6 AWG copper ground conductor.
- [PL] Install 1/4 inch diameter poly pull line (500-pound min. strength).
- [SW] Install pavement sensor cable (state furnished with sensor). See Details on Dwg. ITS-818.

LINE TYPES

- Install conduit
- Proposed edge of pavement
- Proposed striping
- Proposed fence
- Alignment centerline
- R/W — Right of way line
- U T — Existing underground telephone
- U T FO — Existing underground fiber optic

REGISTERED PROFESSIONAL ENGINEER
6688IPE
OREGON
MAY 15, 2001
DOUG SPENCER
EXPIRES: 06/30/2010

OREGON DEPARTMENT OF TRANSPORTATION

Intelligent Transportation Systems

US97: SAND CREEK PASSING LANES SEC.
The Dalles - California Highway
Klamath County

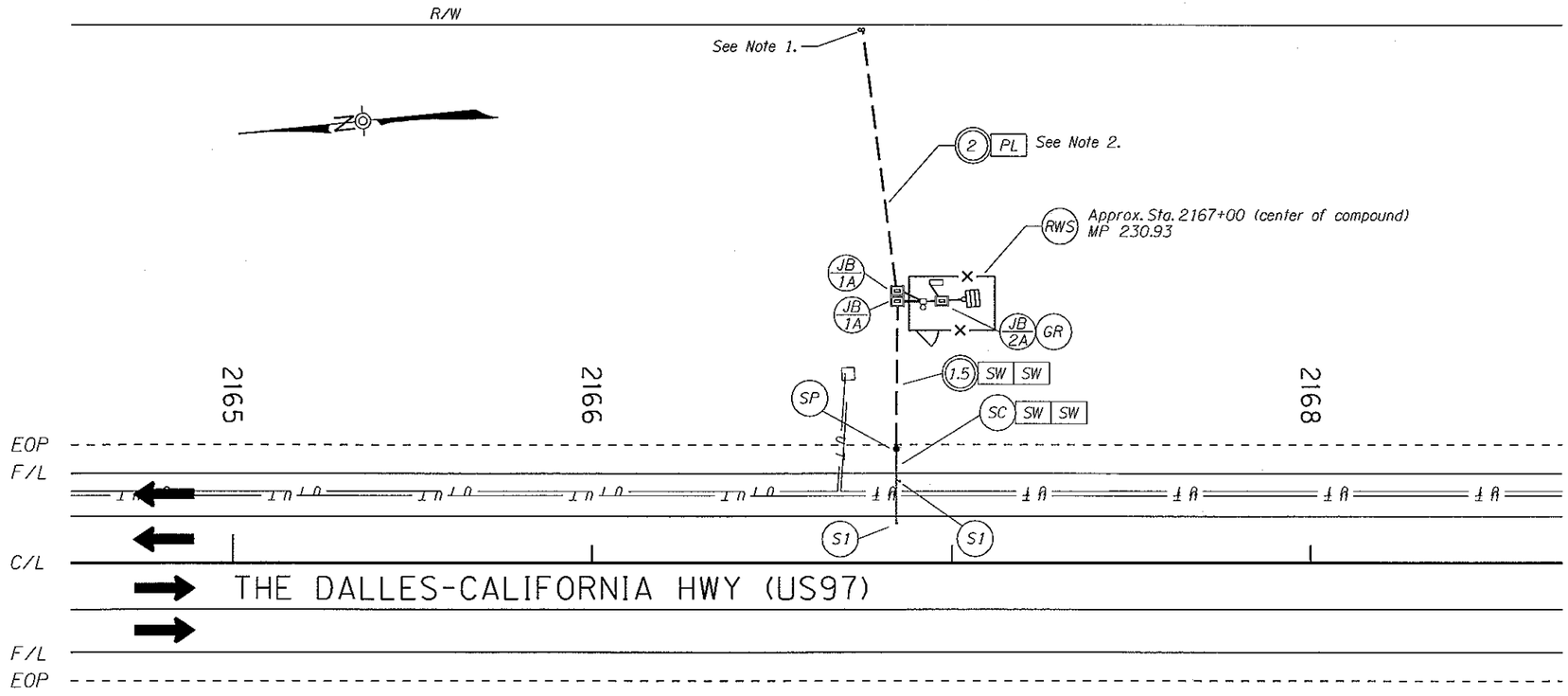
DESIGNED BY: Doug Spencer
REVIEWED BY:
DRAWN BY: A. Bradford
FC: 004 MP: 230.93

ACCOMPANIED BY DWGS.

WEATHER STATION LEGEND & SYMBOLS

O.M.O. DWG. NO. ITS-814

ROAD WEATHER INFORMATION SYSTEM
SITE PLAN
THE DALLES CALIFORNIA HWY
US97: MP 230.93



SCALE 1:480

25 0 25 50 75 100

FEET

General Notes:

1. *See Roadway's General Construction Sheets for exact RWIS location.*

Notes:

1. *Stub telephone conduit 4" above ground. Contractor to coordinate telephone riser installation and telephone services with local provider.*
2. *Telephone conduit shall have 36" min. radius sweeps per Special Provision 00960.*

REGISTERED PROFESSIONAL ENGINEER
66891PE
OREGON
MAY 15, 2001
DOUG SPENCER
5/5/2009
EXPIRES: 06/30/2010

OREGON DEPARTMENT OF TRANSPORTATION

Intelligent Transportation Systems

US97: SAND CREEK PASSING LANES SEC.
The Dalles - California Highway
Klamath County

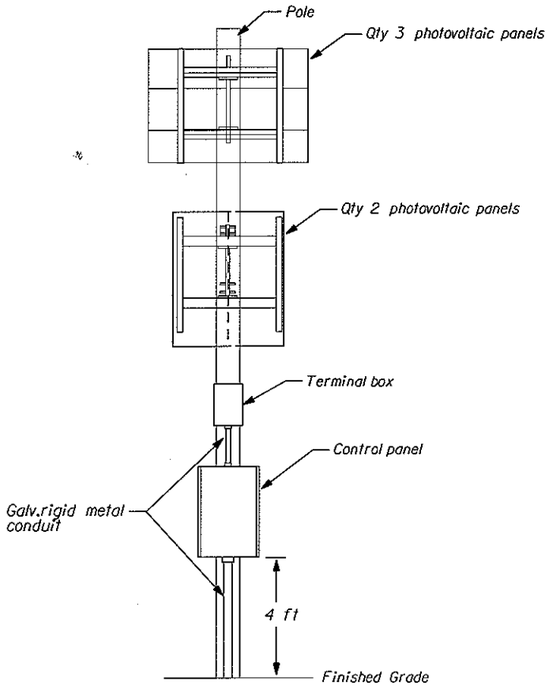
DESIGNED BY: Doug Spencer
REVIEWED BY:
DRAWN BY: A. Bradford
FC: 004 MP: 230.93

ACCOMPANIED BY DWGS.

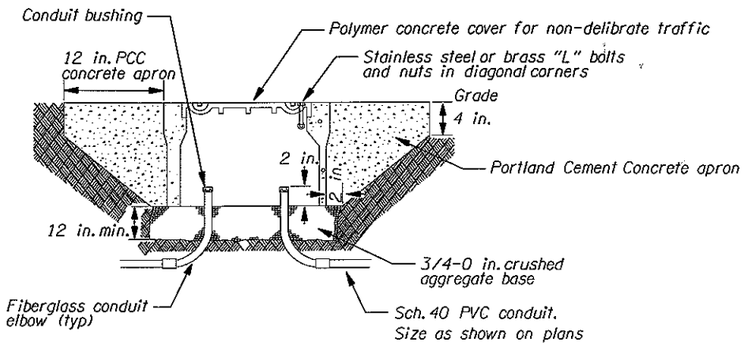
WEATHER STATION SITE PLAN

O.M.O. DWG. NO. ITS-815

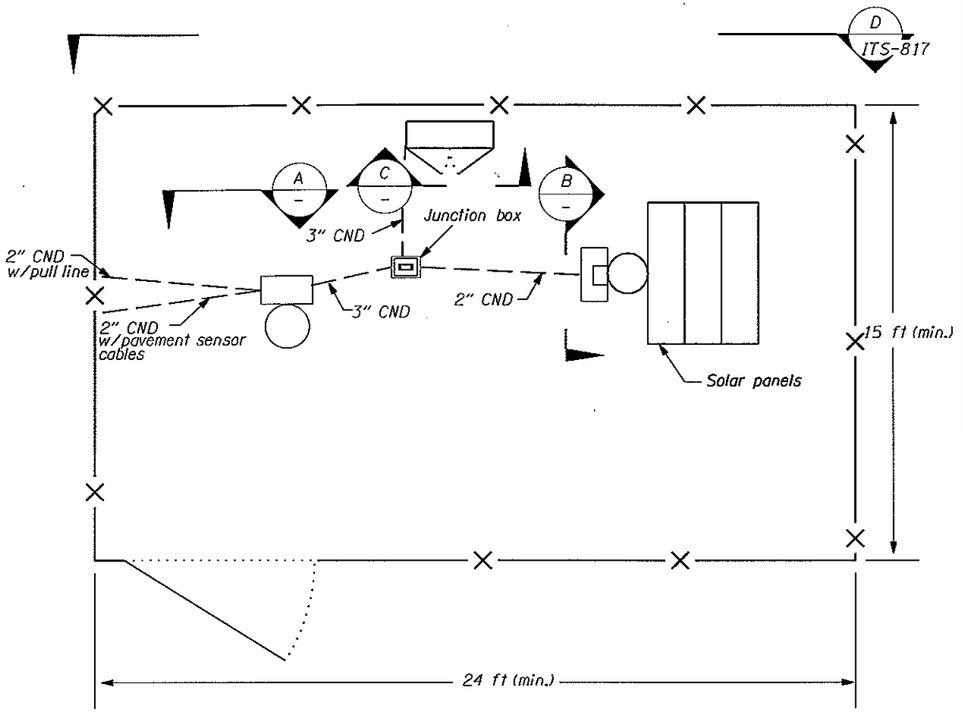
WEATHER STATION DETAILS
DETAILS



B / - PHOTOVOLTAIC ARRAY - SECTION
Scale: None



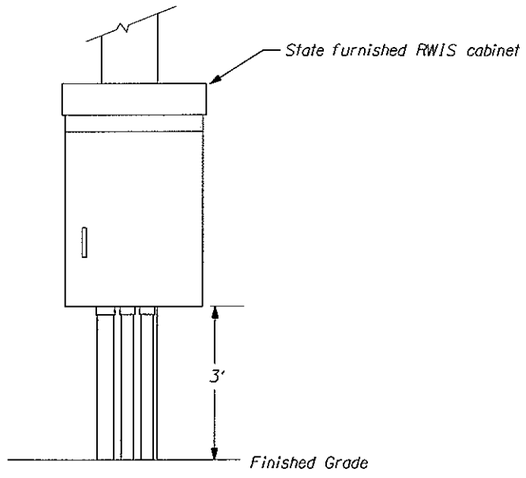
POLYMER CONCRETE JUNCTION BOX DETAIL
Scale: None



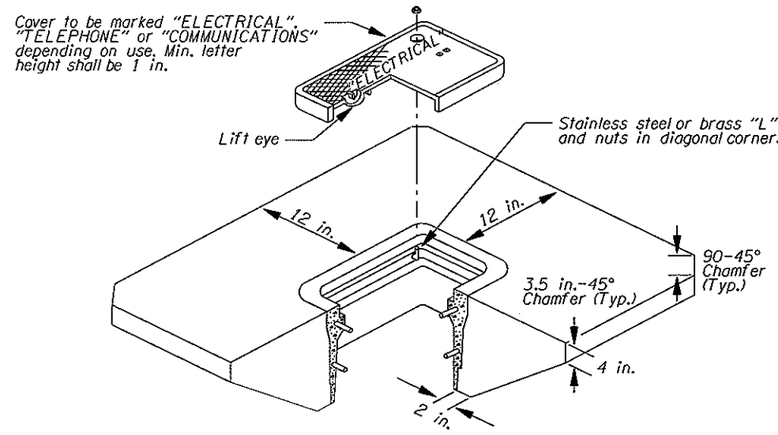
RWS / RWIS ENLARGED PLAN
Scale: None

General Notes:

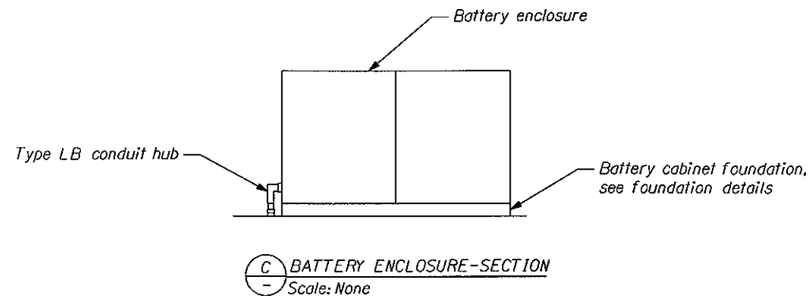
1. Maintain a min. distance of 3 ft. between fence and solar panels.
2. Attach enclosure to framing channel using stainless steel bolts and nuts. Ensure proper clearance between mounting bolts and enclosure backplane and connection is water tight.
3. Transition from PVC rigid in ground conduit to galv. steel rigid above ground.



A / - WEATHER STATION WOOD POLE - SECTION
Scale: None



POLYMER CONCRETE JUNCTION BOX
WITH CONCRETE APRON
(Approx. 7.0 cu.ft. concrete in neat section)



C / - BATTERY ENCLOSURE-SECTION
Scale: None

OREGON DEPARTMENT OF TRANSPORTATION

Intelligent Transportation Systems

REGISTERED PROFESSIONAL ENGINEER
6689PE
OREGON
MAY 15, 2001
DOUG SPENCER
5/5/2009
EXPIRES: 06/30/2010

US97: SAND CREEK PASSING LANES SEC.
The Dalles - California Highway
Klamath County

DESIGNED BY: Doug Spencer
REVIEWED BY:
DRAWN BY: A. Bradford
FC: 004 MP: 230.93

ACCOMPANIED BY DWGS.

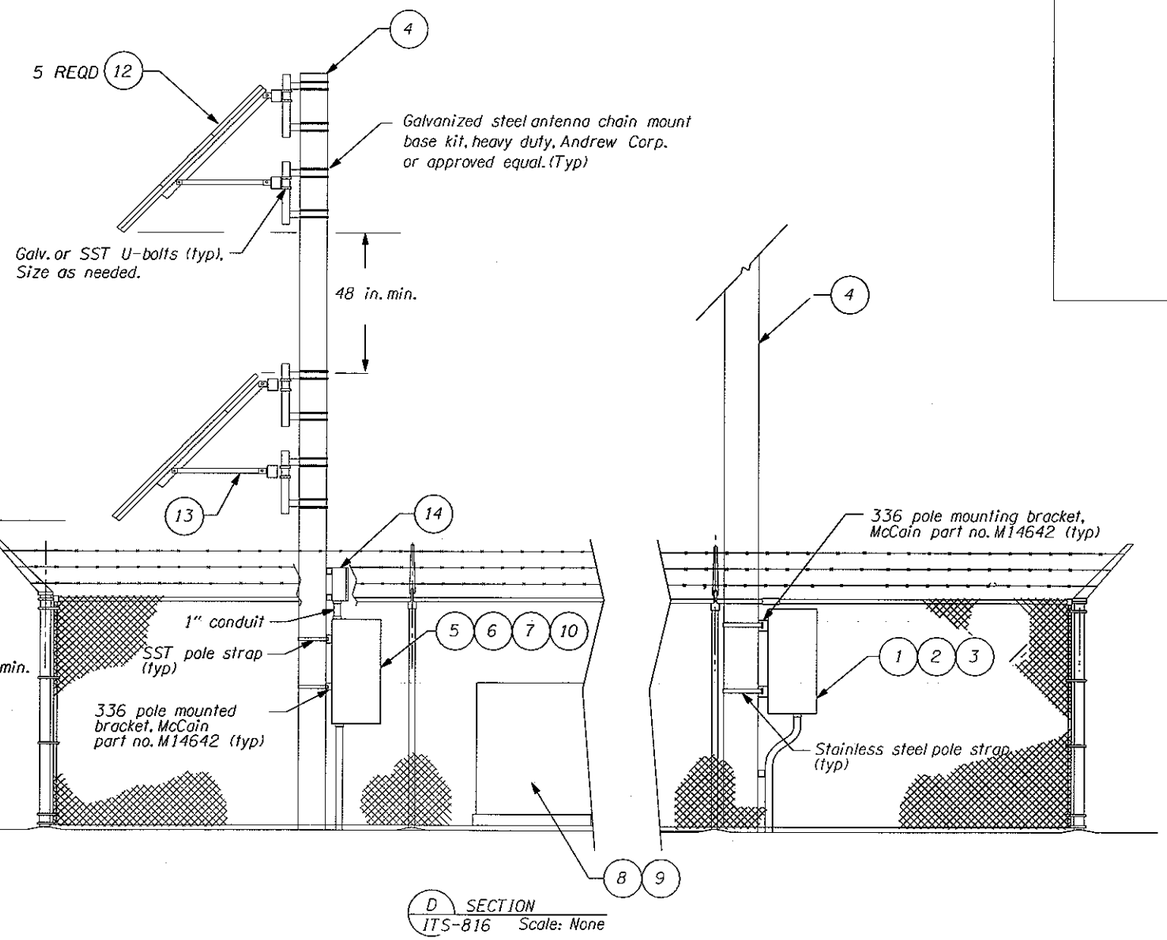
WEATHER STATION DETAILS

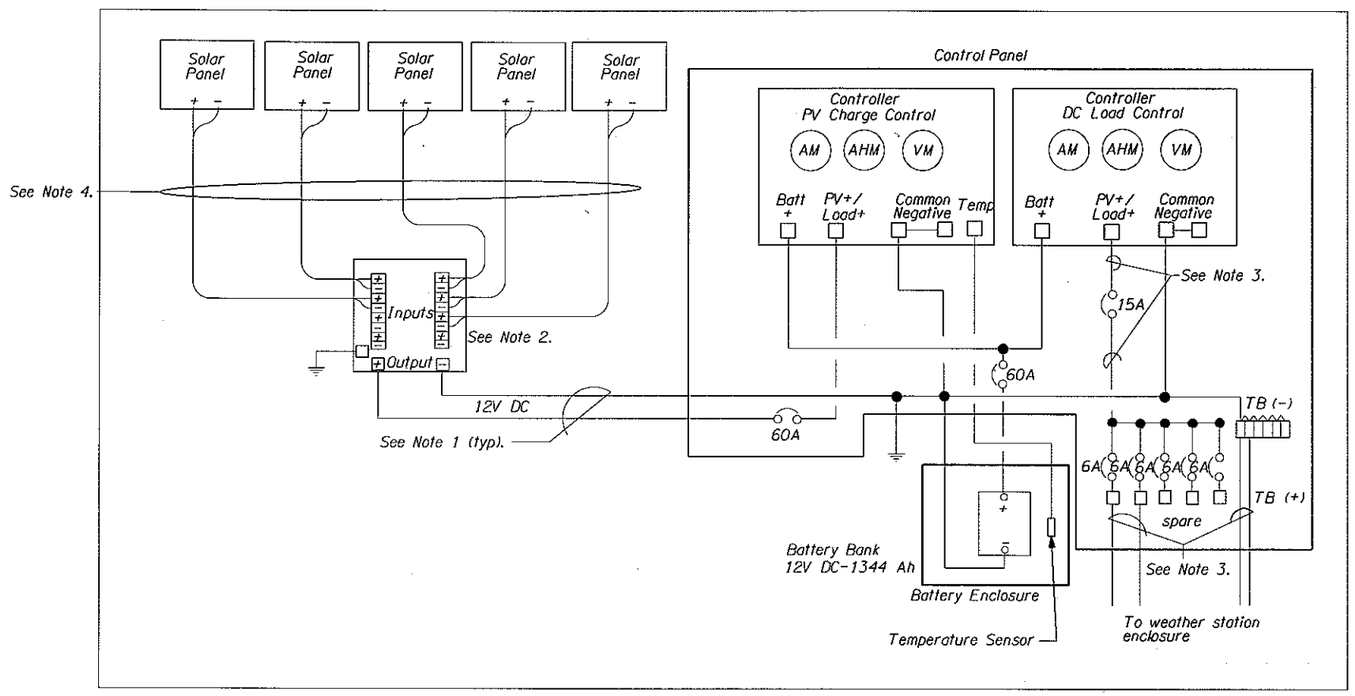
O.M.O. DWG. NO. ITS-816

WEATHER STATION DETAILS

Item No.	Material List	Reference
1	Weather Station Processor	Installed by others
2	Weather Station Cabinet	State Furnished
3	Modem	Installed by others
4	Wood Pole	Special Provision 00995
5	Control Panel Enclosure	Special Provision 00995
6	PV Charge Controller	Special Provision 00995
7	DC Load Controller	Special Provision 00995
8	Batteries	Special Provision 00995
9	Battery Enclosure	Special Provision 00995
10	DC Disconnect	Special Provision 00995
12	Photovoltaic Panels	Special Provision 00995
13	Solar Panel Mounting Hardware	Special Provision 00995
14	Terminal Box	Special Provision 00995

Legend	
Symbol	Description
AM	Amp Meter
AHM	Amp-Hour Meter
VM	Volt Meter
X	Circuit Breaker with "X" trip setting





WIRING DIAGRAM

General Notes:

1. Wire solar panel system as a negative ground system. Connect the negative current carrying conductor to ground.
2. Solar panels are shown for mounting purposes. Orient panels due south for maximum sun exposure. Panels shall be angled approximately 45 degrees.
3. All mounting hardware shall be galvanized steel or stainless steel unless specified otherwise.
4. Connect solar panel conductors to framing members using sunlight resistant cable ties or equivalent.
5. Ensure 336 side pole mounting hardware does not interfer with enclosure backplane.
6. Mount conduits and terminal box to wood pole using galvanized steel framing channel hardware, Unistrut P1000 or equivalent. Attachment bolts shall pass through pole and form a secure connection with a washer and use of two locking nuts.

Notes:

1. Wire type is 6 AWG XHHW copper (90 deg. C) unless it is vendor supplied or specified.
2. All inputs are protected by a 15A internal fuse.
3. Wire type is 12 AWG copper XHHW.
4. Wire type is 14 AWG copper XHHW marked sunlight resistant.
5. Tape back and stow conductors inside weather station enclosure. Leave load breakers in the off position.

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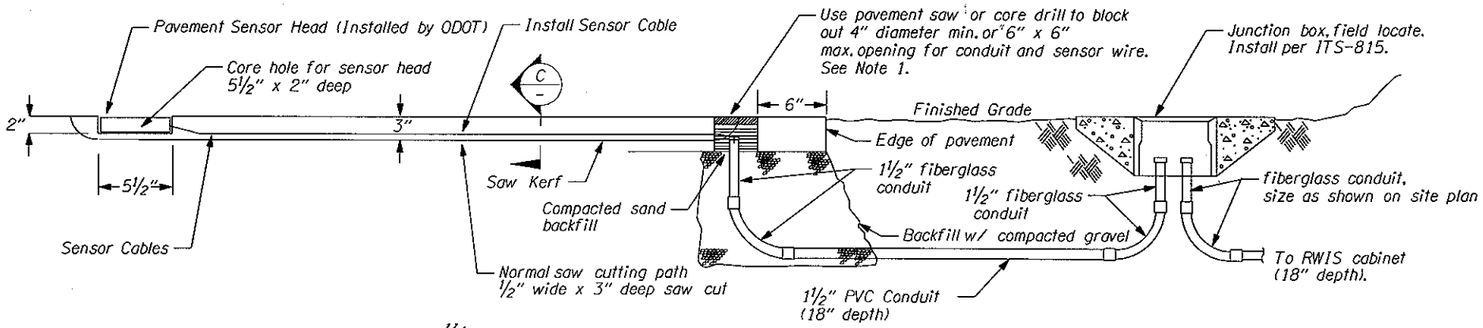
WEATHER STATION DETAILS

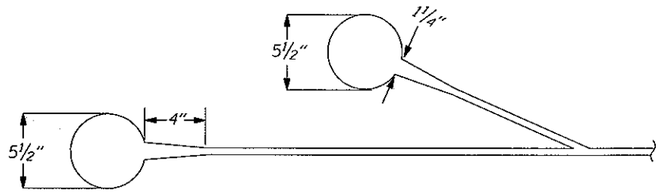
O.M.O. DWG. NO. ITS-817

PAVEMENT SENSOR INSTALLATION DETAILS



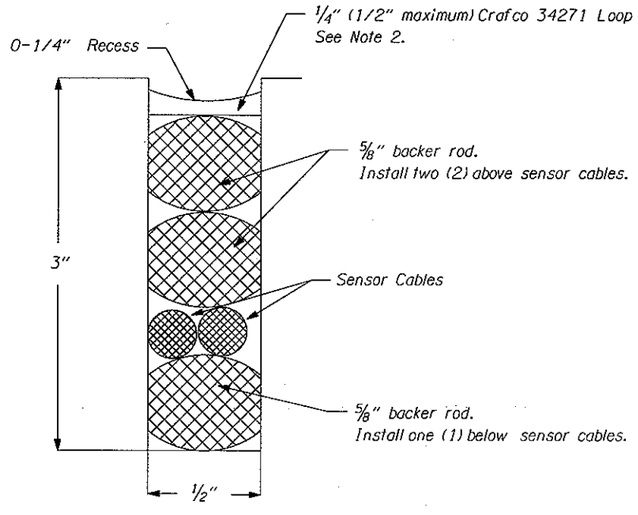
PAVEMENT SENSOR TO JUNCTION BOX DETAIL (TYPICAL)

SIDE VIEW



TOP VIEW (TYPICAL)

TYPICAL SAW KERF DETAILS



C / - BACKER ROD DETAIL (TYP)
CROSS SECTION VIEW

General Notes:

1. Pavement sensors and sensor cable are State furnished.
2. Location for sensors to be field verified by the Engineer prior to coring.
3. Contractor shall asphalt drill sensor location. ODOT technician to install sensor epoxy and place sensor. Contractor to saw kerf, install backer rods, route sensor cable, and backfill with loop sealant.
4. Clean and dry core hole and saw kerf with dry compressed air immediately prior to sensor installation.
5. Leave 6 feet of sensor cable slack in each junction box.
6. Bushings shall be used on all conduits.
7. Round all sharp saw cut edges where wire passes.
8. Install electrical marking tape per the Standard Specifications.

Notes:

1. Backfill pothole with fine sand, backfill class C material, per 00405.14.14(c) to within 3" of roadway. Backfill remainder with emulsified asphalt concrete in accordance with 00748. Measurement and Payment of Section 00748 is not required.
2. Protect sensor cables with backer rod above and below cables. Backfill saw kerf with Crafco 34271 or approved equal loop sealant. Protect from traffic until "skin-over".

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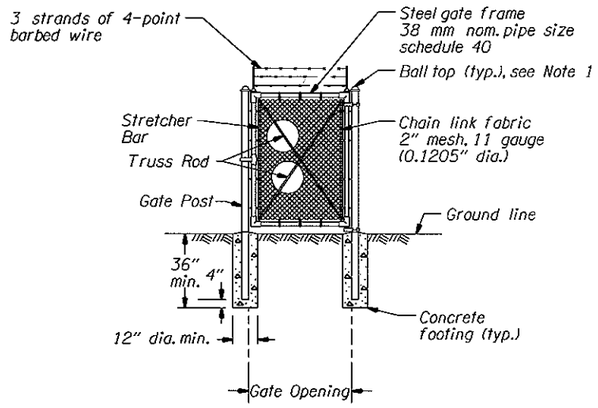
PAVEMENT SENSOR INSTALLATION DETAILS

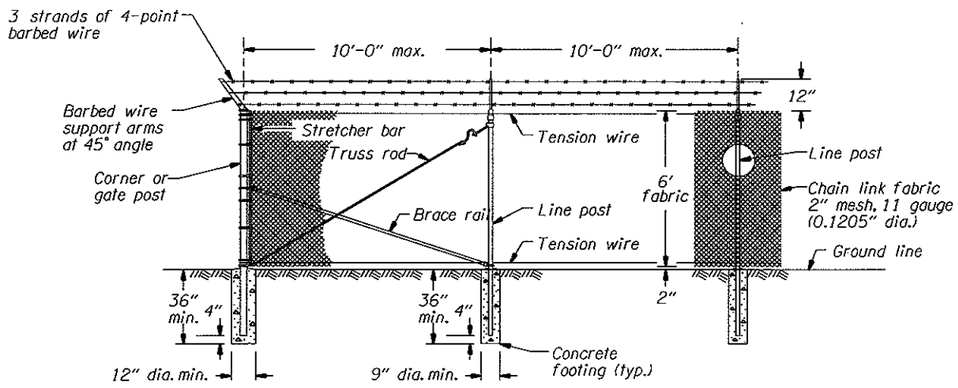
O.W.O. DWG. NO. ITS-818

FENCE AND BATTERY ENCLOSURE DETAILS

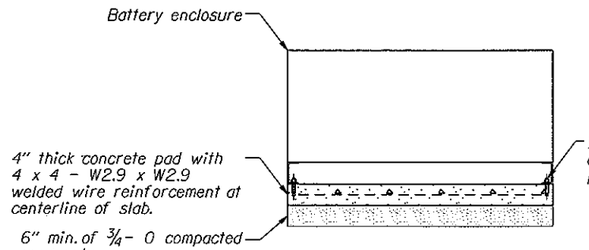
	TYPE	MEMBER							
		BRACE AND TOP RAILS	LINE POSTS	END, CORNER & INTERMEDIATE END POST	GATE OPENING	GATE POSTS	TENSION WIRE	TRUSS ROD	
		TUBULAR	TUBULAR	TUBULAR	(feet)	TUBULAR			
		nom. dia. (in)	nom. dia. (in)	nom. dia. (in)		nom. dia. (in)		nom. dia. (in)	
STEEL	CL-6	1¼	2	2½	5	6	7 gauge	⅜	STEEL



SINGLE GATE DETAIL
Scale: None



CL-6 SECURITY FENCE DETAIL-TYPICAL
Scale: None



BATTERY ENCLOSURE FOUNDATION
Scale: None

General Notes:

1. All dimensions in inches (in) unless otherwise noted.
2. Do not install top rails.
3. Gate posts on each side of a gate opening shall be the same size.
4. All concrete shall be commerical grade.

Notes:

1. All open posts shall have end-caps.

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FENCE & BATTERY ENCLOSURE DETAILS

O.M.O. DWG. NO. ITS-819