FIELD NOTE SAMPLES

FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION

VANCOUVER, WASHINGTON **APRIL 2004**

SAMPLE FIELD NOTES

GENERAL INSTRUCTIONS

- Field measurement and computations should be carried to one more decimal than is shown on the progress estimate spreadsheet.
- Pencil is acceptable for field notes – but DON'T use RED or BLUE. (The exception: "As-Constructed Plans" must be done in red pencil.)
- Do not fill in page number at top right. This is for FHWA internal use.
- Leave plenty of space on a page to allow for FHWA checks or notations.
- All information at top of page should be filled in by you.
- Also "Computed By" and "Date" should be filled in by you, as applicable.
- Do not erase. If there is an error, line it out or circle it (do not obliterate it) and write the correct information below it, or on a new page.

Section 109 Measurement and Payment

PAY NOTE REQUIREMENTS

Take or convert all measurements of work according to the International System of Units (SI), IEEE/ASTM SI 10.

Submit measurement notes to the CO within 24 hours of performing the work. Measurement notes form the basis of the Government's receiving report (see Subsection 109.08(d)). For lump sum items, submit documentation to support invoiced progress payment on a monthly basis.

Examples of acceptable field note formats are available by written request according to Subsection 106.01. As a minimum, include the following information in all records of measurement:

(a) Project name and number
(b) Contract item number
(c) Date the work was performed
(d) Location of the work
(e) Measured quantity
(f) Calculations made to arrive at the quantity
(g) Supporting sketch and/or details as needed to clearly define the work performed and the quantity measured
(h) Names of persons measuring the work
(i) Identification as to whether the measurement is interim or final; and
(j) Signed certification statement by the person taking the measurements, performing the calculations, and submitting them for payment that the measurement and calculations are correct to the best of their knowledge and that the quantity being measured is subject to direct payment for the identified item under the contract.

The Government may check contractor measurements to verify pay quantities and validity of contractor measurement methods.

INDEX

APPENDIX

DIVISION 150

PROJECT REQUIREMENTS

INDEX

FH10-262
9-74(Identification)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
610 E. 5th Street
VANCOUVER, WASHINGTON 98661

IDENTIFICATION

If this Book is found, PLEASE
Return to the above listed address

CASCADE LAKES HIGHWAY
OR PFH 46-1(3)
DTFH70-94-C-00011

RESERVED FOR PROJECT STAMP

BOOK NO._____ TYPE OF NOTES: _____

PROJECT NAME: _____

CONTRACT #: _____

PROJECT NO. _____

COUNTY: _____ STATE: _____

_____
FOREST, PARK OR OTHER CONSTRUCTION

CONTRACTOR: _____

ENGINEER: _____ YEAR: _____

RESERVED FOR VANCOUVER RECORDS ROOM & CHECKING SECTION STAMPS

* Identification such as this is to be placed as first loose leaf of binder or as a cover sheet for the Binder.

ITEM 63510

PILOT CAR

CASCADE LAKES HIGHWAY
OR PFH 46-1(3)
DTFH70-94-C-00011

TOTAL _____ HRS

BOOK NO. _____

COMPLETED BY: _____ DATE:_____

CHECKED BY: _____ DATE:_____

1.) Ticket books can be used in lieu of form FHWA 17348.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15101 Mobilization .

DESCRIPTION, LOCATION, ETC.	QUANTITY
50% Mobilization	
Reference FP-96 Section 151.03	
Original Contract Amount: $4,495,134.00	
Less Mobilization: $460,000.00	
Total: $4,035,134.00	
Times (%) 0.05% = $201,756.70	
Contract Work complete through June 2002 = $202,000.00	
Mobilization: $460,000.00	
50% of Mobilization: $230,000.00	
5% of Contract: $201,756.70	
TOTAL ➡	$201,756.70

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 151.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15101 Mobilization .

DESCRIPTION, LOCATION, ETC.	QUANTITY
100% Mobilization	
Reference FP-03 Section 151.03	
Original Contract Amount: $4,495,134.00	
Less Mobilization: $460,000.00	
Revised Contract Amount Total: $4,035,134.00	
Contract Work complete through June 2002 = $2,143,759.00	
Mobilization: $460,000.00	
10% of Contract Amount: $403,513.40	
Less Estimate No. 001: $201,756.70	
Mobilization this Estimate: = $143,243.30	$201,756.70
TOTAL ➡	$201,756.70

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 151.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15201 Construction Survey and Staking

DESCRIPTION, LOCATION, ETC.	QUANTITY
Estimate No. 2	
Reference FP-96 Section 152.06	
Original Item Total Lump Sum = $100,000.00 X 25% = $25,000.00	
Contract Work to date (excluding mob and bond premium amounts) = $261,000.00 =	
10.4% of Original Contract Amount of $2,500,000.00	
.5% of Original Contract Amount of $2,500,000.00 = $12,500.00	$12,500.00
(maximum item payment allowed to date)	
$12,500.00 = 12.5% of Item Lump Sum	
TOTAL ➡	$12,500.00

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 152.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15201 Construction Survey and Staking

DESCRIPTION, LOCATION, ETC.	QUANTITY
Estimate No. 003	
Reference FP-03 Section 152.06	
Contract Work to date (e xcluding mob and bond premium amounts) = $2,500,000.00 =	
50% of Original Contract Amount of $5,000,000.00	
50% of Original Item Lump Sum Amount of $200,000 = $100,000.00	
Less Payment for Estimate No. 002 of $25,000.00 = $75,000.00 this estimate.	$75,000.00
$75,000.00 = 37.5% of Item Lump Sum	
TOTAL ➡	$75,000.00

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 152.

FORM 17348

Sand Lake - Galloway Road
Control Checks

	Original Data			2003 Traverse				Difference		
Pt.No.	Northing	Easting	Trig. Elev.	Pt.No.	Northing	Easting	Trig. Elev.	d North	d Easting	d Elev.
100	279544.320	2219521.978	4.182	100	279544.323	2219521.985	4.181	-0.003	-0.007	0.001
101	279686.003	2219658.686	4.887	101	279685.950	2219658.778	4.837	0.053	-0.092	0.050
102	279748.193	2219713.406	6.146	23102	279748.195	2219713.448	6.097	-0.002	-0.042	0.049
103	279808.172	2219787.504	8.892	103	279808.178	2219787.508	8.892	-0.006	-0.004	0.000
104	279983.136	2219804.578	10.216	104	279983.144	2219804.566	10.216	-0.008	0.012	0.000
105	280089.106	2219836.964	11.328	105	280089.111	2219836.949	11.333	-0.005	0.015	-0.005
106	280161.385	2219917.529	9.263	23106	280161.368	2219917.551	8.983	0.017	-0.022	0.280
107	280332.758	2219976.328	11.286	107	280332.750	2219976.336	11.292	0.008	-0.008	-0.006
108	280424.454	2219994.840	12.623	23108	280424.469	2219995.011	12.436	-0.015	-0.171	0.187
109	280559.097	2220056.763	11.442	109	280559.090	2220056.766	11.439	0.007	-0.003	0.003
110	280660.806	2220125.400	11.541	110	280660.815	2220125.399	11.531	-0.009	0.001	0.010
111	280778.158	2220167.791	12.130	23111	280817.535	2220177.339	13.068	-39.377	-9.548	-0.938
112	281029.730	2220218.582	15.982	112	281029.578	2220218.765	15.734	0.152	-0.183	0.248
113	281157.426	2220264.068	15.505	23113	281157.234	2220264.133	15.346	0.192	-0.065	0.159
114	281261.908	2220306.813	14.212	114	281261.887	2220306.830	14.205	0.021	-0.017	0.007
115	281423.308	2220356.465	13.987	115	281423.303	2220356.463	13.993	0.005	0.002	-0.006
116	281470.129	2220431.410	10.990	116	281470.121	2220431.410	10.993	0.008	0.000	-0.003
117	281455.663	2220637.735	6.250	117	281455.628	2220637.726	6.250	0.035	0.009	0.000
118	281445.716	2220840.450	6.272	118	281445.719	2220840.446	6.267	-0.003	0.004	0.005
119	281436.448	2220988.315	5.767	119	281436.461	2220988.313	5.775	-0.013	0.002	-0.008
120	281427.333	2221220.446	4.525	120	281427.330	2221220.435	4.517	0.003	0.011	0.008
121	281424.690	2221491.242	4.924	23121	281424.685	2221491.197	4.901	0.005	0.045	0.023
122	281424.262	2221745.336	6.486	122	281424.252	2221745.323	6.489	0.010	0.013	-0.003
123	281425.073	2222005.981	8.875	123	281425.051	2222005.974	8.865	0.022	0.007	0.010
124	281717.075	2222008.135	7.655	124	281717.059	2222008.131	7.651	0.016	0.004	0.004
125	281972.078	2222010.873	8.853	125	281972.067	2222010.871	8.854	0.011	0.002	-0.001
126	282204.526	2222011.870	12.698	126	282204.517	2222011.866	12.696	0.009	0.004	0.002
127	282464.365	2222019.956	16.498	127	282464.356	2222019.958	16.499	0.009	-0.002	-0.001
128	282651.910	2222028.090	16.070	128	282651.900	2222028.089	16.070	0.010	0.001	0.000
129	282845.294	2222036.210	18.736	129	282845.287	2222036.212	18.735	0.007	-0.002	0.000
130	283052.237	2222050.530	20.661	130	283052.229	2222050.528	20.659	0.008	0.002	0.002

* When providing Adjusted Original or Replacement Control Point listings, provide Station and Offset Description and Calculations
** Describe Cap/Rebar or Hub/Tack

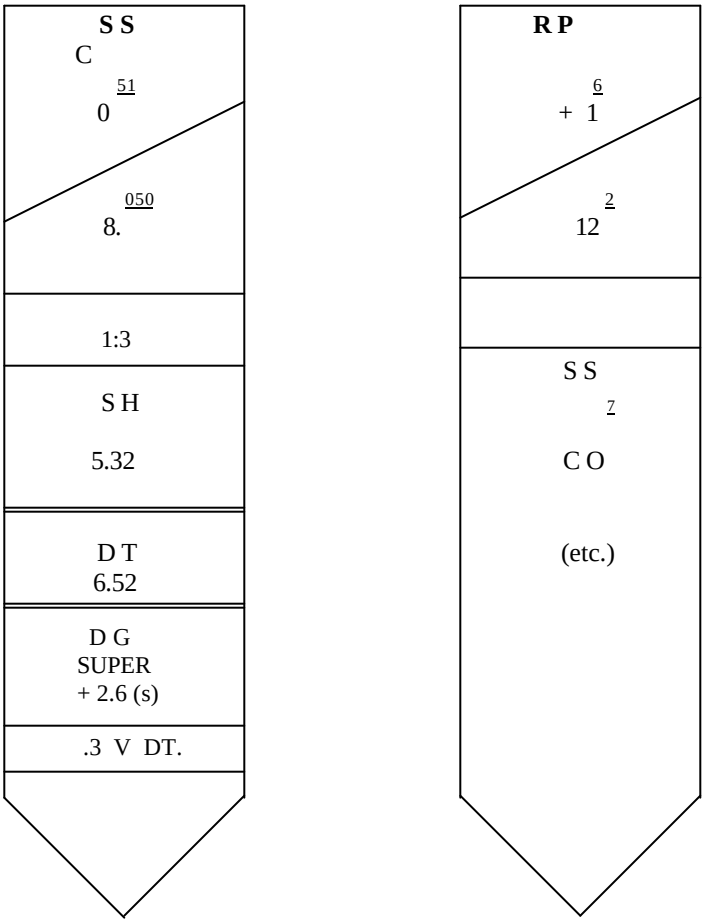
FIELD SLOPE STAKES

HG = HINGE POINT
SS = SLOPE STAKE
OG = ORIGINAL GROUND
FS = FINISHED SUBGRADE TOP
DG = DITCH GRADE
FG = FINISHED GRADE
RP = REFERENCE POINT

DT = DITCH
C = CUT
F = FILL
SH = SHOULDER

BELOW IS ONE EXAMPLE OF WRITING STAKES. REGARDLESS OF WHAT FORMATES ARE USED, IT IS IMPORTANT THAT THE STAKING DATA BE CLEARLY UNDERSTOOD AMONG STAKEHOPS, CONTRACTOR, AND FHWA PERSONNEL

(station and elevation on backside of each stake)



Cut to DG

Dist. From C/L

Design Slope Ratio

Shoulder dist. from C/L

Ditch dist. from C/L

Elev. Diff. from RP to DG

Dist. to C/L

Dist. to SS

NOTES:

Cut to ditch
Fill to shoulder

Typically, when slope staking in a cut section, the Hinge Point is the Ditch bottom and when slope staking in a fill section, the Hinge Point is the Shoulder

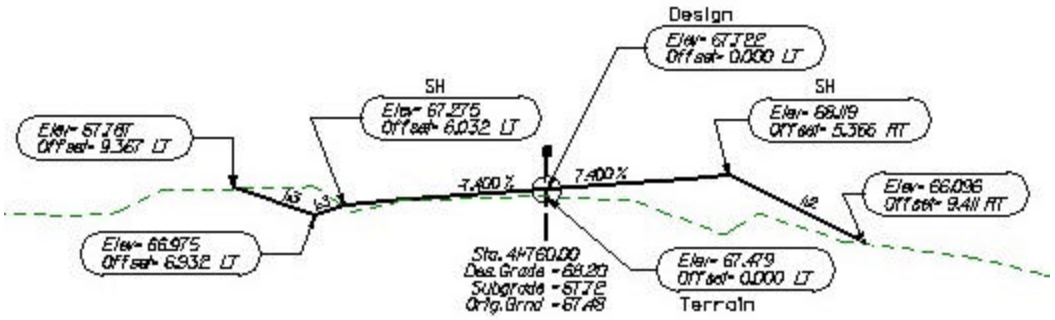
SLOPE STAKE REPORT (m)

STATION

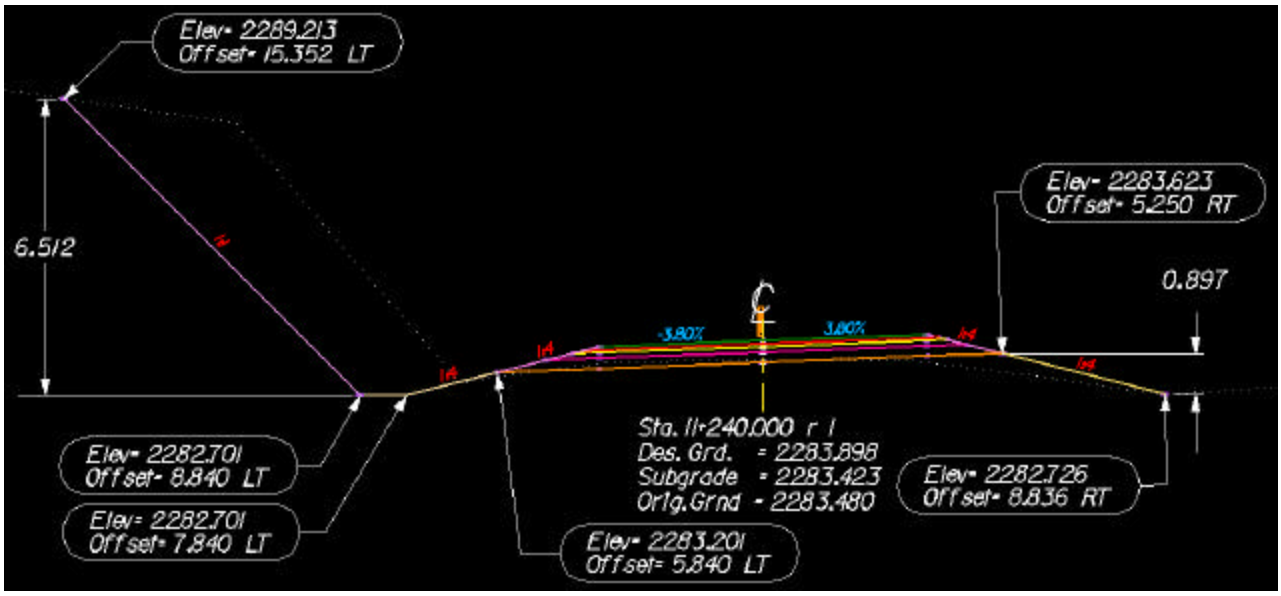
41+760.000 Region 1

Terrain Elevation = 67.479
Design Elevation = 67.722 DIFF = F 0.242

CHANGE	LT STAKE	ELEV	SLOPE	CENTERLINE	SLOPE	ELEV	RT STAKE	CHANGE
	RP NO REF HUB						RP NO REF HUB	
	C 0.811	67.787		NPOW1		66.516	F 1.602	
	9.367		+1:3.00		-1:1.50		7.770	
	6.932	66.975				68.119	SH 5.366	
	-0.300		-1:3.00		+7.40%		0.086	
	SH 6.032	67.275				68.033	4.200	
	-0.136		-7.40%		+7.40%		0.067	
	4.200	67.411				67.966	3.300	
	-0.067		-7.40%		+7.40%		0.244	
	3.300	67.478				67.722	0.000	
	-0.244		-7.40%					
	0.000	67.722						



Below is a typical cross section and an example of the Slope Stake Notes:



02/20/2004 Western Federal Lands Page# 1

Sample Field Notes

Steve Pratt

SLOPE STAKE REPORT (m)

STATION

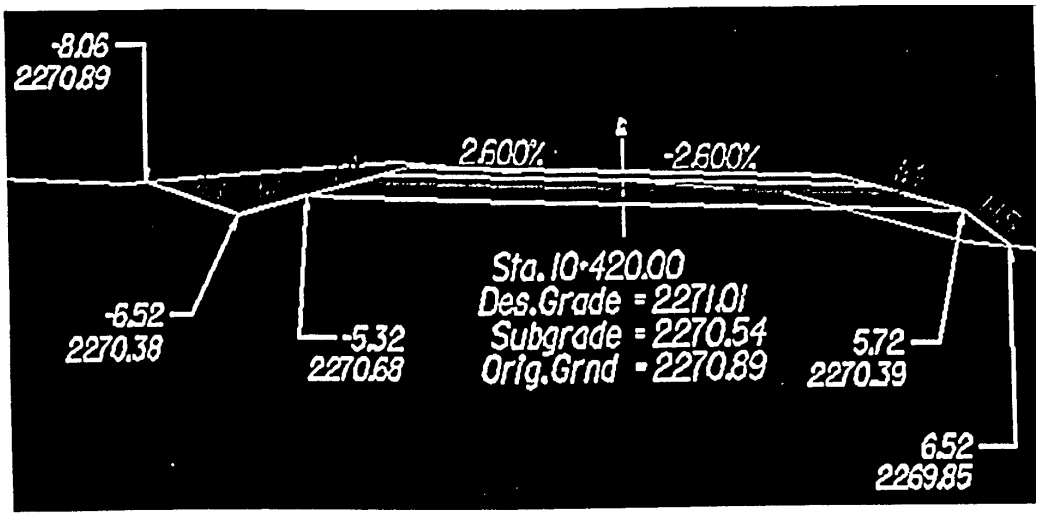
11+240.00 Region 1

Terrain Elevation = 2283.480

Design Elevation = 2283.423 DIFF = C 0.057

CHANGE	LT STAKE	ELEV	SLOPE	CENTERLINE	SLOPE	ELEV	RT STAKE	CHANGE
	RP NO REF HUB						RP NO REF HUB	
	C 6.512	2289.213		A		2282.726	F 0.897	
	15.352		+1:1.00		-1:4.00		8.836	
	HP 8.840	2282.701				2283.623	HP 5.250	
	0.000		-1:0.00		+3.80%		0.063	
	7.840	2282.701				2283.560	3.601	
	-0.500		-1:4.00		+3.80%		0.137	
	5.840	2283.201				2283.423	0.000	
	-0.085		-3.80%					
	3.600	2283.286						
	-0.137		-3.80%					
	0.000	2283.423						

RE-CROSS SECTION NOTES



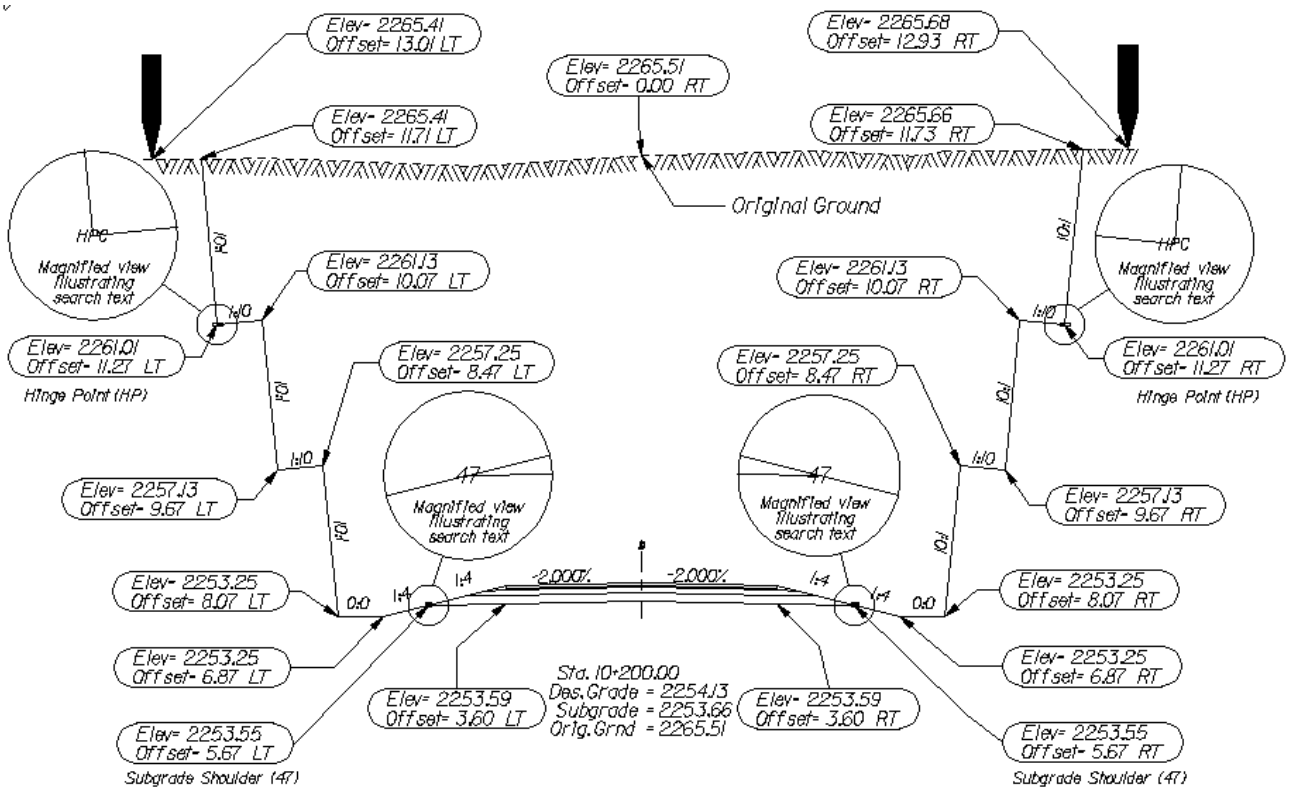
Chain	LT Ref.	CENTERLINE	RT Ref.
		Grade	
A	C 0.00	IN = 0.000 ------- OT = 0.000	C 0.00
	0.000	DN = 0.00 2270.537 UP = 0.00	0.000
	0.000	SLOPE= 1: 3.00 SLOPE= 1: -1.50	0.000
Station	LT Stake	SUPER= 2.6% SUPER= 2.6%	RT Stake
10+420.00	C 0.51	C 0.35	F 0.54
Reg 1	8.060	0.000	6.524
	2270.888	2270.887	2269.853
	LT Hinge	0.00 0.14 0.00 0.00	RT Hinge
		0.000 -5.321(SH) 0.000 0.000	
	2270.375	2270.537	2270.388
	-0.16	0.00 0.09 0.00 -0.09 0.00	- 0.15
	-6.521(DT)	0.000 -3.600 0.00 3.600 0.000	5.720 (SH)

example SLOPE STAKE REPORT

(OLD VERSION)

These examples were taken from our design information website at:

www.wfl.fha.dot.gov/geopak



08/13/2001 Federal Highway Administration Page# 1

Geopak 2001 FHWA Version 2

Designer's Name Here

SLOPE STAKE REPORT (m)

STATION

10+200.00 Region 1

Terrain Elevation = 2265.507

Design Elevation = 2253.663 DIFF = C 11.843

CHANGE	LT STAKE	ELEV	SLOPE	CENTERLINE	SLOPE	ELEV	RT STAKE
	RP						RP
	+ 0.001	2265.411				2265.683	- 0.019
	13.011						12.933
	IN 1.306						IN 1.202
	C 4.402	2265.412		A		2265.664	C 4.654
	11.705		+1:0.10		+1:0.10		11.731
	HP 11.265	2261.010				2261.010	HP 11.265
	-0.120		-1:10.0		-1:10.00		-0.120
	10.065	2261.130				2261.130	10.065
	4.000		+1:0.10		+1:0.10		4.000
	9.665	2257.130				2257.130	9.665
	-0.120		-1:10.0		-1:10.00		-0.120
	8.465	2257.250				2257.250	8.465
	4.000		+1:0.10		+1:0.10		4.000
	8.065	2253.250				2253.250	8.065
	0.000		-1:0.00		-1:0.00		0.000
	6.865	2253.250				2253.250	6.865
	-0.300		-1:4.00		-1:4.00		-0.300
	SH 5.665	2253.550				2253.550	SH 5.665
	-0.041		-2.00%		-2.00%		-0.041
	3.600	2253.591				2253.591	3.600
	-0.072		-2.00%		-2.00%		-0.072
	0.000	2253.663				2253.663	0.000

A partial sample of the notes are shown below:

```
10/02/98                                PRA YELL 13(2) SECTION A
                                        EAST ENTRANCE ROAD
                                      Designer's Name Here
                                        CLEARING REPORT

CUT SLOPE ROUNDING              =       0.0000 m
ADDITIONAL CLEARING IN CUT      =       3.0000 m
ADDITIONAL CLEARING IN FILL     =       1.5000 m
MINIMUM CLEARING WIDTH          =       0.0000 m
SUBTOTALS EVERY     700.0000 m . BEGINNING AT STATION 10+700 METHOD INCR
ADDITIONAL CLEARING     VIA STATION RANGE .............................
11+000          TO 11+500          FOR LEFT SIDE           = 10.000     m
11+800          TO 12+000          FOR RIGHT SIDE          = 8.000      m
12+100          TO 12+500          FOR LEFT & RIGHT SIDES = 6.000       m
.....................................................................

STATION           CLEARING  DISTANCE     EXCEPTION     AREA      SUBTOTAL  AREAS
                     LT       RT           WIDTH        m2          m2    HECTARES


 10+020.00 R 1    11.720    10.628
                                          0.000        451
 10+040.00 R 1    11.920    10.760
                                          0.000        462
 10+060.00 R 1    12.104    11.384
                                          0.000        472
 10+080.00 R 1    12.142    11.477
                                          0.000        479
 10+100.00 R 1    12.401    11.872
                                          0.000        486
 10+120.00 R 1    12.470    11.855
                                          0.000        490
 10+140.00 R 1    12.439    12.166
                                          0.000        504
 10+160.00 R 1    12.631    13.068
```

A sample of the notes are shown below:

11/20/2000 FEDERAL HIGHWAY ADMINISTRATION Page# 1

XYZ Center Folding Notes (Example)

Vancouver, Washington 11/20/2000

Station	X	Y	Z	Offset	ID	SLOPE
10+060.000 R 1	159345.590	558450.295	2261.284	-5.665	Shoulder	
						-2.000%
	159347.048	558448.832	2261.325	-3.600	ETW	
						-2.000%
	159349.589	558446.283	2261.397	0.000	Centerline	
						0.622%
	159352.131	558443.733	2261.420	3.600	ETW	
						0.620%
	159353.439	558442.420	2261.431	5.454	Shoulder	
10+080.000 R 1	159359.613	558464.434	2261.853	-5.722	Shoulder	
						-2.620%
	159361.134	558462.953	2261.909	-3.600	ETW	
						-2.619%
	159363.714	558460.442	2262.003	0.000	Centerline	
						2.622%
	159366.293	558457.931	2262.097	3.600	ETW	
						2.617%
	159367.526	558456.731	2262.142	5.320	Shoulder	
10+100.000 R 1	159373.104	558478.884	2262.448	-5.740	Shoulder	
						-2.799%
	159374.696	558477.454	2262.508	-3.600	ETW	
						-2.800%
	159377.374	558475.048	2262.609	0.000	Centerline	
						2.800%
	159380.052	558472.642	2262.710	3.600	ETW	
						2.798%
	159381.323	558471.501	2262.758	5.309	Shoulder	

Below is an example of the Staking Detail Notes:

06/24/97

PRA YELL 13(2) SECTION A
EAST ENTRANCE ROAD
Designer's Name Here
STAKING DETAIL REPORT(m)

	Slope	Left Stake			%		%	Right Stake			Slope
STATION	RISE/RUN	C/F	DIST	ELEV	SUPER	ADJ.	SUPER	ELEV.	DIST	C/F	RISE/RUN
10+020.00 R 1	1: 3.00	C	0.611	8.699	2259.829	-2.0	2259.632	-2.0	2259.462	7.596	C 0.244	1: 3.00
10+040.00 R 1	1: 3.00	C	0.673	8.883	2260.450	-2.0	2260.191	-2.0	2260.075	7.757	C 0.297	1: 3.00
10+060.00 R 1	1: 3.00	C	0.734	9.066	2261.070	-2.0	2260.750	-2.0	2260.843	8.384	C 0.506	1: 3.00
10+080.00 R 1	1: 3.00	C	0.745	9.101	2261.641	-2.0	2261.309	-2.0	2261.426	8.456	C 0.530	1: 3.00
10+100.00 R 1	1: 3.00	C	0.829	9.350	2262.283	-2.0	2261.868	-2.0	2262.118	8.856	C 0.664	1: 3.00
10+120.00 R 1	1: 3.00	C	0.887	9.527	2262.901	-2.0	2262.427	-2.0	2262.688	8.888	C 0.674	1: 3.00
10+140.00 R 1	1: 3.00	C	0.893	9.544	2263.466	-2.0	2262.986	-2.0	2263.361	9.230	C 0.788	1: 3.00
10+160.00 R 1	1: 3.00	C	0.951	9.718	2264.083	-2.0	2263.545	-2.0	2264.169	9.977	C 1.037	1: 3.00
10+180.00 R 1	1: 3.00	C	1.141	10.289	2264.832	-2.0	2264.104	-2.0	2264.828	10.277	C 1.137	1: 3.00
10+200.00 R 1	1: 3.00	C	1.155	10.329	2265.405	-2.0	2264.663	-2.0	2265.653	11.074	C 1.403	1: 3.00
10+220.00 R 1	1: 3.00	C	1.137	10.275	2265.946	-2.0	2265.222	-2.0	2266.380	11.576	C 1.570	1: 3.00
10+240.00 R 1	1: 3.00	C	0.674	8.887	2266.042	-2.0	2265.782	-2.0	2266.593	7.478	C 1.225	2.00:1.
10+260.00 R 1DL	1:-15.00	C	0.173	8.215	2266.086	-1.4	2266.341	-2.0	2267.119	10.439	C 1.191	1: 3.00
10+280.00 R 1	1: 3.00	C	0.398	7.820	2267.052	1.0	2266.900	-2.0	2267.332	9.401	C 0.845	1: 3.00
10+300.00 R 1DL	1:-15.00	C	0.170	7.879	2267.427	2.6	2267.459	-2.6	2267.435	8.194	C 0.425	1: 3.00
10+320.00 R 1DL	1:-15.00	C	0.194	8.235	2267.962	2.6	2268.018	-2.6	2267.790	6.907	C 0.079DL	1:-15.00
10+340.00 R 1DL	1:-15.00	C	0.196	8.264	2268.519	2.6	2268.577	-2.6	2268.546	8.173	C 0.417	1: 3.00
10+360.00 R 1	1: 3.00	C	0.520	8.082	2269.495	2.6	2269.136	-2.6	2268.892	6.103	F 0.096	1: -4.00
10+380.00 R 1	1: 3.00	C	0.494	8.002	2270.011	2.6	2269.679	-2.6	2269.576	7.957	C 0.346	1: 3.00
10+400.00 R 1	1: 3.00	C	0.608	8.346	2270.594	2.6	2270.147	-2.6	2269.872	6.228	F 0.127	1: -4.00
10+420.00 R 1	1: 3.00	C	0.513	8.060	2270.888	2.6	2270.537	-2.6	2269.853	6.524	F 0.536	1: -1.50
10+440.00 R 1	1: 3.00	C	0.730	8.711	2271.417	2.6	2270.848	-2.6	2270.418	6.144	F 0.282	1: -1.50
10+460.00 R 1	1: 3.00	C	0.938	9.336	2271.857	2.6	2271.081	-2.6	2271.541	9.649	C 0.909	1: 3.00
10+480.00 R 1	1: 3.00	C	0.719	8.679	2271.792	2.6	2271.235	-2.6	2271.354	8.625	C 0.568	1: 3.00
10+500.00 R 1	1: 3.00	C	0.800	8.921	2271.948	2.6	2271.310	-2.6	2271.423	8.605	C 0.562	1: 3.00

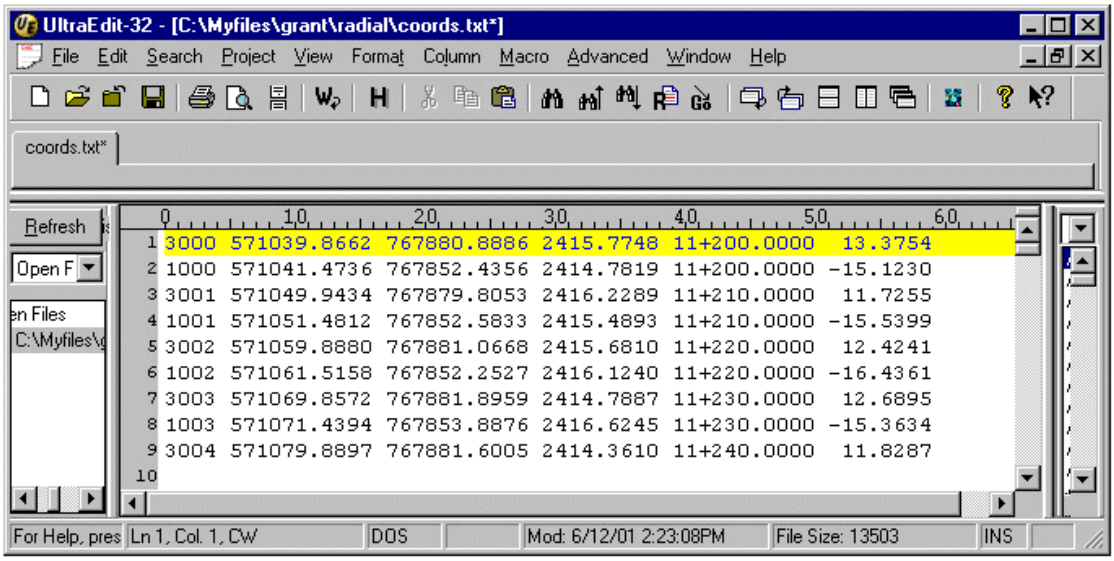
A sample of the notes are shown below:

06/23/97

PRA YELL 13(2) SECTION A
EAST ENTRANCE ROAD
Designer's Name Here
SEEDING REPORT

STATION	SLOPE DISTANCE LT	SLOPE DISTANCE RT	AVERAGE SLOPE DIST LT	AVERAGE SLOPE DIST RT	A R E A m2 LT	A R E A m2 RT	SUBTOTAL A R E A m2 LT	SUBTOTAL A R E A m2 RT	m2 BOTH
			7.803	6.760	157	136			
10+520.00 R 1	7.766	6.259							
			7.237	6.424	145	129			
10+540.00 R 1	6.709	6.590							
			6.359	5.943	128	119			
10+560.00 R 1	6.010	5.296							
			5.988	4.485	120	90			
10+580.00 R 1	5.965	3.675							
			5.309	3.928	107	79			
10+600.00 R 1	4.653	4.182							
			4.325	4.033	87	81			
10+620.00 R 1	3.997	3.885							
			5.299	3.833	106	77			
10+640.00 R 1	6.602	3.780							
			7.128	3.599	143	72			
10+660.00 R 1	7.653	3.418							
			9.288	5.106	186	103			
10+680.00 R 1	10.924	6.794							
			12.141	7.950	243	159			
10+700.00 R 1	13.359	9.106					5220	4618	9838
			14.207	9.604	285	193			
10+720.00 R 1	15.056	10.102							
			14.861	10.084	298	202			
10+740.00 R 1	14.667	10.066							

An example of the **sorted final results** are shown below:



The surveyors should be able to use the **electronic copy** of this file for uploading into their instruments.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15301 Contractor Quality Control .

DESCRIPTION, LOCATION, ETC.	QUANTITY
Per FP-03, Section153.10	
50% of Contract Completed allows for 50% of payment of Lump Sum Bid Item	
Payment of the Lump Sum will be prorated based on the total work completed.	
Original Contract = $5,000,000.00	
Work Completed = $2,500,000.00	
Allow 50% of Lump Sum Bid Item amount of $150,000.00	
Payment = $75,000.00	$75,000.00
TOTAL ➡	$75,000.00

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 153.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15401 Sampling and Testing .

DESCRIPTION, LOCATION, ETC.	QUANTITY
Estimate No. 001	
Per FP-96 and FP-154.07 Payment for 25% of Item Lump Sum as follows:	
Testing Facilities in place and Testing	
Personnel Identified	
Work being Tested has Started	
Pay this Estimate $125,000.00 @25% = $31,250.00	31,250.00
TOTAL ➡	$31,250.00

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 154.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15703 Silt Fence .

DESCRIPTION, LOCATION, ETC.	QUANTITY
Station 3+010 to Station 3+035 Left	25.1
Station 4+200 to Station 4+240 Left	40.3
Station 5+000 to Station 5+010 Right	10.4
Station 6+100 to Station 6+160 Left	60.5
Subtotal	136.3
Round to nearest even number	
TOTAL	136

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 157.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15703 Filter Barrier, Straw Bales .

DESCRIPTION, LOCATION, ETC.	QUANTITY
Station 3+010 to Station 3+015 Left	15
Station 4+200 to Station 4+220 Left	30
Station 5+000 to Station 5+010 Right	6
Station 6+100 to Station 6+120 Left	30
TOTAL ➡	81

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 157.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 15801 Water .

DESCRIPTION, LOCATION, ETC.			QUANTITY
Truck No. 205T	Capacity (Cubic Meters) = 15.14m3		
Load No. 1 - 8:15am, Station 0+200 to Station 0+250 (Compaction, No Payment)			
Load No. 2 - 9:30am, Station 0+250 to Station 0+300 (Compaction, No Payment)			
Load No. 3 - 10:15am, Station 0+400 to Station 0+450 (Compaction, No Payment)			
Load No. 4 - 11:30am, Detour Station 3+000 (Dust Control)			15.14
Load No. 5 - 1:00pm, Station 0+200 to Station 0+300 (Compaction, No Payment)			
Load No. 6 - 2:30pm, Station 0+450 to Station 0+500 (Compaction, No Payment)			
Load No. 7 - 3:30pm, Station 2+400 to Station 2+430 (Compaction, No Payment)			
Load No. 8 - 4:15pm, Detour Station 3+000 (Dust Control)			15.14
Pay Loads	Pay Quantity (Cubic Meters)	Non-Pay Loads	
2	30.3	6	
		TOTAL	30

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 158.
Provide calculations for measurement of truck capacity for approval, prior to production.

FORM PR-1348 U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

BUREAU OF PUBLIC ROADS

DAILY WATER REPORT

ITEM 15801 WATER

NAME OF PROJECT WA FHP 32-1(6)
NORTH CASCADE HIGHWAY

TRUCK NO.	CAPACITY (CUBIC METERS)	DATE WORK PERFORMED
205T	15.14	9-20-80

LOAD NO.	TIME DELIVERED	LOCATIN/ STATION TO STATION	USED FOR
1	8:15 AM	0 + 200 – 0 + 250	COMPACTION
2	9:30 AM	0 + 250 – 0 + 300	
3	10:15 AM	0 + 400 – 0 + 450	
4	11:30 AM	DETOUR 3 + 000	DUST CONTROL
5	1:00 PM	0 + 200 – 0 + 300	COMPACTION
6	2:30 PM	0 + 450 – 0 + 500	
7	3:30 PM	2 + 400 – 2+ 430	
8	4:15 PM	DETOUR 3 + 000	DUST CONTROL

SUMMARY

PAY LOADS	PAY QUANTITY (CUBIC METERS)	NON-PAY LOADS
2	30.3	6

I CERTIFY THAT THIS IS A TRUE AND COMPLETE RECORD OF WATER USED ON THE PROJECT FROM THIS TRUCK.

_____ _____

SUPERINTENDENT OR DRIVER PROJECT ENGINEER OR INSPECTOR

ORIGINAL TO PROJECT ENGINEER

DIVISION 200

EARTHWORK

INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 20101 Clearing and Grubbing

DESCRIPTION, LOCATION, ETC.	QUANTITY(ha)
Station 1+115 to Station 1+250 Left = 135m = 0.23 ha	0.230
Station 1+260 to Station 1+330 Left = 0.08m = 0.08 ha	0.080
TOTAL ➡	0.310 ha

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 201.
The original computed notes may be used for pay notes.

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 20101 CLEARING AND GRUBBING

DATE	STATION	STATION	meters	RT. LT.	INSP.
1 + 115	0	0			
			1	10	10
1 + 105	19 -17	2			
			3.5	80	280
1 + 025	23 - 18	5			
			3.5	70	245
1 + 955	21 - 19	2			
			2	50	100
0 + 905	22 - 19	2			
			2.5	50	125
0 + 855	22 - 18	3			
		BEGIN	ABRUPT		
TOTAL					760

Note: This example is for showing as-built revisions to the Clearing and Grubbing. Normally, a field book listing clearing distances and areas is provided at the beginning of the project.

The original computer notes may be used for pay notes.

WDFD-472 3/83 U.S. DEPARTMENT OF TRANSPORTAT FEDERAL HIGHWAY ADMINISTRATION VANCOUVER, WASHINGTON PAGE:____

MISC CONSTRUCTION NOTES

STATION	RIGHT	TOTAL WIDTH (m)	AVG WIDTH (m)	DIST (m) m2	
1 + 115	0	0			
			6.5	10	65
1+105	3 – 16	13			
			8	80	640
1 + 025	21 – 18	3			
			4.5	70	315
0 + 955	22 – 16	6			
			10.5	50	525
0 + 905	3 – 18	15			
			9	50	525
0 + 855	22 – 18	3			
			TOTAL		1995

Similar notes for SELECTIVE CLEARING AND GRUBBING ITEMS 20201, 20202, and 20203

COMPUTED BY: _____ CHECKED BY: _____
DATE: 1/11/92 DATE: 1/11/93

A partial sample of the notes are shown below:

```
10/02/98                                PRA YELL 13(2) SECTION A
                                        EAST ENTRANCE ROAD
                                      Designer's Name Here
                                        CLEARING REPORT

CUT SLOPE ROUNDING              =       0.0000 m
ADDITIONAL CLEARING IN CUT      =       3.0000 m
ADDITIONAL CLEARING IN FILL     =       1.5000 m
MINIMUM CLEARING WIDTH          =       0.0000 m
SUBTOTALS EVERY     700.0000 m . BEGINNING AT STATION 10+700 METHOD INCR
ADDITIONAL CLEARING     VIA STATION RANGE ..........................
11+000          TO 11+500          FOR LEFT SIDE          = 10.000     m
11+800          TO 12+000          FOR RIGHT SIDE         = 8.000      m
12+100          TO 12+500          FOR LEFT & RIGHT SIDES = 6.000      m
.....................................................................

STATION           CLEARING  DISTANCE     EXCEPTION     AREA      SUBTOTAL  AREAS
                     LT       RT           WIDTH        m2          m2    HECTARES


 10+020.00 R 1    11.720    10.628
                                          0.000        451
 10+040.00 R 1    11.920    10.760
                                          0.000        462
 10+060.00 R 1    12.104    11.384
                                          0.000        472
 10+080.00 R 1    12.142    11.477
                                          0.000        479
 10+100.00 R 1    12.401    11.872
                                          0.000        486
 10+120.00 R 1    12.470    11.855
                                          0.000        490
 10+140.00 R 1    12.439    12.166
                                          0.000        504
 10+160.00 R 1    12.631    13.068
```

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 20204 Removal of Individual Trees

DESCRIPTION, LOCATION, ETC.	QUANTITY(m2)
Station 1+004, Left	
1 @ 840 mm diameter [(.420 x .420) x 3.14]	0.55
1 @ 1,549 mm diameter [(.7745 x .7745) x 3.14]	1.88
Station 0+094, Right	
2 @ 1,677 mm diameter [(.8385 x .8385) x 3.14]	4.42
TOTAL ➡	6.85

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 202.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 20401 - Roadway Excavation

DESCRIPTION, LOCATION, ETC.	QUANTITY (m3)
Station 0+300 to Station 0+400, Left	700
Station 0+400 to Station 0+550, Left	500
Station0+550 to Station 0+700, Left	1,100
Accumulative Total to Date: = 2,300 m3	
Estimated percent complete = 2,300 m3 divided by 195,500 m3 = 0.017%	
TOTAL ➡	2,300

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 204.

FORM 17348

PAULINA-EAST LAKE ROAD PROJECT
EXCAVATION QUANTITIES
ITEM 20401

OR PFH 93-1(2)

ESTIMATE NO. 8

STATION	DESIGN EXCAV. (m3)	DESIGN ACCUM. EXCAV. (m3)	ESTIMATED PERCENT COMPLETE	ESTIMATED m3	ESTIMATED ACCUM. EXCAV. (m3)	REMARKS
0+030 to 0+390	13 344.0	13 344.0	85%	11 342.4	11 342.4	
0+394 to 0+505	5 108.0	18 452.0	85%	4 341.8	15 684.2	INCLUDES SUBEX 105.0
0+600 to 0+710	10 299.0	28 751.0	85%	8 754.2	24 438.4	
0+750 to 0+900	4 110.0	32 861.0	85%	3 493.5	27 931.9	
0+900 to 1+200	1 867.0	34 728.0	80%	1 493.6	29 425.5	
1+200 to 1+475	36.0	34 764.0	80%	28.8	29 454.2	CULVERT INLET 10.5
1+500 to 1+675	4 614.0	39 378.0	80%	3 691.2	33 145.5	
1+675 to 1+800	225.0	39 603.0	80%	180.0	33 325.5	
1+800 to 1+980	472.0	40 075.0	80%	377.6	33 703.1	
1+980 to 2+306	7 198.0	42 273.0	80%	5 758.4	39 461.5	
Campground Road (Lt of Station 0+093)						
0+005 to 0+172	5.0	42 278.0	50%	2.5	39 464.0	
0+172 to 0+190	52.0	42 330.0	50%	26.0	39 490.0	
Approach Roads						
0+500	65.0	42 395.0	100%	65.0	39 555.0	
0+805	501.0	42 896.0	100%	501.0	40 056.0	
1+602	145.0	43 041.0	100%	145.0	40 201.0	
3+978	22.0	43 063.0	100%	22.0	40 223.0	
GRAND TOTAL		43 063.0	93%		40 223.0	
LESS PREVIOUS PAYMENTS					0.0	
PAYMENT DUE THIS MONTH					40 223.0	

(NOTE: ROUND TO WHOLE NUMBERS FOR PAYMENT)

(EXAMPLE FOR USE WITH PROGRESS ESTIMATE)

DATE: 4/3/98 PARTY: Jones, Smith TYPE OF TOPOG

LINE: "L" ITEM 20401 | X | STRAIGHT

PROJECT | | PERCENT

STAMP | | DEGREE

STATION	ELEVATION GRADE	ELEVATION GROUND	CROSS -SECTION LEFT
0+601.980			
			[(17.092 m +17.092 m)/2] (602-588)
			= 234.43 m
0+588.260			

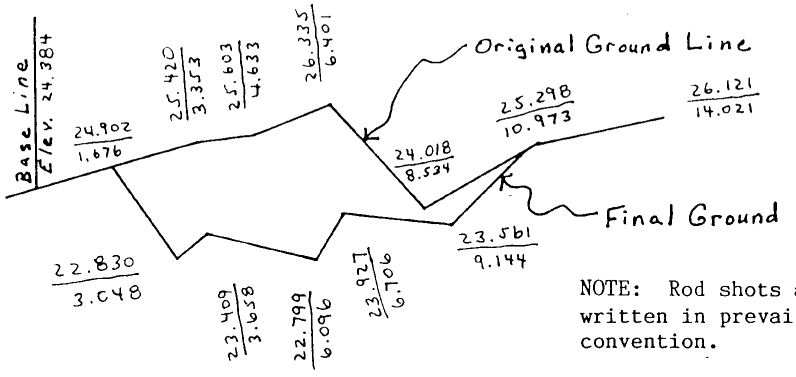
WDFD-266
9/93

U.S. DEPARTMENT OF TRANSPORTA PAGE:____
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

CROSS-SECTION

READINGS C/L	READINGS RIGHT	REMARKS AND/OR SKETCHES
	0.00 0.00 –6.10 –6.10 –8.53 / 3.66 5.64 9.91 10.52 10.52	Measure
		Combined Section
	0.00 6.10 6.10 8.53 8.53 6.10 0.00 / 5.64 9.91 10.52 10.52 8.08 8.08 3.81 = 34.184	34.184
	34.184 / 2 = 17.092 m²	
	0.00 –6.10 –8.53 / 3.81 8.08 8.08	Re-Measure
	0.00 0.00 –6.10 –6.10 / 3.81 5.64 9.91 10.52	Measure
		Combined Section
	0.00 6.10 6.10 8.53 8.53 6.10 0.00 / 5.64 9.91 10.52 10.52 8.08 8.08 3.81 = 34.184	34.184
	34.184 / 2 = 17.092 m²	
	0.00 –6.10 –8.53 –8.53 / 3.81 8.08 8.08 10.52	Re-Measure

In this example the computation is made with actual ground elevations.



NOTE: Rod shots are still written in prevailing $\frac{\text{rise}}{\text{run}}$ convention.

Readings are set down in a clockwise direction around the figure, beginning and ending at the same point. Note that this point is referred vertically to the base elevation (0.0) and that this 0.0 reading is also repeated; thus:

$$\left(\frac{24.384}{0.000}\right)\ \frac{0.000}{1.676}\ \frac{24.902}{1.676}\ \frac{25.420}{3.353}\ \frac{25.603}{4.633}\ \frac{26.335}{6.401}\ \frac{24.018}{8.534}\ \frac{25.298}{10.973}\ \frac{23.561}{9.144}\ \frac{23.927}{6.706}\ \frac{22.799}{6.096}\ \frac{23.409}{3.658}\ \frac{22.830}{3.048}\ \frac{24.902}{1.676}\ \frac{0.000}{1.676}$$

Plus and minus signs are not necessary so long as the figure is entirely on one side of the base lines; however, the algebraic difference is essential in the following computation. Note the signs carefully.

24.902 x (-1.676 + 3.353) =	+	41.761
25.420 x (-1.676 + 4.633) =	+	75.167
25.603 x (-3.353 + 6.401) =	+	78.038
26.335 x (-4.633 + 8.534) =	+	102.733
24.018 x (-6.401 + 10.973) =	+	109.810
25.298 x (-8.534 + 9.144) =	+	15.432
23.561 x (-10.973 + 6.706) =	-	100.535
23.927 x (-9.144 + 6.096) =	-	72.929
22.799 x (-6.706 + 3.658) =	-	69.491
23.409 x (-6.096 + 3.048) =	-	71.351
22.830 x (-3.658 + 1.676) =	-	45.249
24.902 x (-3.048 + 1.676) =	-	34.166
Double End Area =	+	29.220
Area =		14.610

Computation of Area of Any Irregular Section (by Crisscross Method)

EXAMPLE FOR END AREA COMPUTATION

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

COMPUTATION OF THREE DIMENSIONAL VOLUME

DATE	STATION	STATION	LENGTH (m)	WIDTH (m)	DEPTH (m)
7/10/03	1 +036	1+436	400.0	12.0	3.0
7/17/03	1+890	1+760	870.0	11.0	3.0
8/15/03	1+114	3+464	350.0	6.0	3.0
TOTAL					

WDFD-472 3/83

U.S. DEPARTMENT OF TRANSPORTAT
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

PAGE:____

MISC CONSTRUCTION NOTES

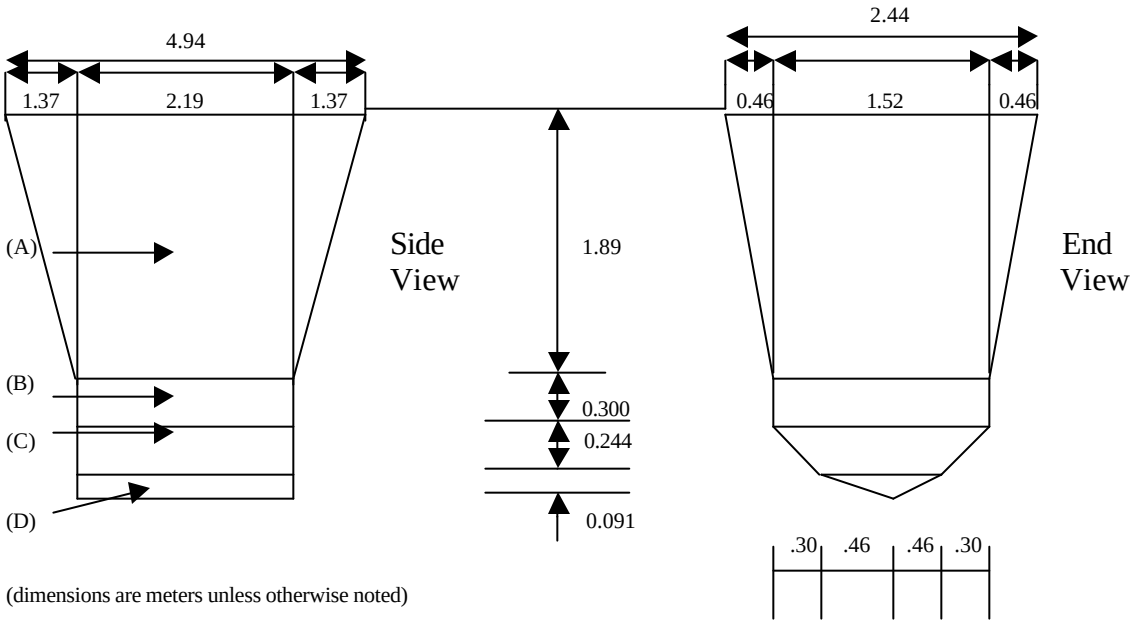
VOLUME (m3)	INSP.				
14400	ABC				
28710	ABC				
6300	ABC				
46410					

COMPUTED BY:_____ CHECKED BY: _____
DATE: _____ DATE:_____

Truck Measurement Example

Truck No. ? (tractor)
Trailer No. ? (belly dump)

Project Name XXXXXXXXXXXX
Project Number XX XXX XXXX (X)



(dimensions are meters unless otherwise noted)

Volume (A) (Use prismoidal formula, $V = \frac{h}{b}(A_1 + (4A_m + A_2)$ $h = 1.89$

$A_1 = 4.94 \times 2.44 = 12.05$ $A_2 = 2.19 \times 1.52 = 3.33$ $A_m = \frac{(4.94 + 2.19)}{2} \times \frac{(2.44 + 1.52)}{2} = 7.07$

$V = \frac{1.89}{b}(12.05 + (4 \times 7.07) + 3.33) =$ **13.753**

Volume (B)

$V = 2.19 \times 1.52 \times 0.30 =$ **0.999**

Volume (C)

$V = 2.19 \times \frac{1.52 + 0.92}{2} \times 0.244 =$ **0.652**

Volume (D)

$V = 2.19 \times \frac{0.92}{2} \times 0.091 =$ **0.092**

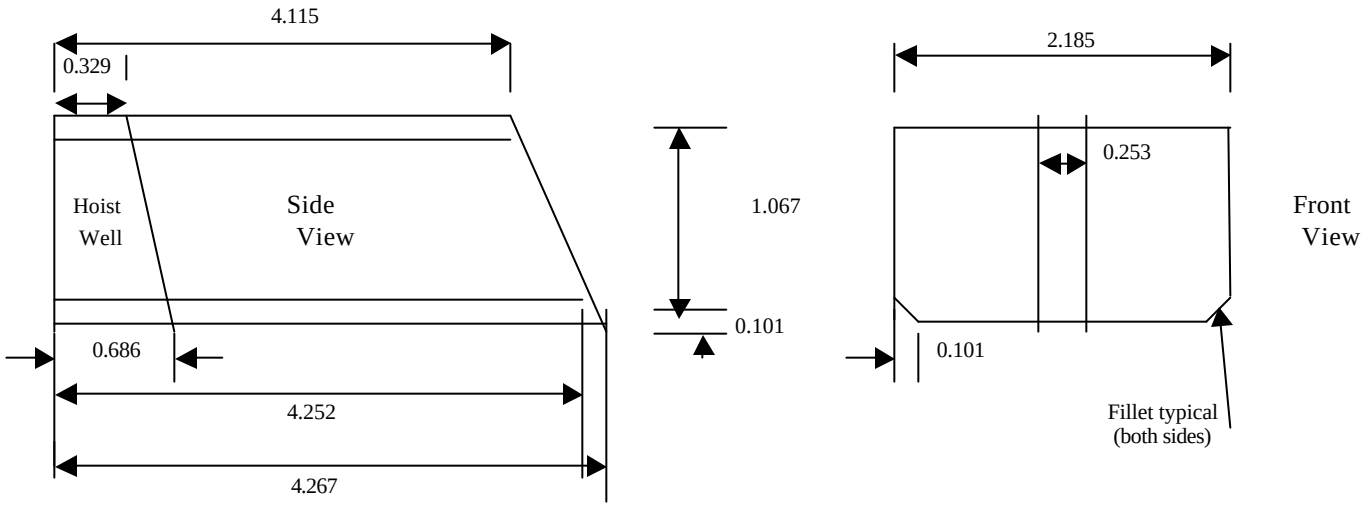
Total Volume = 15.496 m^3

Composed By: _____ **Checked By:** _____

Truck Measurement Example

Truck No. ? (tractor)
Trailer No. ? (belly dump)
License No. XXXXXXX

Project Name XXXXXXXXXXXX
Project Number XX XXX XXXX (X)



(dimensions are meters unless otherwise noted)

Volume

$\frac{4.115 + 4.267}{2}$ x 2.185 x 1.067 = **9.771**

Less Hoist Well

$\frac{0.686 + 0.329}{2}$ x 0.253 x 1.067 = **-0.137** (minus)

Less Fillets

$\frac{0.101 \times 0.101}{2} \times \frac{4.252 + 4.267}{2} \times 2$ = **-0.043** (minus)

Total Volume = 9.591 m^3

NOTE
The above computations are for illustration only, and not necessarily part of survey notes. However, to ensure measurements are adequate, the surveyor might make at least rough computations for complicated shapes.

Composed By: _____ **Checked By: _____**

CERTIFICATION

Date: _____

Truck No. _____ Measured Volume: _____

Owner:_____

It is mutually agreed to, by No Name Bros., and Western Federal Lands Highway Division, that the above listed truck will be paid for at the following volume:

Agreed volume by both parties = _____ Cubic Meters.

It is also agreed to, by both parties, that if the Western Federal Lands Highway Division Inspector(s) think that a truck is not loaded to the agreed volume, then the right to reduce the cubic meters accordingly for that particular load.

FOR THE CONTRACTOR: No Name Bros., Inc.:

Name: _____ Date: _____

Title: _____

For Western Federal Lands Highway Division:

Name: _____ Date: _____

Title: _____

* See attached computations.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 20701 - Earthwork Geotextile, Type-I-A

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Station 0+092 to 0+160 Left Lane (4.5 m width) (68 m x 4.5m) = 306 m	306
Station 0+403 to 0+600, Full Width (9 m width) (197 m x 9 m) = 1,773 m	1,773
Station 2+700 to 3+005, Right Lane (4.5 m width) (305 m x 4.5 m) = 1,373 m	1,373
TOTAL ➡	3,452

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 207.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 21101 - Roadway Obliteration

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Station 2+000 9 m Left and 12 m Right Total width = 21 m	
Average width =21.5 Distance = 20 m	430
Station 2+980 10m Left and 12 m Right Total width = 22 m	
Average width =21.5 Distance = 20 m	430
Station 2+960 8 m Left and 13 m Right Total width = 21 m	
Average width =21.5 Distance = 20 m	430
Station 2+940 9 m Left and 14 m Right Total width = 22 m	
Average width =21.5 Distance = 20 m	430
Station 2+920 9 m Left and 12 m Right Total width = 21 m	
Average width =21 Distance = 20 m	420
Station 2+900 9 m Left and 12 m Right Total width = 21 m	
Average width =21.5 Distance = 20 m	430
Station 2+880 9 m Left and 13 m Right Total width = 22 m	
TOTAL	2570

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 211.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 21101
ROADWAY OBLITERATION

STATION	WIDTH LT (m)	WIDTH RT (m)	TOTAL WIDTH (m)	AVG WIDTH (m)	DISTANCE (m)	
2+000	9	12	21			
				21.5	20	
2+980	10	12	22			
				21.5	20	
2+960	8	13	21			
				21.5	20	
2+940	9	14	22			
				21.5	20	
2+920	9	12	21			
				21	20	
2+900	9	12	21			
				21.5	20	
2+880	9	13	22			

WDFD-472 3/83 U.S. DEPARTMENT OF TRANSPORTAT PAGE:____
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC CONSTRUCTION NOTES

AREA (m2)					
430					
430					
430					
430					
420					
430					
2570	TOTAL				

COMPUTED BY: _____ CHECKED BY: _____
DATE: 1/11/92 DATE: 1/11/93

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 21201 - Linear Grading

DESCRIPTION, LOCATION, ETC.	QUANTITY (Km)
Station 1+005 to Station 2+200 = 1,195 m = 1.195 Km	1.195
TOTAL ➡	1.195

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 212.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 21201
LINEAR GRADING

DATE	FROM STATION	TO STATION	STA DISTANCE		INSP
1/24/93	1+005	2+200	1,195 m		ABC
1/30/93	2+400	3+005	605 m		ABC
TOTAL STATIONS			1,800 m		

WDFD-472 U.S. DEPARTMENT OF TRANSPORTAT PAGE:____
3/83 FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC CONSTRUCTION NOTES

COMPUTED BY: ABC CHECKED BY: JKD
DATE: _____ DATE: _____

DIVISION 250

STRUCTURAL EMBANKMENT

INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 25103 - Keyed Riprap

DESCRIPTION, LOCATION, ETC.	QUANTITY (m3)
Station 1+005 - End Section	
Area Volume = 215.0	215.0
Station 1+015	
Area Volume = 729.3	729.3
Station 1+030	
Area Volume = 789.3	789.3
Station 1+045	
Area Volume = 695.3	695.3
Station 1+060	
Area Volume = 208.5	208.5
Station 1+070 - End Section	
* See attached measurement and computations.	
TOTAL ➡	2,637

I certify that the above quantity was performed and/or used in the construction of this project.

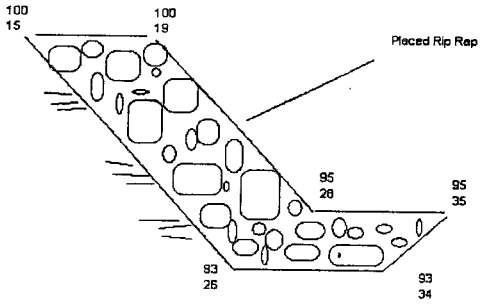
_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 251.

FORM 17348

Criss-Cross average end area method using elevations and distance

Station										
1005	0.0	End section								
	0.0									
									0.0	
									Area	**Volume** **215.0**
1015	100.0	100.0	95.0	95.0	93.0	93.0	100.0	100.0		
	15.0	19.0	28.0	35.0	34.0	26.0	15.0	19.0		
		1300.0	**1520.0**	**570.0**	**-837.0**	**-1767.0**	**-700.0**		**43.0**	
									Area	
										Volume **729.3**
1030	98.9	99.0	94.0	93.8	91.7	91.5	98.9	99.0		
	15.0	19.0	29.0	34.8	33.5	25.0	15.0	19.0		
		1386.0	**1485.2**	**422.1**	**-898.7**	**-1692.8**	**-593.4**		**54.2**	
									Area	
										Volume **789.3**
1045	100.0	100.0	95.0	95.0	93.0	93.0	100.0	100.0		
	15.5	20.0	28.0	36.0	35.0	24.5	15.5	20.0		
		1250.0	**1520.0**	**665.0**	**-1069.5**	**-1813.5**	**-450.0**		**51.0**	
									Area	
										Volume **695.3**
1060	101.3	101.7	96.2	96.2	94.5	94.5	101.3	101.7		
	15.0	19.0	28.0	35.0	34.0	26.0	15.0	19.0		
		1322.1	**1539.2**	**577.2**	**-850.5**	**-1795.5**	**-709.1**		**41.7**	
									Area	
										Volume **208.5**
1070	0.0	End section							**0.0**	
	0.0								**Area**	
										Total **2637.4 cubic meters**



U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 25101 - Placed Riprap

DESCRIPTION, LOCATION, ETC.	QUANTITY (t)
Station 0+085 to 0+200 Left	205.0
* See attached documentation.	
TOTAL ➡	205.0

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 251.

FORM 17348

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

PAGE NO._____

PROJECT: _____

ITEM NO.: 25101 Placed Riprap

DATE _____

SOURCE NO.: _____

Pay Lot No.: _____

SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (KG)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)
1	37	8:35am	35 600								
2	42	8:44am	35 800								
3	32	8:52am	34 000								
4	36	9:03am	34 500								
5	37	9:11am	36 000								
6	42	9:20am	35 900								
7	32	9:30am	36 100								
8	36	9:41am	35 900								
9	37	9:53am	35 700								
10	42	10:02am	36 000								

DAILY SUMMARY
MASS (kg) 355,500
TARE (kg) 150,500
NET (kg) 205,000
Metric ton 205.0

WEIGHED BY: S. Worth

CHECKED BY: ABC

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION
SIGNED_____

DATE 4/25/2003

COMPANY XYZ Construction

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

Attach to Daily Record of Miscellaneous Item 25101 Placed Riprap Class 1

WFLHD-443
(Rev 12/90)

TARE CHART

PAGE NO._____

LOADS NOT APPEARING ON
STREET DELIVERY REPORT
WILL BE DELETED UNLESS
SATISFACTORILY EXPLAINED.

PROJECT: _____

ITEM NO.: 25101 Placed Riprap

DATE _____

SOURCE NO.: Magpie Pit

Pay Lot No.: _____

SHEET NO. 1 OF 1

TRUCK NO.	37	42	32	36	
TARE 1 (kg)	15 000	15 100	15 200	14 900	
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)	15 000	15 100	15 200	14 900	
TRUCK TALLY	I I I	I I I	I I	I I	
NUMBER LOADS	3	3	2	2	
TARE WEIGHT (kg)	45,000	45,300	30,400	29,800	
TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					
TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TOTAL TARE WEIGHT 150,500.0 kg

I CERTIFY THIS INFORMATION TO BE
C O R R E C T

BY:_____

DATE: _____

COMPANY: _____

Attach to Daily Record of Miscellaneous Item 25101 Placed Riprap Class 1

WFLHD-434
(Rev 12/90)

STREET DELIVERY REPORT
SPREAD REPORT

PAGE NO._____

PROJECT: _____

ITEM NO.: 25101 Placed Riprap

DATE _____

SOURCE NO.: Magpie Pit

Pay Lot No.: _____

SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS	LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS
1	37	8:53am	0+085	Left					
2	42	9:03am	0+110	Lt					
3	32	8:12am	"	Right					
4	36	9:21am	"	Rt Approach					
5	37	9:30am	0+200	Lt					
6	42	9:42am	0+210	Lt					
7	32	9:50am	0+110	Lt					
8	36	9:59am	0+220	Lt					
9	37	10:11am	0+220	Rt					
10	42	10:20am	0+200	Rt					

CERTIFICATION

I CERTIFY THAT THE ABOVE LOADS WERE PLACED AS SHOWN AND ARE THE SOLE BASIS FOR PAYMENT.

Contractor signature _____ Received by: _____Date _____

Attach to Daily Record of Miscellaneous Item 25101 Class 1 Riprap

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 25101 - Placed Riprap

DESCRIPTION, LOCATION, ETC.	QUANTITY (m3)
Station 0+085 to 0+200 Left Lane	93
* See attached truck measurement summary and truck volume computations.	
TOTAL ➡	93

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 251.
This Method of Measurement is not normal practice for Item No. 25101.

FORM 17348

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

PAGE NO._____

PROJECT: _____

ITEM NO.: 25101 Placed Riprap

DATE _____

SOURCE NO.: _____

Pay Lot No.: _____

SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME	LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME	LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME
1	37	8:35am	9.3								
2	42	8:44am	9.3								
3	32	8:52am	9.3								
4	36	9:03am	9.3								
5	37	9:11am	9.3								
6	42	9:20am	9.3								
7	32	9:30am	9.3								
8	36	9:41am	9.3								
9	37	9:53am	9.3								
10	42	10:02am	9.3								

DAILY SUMMARY

_____

TARE _____

NET _____

m3 93.0

WEIGHED BY: Truck Meas

CHECKED BY: _____

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION

SIGNED_____

DATE _____

COMPANY _____

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

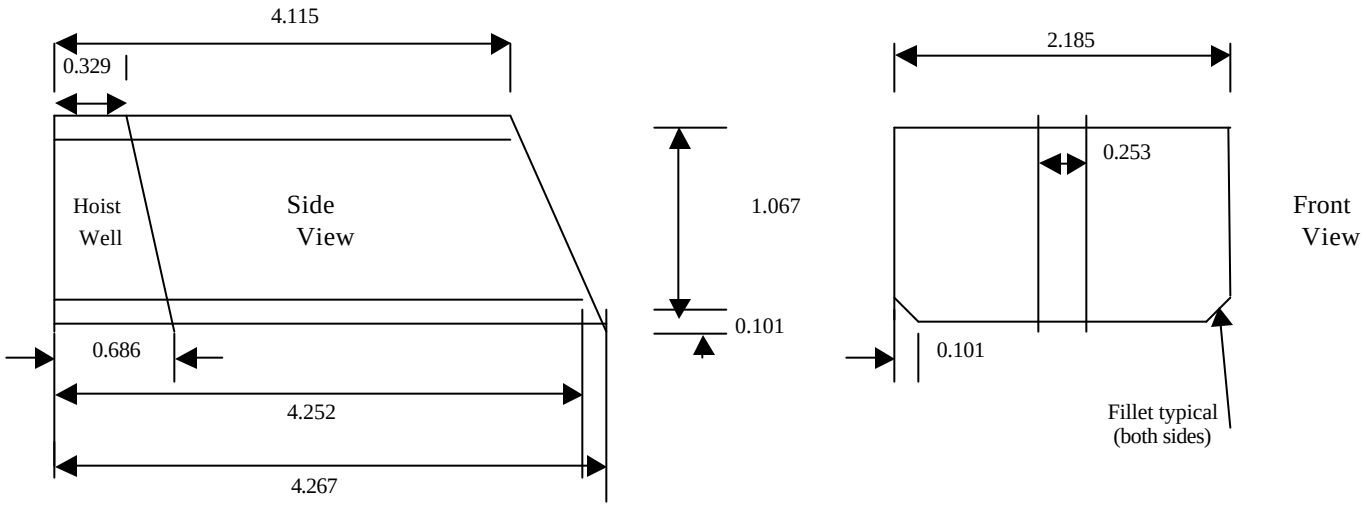
☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

Attach to Daily Record of Miscellaneous Item 25101 Placed Riprap

Truck Measurement Example

Truck No. ? (tractor)
Trailer No. ? (belly dump)
License No. XXXXXXX

Project Name XXXXXXXXXXXX
Project Number XX XXX XXXX (X)



(dimensions are meters unless otherwise noted)

Volume

$\frac{4.115 + 4.267}{2}$ x 2.185 x 1.067 = **9.771**

Less Hoist Well

$\frac{0.686 + 0.329}{2}$ x 0.253 x 1.067 = **-0.137** (minus)

Less Fillets

$\frac{0.101 \times 0.101}{2}$ x $\frac{4.252 + 4.267}{2}$ x 2 = **-0.043** (minus)

Total Volume = 9.591 m^3

NOTE
The above computations are for illustration only, and not necessarily part of survey notes. However, to ensure measurements are adequate, the surveyor might make at least rough computations for complicated shapes.

Composed By: _____ **Checked By:** _____

CERTIFICATION

Date: _____

Truck No. _____ Measured Volume: _____

Owner:_____

It is mutually agreed to, by No Name Bros., and Western Federal Lands Highway Division, that the above listed truck will be paid for at the following volume:

Agreed volume by both parties = _____ Cubic Meters.

It is also agreed to, by both parties, that if the Western Federal Lands Highway Division Inspector(s) think that a truck is not loaded to the agreed volume, then the right to reduce the cubic meters accordingly for that particular load.

FOR THE CONTRACTOR: No Name Bros., Inc.:

Name: _____ Date: _____

Title: _____

For Western Federal Lands Highway Division:

Name: _____ Date: _____

Title: _____

* See attached computations.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 25303 Gabions

DESCRIPTION, LOCATION, ETC.					QUANTITY (m3)
Row	Height	Length	No. of Baskets	m3	
1	0.915	2.750	8	20.13	20.13
2	0.915	2.750	11	27.679	27.68
3	0.915	2.750	13	32.711	32.71
4	0.915	2.750	14	35.228	35.23
5	0.915	3.660	1	3.349	3.35
				TOTAL	119

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
* See FP for Method of Measurement, Section 253.
* Measuring individual baskets as shown in the example may not provide the true face of wall square meter measurement. Review measurement method prior to completion of documentation.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 25303
GABIONS

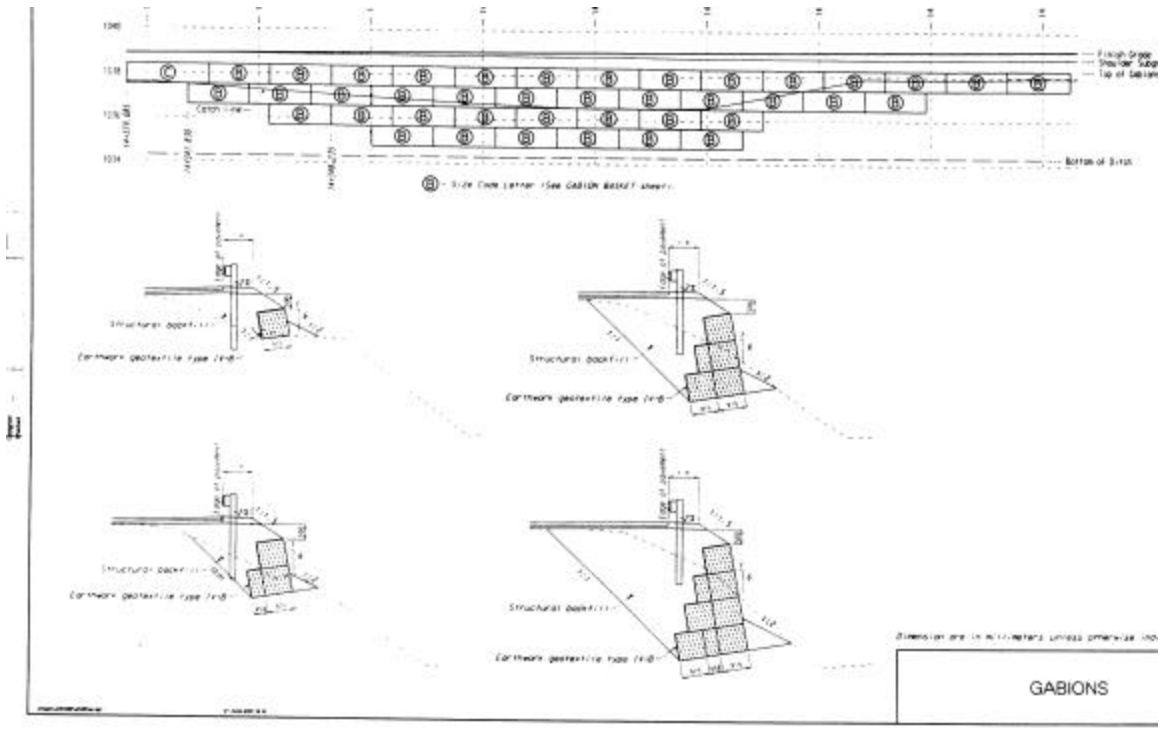
STATION	No. A;s	m2		No. B's	m2
0+080					
TO	1	1.67		14	35.14
0+150					

WDFD-472 U.S. DEPARTMENT OF TRANSPORTAT PAGE:____
3/83 FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

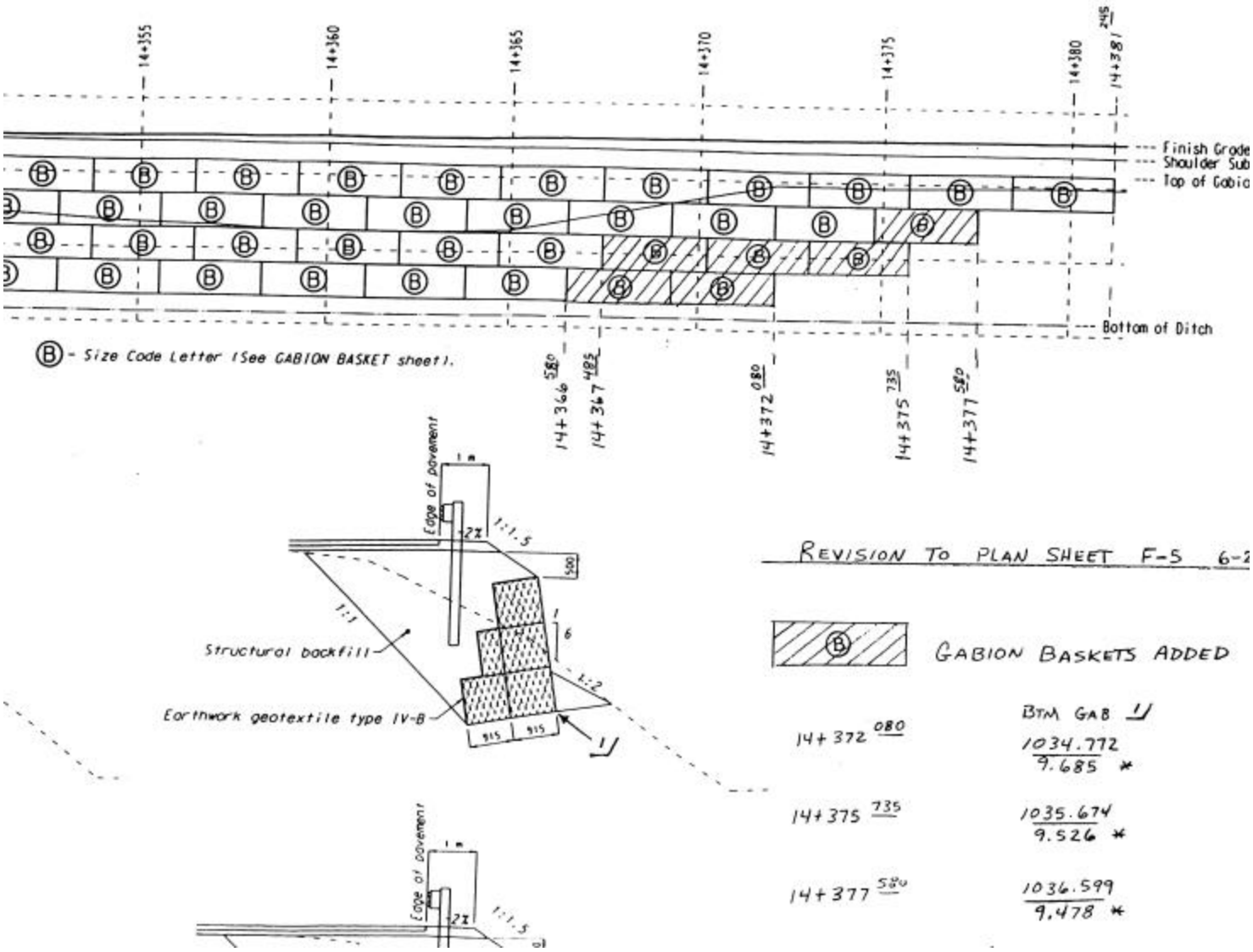
MISC CONSTRUCTION NOTES

	No. C's	m2			Total m2
	1	3.35			40.16
NOTE:		Gabion Baskets	Height (m)	Length (m)	Front Face (m2)
	A	A	0.915	1.83	1.67
	B	B	0.915	2.75	2.51
	C	C	0.915	3.66	3.35

COMPUTED BY: _____ CHECKED BY: _____
DATE: _____ DATE: _____



NOMINAL SIZES AND CAPACITY OF GABION BASKET				
Size Code Letter	Size in meters		Diaphragm Partitions	Capacity m3
	Length	Height		
A	1.83	0.915	1	1.5
B	2.75	0.915	2	2.3
C	3.66	0.915	3	3.1
X	4.58	0.915	4	3.8
Y	5.49	0.915	5	4.6
D	1.83	0.45	1	0.8
E	2.75	0.45	2	1.1
F	3.66	0.45	3	1.5
G	1.83	0.30	1	0.5
H	2.75	0.30	2	0.8
I	3.66	0.30	3	1.0


14+355
14+360
14+365
14+370
14+375
14+380
14+381 245
Finish Grade
Shoulder Sub
Top of Gabio
Bottom of Ditch
(B) - Size Code Letter (See GABION BASKET sheet).
14+366 580
14+367 485
14+372 080
14+375 735
14+377 580
Edge of pavement
1 m
2%
1:1.5
500
1:1
1
6
1:2
Structural backfill
Earthwork geotextile type IV-B
915
915
1/
REVISION TO PLAN SHEET F-5 6-2
GABION BASKETS ADDED
BTM GAB 1/
14+372 080
1034.772
9.685 *
14+375 735
1035.674
9.526 *
14+377 580
1036.599
9.478 *

DIVISION 300

Aggregate Courses

INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 30101 - Aggregate Base, Grading D

DESCRIPTION, LOCATION, ETC.	QUANTITY (t)
Station 1+100 to 1+815 Left Lane	684.5
* See attached documentation	
TOTAL ➡	684.5

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 301

FORM 17348

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

PROJECT: _____

ITEM NO.: 30101, Aggregate Base DATE _____

SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)
1	63	8:00 am	24,500	41	63	3:50pm	24,400				
2	72	8:10 am	24,400	42	56	4:05pm	24,900				
3	101	8:25 am	24,600								
4	109	8:35 am	23,900								
5	32	8:50 am	24,500								
6	56	9:05 am	24,600								
7	63	9:10 am	25,000								
8	72	9:25 am	24,400								
9	101	9:35 am	24,900								
10	109	9:55 am	24,500								
11	32	10:10 am	24,700								
12	63	10:20 am	24,400								
13	72	10:30 am	24,000								
14	101	10:35 am	24,900								
15	109	10:45 am	23,900								
16	32	11:00 am	24,500								
17	63	11:10 am	24,800								
18	72	11:25 am	24,400								
19	101	11:35 am	24,900								
20	109	11:50 am	24,700								
21	32	11:55 am	24,500								
22	63	12:35 am	24,500								
23	101	12:40 am	24,400								
24	72	12:50 pm	24,800								
25	109	1:05 pm	23,900								
26	32	1:15 pm	24,000								
27	56	1:25 pm	24,500								
28	63	1:35 pm	24,600								
29	73	1:45 pm	24,800								
30	101	1:55 pm	24,500								
31	109	2:05 pm	23,900								
32	32	2:20 pm	24,400								
33	63	2:25 pm	24,600								
34	72	2:40 pm	24,500								
35	101	2:50 pm	24,500								
36	109	3:00 pm	24,800								
37	63	3:15 pm	24,600								
38	72	3:30 pm	24,700								
39	101	3:35 pm	24,500								
40	109	3:40 pm	23,900								

DAILY SUMMARY

MASS 1,029, 900
TARE 345, 500
NET 684, 450
Metric tons 684.45

WEIGHED BY: ABC

CHECKED BY: JKD

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION
SIGNED_____

DATE _____.

COMPANY XYZ Construction

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

WFLHD-443
(Rev 12/90)

TARE CHART

PAGE NO._____

LOADS NOT APPEARING ON
STREET DELIVERY REPORT
WILL BE DELETED UNLESS
SATISFACTORILY EXPLAINED.

PROJECT: _____

ITEM NO.: 30101, Aggregate Base

DATE _____

SOURCE NO.: 634-55142

Pay Lot No.: 1

SHEET NO. 1 OF 1

TRUCK NO.	63	72	101	109	32
TARE 1 (kg)	8400	8300	8500	8700	8500
TARE 2 (kg)	8300	8100	8300	8600	8400
TARE 3 (kg)		8200			
TARE AVERAGE (kg)	8350	8200	8400	8650	8450
TRUCK TALLY	𝍸 |||	𝍸 |||	𝍸 |||	𝍸 |||	𝍸 |
NUMBER LOADS	9	7	8	8	6
TARE WEIGHT (kg)	75,150	57,400	67,200	69,200	50,700

TRUCK NO.	56				
TARE 1 (kg)	8600				
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)	8600				
TRUCK TALLY	|||				
NUMBER LOADS	3				
TARE WEIGHT (kg)	25,800				

TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TOTAL TARE WEIGHT 345, 450 kg

I CERTIFY THIS INFORMATION TO BE
C O R R E C T

BY:_____

DATE: _____

COMPANY: _____

WFLHD-434
(Rev 12/90)

STREET DELIVERY REPORT
SPREAD REPORT

PAGE NO._____

PROJECT: _____

ITEM NO.: 30101, Aggregate Base _____ DATE _____

SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS	LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS
1	63	8:25am	1+100	Right Lane	26	32	1:40pm	1+200	Left Lane
2	72	8:35am	0+140	"	27	56	1:50pm	1+230	"
3	109	8:55am	0+170	"	28	63	2:00pm	1+270	"
4	101	9:00am	0+205	"	29	72	2:10pm	1+305	"
5	32	9:15am	0+230	"	30	101	2:20pm	1+340	"
6	56	9:30am	0+310	"	31	109	2:30pm	1+390	"
7	63	9:45am	0+360	"	32	32	2:45pm	1+420	"
8	101	9:55am	0+390	"	33	63	3:00pm	1+480	"
9	72	10:05am	0+450	"	34	72	3:05pm	1+520	"
10	109	10:20am	0+490	"	35	101	3:15pm	1+570	"
11	32	10:35am	0+510	"	36	109	3:25pm	1+575	Approach Lef
12	63	10:45am	0+580	"	37	63	3:40pm	1+660	"
13	72	11:05am	0+620	"	38	72	3:50pm	1+705	"
14	109	11:15am	0+700	"	39	101	4:00pm	1+725	"
15	101	11:25am	0+730	"	40	109	4:15pm	1+775	"
16	32	11:30am	0+795	"	41	63	4:20pm	1+790	"
17	63	11:45am	0+820	"	42	56	4:30pm	1+815	"
18	72	11:55am	0+870	VOID					
19	101	12:05pm	0+890	Right Lane					
20	109	12:30pm	0+920	"					
21	32	12:35pm	0+030	Approach Right			NOTE:	Enter station where dump begins	
22	63	1:00pm	0+980	Right Lane					
23	101	1:05pm	0+020	"					
24	72	1:15pm	1+100	Left Lane					
25	109	1:30pm	1+160	"					

CERTIFICATION

I CERTIFY THAT THE ABOVE LOADS WERE PLACED AS SHOWN AND ARE THE SOLE BASIS FOR PAYMENT.

Contractor signature _____ Received by: _____Date _____

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

Example utilizing Belt Scales

PROJECT: _____.

ITEM NO.: 30101, Aggregate Base DATE _____

SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (t)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)
1	63	8:00 am		41	63	3:50pm					
2	72	8:10 am		42	56	4:05pm					
3	101	8:25 am									
4	109	8:35 am									
5	32	8:50 am									
6	56	9:05 am									
7	63	9:10 am									
8	72	9:25 am									
9	101	9:35 am									
10	109	9:55 am									
11	32	10:10 am									
12	63	10:20 am									
13	72	10:30 am									
14	101	10:35 am									
15	109	10:45 am									
16	32	11:00 am									
17	63	11:10 am									
18	72	11:25 am									
19	101	11:35 am									
20	109	11:50 am									
21	32	11:55 am									
22	63	12:35 am									
23	101	12:40 am									
24	72	12:50 pm									
25	109	1:05 pm									
26	32	1:15 pm									
27	56	1:25 pm									
28	63	1:35 pm									
29	73	1:45 pm									
30	101	1:55 pm									
31	109	2:05 pm									
32	32	2:20 pm									
33	63	2:25 pm									
34	72	2:40 pm									
35	101	2:50 pm									
36	109	3:00 pm									
37	63	3:15 pm									
38	72	3:30 pm									
39	101	3:35 pm									
40	109	3:40 pm									

DAILY SUMMARY
End Reading 792,300
Begin Reading 107,553
NET kg 684,747
Metric tonne 684.75

WEIGHED BY: ABC

CHECKED BY: JKD

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION
SIGNED_____

DATE _____.

COMPANY XYZ Construction

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

WEIGHT TICKETS

SOMEWHERE ROAD PROJECT — ABC CONTRACTORS
PROJECT: PFH 123-4(5) — TICKET NO. : 6789
LOAD NO.: 15

ITEM NO. 30104 - SUB-BASE AGGREGATE, GRADING A

Date: 10/16/2004 TIME LOADED: 07:45

TIME DUMPED: 08:05

LOCATION DUMPED: Sta. 0+080 to 0+093

Truck No. 12 GROSS (kg) 35,850

TARE (kg) 15,650

NET (kg) 20,200

ACCUMMULATIVE DAY NET: 1,113. 750

* Sample Weight Ticket printed at electronic scale.
Time and station of placement added at project by spread person
Can utilize similar ticket for aggregate or asphalt items.

Please provide the following information on all weight tickets.

(1) Project Number
(2) Item Number and Description
(3) Date
(4) Time
(5) Ticket Number
(6) Haul Unit Number
(7) Net Mass in load at least to the nearest 50 kilograms
(8) Subtotal net mass for each haul unit since the beginning of the shift
(9) Accumulated total net mass for all haul units since beginning of the shift

ABC Contractors
Project Office
P.O. Box 1234
Anywhere, USA 56789
Phone No.: 123-456-7891
Fax No.: 123-456-7892

April 20, 2004

Serial Letter No. 26

Mr. U. R. Bright, Project Engineer
Federal Highway Administration
12345 Slam Dunk Road
Somewhere, USA 56789

RE: Somewhere Road Project
Target Values for Sub-Base Aggregate
Item No. 30104

Dear Mr. Bright:

We submit our 180 kg sample to which the "Humphres Method of Granular Soils" is to be performed for the 30101, Aggregate Base, Grading A.

Following are the target values for the aggregate samples:

Grading A	Percent Mass Passing Sieve
63 mm	100
50 mm	97 - 100
37.5 mm	
25 mm	65 - 79
19 mm	
12.5 mm	45 - 59
9.5 mm	
4.75 mm	28 - 42
425 um	9 - 17
75 um	10 max

Sincerely,

Johnny Sunshine
Project Superintendent

* Provide Target Values for all Specification and Intermediate Screens.

DIVISION 400

Asphalt Pavements and Surface Treatments

INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 40101 - Hot Asphalt Concrete Pavement

DESCRIPTION, LOCATION, ETC.	QUANTITY (t)
Station 1+100 to 1+815 Left Lane	684.5
* See attached documentation	
TOTAL ➡	684.5

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 401

FORM 17348

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

PROJECT: _____

ITEM NO.: 30101, Aggregate Base DATE _____

SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)
1	63	8:00 am	24,500	41	63	3:50pm	24,400				
2	72	8:10 am	24,400	42	56	4:05pm	24,900				
3	101	8:25 am	24,600								
4	109	8:35 am	23,900								
5	32	8:50 am	24,500								
6	56	9:05 am	24,600								
7	63	9:10 am	25,000								
8	72	9:25 am	24,400								
9	101	9:35 am	24,900								
10	109	9:55 am	24,500								
11	32	10:10 am	24,700								
12	63	10:20 am	24,400								
13	72	10:30 am	24,000								
14	101	10:35 am	24,900								
15	109	10:45 am	23,900								
16	32	11:00 am	24,500								
17	63	11:10 am	24,800								
18	72	11:25 am	24,400								
19	101	11:35 am	24,900								
20	109	11:50 am	24,700								
21	32	11:55 am	24,500								
22	63	12:35 am	24,500								
23	101	12:40 am	24,400								
24	72	12:50 pm	24,800								
25	109	1:05 pm	23,900								
26	32	1:15 pm	24,000								
27	56	1:25 pm	24,500								
28	63	1:35 pm	24,600								
29	73	1:45 pm	24,800								
30	101	1:55 pm	24,500								
31	109	2:05 pm	23,900								
32	32	2:20 pm	24,400								
33	63	2:25 pm	24,600								
34	72	2:40 pm	24,500								
35	101	2:50 pm	24,500								
36	109	3:00 pm	24,800								
37	63	3:15 pm	24,600								
38	72	3:30 pm	24,700								
39	101	3:35 pm	24,500								
40	109	3:40 pm	23,900								

DAILY SUMMARY

MASS 1,029, 900
TARE 345, 500
NET 684, 450
Metric tons 684.45

WEIGHED BY: ABC

CHECKED BY: JKD

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION
SIGNED _____

DATE _____.

COMPANY XYZ Construction

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: _____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: _____

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: _____

WFLHD-443
(Rev 12/90)

TARE CHART

PAGE NO._____

LOADS NOT APPEARING ON
STREET DELIVERY REPORT
WILL BE DELETED UNLESS
SATISFACTORILY EXPLAINED.

PROJECT: _____

ITEM NO.: 40101, Hot Asphalt Concrete Pavement

DATE _____

SOURCE NO.: 634-55142

Pay Lot No.: 1

SHEET NO. 1 OF 1

TRUCK NO.	63	72	101	109	32
TARE 1 (kg)	8400	8300	8500	8700	8500
TARE 2 (kg)	8300	8100	8300	8600	8400
TARE 3 (kg)		8200			
TARE AVERAGE (kg)	8350	8200	8400	8650	8450
TRUCK TALLY	𝍸 |||	𝍸 |||	𝍸 |||	𝍸 |||	𝍸 |
NUMBER LOADS	9	7	8	8	6
TARE WEIGHT (kg)	75,150	57,400	67,200	69,200	50,700

TRUCK NO.	56				
TARE 1 (kg)	8600				
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)	8600				
TRUCK TALLY	|||				
NUMBER LOADS	3				
TARE WEIGHT (kg)	25,800				

TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVERAGE (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TOTAL TARE WEIGHT 345, 450 kg

I CERTIFY THIS INFORMATION TO BE
C O R R E C T

BY:_____

DATE: _____

COMPANY: _____

WFLHD-434
(Rev 12/90)

STREET DELIVERY REPORT
SPREAD REPORT

PAGE NO._____

PROJECT: _____

ITEM NO.: 40101, Hot Asphalt Concrete Pavement DATE _____
SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS	LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS
1	63	8:25am	1+100	Right Lane	26	32	1:40pm	1+200	Left Lane
2	72	8:35am	0+140	"	27	56	1:50pm	1+230	"
3	109	8:55am	0+170	"	28	63	2:00pm	1+270	"
4	101	9:00am	0+205	"	29	72	2:10pm	1+305	"
5	32	9:15am	0+230	"	30	101	2:20pm	1+340	"
6	56	9:30am	0+310	"	31	109	2:30pm	1+390	"
7	63	9:45am	0+360	"	32	32	2:45pm	1+420	"
8	101	9:55am	0+390	"	33	63	3:00pm	1+480	"
9	72	10:05am	0+450	"	34	72	3:05pm	1+520	"
10	109	10:20am	0+490	"	35	101	3:15pm	1+570	"
11	32	10:35am	0+510	"	36	109	3:25pm	1+575	Approach Lef
12	63	10:45am	0+580	"	37	63	3:40pm	1+660	"
13	72	11:05am	0+620	"	38	72	3:50pm	1+705	"
14	109	11:15am	0+700	"	39	101	4:00pm	1+725	"
15	101	11:25am	0+730	"	40	109	4:15pm	1+775	"
16	32	11:30am	0+795	"	41	63	4:20pm	1+790	"
17	63	11:45am	0+820	"	42	56	4:30pm	1+815	"
18	72	11:55am	0+870	VOID					
19	101	12:05pm	0+890	Right Lane					
20	109	12:30pm	0+920	"					
21	32	12:35pm	0+030	Approach Right			NOTE:	Enter station where dump begins	
22	63	1:00pm	0+980	Right Lane					
23	101	1:05pm	0+020	"					
24	72	1:15pm	1+100	Left Lane					
25	109	1:30pm	1+160	"					

CERTIFICATION

I CERTIFY THAT THE ABOVE LOADS WERE PLACED AS SHOWN AND ARE THE SOLE BASIS FOR PAYMENT.

Contractor signature _____ Received by: _____Date _____

WFLHD-422
(Rev 12/90)

DAILY WEIGHT RECORD

Example utilizing Belt Scales

PROJECT: _____

ITEM NO.: 40101, Hot Asphalt Concrete Pavement DATE _____
SOURCE NO.: 634-55142 Pay Lot No.: 1 SHEET NO. 1 OF 1

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)
1	63	8:00 am		41	63	3:50pm					
2	72	8:10 am		42	56	4:05pm					
3	101	8:25 am									
4	109	8:35 am									
5	32	8:50 am									
6	56	9:05 am									
7	63	9:10 am									
8	72	9:25 am									
9	101	9:35 am									
10	109	9:55 am									
11	32	10:10 am									
12	63	10:20 am									
13	72	10:30 am									
14	101	10:35 am									
15	109	10:45 am									
16	32	11:00 am									
17	63	11:10 am									
18	72	11:25 am									
19	101	11:35 am									
20	109	11:50 am									
21	32	11:55 am									
22	63	12:35 am									
23	101	12:40 am									
24	72	12:50 pm									
25	109	1:05 pm									
26	32	1:15 pm									
27	56	1:25 pm									
28	63	1:35 pm									
29	73	1:45 pm									
30	101	1:55 pm									
31	109	2:05 pm									
32	32	2:20 pm									
33	63	2:25 pm									
34	72	2:40 pm									
35	101	2:50 pm									
36	109	3:00 pm									
37	63	3:15 pm									
38	72	3:30 pm									
39	101	3:35 pm									
40	109	3:40 pm									

DAILY SUMMARY
End Reading 792 300
Begin Reading 107 553
NET kg 684 450
Metric tonne 684.45

WEIGHED BY: ABC

CHECKED BY: JKD

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION
SIGNED_____

DATE _____.

COMPANY XYZ Construction

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____
400.6
☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____
☐ AGREE WITH ☐ DOES NOT AGREE Inspector:_____

WEIGHT TICKETS

SOMEWHERE ROAD PROJECT — ABC CONTRACTORS
PROJECT: PFH 123-4(5) — TICKET NO. : 6789
LOAD NO.: 15

ITEM NO. 30104 - SUB-BASE AGGREGATE, GRADING A

Date: 10/16/2004 TIME LOADED: 07:45

TIME DUMPED: 08:05

LOCATION DUMPED: Sta. 0+080 to 0+093

Truck No. 12 GROSS (kg) 35,850

TARE (kg) 15,650

NET (kg) 20,200

ACCUMMULATIVE DAY NET: 1,113. 750

* Sample Weight Ticket printed at electronic scale.
Time and station of placement added at project by spread person
Can utilize similar ticket for aggregate or asphalt items.

Please provide the following information on all weight tickets.

(1) Project Number
(2) Item Number and Description
(3) Date
(4) Time
(5) Ticket Number
(6) Haul Unit Number
(7) Net Mass in load at least to the nearest 50 kilograms
(8) Subtotal net mass for each haul unit since the beginning of the shift
(9) Accumulated total net mass for all haul units since beginning of the shift

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 40901 - Emulsified Asphalt Surface Treatment

DESCRIPTION, LOCATION, ETC.	QUANTITY (t)
Station 1+100 to 1+815 Left Lane	15.7
* See attached documentation and invoices	
TOTAL ➡	15.7

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 409.

FORM 17348

DATE: _____ LINE: _____ PARTY: ___ _____
PROJECT:

PROJECT STAMP

ITEM 40904
EMULSIFIED ASPHALT GRADE

DATE	INVOICE NO.	metric tons			INSP.
3/10/93	178796	15.70			ABC
3/11/93	178797	16.50			ABC
3/12/93	178002	13.40			ABC
SUBTOTAL		45.6			
3/15/93	189777	-.320			ABC
	TOTAL	42.4			

Note:

Per FP96 Subsection 109.02(k), when emulsified asphalt is converted from volume to mass, use a factor of 1000 liters per metric ton regardless of temperature

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTAT PAGE:____
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC CONSTRUCTION NOTES

REMARKS					
MATERIALS NOT USED, RETURNED TO SUPPLIER					

NOTE: REASURE VOLUME IN TANK FOR VERIFICATION,
BUT PAYMENT WILL BE BASED ON TONS
ON RETURN INVOICES.

COMPUTED BY: _____ CHECKED BY: _____
DATE: _____ DATE: _____

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 40904 - Prime Coat Grade MC - 250

DESCRIPTION, LOCATION, ETC.	QUANTITY (t)
Station 0+107 to 0+547 Left Lane = 2,320 Liters applied @ 15.6C = 2.32 metric tonne	2.32
Station 0+547 to 0+872 Left Lane = 1,166 Liters applied @ 15.6C = 1.16 metric tonne	1.16
Station 0+107 to 0+789 Right Lane = 3,677Liters applied @ 15.6C = 3.67 metric tonne	3.67
* See attached documentation and invoices	
TOTAL ➡	7.2

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 409.

FORM 17348

DATE: _____ LINE: _____ PARTY: R P. SMITH

PROJECT ITEM 40904

PROJECT PRIME COAT

STAMP GRADE MC-250

STA. TO STA.	SHOT LENGT H (m)	SHOT WIDTH (m)	AREA OF SHOT (m2)	HOT L ASPHALT APPLLIED	TEMP. C WHEN SHOT
7/9/80, CLEAR & WARM, ATMOSPHERIC TEMP. 18C & RISING @ 7:30AM					
0+107 LT					
TO	440	4	1760	2445	99
0+547 LT					
TO	325	4	1300	1230	99
0+872 LT					
0+107 RT					
TO	682	4	2728	3861	93
0+789 RT					

NOTE: SIMILAR NOTES SHALL BE USED

FOR DOCUMENTING THE APPLICATION

AND DISTRIBUTIN OF MOST

LILQUID ASPHALTIC MATERIALS

WDFD-472 U.S. DEPARTMENT OF TRANSPORTAT PAGE:____

3/83 FEDERAL HIGHWAY ADMINISTRATION

VANCOUVER, WASHINGTON

MISC CONSTRUCTION NOTES

FACTOR FOR CONVERSION TO 15.5 C	LITERS APPLIED @ 15.6 C	APL. RATE L/m3 @ 15.6C	PLAN APL.RATE L/m3	INVOICE NO.	REM
0.9482	2320	1.32	1.3	B3319	
0.9482	1166	0.89	1.3	B3319	
0.9518	3677	1.35	1.3	B3319	
TOTAL	7163	Liters			
@ 15.6 C					

7163 L @ 15.6 C / 1002 Liters per metric ton =
7.15 metric tons

Invoice No. B3319 shows 7.22 metric tons by mass

Cross check considered adequate.
/s/ Inspector

COMPUTED BY: _____ CHECKED BY:_____

DATE: _____ DATE:_____

INFORMATION FOR PROGRESS PAYMENT

Unnamed Lake Road OR PFH 1234-1 (2) ESTIMATE #8

ITEM 41201, EMULSIFIED ASPHALT, GRADE CSS-1, TACK COAT

DATE	INVOICE NO.	GROSS MASS (kg)	TARE MASS (kg)	NET MASS (kg)	NET MASS DELIVERED (metric tons)	MASS RETURNED (metric tons)	MASS USED (metric tons)
7/27/98	4347	23150	12800	10350	10.35	1.06	9.29
8/03/98	*	13300	11200	2100	2.10	.40	1.70
8/04/98	*	14750	11800	2950	2.95	0.00	2.95
8/05/98	*	14250	11550	2700	2.70	0.00	2.70

TOTAL TO DATE = 16.64

* WEIGHED ON PROJECT PLATFORM SCALE

GRAND TOTAL = 16.64

LESS PREVIOUS PAYMENTS = 10.03

PAYMENT DUE THIS MONTH = 6.61 = 6.6

* Provide documentation showing location and rate of application as per page 400 - 11 of Field Note Sample Book.

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 41301 - Asphalt Pavement Milling

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Station 2+060 to 3+911 Right - 4 m wide x 1851 m length = 7,404 m2	7,404.0
Station 2+205 to 3+356 Left Lane = 4 m wide x 1151 m length = 1,604 m2	1,604.0
TOTAL ➡	9,008

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 413.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 41301
ASPHALT PAVEMENT MILLING

DATE	STATION	STATION	WIDTH (m)	LENGTH (m)	Square meters
10/21/92	2+060	3+911 R	4	1,851	7,404.0
10/28/92	2+205	3+356 L	4	1,151	1,604.0
TOTAL					9,008

WDFD-472 3/83 U.S. DEPARTMENT OF TRANSPORTAT PAGE:____
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC CONSTRUCTION NOTES

INSPECTOR					
ABC					
ABC					

COMPUTED BY: _____ CHECKED BY: _____
DATE: _____ DATE: _____

DIVISION 550

Bridge Construction

INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 55101 - Steel H - Pile, in place, 310 mm x 110 mm

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Abutment No. 1 = 82 m	82.0
* See attached documentation.	
TOTAL ➡	82.0

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 551.

FORM 17348

DATE:_____ LINE:_____ PARTY:_____

PROJECT: ITEM - 55101

PROJECT STAMP

Steel H-Piles In Place

CAPACITY COMPUTATIONS

FP96 TABLE 551-1 PILE HAMMER MINIMUM ENERGY

CALCULATE ULTIMATE PILE CAPACITY (RU):

RU = 440 kN REQUIRED BEARING x FACTOR OF SAFETY (3) = 1320 kN

FROM TABLE 551-1: 1320 kN => 21 kJ REQUIRED HAMMER ENERGY (kJ = kN·m)

CHECK PROPOSED HAMMER ENERGY:

DELMAG D8-22 MAX. ENERGY RATING = 23.87 kN·m

DYNAMIC FORMULA:

RU= $7\sqrt{E}\ \log(10N) - 550$

RU= ULTIMATE PILE CAPACITY (kN) = 1320 kN

E= MANUFACTURER'S RATED HAMMER ENERGY IN JOULES AT THE FIELD OBSERVED RAM STROKE = 23870 JOULES (AT MAX. ENERGY)

N= NUMBERS OF HAMMER BLOWS PER 25mm AT FINAL PENETRATION

SOLVING FOR N: WHERE $N=10^{X}$

Therefore $X = \left(\frac{RU + 550}{7\sqrt{E}}\right) - 1$

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

SUBSTITUTE VALUES AND SOLVE FOR X:

$$X = \left(\frac{1320 + 550}{7\sqrt{23870}}\right) - 1$$

X = 0.73

SOLVING FOR N:

$N = 10^{X}$

$N = 10^{0.73}$

N = 5.4 BLOWS PER 25 mm AT MAX. ENERGY *

NOTES: * 1) Hammers seldom operate at the maximum manufacturer's rated energy. Hammer energy values should be based on field observed ram stroke. Hammer manufacturers can provide tables of ram stroke versus hammer energy.

2) Use dynamic formula (FP96 Subsection 551.06(b) to determine ultimate capacity (blow per mm) unless the wave equation is required according to FP96 Subsection 551.03(b) If wave equation is used, WFLHD Geotech Branch will furnish the amount of blows required to obtain pile capacity.

COMPUTED BY: ABC CHECKED BY: JKD

DATE: 1/12/98 DATE: 1/12/98

DATE:_____ LINE:_____ PARTY: _____
PROJECT: ITEM 55101
PROJECT STAMP _____ PILES, IN PLACE

WDFD-472 3/83 — U.S. DEPARTMENT OF TRANSPORTATION — FEDERAL HIGHWAY ADMINISTRATION — VANCOUVER, WASHINGTON — PAGE:__

MISC. CONSTRUCTION NOTES
(Dimensions are in meters unless otherwise noted)

PILE DRIVING RECORD

STRUCTURE : BOULDER CREEK BRIDGE — DATE: 1/10/98

LOCATION : ABUT # 2 PILE TYPE : HP 250 x 85

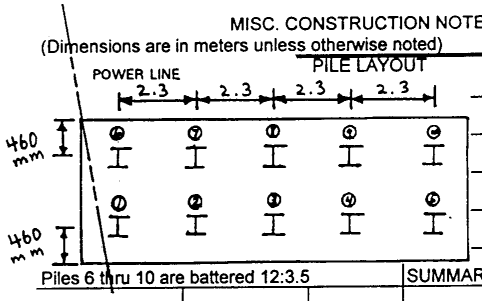
HAMMER NAME & MODEL : DELMAG D8-22

HAMMER ENERGY : 23.87 kN•m

REQUIRED BEARING : 440 kN

PILE NO.	LENGTH IN LEADS	CUT OFF LENGTH (m)	CUT OFF ELEVATION	TIP ELEV
1 **	7.62	0.229	238.658	225.552
	7.62	1.905	238.658	
2	15.24	3.100	238.658	226.518
3	15.24	3.200	238.658	226.619
4	15.24	2.819	238.658	226.238
5	15.24	2.234	238.658	225.653
6 **	7.62	0.305	238.658	225.857
	7.62	1.600	238.658	
7	15.24	2.643	238.658	226.564
8	15.24	2.691	238.658	226.613
9	15.24	2.286	238.658	226.223
10	15.24	1.829	238.658	225.784
TOTAL	152.4	24.841		

** Length restricted to 7.62 m due to power lines over abutment

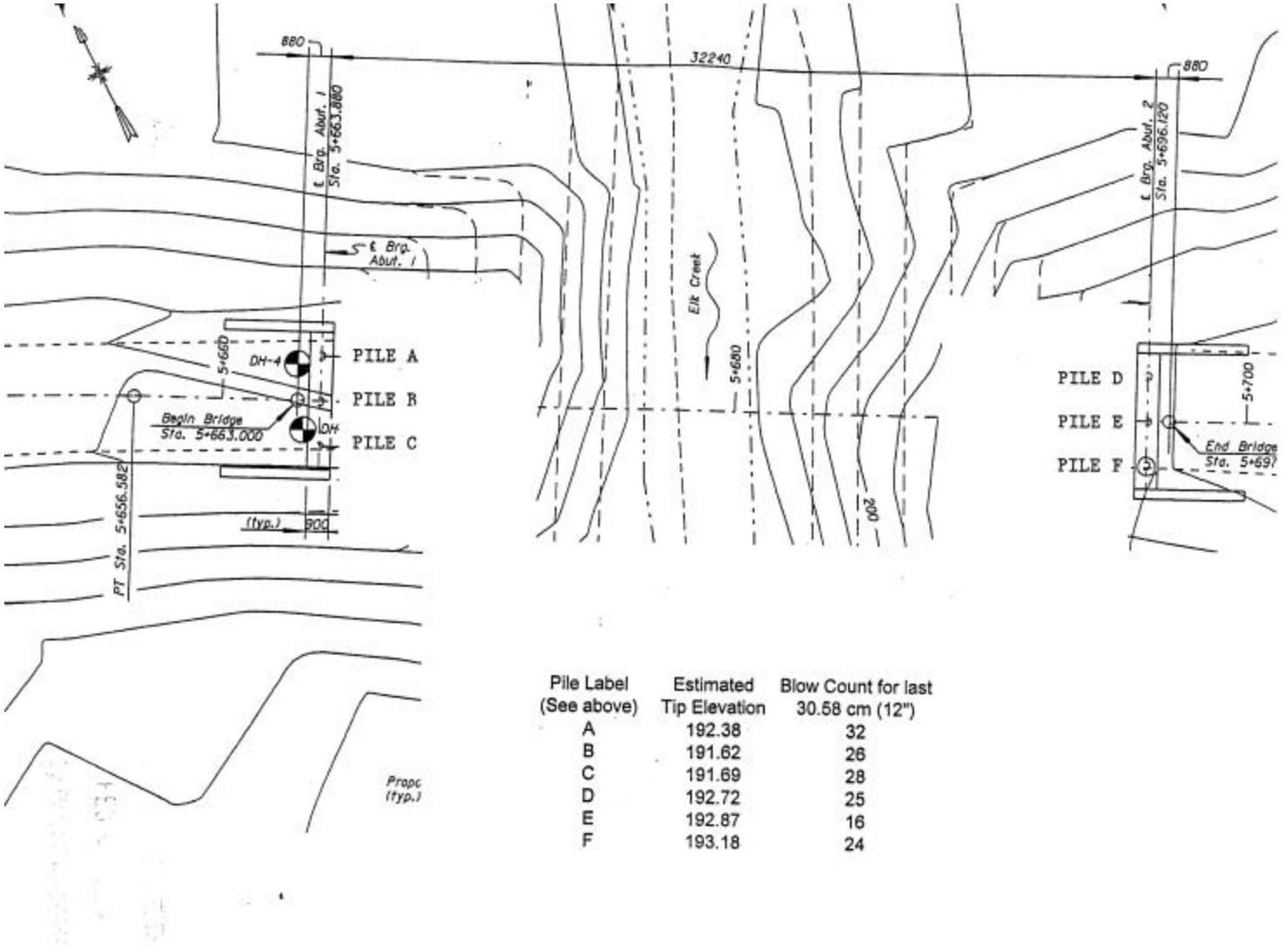


Piles 6 thru 10 are battered 12:3.5

SUMMARY

PILE NO.	GROUND ELEVATION	BLOWS per 25 mm	55101 meters	55106 EACH
1	238.354	6	13.11	1
	238.354			
2	238.354	7	12.14	
3	238.354	7	12.04	
4	238.354	6	12.42	
5	238.354	6	13.01	
6	238.354	6	12.80	1
	238.354			
7	238.354	7	12.09	
8	238.354	7	12.05	
9	238.354	8	12.44	
10	238.354	6	12.87	
TOTAL			125.0	2

COMPUTED BY: TB — CHECKED BY: JKD
DATE: 1/12/98 — DATE: 1/12/98



Pile Label (See above)	Estimated Tip Elevation	Blow Count for last 30.58 cm (12")
A	192.38	32
B	191.62	26
C	191.69	28
D	192.72	25
E	192.87	16
F	193.18	24

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 55201 - Structural Concrete

DESCRIPTION, LOCATION, ETC.	QUANTITY (m3)
Pier Cap Abutment No. 1 = 4.27 x 11.4 x 0.88 = 42.84 m3	42.84
Pier Cap Abutment No. 1 = 4.27 x 11.4 x 0.88 = 42.84 m3	42.84
* See attached documentation.	
TOTAL ➡	85.68

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 552

FORM 17348

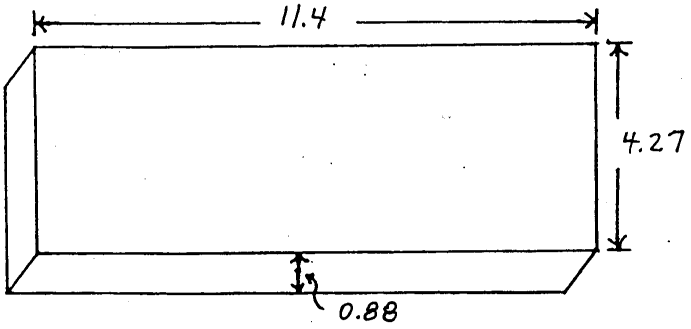
DATE: _____ LINE: _____ PARTY: Contractor

PROJECT:

PROJECT STAMP

Item 55201
Structural Concrete

Estimate No. 1			
Pier Cap Abut. No. 1			
	4.27 x 11.4 x .88 =	42.84	m3
Pier Cap Abut. No. 2			
	Same as Pier Cap Abut. No. 1	42.84	m3
Total Item 55201 Est. No. 1		85.68	m3



(Documentation for Progress Est.)

DATE: _____ LINE: _____ PARTY: J.Jones, Instr.
PROJECT: R.Jones, Chainman
O.Brown, Chainman
PROJECT STAMP C.Black, Rearchain

CLEAR & HOT

8+373.929 C/L BENT No. 4

8+357.473 C/L PIER No. 1

Note: Always set several hubs on each C/L with back or foresight set at a distance so that construction operations will not interfere.

Note: All main C/L hubs and bench marks to be well referenced and described so others not familiar with site may locate them with instrument and chain.

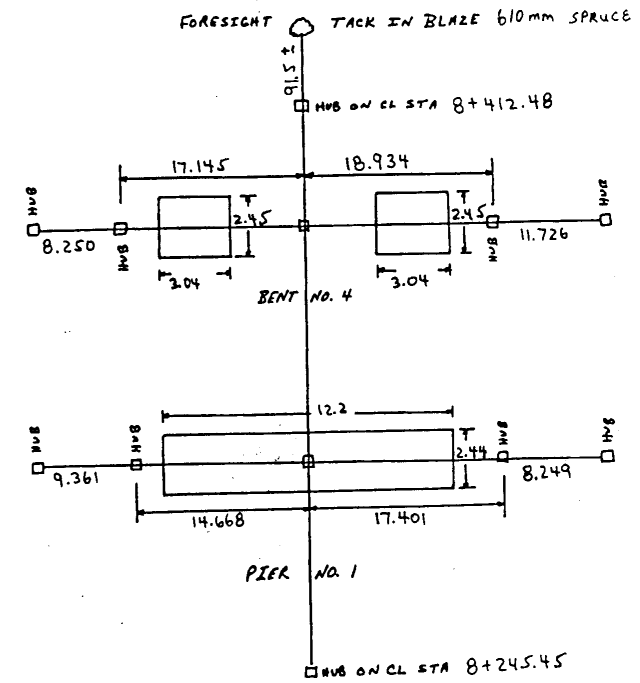
WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA PAGE: ___
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

All dimensions shown in meters unless otherwise noted

BRIDGE



BM #23, ELEVATION 23.3263 NAIL IN BASE OF 457 mm

SPRUCE TREE 33 meters LT STA. 8+305.8

COMPUTED BY: ABC CHECKED BY: JKD
DATE: 04/15/98 DATE: 04/15/98

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 55401 - Reinforcing Steel

DESCRIPTION, LOCATION, ETC.	QUANTITY (kg)
Abutment No. 1	1,060.79
Abutment No. 1	579.502
Total	1,640.292
* See attached documentation.	
PAY TOTAL ➡	1,640

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 554.

FORM 17348

DATE:_____ LINE:_____ PARTY:_____
PROJECT:

PROJECT STAMP

ITEM 55401
REINFORCING STEEL

DESCRIPT.	MARK	NO.	SIZE	LENGTH (m)	kg
ABUT No.1	A1	114	#25	267	1060.790
ABUT No.2	A2	15	#13	583	579.502
				Total	1640.292
				Pay Qty =	1640 kg

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

PAGE:___

MISC. CONSTRUCTION NOTES

INSTALLED		CONTR.	INSP.	REMARKS
04/40/98		WJF	JTB	Straight Bars
"		"	"	Straight Bars

COMPUTED BY: ABC CHECKED BY: JKD

ACE PRECAST PRODUCTS
P.O. Box 1234
Anywhere, USA 56789
Phone No.: 123-456-7891
Fax No.: 123-456-7892

April 20, 2004

Serial Letter No. 01

ABC Contractors
Mr. U. R. Bright, Project Manager
12345 Slam Dunk Road
Somewhere, USA 56789

RE: Somewhere Road Project
Concrete mix design
Item No. 55201

Dear Mr. Bright:

We submit our request for our concrete mix design and also some representative cylinder results.

This is our standard design for the required 35 mpa to meet ASTM C 1433 requirements. This is actual measured material for a .67 cubic meter batch.

½ Round rock	660 kgs
Washed concrete sand	597 kgs
Type 10 Portland cement	213 kgs
Maximum Water Cement Ratio	0.45

Please note that this is confidential information and for your and the agencies use only.

Please let me know if you require any additional information and also when you have your schedule for delivery.

Best Regards

Johnny Sunshine
Project Superintendent

U.S. Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

PORTLAND CEMENT CONCRETE MIX DESIGN[1]
TRIAL BATCH SUMMARY

Project: NV FLH 3-2(4) Scenic Hwy. Date: 10/1/96
Contractor: M·M Constr. Co. Concrete for: Box culvert
Concrete producer: Roadway Ready Mix Reno, NV Class of concrete: A(AE)
Mix designation: —

• **COMPRESSIVE STRENGTH (28 DAY)**

Minimum average strength required[2] (f_{cr}) 26.49 megapascals (MPa)
Design strength specified (f_c') 25 MPa

• **PROPORTIONS**

Material	Specific Gravity (SSD)	SSD Mass per m³ (kg)	Absolute Volume (m³)	Tolerance % (±)	Admixtures	Dosage per m³ (mL)
Cement	3.15	362	0.115	1	Air entrainment	769
Water	1.00	147	0.147	1	Water reducer	—
Coarse aggregate[3]	2.73	1237	0.453	2	Retarder	—
Fine aggregate[3]	2.72	638	0.234	2	Color	—
Total air			0.050		Accelerator	—
Other —	—	—	—		Other —	—
Totals		2384 kg	0.999 m³			

• **PROPERTIES**

Water/cement ratio (by mass)[4] 0.41
Measured unit mass 2378 kg/m³
Theoretical unit mass 2384 kg/m³
Measured air content 5.3 percent
Measured slump 100 mm

• **MEASURED COMPRESSIVE STRENGTH**

Individual 7-day, MPa 16.97, 14.03, 17.76. Average (7 day): 16.25 MPa
Individual 28-day, MPa 30.27, 30.94, 27.76. Average (28 day): 29.66 MPa

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).
[2] See page 5.
[3] Bulk SSD.
[4] The water/cement ratio for modified concrete is the ratio of the mass of water to the combined masses of portland cement and cement substitute.

• **SIGNATURES** Contractor: J. M. Good
Mix Designer: C. Charles

Form FHWA 1608 (Rev 10-96) Page 1 of 6

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
MATERIALS SOURCE SUMMARY

• **CEMENT (AASHTO M 85)**

Name and address of cement producer: Ideal Basic Inc., Fort Collins

Source of manufacture: Limestone Quarry on Property

Type of cement: II Materials certification attached: ☑ Yes ☐ No

• **WATER (725.01 and AASHTO T 26)**

Water potable: ☑ Yes ☐ No If no, provide the following:

Water pH number	_____
Chloride concentration	_____ (ppm)
Sulphate ion concentration	_____ (ppm)
Total solids content	_____ (%)

• **ADMIXTURES**

Material	Producer and Product Designation	Certification Attached Yes	Certification Attached No
Air entraining admixture	Protex	☐	☑
Water reducing admixture, type A		☐	☐
Retarding admixture, type B		☐	☐
Accelerating admixture, type C		☐	☐
Water reducing and retarding admixture, type D		☐	☐
Water reducing and accelerating admixture, type E		☐	☐
Water reducing, high range admixture, type F		☐	☐
Fly ash, type ___		☐	☐
Ground iron blast-furnace slag		☐	☐
Silica fume (microsilica)		☐	☐
Color additive		☐	☐
Other:_____		☐	☐

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).

Form FHWA 1608 (Rev 10-96) Page 2 of 6

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
MATERIALS SOURCE SUMMARY

• **COARSE AGGREGATE (703.02 AND AASHTO M 80)**

Name of supplier/producer: Anderson Crushing Co.

Location of material source: Brush Flats, 5 km NE, Fort Collins, Hwy. 71

Material type: ☑ Gravel ☐ Crushed gravel ☐ Crushed stone ☐ Crushed blast furnace slag

Grading no.: 7

Sieve Analysis:

Sieve Designation	Percent Passing	Specification
50 mm	____	____
37.5 mm	____	____
25.0 mm	____	____
19.0 mm	100	100
12.5 mm	94	90-100
9.5 mm	53	40-70
4.75 mm	10	0-15
2.36 mm	2	0-5
1.18 mm	1	—

Properties:

(1) Coal and lignite 0.2 (%) (0-0.5)[3]
(2) Deleterious chert 0.0 (%) (0-3)[3]
(3) Sodium sulfate soundness[2] 4.6 (%)(0-12)[3]
(4) Clay lumps and friable particles 0.1 (%) (0-2)[3]
(5) LA abrasion ____, grading B, 21 % loss (0-40)[3]
(6) Bulk specific gravity 2.71
(7) Absorption 0.59 (%)
(8) Bulk SSD specific gravity 2.73
(9) Dry rodded unit mass 1724 (kg/m³)
(10) Minus 75 μm 1.0 (%) (0-1)[3]
(11) Adherent fines 0.1 (%) (0-1)[3]
(12) Other ____

• **FINE AGGREGATE (703.01 AND AASHTO M 6)**

Name of supplier/producer: Anderson Crushing Co.

Location of material source: Brush Flats, 5 km NE, Fort Collins, Hwy. 71

☐ Manufactured sand ☑ Natural sand ☐ Blend

Sieve Analysis:

Sieve Designation	Percent Passing	Accumulative Percent Retained
9.5 mm	100	0
4.75 mm	97	3
2.36 mm	82	18
1.18 mm	61	39
600 μm	50	50
300 μm	22	78
150 μm	9	91

Fineness modulus: 2.79

Properties:

(1) Clay lumps 0.0 (%) (0-3)[3]
(2) Coal and lignite 0.0 (%) (0-1)[3]
(3) Sodium sulfate soundness[2] 9.2 (%) (0-10)[3]
(4) Sand equivalent value, alt. 2 79 (>75)[3]
(5) Bulk specific gravity 2.69
(6) Bulk SSD specific gravity 2.72
(7) Absorption 1.05 (%)
(8) Organic impurities none
(9) Minus 75 μm 1.0 (%) (0-3)[3]
(10) Other ____

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).
[2] At five cycles.
[3] Specification limits.

Form FHWA 1606 (Rev 10-94)

Page 3 of 6

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
DATA FOR COMPUTING THE COEFFICIENT OF VARIATION OF BATCHES

Batch No.	Date Batched	7-Day Compressive Strengths (MPa)				28-Day Compressive Strengths (MPa)			
		Cyl. 1	Cyl. 2	Cyl. 3	Average ($\bar{x}$)	Cyl. 1	Cyl. 2	Cyl. 3	Average ($\bar{x}$)
1	10/1/96	16.34	15.86	16.58	16.26	24.40	26.92	25.11	25.48
2	10/1/96	15.03	13.78	15.86	14.89	23.34	24.52	26.35	24.74
3	10/1/96	15.62	15.82	16.13	15.86	21.42	25.99	23.62	23.69
4	10/2/96	19.21	19.99	19.34	19.51	23.37	21.26	24.08	22.91
5	10/2/96	18.28	18.65	17.86	18.26	25.31	22.76	26.75	24.95
6	10/2/96	19.17	18.27	19.31	18.92	22.71	20.72	25.57	23.01
7	10/2/96	17.44	18.62	19.93	18.66	26.42	26.06	22.17	24.89
8	10/2/96	15.17	19.31	19.44	17.97	23.62	26.95	22.49	24.36
9	10/3/96	18.13	17.58	20.03	18.58	20.05	21.71	24.98	22.25
10	10/3/96	15.48	17.37	16.60	16.48	22.37	23.34	25.88	23.87
11	10/3/96	19.03	16.75	17.71	17.83	21.15	24.00	25.46	23.54
12	10/4/96	19.62	18.93	17.10	18.55	21.73	25.84	23.06	23.55
13	10/4/96	17.58	18.27	19.37	18.41	22.79	28.30	27.31	26.14
14	10/4/96	19.03	15.41	17.90	17.45	21.47	25.96	22.81	23.42
15	10/4/96	20.34	15.86	16.89	17.70	20.84	23.50	25.00	23.12
16	10/4/96	19.36	20.03	17.48	18.96	22.17	24.68	25.94	24.27
17	10/5/96	18.27	15.10	18.82	17.40	23.41	24.88	24.02	24.11
18	10/5/96	16.20	19.48	17.60	17.76	21.99	26.95	23.66	24.21
19	10/5/96	18.67	18.28	20.06	19.00	24.70	25.73	27.05	25.83
20	10/5/96	20.01	18.27	19.55	19.28	26.59	24.78	25.64	25.68

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).

$\bar{X} = \frac{\sum X}{N} = \frac{484.02}{N} = 24.20$ (MPa)

$s = \sqrt{\frac{N \sum (X^2) - (\sum X)^2}{N(N-1)}} = 1.0638$

Where:

- X = The 28-day batch average of at least 2 cylinders (3 preferred).
- $\bar{X}$ = The mean of the averages of 28-day compressive results.
- s = The sample standard deviation of the 28-day batch averages.
- N = The number of batches sampled.

$\sqrt{\frac{20 \times 11735.27 - (484.02)^2}{20(20-1)}}$

Form FHWA 1608 (Rev 10-96)

Page 4 of 6

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
DETERMINATION OF MINIMUM MIX DESIGN COMPRESSIVE STRENGTH

- **MINIMUM MIX DESIGN COMPRESSIVE STRENGTH (f_{cr})**

Computed values from page 4:

$\overline{X}$ = 24.20 (MPa) s = 1.0638

Where:

s = The sample standard deviation of the 28-day compressive strength test results from page 4.

$\overline{X}$ = The mean of the 28-day compressive strength test results from page 4.

V = The *coefficient of variation*[2] expressed as a decimal and calculated as follows:

$$V = \frac{s}{\overline{X}} = \frac{1.0638}{24.20} = 0.044 \text{ or } 0.15$$

$$f_{cr} = \frac{f'_c}{1 - kV} = \frac{25}{1 - 1.28\,(0.044)} = 26.49 \text{ (Mpa)}$$

Where:

f'_c = The 28-day design compressive strength specified in the contract.

k = A constant (1.28) for a probability that not more than 1 in 10 tests will fall below the specified compressive strength (f'_c).

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).
[2] Use 0.15 for the coefficient of variation when there is insufficient test data available.

Form FHWA 1606 (Rev 10-96) Page 5 of 6

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
LABORATORY TRIAL BATCH MIX DESIGN SUMMARY

Description	Equivalent Batch Masses (SSD mass/m³)				
Materials:	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5
Cement (kg)	362				
Water (kg)	147				
Coarse aggregate (kg)	1237				
Fine aggregate (kg)	638				
Air entrainer (mL)	769				
Water reducer (mL)	—				
High range water reducer (mL)	—				
Other _____	—				
Properties:					
Water/cement ratio	0.41				
Theoretical unit mass (kg/m³)	2384				
Measured unit mass (kg/m³)	2378				
Measured air content (%)	5.3				
Measured slump[2] (mm)	100				
Ambient temperature (°C)	17				
Concrete temperature (°C)	*	* Not measured			
Measured Compressive Strengths (MPa):					
Individual 7-day	16.97				
Individual 7-day	14.03				
Individual 7-day	17.76				
Average (7-day)	16.25				
Individual 28-day	30.27				
Individual 28-day	30.94				
Individual 28-day	27.76				
Average (28-day)	29.66				

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).
[2] Measure slump values on concrete before and after addition of high range water reducer if used.

Form FHWA 1608 (Rev 10-96) Page 6 of 6

Doc. # 2640C
(Rev. 8/01)

FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION

8.34 lbs/gal
3.785 L/gal
1.308 yd3/m3

DELIVERY TICKET - Portland Cement Concrete

Project: WY PRA YELL 10(13)
Madison- Norris

Date:
Ticket No.:

Contractor: HK
Subcontractor: Idaho Construction
Concrete Supplier: Walters Ready Mix

Truck No.:
Design Mix No.:

Class of Concrete: A(AE) / SEAL
Brand Cement: HOLNAN I II
Brand Air Entr.: MB
Brand Water Reduce MB
Hydration Stabil.:
Location of Placement:

m3 Batched:
yd3 Batched:

BAG COUNT _____

BATCH WEIGHTS		
	BATCH	
Water	(drum)	
Cement		
CA		
FA		
Color:		
AEA		
Reducer		
Total		
A(AE)	1yd3	1m3
ssd/yd3	English	Metric
Water	32.49	160.88
Cement	620.43	368.1
CA	1693.19	1004.57
FA	1212.83	719.57
140.65 lb/	**3797.42**	**2253.12**

WATER SUMMARY

Max. Water: [.44 x cement]

Free Water: IN AGGREGATES

				NET
CA:	% Mo -	% Abs =		%
CA Free Water = L			GAL	
FA:	% Mo	% Abs=		%
FA Free Water =L			GAL	

Batched Water: DRUM + FREE

Max water by mix design :L GAL
32.5g/yd 161L/m3
Max water allowed at site:L GAL

Added Water: L GAL
drum+free+added
Total Water : L GAL
CALCULATE
W / C Ratio:

TIME

Time water added to cement & agg.:

Time discharge completed:

REVOLUTIONS

Counter reading at start of mixing:
Counter reading at end of mixing:
Counter reading at end of place:

Cylinder Identification:

AIR	SLUMP	UNIT WT	TEMP

Disposal of batch not used:
Amount Reason:

Concrete Batch Technician or
Plant Inspector

Concrete Testing Technician or
Field Inspector

DELIVERY TICKET FOR PORTLAND CEMENT

Project: OR PFH 162-1(1)
MT. HOOD MEADOWS ACCESS RD.

Date:
Ticket No.:

Contractor: ELTING, INC.
Subcontractor: HOLM II
Concrete supplier: HOOD RIVER S & G

Truck No.:
Design Mix No.:

Brand Cement: LaFarge
Brand Air Entr.: MB AE90 (Master Builders)
Brand Water Reducer: Polyheed 990 (Master Builders)
Location and Placement:

Class of Concrete:
Cu Units Batched:
Cu Units Placed:

BATCH WEIGHTS	VALUES
WATER	
CEMENT + POZZOLONS(if any)	
C.A.	
F.A.	

ADDITIVES	
COLOR	
AIR	
HYDRATION STABILIZER(DELVO)	
WATER REDUCER	

WATER SUMMARY

(.44) x Cement = MAX. WATER ALLOWED

C.A. MOISTURE CONTENT	A		(A x C.A.)	1	
F.A. MOISTURE CONTENT	B		(B x F.A.)	2	
C.A. ABSORPTION FACTOR	C	1.5	(C x C.A.)	3	
F.A. ABSORPTION FACTOR	D	2.5	(D x F.A.)	4	

WATER ADDED AT SIGHT — 5

TOTAL WATER IN MIIX — BATCH WATER+1+2-3-4+5

W/C RATIO — (TOTAL WATER/(CEMENT + POZZOLONS))

DIVISION 600
Incidental Construction
INDEX

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 60201 - 600 millimeter pipe culvert

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 3+082 - 600 mm pipe culvert, 600 mm	14.3
* See attached documentation.	
TOTAL ➡	14.3

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 602.

FORM 17348

U.S. Department of Transportation
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

Page: 1

Date: 8-20-2007

Project: ID PFH 79-1(8)
Big Dry Fork Road

Culvert Notes

Staking crew: R&D Consultants
R. Smith, R. Brown
M. Park

Station	Size	Length	Gauge or Class	Type	Inspector's Signature
3+082	600 mm	14.25	2.01	CMP	

Beveled End Sections Inlet ____ In Place Ft. Lt. 6.60 Extend: Ft. Lt. ____
Outet 1:2 Ft. Rt. 7.65 Ft. Rt. ____

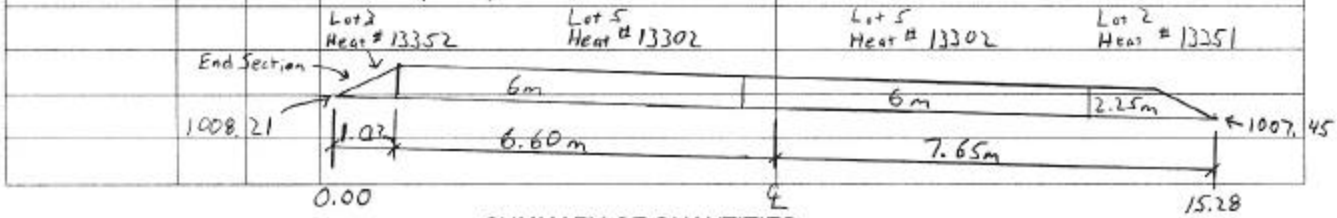
Pipe Installed Date: 8-20-07 New: x Salvaged ____

Elevation Lt. 1008.21 Rt. 1007.45 Total Fall: 0.76

Cover Min: 300 mm Max: 760 mm Grade: 5%

Skew: NA

Station	Elevation Grade	Ground	CROSS - SECTION NOTES			
3+082				Cover calculations for flexible pavement:		
					LT Shldr	CL	RT Shldr
0.00	8.21		1008.21 (inlet) w/camber	Subgrade elev:	1009.09	1009.18	1009.09
3.00	8.06	+0.10	1008.16 (right shoulder)	Top of pipe:	1008.79	1008.61	1008.33
6.00	7.91	+0.15	1008.06	Depth of cover:	0.30	0.57	0.76
7.62	7.83	+0.15	1007.98 (centerline)				
9.00	7.76	+0.15	1007.91				
12.00	7.61	+0.11	1007.72				
12.24	7.60	+0.10	1007.70 (left shoulder)				
15.28	7.45		1007.45 (outlet)				



SUMMARY OF QUANTITIES

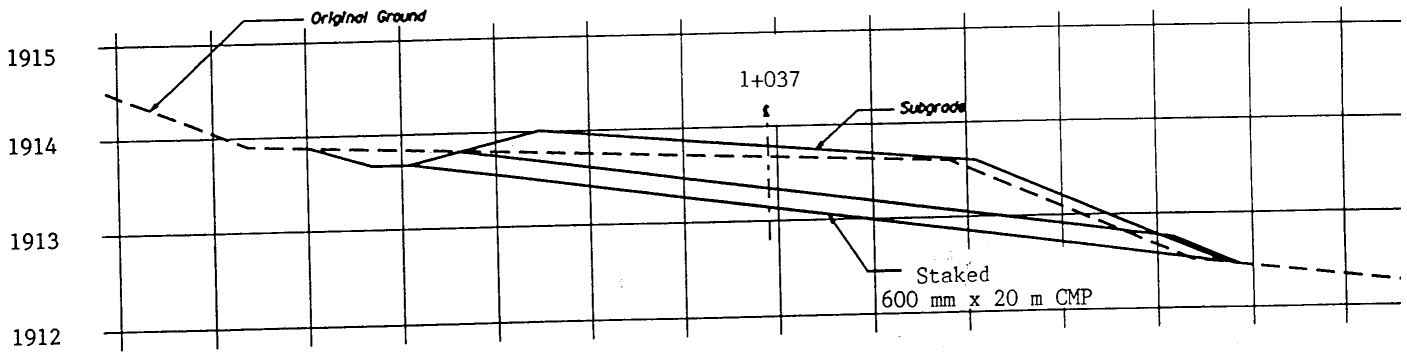
Item No.	Description	Quantity	Unit	Ent. in Sum Book Page No.	Ent. in Sum Book Date
60201A	600 mm pipe culvert	14.3	m		
60206A	End section for 600 mm pipe culvert	1	ea		

Computed by: G. Jackson/BC Inc. Checked by: M. Valdez/FHWA

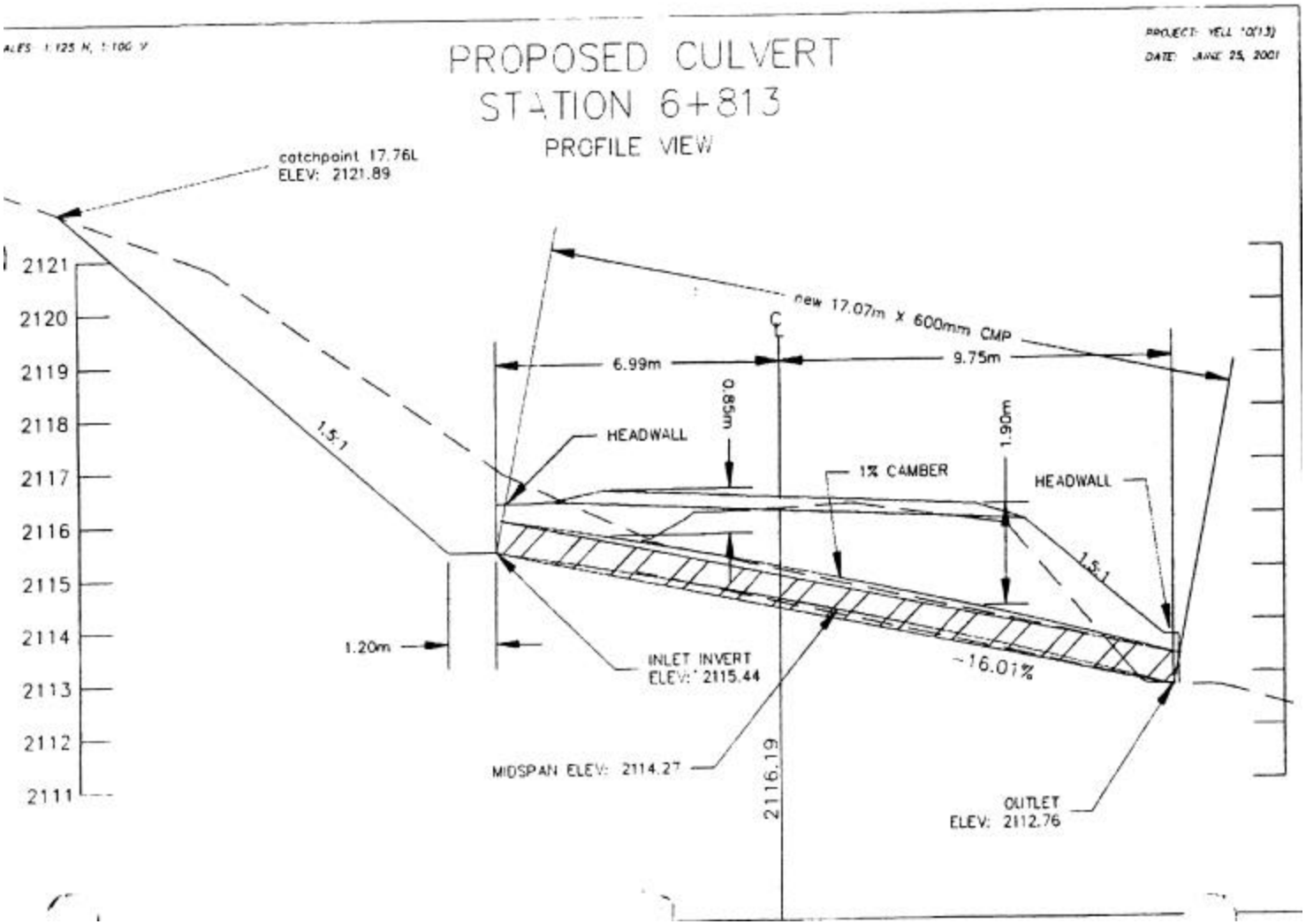
Date: 8-20-2007 Date: 8-20-2007

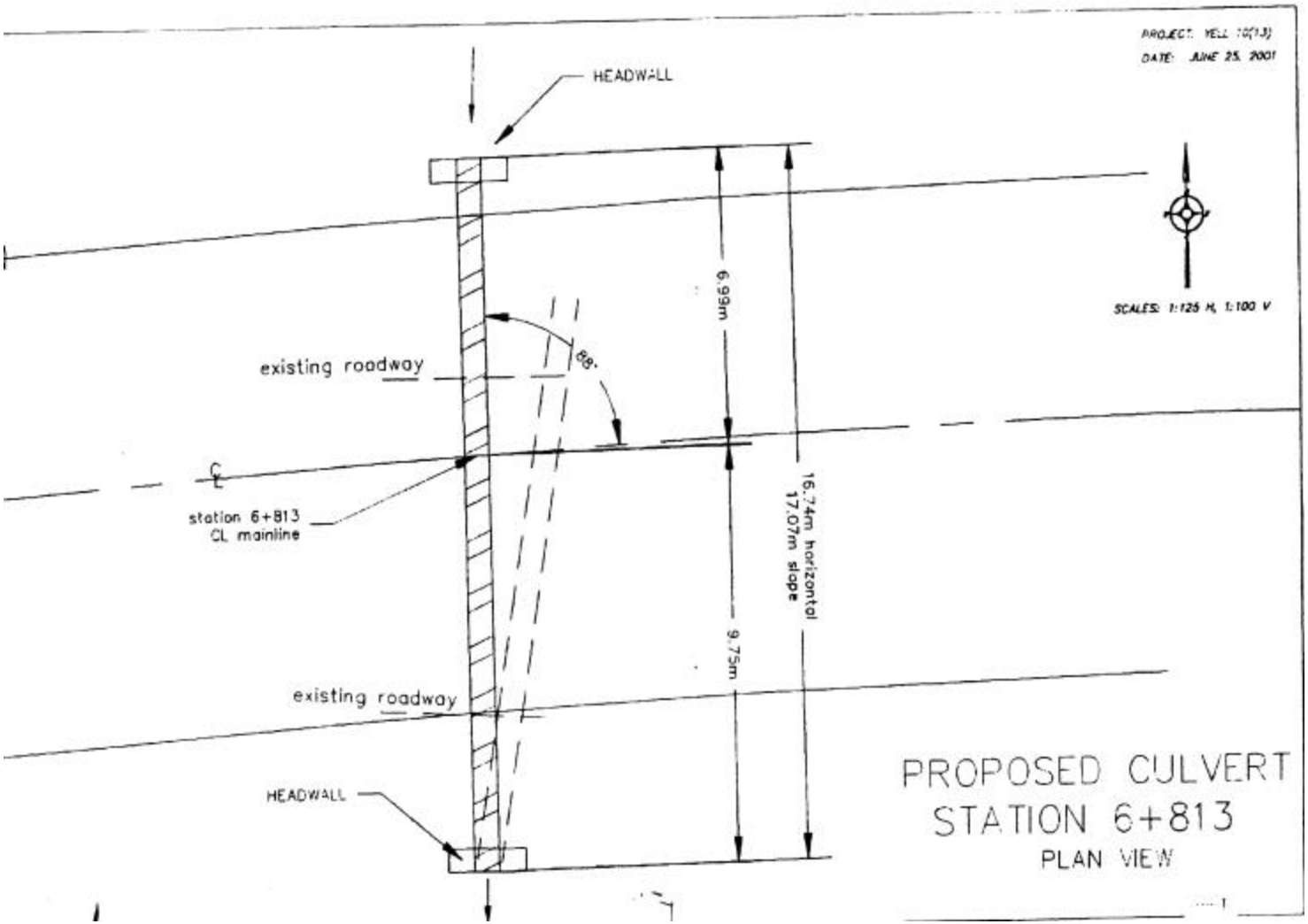
culvert.wpf

CROSS SECTION



CASCADE LAKES HIGHWAY
OR PFH 46-1(3)
DTFH70-94-C-00011


PROPOSED CULVERT
STATION 6+813
PROFILE VIEW
catchpoint 17.76L
ELEV: 2121.89
new 17.07m x 600mm CMP
6.99m
9.75m
0.85m
1.90m
HEADWALL
1% CAMBER
HEADWALL
1.5:1
1.5:1
1.20m
INLET INVERT
ELEV: 2115.44
-16.01%
MIDSPAN ELEV: 2114.27
2116.19
OUTLET
ELEV: 2112.76
2121
2120
2119
2118
2117
2116
2115
2114
2113
2112
2111


PROJECT: YELL 10(13)
DATE: JUNE 25, 2001
HEADWALL
6.99m
existing roadway
68°
℄
station 6+813
CL mainline
16.74m horizontal
17.07m slope
9.75m
existing roadway
HEADWALL
SCALES: 1:125 H, 1:100 V
PROPOSED CULVERT
STATION 6+813
PLAN VIEW

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 60801 - Concrete and Rubble Paved Waterway

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Station 0+566 to Station 0+597	37.2
Average Length of 31 m x Average Width of 1.2 m = 37.2	
* See attached documentation.	
TOTAL ➡	37.2

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 608.

FORM 17348

DATE:_____ LINE:_____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 60801
CONCRETE AND RUBBLE PAVED WATERWAY

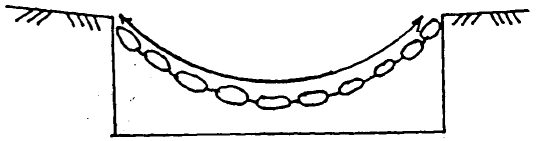
STATION	LENGTH (m)	WIDTH (m)	AVG.W (m)	square meters	
0+566		1.2			
	3		1.25	3.75	
0+569		1.3			
	5		1.35	6.75	
0+574		1.4			
	4		1.25	5.00	
0+578		1.1			
	2		1.1	2.20	
0+580		1.1			
	3		1.1	3.30	
0+583		1.1			
	4		1.2	4.80	
0+587		1.3			
	5		1.25	6.25	
0+592		1.2			
	5		1.15	5.75	
0+597		1.1			
			TOTAL	37.8	m 2

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPOR PAGE:__
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

WIDTH MEASUREMENT



COMPUTED BY: ABC CHECKED BY: JKD

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 60802- Paved Waterway

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 1+002 to Station 0+597 = 405 m	405
* See attached documentation.	
TOTAL ➡	405

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 608.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____

PROJECT:

PROJECT STAMP

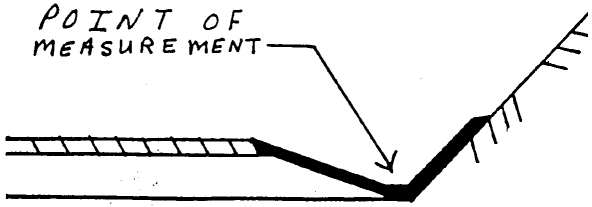
WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

ITEM 60802
CONCRETE AND RUBBLE ASPHALT PAVED WATERWAY

MISC. CONSTRUCTION NOTES

STATION	LT LENGTH (m)	RT LENGTH (m)			
1+002					
TO		25			
1+027					
TO		25			
1+052					
TO		25			
1+077					
TO		50			
1+127					
TO		50			
1+177					
TO		50			
1+227					
TO		50			
1+277					
TO		24			
1+301					
	TOTAL	301	meters		



COMPUTED BY: ABC CHECKED BY: JKD

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 61701- Guardrail System G4, Type I, Class A (1.8 m Wood Post)

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 3+056 to Station 3+221.6 = 165.2 m (Left)	165.2
Station 4+003 to Station 4+125 = 122.0 m (Left)	122.0
Station 5+137 to Station 5+148 = 11 m (Left)	11.0
Station 5+148 to Station 5+294.3 = 146.3 m (Left)	146.3
* See attached documentation.	
TOTAL ➡	444.5

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 617.

FORM 17348

DATE:_____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 61701
GUARDRAIL, SYSTEM
G4 AND END SECTIONS

STATION	ITEM 61701	ITEM 61702A	ITEM 61702B	DATE INSTALLED	INITIAL
3+056.4			1	7/6/92	ABC
LT	165.2			7/3/92	ABC
3+221.6		1		7/6/92	ABC
4+003		1		7/7/92	ABC
LT	122.0			7/4/92	ABC
4+125		1		7/7/92	ABC
5+137			1	7/8/92	ABC
LT	11.0			7/4/92	ABC
5+148					
LT	146.3			7/5/92	ABC
5+294.3		1		7/7/92	ABC
TOTAL LEFT	444.5	4	2		

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA PAGE:_
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

CHECKED BY: IKD

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 61702 - Terminal Section, Type Flared

DESCRIPTION, LOCATION, ETC.	QUANTITY (ea)
Estimate No. 6	
Terminal Sections, Type Flared	4
* See attached documentation.	
TOTAL ➡	4

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 617.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 61701
GUARDRAIL, SYSTEM
G4 AND END SECTIONS

STATION	ITEM 61701	ITEM 61702A	ITEM 61702B	DATE INSTALLED	INITIAL
3+056.4			1	7/6/92	ABC
LT	165.2			7/3/92	ABC
3+221.6		1		7/6/92	ABC
4+003		1		7/7/92	ABC
LT	122.0			7/4/92	ABC
4+125		1		7/7/92	ABC
5+137			1	7/8/92	ABC
LT	11.0			7/4/92	ABC
5+148					
LT	146.3			7/5/92	ABC
5+294.3		1		7/7/92	ABC
TOTAL LEFT	444.5	4	2		

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

PAGE:_

MISC. CONSTRUCTION NOTES

CHECKED BY: JKD

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 62201 - Motor Grader, 110 kW minimum

DESCRIPTION, LOCATION, ETC.	QUANTITY (hr)
Station 5+010 to Station 6+500	8.0
* Refer to Project Specifications for Requirements to list the names of the operator and verify	
With a Certified Contractor Payroll.	
TOTAL ➡	8.0

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 622.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 62301 - General Labor

DESCRIPTION, LOCATION, ETC.	QUANTITY (hr)
Scaling Slopes	
Station 3+055 to Station 3+090	8.0
* Refer to Project Specifications for Requirements to list the names and verify	
with a Certified Contractor Payroll.	
TOTAL ➡	8.0

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 623.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 62401 - Furnishing and Placing Topsoil

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Station 4+900 = 17 wide	
Average width = 18.5 x Length 50 m =	925
Station 4+950 = 20 wide	
Average width = 17.5 x Length 50 m =	875
Station 5+000 = 15 wide	
Average width = 15x Length 50 m =	750
Station 5+500= 15 wide	
TOTAL ➡	2,550

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 624.

FORM 17348

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 62503 - Seeding, Hydraulic Method

DESCRIPTION, LOCATION, ETC.	QUANTITY (SU)
Station 0+035 to Station 1+624, Right	9
* See attached Documentation	
TOTAL ➡	9

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 625.

FORM 17348

US DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS

Date: _____ Line: _____ Party: _____

Project Stamp:

Item No. 62503
Seeding, Hydraulic Method

STATION	PLAN m2	SLURRY UNITS	DATE	INITIALS			COMMENTS
0+035							
	944	1	9/28/02	JKD			1 Slurry Unit = 4000 Liters of Water plus
0+055							8.810 kg Bulk Seed
	1,02	1	9/28/02	JKD			(6.725 KG Live Seed)
1+206							
	985	1	9/28/02	JKD			22.7 kg 10:20:10 Fertilizer
1+278							13.6 kg 38:0:0 Fertilizer
	1,907	1	9/28/02	JKD			
1+322							And Mulch for Tracer:
	990	1	9/28/02	JKD			16.812 kg per Slurry Unit
1+400							
	1,020	1	9/29/02	JKD			10 Slurry Units per Hectare
1+520							10,000 square meters = 1 hectare
	1,000	1	9/29/02				10,000/10 = 1,000 m2 per Slurry Unit
1+599							
	995	1	9/29/02	JKD			
1+624							
	1,000	1	9/29/02	JKD			

Computed By: _____ Date: _____ Checked By: _____ Date: _____

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 62506 - Mulching, Hydraulic Method

DESCRIPTION, LOCATION, ETC.	QUANTITY (SU)
Station 0+035 to Station 1+624, Right	11
* See attached Documentation	
TOTAL ➡	11

I certify that the above quantity was performed and/or used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 625.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____

PROJECT:

PROJECT STAMP

ITEM 62506
MULCHING
HYDRAULIC METHOD

STATION	PLAN (m 2)	SLURRY UNITS	DATE	INITIALS	
0+022					
	1004	1	9/28/92	JKD	
0+055					
	1002	1	9/28/92	JKD	
1+206					
	985	1	9/28/92	JKD	
1+278					
	1907	2	9/28/92	JKD	
1+322					
	990	1	9/28/92	JKD	
1+400					
	1020	1	9/29/92	JKD	
1+520					
	1000	1	9/29/92	JKD	
1+599					
	995	1	9/29/92	JKD	
1+624					
	1000	1	9/29/92	JKD	
1+711					
	998	1	9/29/92	JKD	
PAGE TOTAL		11			

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA PAGE: ___
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

1 SLURRY UNIT = 4000 LITERS OF WATER PLU

450 kg MULCH

10 SLURRY UNITS PER HECTARE

10000 square meters = 1 hectare

10000/10 = 1000 m2 PER SLURRY UNIT

COMPUTED BY: JKD CHECKED BY: ABC

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 63401A - Pavement Markings, Type B, Broken Yellow

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 5+900 to Station 6+912, Centerline	1,012
* See attached Documentation	
TOTAL ➡	1,012

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 634.

FORM 17348

DATE: _____ LINE: _____ PARTY: _____

PROJECT:

PROJECT STAMP

ITEM 63401A & 63401B

PAVEMENT MARKINGS

SOLID & BROKEN YELLOW REFLECTORIZED

STATION	TYPE	63401A BROKEN (m)	63401B SOLID (m)		
5+900					
TO	DOUBLE		410		
6+105					
6+213					
TO	SLD/BRK	98	98		
6+311					
6+521					
TO	BROKEN	89			
6+610					
6+643					
TO	DOUBLE		144		
6+715					
6+890					
TO	DOUBLE		44		
6+912					
TOTAL		187	696	meters	

3/83

FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

COMPUTED BY: UPB

DATE: 12/15/93

CHECKED BY: ABC

DATE: 12/16/93

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 63401B - Pavement Markings, Type B, Solid Yellow

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 4+800 to Station 5+900, Centerline	1,100
* See attached Documentation	
TOTAL ➡	1,100

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 634.

FORM 17348

DATE: ______ LINE: __________ PARTY: ______________
PROJECT:

PROJECT STAMP

ITEM 63401A & 63401B
PAVEMENT MARKINGS
SOLID & BROKEN YELLOW REFLECTORIZED

STATION	TYPE	63401A BROKEN (m)	63401B SOLID (m)		
5+900					
TO	DOUBLE		410		
6+105					
6+213					
TO	SLD/BRK	98	98		
6+311					
6+521					
TO	BROKEN	89			
6+610					
6+643					
TO	DOUBLE		144		
6+715					
6+890					
TO	DOUBLE		44		
6+912					
TOTAL		187	696	meters	

3/83

FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

COMPUTED BY: UPB
DATE: 12/15/93

CHECKED BY: ABC
DATE: 12/16/93

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 63401C - Pavement Markings, Type B, Solid White

DESCRIPTION, LOCATION, ETC.	QUANTITY (m)
Station 4+800 to Station 5+900, Centerline	794
* See attached Documentation	
TOTAL ➡	794

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 634.

FORM 17348

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA PAGE:_
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

DATE:_____ LINE: _____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 63401C
PAVEMENT MARKINGS
SOLID WHITE REFLECTORIZED

STATION	LEFT (m)	RIGHT (m)	LENGTH (m)		
1+025					
TO		335	335		
1+360					
1+420					
TO		180	180		
1+600					
1+722					
TO	87		87		
1+809					
2+026					
TO	74		74		
2+100					
2+210					
TO	118		118		
2+328					
TOTAL			794	meters	

MISC. CONSTRUCTION NOTES

COMPUTED BY: UPB
DATE: 12/15/93

CHECKED BY: ABC
DATE: 12/16/93

DATE:_____ LINE:_____ PARTY: _____
PROJECT:

PROJECT STAMP

ITEM 63401C
PAVEMENT MARKINGS
SOLID WHITE-N0N REFLECTORIZED

LOCATION	TYPE	WIDTH (mm)	NUMBER	LENGTH (m)	LENGTH (100 mm)
SNAKE RIVER	SKIPS	100	12	1.0	12.0
SNAKE RIVER	PRK STALLS	100	16	16.0	256.0
SNAKE RIVER	PRK STALLS	100	1	7.0	7.0
SNAKE RIVER	HANDICAP	300	1	8.3	24.9
SNAKE RIVER	HANDICAP	150	1	6.0	9.0
SNAKE RIVER	HANDICAP	430	1	0.5	2.2
SNAKE RIVER	HANDICAP	430	1	0.5	2.2
TETON					
OVERLOOK	PRK STALLS	100	24	5.8	139.2
OVERLOOK	PRK STALLS	100	6	3.4	20.4
OVERLOOK	PRK STALLS	100	5	15.2	76.0
GLACIER	PRK STALLS	100	22	5.8	127.6
GLACIER	PRK STALLS	100	6	3.6	21.6
GLACIER	PRK STALLS	100	5	12.0	60.0
				TOTAL	758.0 meters

WDFD-472
3/83

U.S. DEPARTMENT OF TRANSPORTA PAGE
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

MISC. CONSTRUCTION NOTES

COMPUTED BY: CHECKED BY: ABC

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 63507 - Construction Signs

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
2 each - Detour Arrows - 762 mm x 610 mm	0.930
4 Each - Flagger Symbol - 900 mm x 900 mm	3.240
* See attached Documentation	
TOTAL ➡	4.170

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 635.

FORM 17348

DATE:_____ LINE:_____ PARTY: _____

PROJECT:

PROJECT STAMP

ITEM 63507
CONSTUCTION SIGN

PLAN SIGN NUMBER	MUTCD NUMBER	LEGEND
2	W20-1	ROAD CONSTRUCTION AHEAD
3	G20-1	ROAD CONSTRUCTION NEXT 1.5 MILES
4	G20-2	END CONSTRUCTION
9	R4-1	DO NOT PASS
10	R1-2	YIELD
6	W20-7A	FLAGGER SYMBOL
		W/500 FT PLATE
7	W8-6	TRUCK CROSSING
11	W13-1	25 MPH
14	G20-1	ROAD CONSTRUCTION NEXT 0.5 MILE
2	W20-1	ROAD CONSTRUCTION AHEAD
6	W20-7A	FLAGGER SYMBOL
		W/500 FT PLATE
7	W8-6	TRUCK CROSSING
11	W13-1	25 MPH
14	G20-1	ROAD CONSTRUCTION NEXT 0.5 MILE
2	W20-1	ROAD CONSTRUCTION AHEAD
6	W20-1	FLAGGER SYMBOL
		W/500 FT PLATE
5	W20-4	ONE LANE ROAD AHEAD

WDFD-4 3/83 U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
VANCOUVER, WASHINGTON

PAGE:___

MISC. CONSTRUCTION NOTES

QTY (EACH)	SIZE (mm)	QUANTITY (m 2)	ACCUM. TOTAL	DATE	INSP.
2	1200 x 1200	2.880	2.880	10/09/91	TKC
2	1500 x 900	2.700	5.580	10/09/91	TKC
2	1500 x 600	1.800	7.380	10/10/91	TKC
2	1500 x 700	2.100	9.480	10/11/91	TKC
2	900x900x900	0.820	10.300	10/11/91	TKC
1	1200 x 1200	1.440	11.740	10/11/91	TKC
1	600 x 450	0.270	12.010	10/11/91	TKC
1	700 x 700	0.490	12.500	10/11/91	TKC
1	600 x 600	0.360	12.860	10/11/91	TKC
1	1500 x 900	1.350	14.210	10/11/91	TKC
1	1200 x 1200	1.440	15.650	10/11/91	TKC
1	1200 x 1200	1.440	17.090	10/14/91	TKC
1	600 x 450	0.270	17.360	10/14/91	TKC
1	700 x 700	0.490	17.850	10/14/91	TKC
1	600 x 600	0.360	18.210	10/14/91	TKC
1	1500 x 900	1.350	19.560	10/14/91	TKC
1	1200 x 1200	1.440	21.000	10/14/91	TKC
2	1200 x 1200	2.880	23.880	10/09/91	TKC
2	600 x 450	0.540	24.420	10/09/91	TKC
2	1200 x 1200	2.880	27.300	10/29/91	TKC
PAGE	TOTAL		27.300	m 2	

COMPUTED BY: TKC CHECKED BY: JKD

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN
DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Number: 63509 - Flagger

DESCRIPTION, LOCATION, ETC.	QUANTITY (m2)
Sub-excavation - Station 1+025 to Station 1+315	
Jane Doe - 0600 to 1630 (no lunch break)	10.5
Sally Dowright - 0600 to 1630 (no lunch break)	10.5
Borrow Source Access Road - Station 3+291 - Left	
John Downhome - 0600 to 1630 (no lunch break)	10.5
Culvert Placement - Station 4+217	
Joe Rigrite - 0600 to 1630 (no lunch break)	4.0
Jim Miney - 0600 to 1630 (no lunch break)	4.0
Note: Refer to project specification for requirements to list names and verify with	
Certified contractor payroll reports.	
TOTAL ➡	39.5

I certify that the above quantity was performed and/or
used in the construction of this project.

_____ _____
Contractor Project Engineer/Inspector

NOTE:
See FP for Method of Measurement, Section 635.

FORM 17348

APPENDIX

Appendix	Description
A	Guidelines for Partial Payment
B	Example Contractor invoice and support data
C	Example Critical Path Method Schedule
D	Example Quality Control Plan
E	Reinforcing Steel weights and marks
F	Pile driving data
G	WFLHD sample size guidance sheet
H	Volume correction factors for asphaltic materials
I	Area of a circle
J	Metric conversion factors – General
K	Blank Forms

APPENDIX 'A'

Guidelines for percentage payments for partially complete work

Description	Allowance (Cumulative)
Clearing and Grubbing	
• Felled and slashed	35
• Bucked and piled (slashings, brush and logs)	60
• Grubbed	75
• Burned or chipped and removed	98
• Substantially complete including cleanup	100
Excavation and Embankment	
• Pioneered	5
• Drilled	20
• Blasted	35
• Roughed out to grade	85
• Roadbed finished to grade	90
• Slopes seeded	98
• Substantially complete including cleanup	100
Structural Excavation	
• Excavation complete	85
• Backfill complete	98
• Substantially complete including cleanup	100
Aggregate Courses	
• Crushed and stockpiled onsite	50
• Placed on roadway	80
• Spread, compacted and tested	98
• Substantially complete including cleanup	100
Asphalt Pavements	
• Aggregates crushed and stockpiled onsite	50
• Placed, compacted and tested	98
• Substantially complete including cleanup	100

PCC Pavement

- Forms set 35
- Concrete in place 90
- Forms removed and testing complete 98
- Substantially complete including cleanup 100

Concrete Structures

- Falsework erected 10
- Forming complete 20
- Concrete in place 80
- Forms removed 90
- Concrete tested and finished 98
- Substantially complete including cleanup 100

Steel Structures

- Falsework erected 10
- Steel in place 80
- Bolting and welding complete 90
- Painting complete 98
- Substantially complete including cleanup 100

Notes:

(1) These percentages are typical. They may be adjusted based on a detailed analysis of circumstances on given project.
(2) Whenever partially complete work entails continuing maintenance, an appropriate percentage should be retained to cover those costs.

APPENDIX 'A'

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
15101	Mobilization	Lump Sum	0.1%
15201	Construction Survey and Staking	Lump Sum	0.1%
15202	Slope Stake and Reference Points	km	0.1
15203	Centerline Reestablishment	km	0.1
15204	Drainage Structure Survey and Staking	Each	1.
15205	Bridge Survey and Staking	Lump Sum	0.1%
15206	Retaining Wall Survey and Staking	Lump Sum	0.1%
15207	Grade Finishing Stakes	km	0.1
15208	Permanent Monuments and Markers	Each	1.
15209	Miscellaneous Survey and Staking	Hour	0.5
15210	Miscellaneous Survey and Staking	Lump Sum	0.1%
15401	Contractor Testing	Lump Sum	0.1%
15501	Construction Schedule	Lump Sum	0.1%
15601	Snow Removal	km	1.
15602	Detour	Lump Sum	0.1%
15702	Soil Erosion Control	Lump Sum	0.1%
15703	Silt Fence	m	1.
15704	Brush Barriers	m	1.
15705	Slope Drains	m	1.
15707	Temporary Culvert Pipe	m	0.1
15708	Straw Bales	Each	1.
15709	Check Dams	Each	1.
15710	Sand Bags	Each	1.
15713	Plastic Lining	m2	1.
15714	Temporary Turf Establishment	ha	0.001
15715	Temporary Turf Establishment	kg	1.
15716	Equipment for Soil Erosion	Hour	0.5
15730	Temporary Turf Establishment	Slry	0.1
15731	Temporary Turf Establishment (Fertilizing)	t	0.1
15735	Clear Plastic Covering	m2	1.
15741	Mulching Hydraulic Method	Slry	0.1
15801	Watering for Dust Control	m3	1.

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
20101	Clearing and Grubbing	ha	0.001
20204	Removal of Individual Trees	m2	0.01
20301	Removal of Structures and Obstructions	Each	1.
20302	Removal of Structures and Obstructions	m	0.1
20303	Removal of Structures and Obstructions	m2	0.1
20304	Removal of Structures and Obstructions	Lump Sum	0.1%
20401	Roadway Excavation	m3	1.
20402	Sub excavation	m3	1.
20403	Unclassified Borrow	m3	1.
20404	Unclassified Borrow	t	0.1
20405	Select Borrow	m3	1.
20406	Select Borrow	t	0.1
20407	Select Topping	m3	1.
20408	Select Topping	t	0.1
20409	Embankment Construction	m3	1.
20501	Control Blasting Hole	m	1.
20701	Earthwork Geotextile Fabric	m2	1.
20801	Structure Excavation	m3	0.1
20802	Foundation Backfill	m3	0.1
20803	Structural Backfill	m3	0.1
20804	Shoring and Bracing	Lump Sum	0.1%
20805	Cofferdams	Lump Sum	0.1%
21001	Permeable Backfill	m3	1.
21101	Roadway Obliteration	m2	1.
21102	Roadway Obliteration	Lump Sum	0.1%
21201	Linear Grading	km	0.01

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
21301	Subgrade Stabilization	m2	1.
21302	Lime	t	0.1
21303	Cement	t	0.1
21304	Fly Ash	t	0.1
25101	Placed Riprap	m3	1.
25102	Placed Riprap	t	0.1
25103	Keyed Riprap	m3	1.
25104	Keyed Riprap	t	0.1
25105	Mortared Riprap	m3	1.
25201	Special Rock Embankment	m3	1.
25202	Special Rock Embankment	t	0.1
25203	Rock Buttress	m3	1.
25204	Rock Buttress	t	0.1
25301	Gabions	m2	0.1
25303	Gabions	m3	1.
25305	Revet Nattress	m3	0.1
25401	Reinforced Concrete Crib Retaining Wall	m2	0.1
25402	Metal Crib Retaining Wall	m2	0.1
25403	Treated Timber Crib Retaining Wall	m2	0.1
25404	Crib Wall Backfill	m3	1.
25501	Mechanically Stabilized Earth Wall	m2	0.1
25502	Select Granular Backfill	m3	1.
25503	Concrete Leveling Pad	m	0.1
25601	Ground Anchor	Each	1.
25602	Performance Test	Each	1.
25801	Reinforced Concrete Retaining Wall	m2	0.1
25802	Reinforced Concrete Retaining Wall	m	0.1
25803	Reinforced Concrete Retaining Wall	m3	0.01
26201	Rockery Wall	m2	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
30101	Aggregate Base	t	0.1
30102	Aggregate Base	m2	1.
30103	Aggregate Base	m3	1.
30201	Treated Aggregate Course	t	0.1
30202	Treated Aggregate Course	m2	1.
30203	Cement	t	0.1
30204	Fly Ash	t	0.1
30205	Lime	t	0.1
30301	Road Reconditioning	km	0.001
30302	Road Reconditioning	m2	1.
30401	Aggregate Stabilization	km	0.001
30402	Aggregate Stabilization	m2	1.
30403	Lime	t	0.1
30404	Cement	t	0.1
30405	Fly Ash	t	0.1
30501	Aggregate-Topsoil Course	t	0.1
30502	Aggregate-Topsoil Course	m2	1.
30503	Aggregate-Topsoil Course	m3	1.
30601	Dust Palliative Application	km	0.001
30602	Dust Palliative Application	m2	1.
30603	Emulsified Asphalt	t	0.1
30604	Lignin Sulfied	t	0.1
30605	Calcium Chloride	t	0.1
30606	Magnesium Chloride	t	0.1
30701	Stockpiled Aggregates	t	1.
30702	Stockpiled Aggregates	m3	1.
30703	Preparation of Stockpile Site	ha	0.001
30801	Roadway Aggregate	m3	1.
30802	Roadway Aggregate	t	0.1
30803	Roadway Aggregate	m2	1.

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
30901	Emulsified Asphalt Treated Aggregate	t	0.1
30902	Emulsified Asphalt Treated Aggregate	m2	1.
30903	Emulsified Asphalt Treated Aggregate	m3	1.
30904	Emulsified Asphalt	t	0.1
40101	Hot Asphalt Concrete Pavement	t	0.1
40103	Asphalt Cement	t	0.01
40104	Mineral Filler	t	0.01
40105	Antistrip Additive	t	0.01
40106	Superpave Asphalt Concrete Pavement	t	0.1
40201	Minor Hot Asphalt Pavement	t	0.1
40301	Hot Recycled Asphalt Concrete Pavement	t	0.1
40303	Asphalt Cement	t	0.01
40304	Mineral Filler	t	0.01
40305	Recycling Agent	t	0.01
40306	Antistrip Additive	t	0.01
40401	Open-Graded Asphalt Friction Course	t	0.1
40402	Asphalt Cement	t	0.01
40403	Antistrip Additive	t	0.01
40501	Hot Asphalt Treated Base Course	t	0.1
40502	Asphalt Cement	t	0.01
40503	Mineral Filler	t	0.01
40504	Antistrip Additive	t	0.01
40601	Dense-Graded Amulsified Asphalt Pavement	t	0.1
40602	Emulsified Asphalt	t	0.1
40603	Mineral Filler	t	0.01
40701	Open-Graded Emulsified Asphalt	t	0.1
40702	Emulsified Asphalt	t	0.1
40703	Choker Aggregate	t	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
40801	Cold Recycled Asphalt Base Course	t	0.1
40802	Cold Recycled Asphalt Base Course	m2	1.
40803	Emulsified Asphalt	t	0.1
40804	Recycling Agent	t	0.01
40805	Lime	t	0.1
40901	Surface Treatment Aggregates	t	0.1
40902	Surface Treatment Aggregates	m3	1.
40903	Asphalt Cement	t	0.01
40904	Emulsified Asphalt	t	0.1
41001	Slurry Seal	m2	1.
41002	Emulsified Asphalt	t	0.1
41003	Slurry Seal Aggregate	t	0.1
41101	Prime Coat	t	0.01
41102	Prime Coat	L	1.
41103	Blotter	t	0.1
41104	Blotter	m3	1.
41201	Tack Coat	t	0.1
41202	Tack Coat	L	1.

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
41701	Minor Cold Asphalt Mix	t	0.1
50101	Reinforced Portland Cement Concrete Pavement	m2	0.1
50201	Concrete Pavement Patch	m2	0.1
50202	Sealing Joints and Cracks	m	1.
50203	Grout	m3	1.
50204	Undersealing Holes	Each	1.
50205	Surface Diamond Grinding	m2	0.1
50208	Rubblizing and Compacting Concrete Pavement	m2	1.
55101	Piles in Place	m	0.1
55102	Piles in Place	Each	1.
55103	Pile Load Test	Each	1.
55104	Pile Load Test	Lump Sum	0.1%
55105	Preboring	m	0.1
55106	Splices	Each	1.
55107	Test Piles	m	0.1
55108	Test Piles	Each	1.
55201	Structural Concrete	m3	0.01
55204	Seal Concrete	m3	0.1
55301	Precast, Prestressed Concrete Structural Members	Each	1.
55302	Precast, Prestressed Concrete Structural Members	m	0.1
55303	Prestressing System	Lump Sum	0.1%
55401	Reinforcing Steel	kg	1.
55402	Epoxy Reinforcing Steel	kg	1.
55501	Structural Steel	kg	1.
55112	Sheet Pile in Place	m2	0.1
55601	Bridge Railing	m	0.1
55602	Bridge Railing	Lump Sum	0.1%
55603	Remove and Reset Bridge Railing	m	0.1
55701	Untreated Structural Timber and Lumber	m3	0.01
55702	Treated Structural Timber and Lumber	m3	0.01

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
55801	Dampproofing	m2	1.
55802	Dampproofing	Lump Sum	0.1%
55901	Membrane Waterproofing	m2	1.
55902	Membrane Waterproofing	Lump Sum	0.1%
56001	Water Stop	m	0.1
56002	Water Stop	Lump Sum	0.1%
56101	Structural Concrete Bonding	m	0.1
56102	Structural Concrete Bonding	L	1.
56103	Structural Concrete Bonding	Lump Sum	0.1%
56104	Crack Preparation	m	0.1
56105	Crack Preparation	Lump Sum	0.1%
56301	Painting	Lump Sum	0.1%
56302	Painting	m2	0.1
56401	Bearing Device	Each	1.
56501	Drilled Shafts	m	0.1
56502	Trial Drilled Shaft	Each	1.
56503	Bell	Each	1.
60101	Minor Concrete	m3	0.01
60102	Minor Concrete	m2	0.1
60103	Minor Concrete	Lump Sum	0.1%
60104	Minor Concrete	Each	1.
60201	Pipe Culvert	m	0.1
60206	End Section	Each	1.
60209	Elbow	Each	1.
60210	Branch Connection	Each	1.
60301	Structural Plate Pipe	m	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
60401	Manhole	Each	1.
60402	Manhole	m	0.1
60403	Inlet	Each	1.
60404	Catch Basin	Each	1.
60405	Manhole Adjustment	Each	1.
60406	Inlet Adjustment	Each	1.
60407	Capping Inlets and Manholes	Each	1.
60408	Junction Box	Each	1.
60409	Metal Frame Grate	Each	1.
60410	Spring Box	Each	1.
60411	Removing and Resetting Metal Frame and Grate	Each	1.
60501	Underdrain system	m	0.1
60504	Geocomposie Underdrain System	m	0.1
60505	Geocomposite Sheet Drain system	m2	0.1
60506	Collector Pipe	m	0.1
60508	Granular Backfill	m3	1.
60509	Sand	m3	1.
60601	Spillway Assembly	Each	1.
60602	Pipe Anchor Assembly’s	Each	1.
60701	Removing, Cleaning, and Stockpiling Culvert	m	0.1
60702	Removing, Cleaning, and Relaying Culvert	m	0.1
60703	Cleaning culverts in Place	m	0.1
60704	Reconditioning Drainage Structures	Each	1.
60801	Paved Waterway	m2	0.1
60802	Paved Waterway	m	1.
60803	Asphalt Paved Waterway	t	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
60901	Portland Cement Concrete Curb	m	0.1
60902	Portland Cement Concrete Curb and Gutter	m	0.1
60903	Stone Curb	m	0.1
60904	Precast Curb	m	0.1
60905	Asphalt Curb	m	1.
60906	Reset Curb	m	1.
60907	Bed Course Material	m3	1.
60908	Bed Course Material	t	0.1
60909	Wheelstop	Each	1.
60910	Remove and Reset Wheelstop	Each	1.
60911	Log Curb	m	0.1
61001	Horizontal Drain Pipe	m	0.1
61002	Collector System	m	0.1
61003	Collector System	Lump Sum	0.1%
61101	Water System	Lump Sum	0.1%
61102	Water Line	m	0.1
61103	Encasemenet Pipe	m	0.1
61104	Valve	Each	1.
61105	Valve Box	Each	1.
61106	Fire Hydrant	Each	1.
61201	Sewer System	Lump Sum	1.
61202	Sewer Line	m	0.1
61301	Simulated Stone Masonry Surface Treatment	m2	0.1
61302	Simulated Stone Masonry Test Wall	Each	1.
61401	Lean Concrete Backfill	m3	1.
61501	Sidewalk	m2	0.1
61502	Drive Pad	m2	0.1
61503	Median	m2	0.1
61601	Concrete Slope Paving	m2	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
61701	Guardrail System	m	0.1
61702	Terminal Section	Each	1.
61703	Removing and Resetting Guardrail	m	0.1
61704	Raising Guardrail	m	0.1
61705	Replace Posts	Each	1.
61706	Connection to Structure	Each	1.
61707	Reinforced Concrete Transition	Each	1.
61801	Concrete Barrier	m	0.1
61802	Precast Concrete Guardwall	m	0.1
61803	Terminal Section	Each	1.
61804	Reset Barrier	m	1.
61901	Fence	m	1.
61901	Fence, Chain Link	m	0.1
61901A	Fence, Log, Rail	m	0.1
61902	Gate	Each	1.
61903	Cattle Guard	Each	1.
61904	Brace Panel	Each	1.
61905	Bollard Post	Each	1.
61906	Remove and Reset Fence	m	1.
61912	Pedestrian Railing	m	0.1
62001	Masonry	m3	0.1
62002	Stone Masonry Guard wall	m	0.1
62003	Remove and Reset Stone Masonry	m3	0.1
62050	Railing	m	0.1
62101	Monument	Each	1.
62102	Marker	Each	1.
62201	Rental Equipment	Hour	0.5
62301	General Labor	Hour	0.5

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
62401	Furnish and Placing Topsoil	m2	1.
62402	Furnish and Placing Topsoil	ha	0.001
62403	Furnish and Placing Topsoil	m3	1.
62404	Placing Conserved Topsoil	m2	1.
62405	Placing Conserved Topsoil	ha	0.001
62406	Placing Conserved Topsoil	m3	1.
62501	Seeding	ha	0.001
62502	Seeding	m2	1.
62503	Seeding, Hydraulic Method	Slry	1.
62504	Mulching	ha	0.001
62505	Mulching	m2	1.
62506	Mulching, Hydraulic Method	Slry	1.
62507	Fertilizer, Dry Method	t	0.1
62508	Water	m3	1.
62509	Turf Establishment	ha	0.001
62601	Plants	Each	0.1
62701	Sod	m2	1.
62801	Sprigging	ha	0.001
62802	Sprigging	m2	1.
62901	Erosion Control Mat	m2	1.
62902	Roving	m2	1.
62903	Cellular Confinement System	m2	1.
63301	Sign Installation	Each	1.
63302	Sign Installation	m2	0.001
63304	Posts	Each	1.
63306	Object Markers	Each	1.
63307	Delineators	Each	1.
63308	Removing and Resetting	Each	1.
63312	Signs, Routed Wood	m2	0.001

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
63401	Pavement Markings	m	1.
63402	Pavement Markings	m2	0.1
63403	Pavement Markings	L	1.
63404	Pavement Markings	km	0.001
63405	Pavement Markings	Each	1.
63501	Temporary Traffic Control	Lump Sum	0.1%
63502	Advance Warning Arrow Panel	Hour	0.5
63503	Advance Warning Arrow Panel	Each	1.
63504	Barricade	m	0.1
63505	Barricade	Each	1.
63506	Cone	Each	1.
63507	Construction Sign	m2	0.001
63508	Drum	Each	1.
63509	Flagger	Hour	0.5
63510	Pilot Car	Hour	0.5
63511	Temporary Concrete Barrier	m	1.
63512	Moving Temporary Concrete Barrier	m	1.
63513	Temporary Guardrail	m	1.
63514	Temporary Pavement Markings	m	1.
63515	Temporary Pavement Markings	km	0.001
63516	Temporary Pavement Markings, Symbols	m2	0.1
63517	Temporary Pavement Markings, Symbols	Each	1.
63518	Temporary Raised Pavement Marker	Each	1.
63519	Pavement Marking Removal	m	1.
63520	Vertical Panel	Each	1.
63521	Warning Light	Each	1.
63522	Shadow Vehicle	Each	1.
63523	Maintenance of Traffic, Pavement Patch	t	1.
63524	Variable Message Sign	Each	1.
63525	Temporary Crash Cushion	Each	1.
63526	Moving Temporary Traffic Cushion	Each	1.
63527	Replacement Temporary Traffic Cushion	Each	1.
63528	Temporary Traffic Signal System	Lump Sum	0.1%
63529	Temporary Traffic Signal System	Each	1.
63530	Relocating Temporary Traffic Signal System	Each	1.
63531	Temporary Fence	m	1.
63532	Portable Rumble Strip	Each	1.
63533	Opposing Traffic Lane Divider	Each	1.
63534	Steel Plates	m2	0.1

FP 96
PAY DECIMAL LIST

ITEM	DESCRIPTION	UNIT	FIGURE
63560	Traffic and Safety Supervisor	Day	0.1
63601	Signal Installation	Lump Sum	0.1%
63602	Lighting Installation	Lump Sum	0.1%
63603	Electrical Installation	Lump Sum	0.1%
63604	Railroad Crossing System	Lump Sum	0.1%
63605	Relocate----------	Lump Sum	0.1%
63606	Conduit	m	1.
63607	Electrical Conductors	m	1.
63608	Luminaries	Each	1.
63609	Poles	Each	1.
63610	Pull Box	Each	1.
63611	Relocate	Each	1.
63701	Field Office	Each	0.01
63702	Field Laboratory	Each	0.01
63703	Residential Housing	Each	0.01
64502	Barrier Log	m	0.1
65002	Landscape Log	m	1.
65802	Pumped Grout	m3	0.1
65803	Drilled Holes	m	0.1
67509	Containment Log	m	0.1

Revised 04/07/98

ACE CONTRACTING, INC.
P.0. BOX 1234
ANYWHERE, USA 12345-6789
(123) 456-7891

January 1, 2004

Mr. Rodney Router, Project Engineer
Western Federal Lands Highway Division
P.O. Box 4567
Somewhere, USA 98765-4321

Re: Progress Estimate No. 003
OR PFH 123-1(1)
Happy Trails Creek Road
Contract No. DTFH70-XX-C-000XX

Dear Mr. Router

We submit our invoice for items on which there was work during the invoice period of December 1, 2003 through December 31, 2003. Also enclosed is our certification statement, and update of work performed by our subcontractors to date.

Please send payment to our Anywhere, USA corporate bank account by electronic transfer, as usual.

In the event that this invoice is found to be defective, please contact the following person.
John R. Doe, Project Manager
Ace Contracting, Inc.
P.0. Box 1234
Anywhere, USA 12345-6789
(123) 456-7891

Respectfully,

John R. Doe, Project Manager

JRD/lm
Enclosures

To: U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division
Mr. Rodney Router, Project Engineer
Western Federal Lands Highway Division
P.O. Box 4567
Somewhere, USA 98765-4321

Re: Contract No. DTFH70-XX-C-000XX
Award Date: 9/12/2003
Progress Estimate No. 003
Period December 1, 2003 through December 31, 2003
OR PFH 123-1(1)
Happy Trails Creek Road

Pursuant to FAR Clauses 52.232-5, and 52.232-27, and Special Contract Requirements, Subsection 109.08, the following is work completed to date. Payment is hereby requested.

Prepared By: Ace Contracting, Inc.

I hereby certify, to the best of my knowledge and belief, that--

(1) The amount requested are only for performance in accordance with specifications, terms, and conditions of the contract.

(2) Payment to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements and the requirements of chapter 39 of title 31, United States Code; and

(3) This request for progress payment does not include any amount which the prime contractor intends to withhold from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

Name:	Title:
Signature:	Date:
Date Received:	Date Approved:
Signature:	Date Approved
Signature:	Project Engineer

PROGRESS ESTIMATE NO. 003
OR FS 108-2(11)
HAPPY TRAILS CREEK ROAD

FOR WORK PERFORMED JULY 1, 1998 THROUGH JULY 31, 1998
CONTRACT NO. DTFH70-XX-C-000XX
ACE CONTRACTING, INC.

ITEM NO.	NAME	CONTRACT QUANTITY	UNIT PRICE	UNIT	AMOUNT	CURRENT QTY.	PREV. QTY.	QTY. TO DATE		CURRENT AMOUNT	AMOU TO D
15101	Mobilization	1	$200,000.00	LS	$200,000.00	0.00	1.00	1.00		$0.00	$200,0
15201	Constr. Survey and Staking	1	$51,500.00	LS	$51,500.00	0.05	0.80	0.85	*	$2,575.00	$43,7
15401	Contractor Testing	1	$35,000.00	LS	$35,000.00	0.10	0.80	0.90		$3,500.00	$31,5
15501	Construction Schedule	1	$2,500.00	LS	$2,500.00	0.50	0.25	0.75		$1,250.00	$1,8
15703	Silt Fence	4,100	$9.30	m	$38,130.00	500.00	2,000.00	2,500.00		$4,650.00	$23,2
15708	Straw Bales	340	$7.50	EA	$2,550.00	24.00	105.00	129.00		$180.00	$9
15709	Check Dams	70	$150.00	EA	$10,500.00	15.00	10.00	25.00		$2,250.00	$3,7
20101	Clearing and Grubbing	13	$5,600.00	ha	$72,800.00	13.00	0.00	13.00		$72,800.00	$72,8
20401	Roadway Excavation	108,000	$3.82	m3	$412,560.00	29,000.00	46,000.00	75,000.00		$110,780.00	$286,5
25101	Placed Riprap	350	$14.50	m3	$5,075.00	66.00	205.00	271.00		$957.00	$3,9
30101	Aggregate Base, Grading D	33,000	$9.76	t	$322,080.00	21,000.00	0.00	21,000.00		$204,960.00	$204,9
	Incentive Bonus		$0.10	t		21,000.00	0.00	21,000.00	**	$2,100.00	$2,1
40101	Hot Asph. Concr. Pavement	6,300	$23.54	t	$148,302.00	0.00	0.00	0.00		$0.00	
60201	1200 mm Pipe Culvert	50	$590.00	m	$29,500.00	15.00	12.00	27.00		$8,850.00	$15,9
63509	Flagger	700	$39.00	HR	$27,300.00	24.00	0.00	24.00		$936.00	$9
Contract Modifications											
25102	CM-0001 Keyed Riprap	50	$45.00	m3	$2,250.00	30.00	15.00	45.00		$1,350.00	$2,0
60901	CM-0002 Stone Curb	500	$150.00	m	$75,000.00	38.00	186.00	224.00		$5,700.00	$33,6
Temporary Items											
30101	Materials on Hand Advance	33,000	$4.20	t	$138,600.00	(21,000.00)	33,000.00	12,000.00		($88,200.00)	$50,4
TOTALS										$334,638.00	$978,2

* Note Quantity reflects 10% ($5,150) being withheld from subcontractor as a condition of subcontract.
** Note Incentive bonus reflects 1.02 payfactor, in accordance with Subsection 106.05

PROGRESS ESTIMATE NO. 003
OR FS 108-2(11)
HAPPY TRAILS CREEK ROAD

ACE CONTRACTING, INC.
CONTRACT NO. DTFH70-XX-C-000XX

THE FOLLOWING IS A LIST OF SUBCONTRACTORS TO WHOM PAYMENTS HAVE BEEN MADE AND A LISTING OF TOTAL AMOUNTS EXPECTED TO BE PAID THESE SUBCONTRACTORS RELATING TO WORK PERFORMED UNDER THIS CONTRACT.

SUBCONTRACTOR		TOTAL AMOUNT SUBCONTRACTED	DUE THIS ESTIMATE	PAID TO DATE
Acme Striping, Inc.	*	$21,000.00	$0.00	$0.00
Our-Way Traffic Control Co.		$25,000.00	$700.00	$700.00
Zippy Surveying, Inc.		$51,500.00	$2,575.00	$43,775.00
Movers & Shakers Logging Co.	*	$65,000.00	$65,000.00	$65,000.00
Stone & Sons Masonry Co.		$65,750.00	$4,997.00	$29,456.00
Smith Testing, Inc.		$30,000.00	$3,000.00	$27,000.00
TOTALS		$258,250.00	$76,272.00	$165,931.00

* Denotes DBE Subcontractor

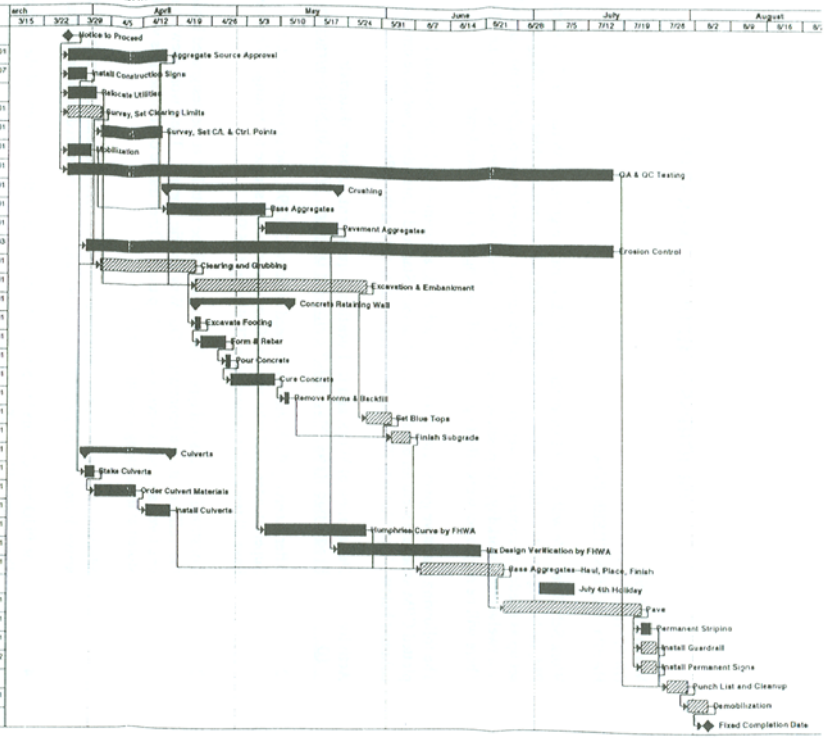
SUBMITTED: Robert G. Jones

BY: Robert G. Jones, Project Manager

DATE: Aug. 5, 1998

OR FS 108-2(11)
HAPPY TRAILS CREEK ROAD
CONTRACT NO. DTFH70-XX-C-000XX

ID	Task Name	DUR	E S	E F	L S	L F	F F	Tot. Float	Predec.	Item No.
1	Notice to Proceed	0d	3/27	3/27	3/27	3/27	0d	0d		
2	Aggregate Source Approval	15d	3/27	4/16	4/1	4/21	0d	3d	1	3010140101
3	Install Construction Signs	2d	3/27	3/30	3/30	3/31	0d	1d	1	63507
4	Relocate Utilities	4d	3/27	4/1	4/17	4/22	15d	15d	1	
5	Survey, Set Clearing Limits	5d	3/27	4/2	3/27	4/2	0d	0d	1	15201
6	Survey, Set CA, & Ctrl. Points	9d	4/3	4/15	4/10	4/22	5d	5d	5	15201
7	Mobilization	3d	3/27	3/31	4/17	4/21	12d	15d	1	15101
8	QA & QC Testing	75d	3/27	7/16	4/6	7/24	6d	6d	1	15101
9	Crushing	25d	4/17	5/21	4/22	5/26	0d	3d		3010140101
10	Base Aggregates	14d	4/17	5/6	4/22	5/11	0d	3d	2,7	30101
11	Pavement Aggregates	11d	5/7	5/21	5/12	5/26	0d	3d	10	40101
12	Erosion Control	73d	3/31	7/16	4/1	7/24	1d	1d	3	15703
13	Clearing and Grubbing	14d	4/3	4/22	4/3	4/22	0d	0d	5,12SS+2d	20101
14	Excavation & Embankment	25d	4/23	5/27	4/23	5/27	0d	0d	13,4,8	20401
15	Concrete Retaining Wall	13d	4/23	5/11	5/14	6/1	0d	15d		55201
16	Excavate Footing	1d	4/23	4/23	5/14	5/14	0d	15d	13	55201
17	Form & Rebar	3d	4/24	4/28	5/15	5/19	0d	15d	16	55201
18	Pour Concrete	1d	4/29	4/29	5/20	5/20	0d	15d	17	55201
19	Cure Concrete	7d	4/30	5/8	5/21	5/29	0d	15d	18	55201
20	Remove Forms & Backfill	1d	5/11	5/11	6/1	6/1	15d	15d	19	55201
21	Set Blue Tops	3d	5/28	6/1	5/28	d/1	0d	0d	14	15201
22	Finish Subgrade	4d	6/2	6/5	6/2	6/5	0d	0d	20,21	20401
23	Culverts	14d	3/31	4/17	5/19	6/5	0d	35d		60201
24	Stake Culverts	2d	3/31	4/1	5/19	5/20	0d	35d	3	15201
25	Order Culvert Materials	7d	4/2	4/10	5/21	5/29	0d	35d	24	60201
26	Install Culverts	5d	4/13	4/17	6/1	6/5	35d	35d	25	60201
27	Humphries Curve by FHWA	15d	5/7	5/27	5/18	6/5	7d	7d	10	30101
28	Mix Design Verification by FHWA	21d	5/22	6/19	5/27	6/24	3d	3d	11	40101
29	Base Aggregates--Haul, Place, Finish	13d	6/8	6/24	6/8	6/24	0d	0d	22,26,27	30101
30	July 4th Holiday	7d	7/2	7/8	7/2	8/3	0d	0d		
31	Pave	14d	6/25	7/21	6/25	7/21	0d	0d	28,29	40101
32	Permanent Striping	2d	7/22	7/23	7/23	7/24	1d	1d	31	63401
33	Install Guardrail	3d	7/22	7/24	7/22	7/24	0d	0d	31	61701
34	Install Permanent Signs	3d	7/22	7/24	7/22	7/24	0d	0d	31	63302
35	Punch List and Cleanup	4d	7/27	7/30	7/27	7/30	0d	0d	8,12,32,33,34	
36	Demobilization	2d	7/31	8/3	7/31	8/3	0d	0d	35	15101
37	Fixed Completion Date	0d	8/3	8/3	8/3	8/3	0d	0d	36	



C – 1

ACE CONTRACTING, INC
Date: March 18, 1998

Task | Progress | Summary | Rolled Up Progress
Critical | Milestone | Rolled Up Milestone | Non-Work Period

PROGRESS SCHEDULE NARRATIVE

March 16, 1998
OR FS 108-2(11)
HAPPY TRAILS CREEK ROAD

Work Schedule: We will work Monday through Friday, using eight-hour shifts from 7:00 AM to 3:30 PM, including half-hour lunch break. No weekend work is anticipated at this time. Flaggers will be set up as needed to control one-way traffic. As the summer progresses we might extend our shift time to a twelve-hour workday, and possible weekend work, which would be reflected on a schedule update. There will be no project work affecting public traffic during the July 4th weekend.

The following narrative gives details of our planned work, as required by FP-96 Section 155. Since the plotted CPM schedule includes details of Item Number, Start and Finish dates, we have omitted those columns below. The "Activity ID" number corresponds to that on the CPM schedule.

Activity ID	**Description of Work and its Location, Equipment, Labor, Materials, Production Rates, Materials/Equipment Delivery, Work by Subcontractors**
2	After receiving the Notice to Proceed effective 3/27/98, two laborers and the Superintendent will take samples from our proposed source for testing. We expect to have all test results submitted to FHWA by 4/16/98.
3	Construction signs and type III barricades will be installed at the designated locations by the traffic control subcontractor, Our Way Traffic Control. Their work crew consists of one foreman, one laborer, and a pickup truck. Other traffic control devices will be stored at the staging area until needed. Materials for erosion control and materials for the concrete retaining wall should also arrive during the week of March 30, 1998, and all will be stored at the staging area.
4	The PUD has scheduled relocation of power poles on the lower end of the project. Their work will not affect our operations.
5 & 6	The survey subcontractor, Zippy Surveying, will stake clearing limits starting from station 2+355, then drop back after the clearing and grubbing has started to relocate control points, and set slope stakes with reference point stakes for the full length of the project. Using a four-person crew, they expect to complete .5 km per day.
7	Mobilization of the crusher to our materials source and mobilization of earthwork equipment will be accomplished. Due to contract constraints, equipment and haul vehicles will be kept at the designated staging area when not in use.
8	Our testing subcontractor, Smith Testing, will be on site from the start of crushing until the completion of paving. Their staff consists of one to two testers, with occasional site visits by their Lab Chief. Our Superintendent will be responsible for quality assurance for all operations.

9 - 11 After source approval is received, aggregate production will begin with the base rock. Crusher setup should take no more than two days, with crew of a Foreman and four laborers. One D8 dozer and one 966 f. e. loader, each with one operator, will feed and stockpile materials. The anticipated production rate for base rock is 1200 metric tons per day. Base rock will be stockpiled at the station 1+003 rt. turnout using three end-dump trucks and a 966 f. e. loader. After completing base rock production, it will take one day to change crusher screens and begin producing pavement aggregates. The anticipated production rate for that operation is 800 metric tons (combined sizes total) per day. This material will be placed in stockpiles at the hot plant location. In crushing both aggregates, we may decide to lengthen our work shift to achieve the target production rates. Our testing subcontractor, Smith Testing, will run production tests on all aggregates to ensure contract specifications are met. After we complete production of the pavement aggregates, Smith Testing will begin to develop the asphalt mix design.

12 Silt fence and straw bales will be installed throughout the project at the locations identified in the Erosion Control Plan. These devices will be maintained as necessary by one laborer. Two laborers will remove all devices at project completion.

13 The clearing and grubbing operation can begin after clearing limits are established, station 2+355 ahead. -The clearing sub is Movers & Shakers Logging, and their six-person crew expects to complete 1 km per day. Their equipment includes two skidders and a track excavator–each piece of equipment with its own operator. Merchantable logs will be decked at mainline turnouts for pickup by their two self-loading trucks on Friday mornings. Waste materials will be taken to the designated disposal site, using one end-dump truck, for later burning.

14 Following completion of clearing and grubbing, excavation will begin at station 2+355 and proceed ahead, with the material going to the station 5+150 rt. fill. Excavation equipment will be two scrapers, one excavator, and one 988B f. e. loader–each piece of equipment with its own operator. We also expect to use four end dump trucks (with four drivers), for a total production rate of 550 cubic meters per day. Smith Testing will run proctors on excavated material as necessary to monitor work in the fill, and take compaction tests. The rock cut at station 3+040 should take another estimated four days to drill and shoot using one track drill with two operators and one laborer, with two additional days to haul the material to the USFS stockpile off-project, using five end-dump trucks and drivers with the 988B f. e. loader and one operator, for a production rate average of 400 cubic meters per day.

(Note to Contractors: Continue on with all remaining activities shown on CPM schedule)

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

CONTRACTOR DAILY QUALITY CONTROL REPORT

Project : _____

Contract/Subcontractor: _____

Date : _____ **Day:** _____

Weather : _____

Quality Control Inspection Narrative

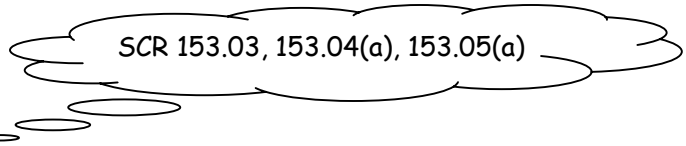
It is hereby certified that the information contained in this record is accurate, and that all work documented herein complies with the requirements of the contract. Any exceptions to this certification are documented as a part of this record.

Recorded by: Reviewed by:

_____ _____

Contractor Quality Control Manager Federal Highway Administration

Quality Control and Assurance Plan [SCR 153.02]]
Humday Construction Company
WA PFH 387-2(3) Clear River Road



1. Qualifications.

The following individuals will be providing quality control and quality assurance inspection and testing on the project.

a. Erica Lewis will be the Quality Manager and will principally be doing Quality Assurance inspections on grading, structures, walls, survey and other items detailed elsewhere in this plan. Erica has a B. S. in Civil Engineering and has worked the past two years for Muenster Construction Co as the Quality Control Manager. Prior to that Jane spent eight years working as an inspector and project engineer for Washington DOT.

b. John Fisher will principally be performing Quality Control inspections on work performed by Muenster Construction Co. This will include clearing, grading, culverts and aggregate base and emulsified base placement. John will also be doing the Quality Control for seeding, willow planting and permanent signs and pavement markings. John has a B. S. in Construction Management and has spent the past three years working for Muenster Construction Co. as a culvert foreman and project engineer. Prior to that he worked three years for Cooke County Public Works as an inspector class one. John will be Quality Assurance inspector for traffic control. John will be the alternate Quality Manager

c. Lillie Roe will be performing Quality Control inspections on structure work, including the bridge and the walls on the project. Lillie works for Structural Industries as a licensed Structural Engineer. She has worked in this capacity for the past 10 years, primarily in the role of project engineer on construction projects.

d. Stephanie Lee will be doing Quality Control inspections on survey, guardrail, traffic control and other items as detailed elsewhere in this plan. She will also be performing Quality Assurance inspections on clearing, culverts, base rock, emulsified base, paving and other items as detailed elsewhere in this plan. Stephanie spent the past 7 years working for Waudby Contractors as a foreman for a paving crew. Prior to that she worked as a seasonal surveyor for the US Forest Service as well as a seasonal worker for various construction contractors doing grade checking and materials testing.

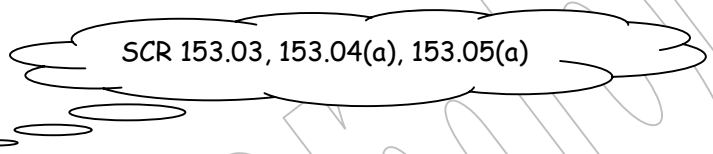
e. Hernandez Testing will be providing all the testing on the project except the Quality Control for the crushing. Hernandez is a respected testing firm that has been in business for the past 35 years. Austin Roberts will be the primary Quality Control compaction tester, including embankment,

culverts and structures. Austin has been a tester for the past 3 years and is Level 2 certified by WSDOT. The remaining specific testers, and their qualifications, will be provided as we get closer to on-site testing. All off-site tests (mix designs) will be conducted in their main lab located in Spokane, WA.

f. Grace Becker will be the Quality Control gradation tester during crushing. Grace works for Williams Crushing and has been their Quality Control tester for the past 3 years.

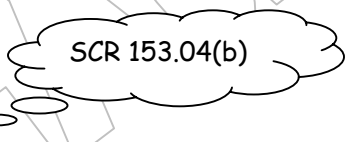
g. Issac Galloway will be the Quality Control inspector for the paving operations. Issac is a foreman for Emory Paving and has been a foreman for the past 15 years.

h. If other inspectors or testers are needed, qualification information will be provided.



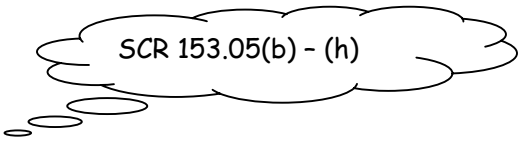
2. Authority.

Erica Lewis reports directly to Linda Russel, Vice President. Erica will be coordinating all activities with the Superintendent and various Foremen on the project. She has the authority to stop all work (including that of subcontractors and suppliers) for non-compliance reasons. All testers and inspectors will report directly to Erica Lewis. They will not have authority to stop work.



3. Chart of Inspections

Appendix A contains a chart of inspections (both Quality Control and Quality Assurance) that details the definable features of work, the responsible inspector and the frequency and method of inspections.



4. Quality Assurance

The first part of the Quality Assurance Plan is to develop a list of definable features of work for this project. The list of definable features for this project follows:

a. Survey
b. Clearing and Grubbing
c. Erosion Control Devices

d. Excavation
e. Culvert Installation
f. Crushing
g. Embankment
h. Wall Installation
i. Fencing
j. Finishing Subgrade
k. Willow Planting
l. Seeding/Mulching
m. Bridge Work
n. Base Rock
o. Emulsified Treated Base
p. Guardrail
q. Paving
r. Traffic Control
s. Pavement Markings & Permanent Signs

A definable feature is a portion of the work that due to its size, environmental sensitivity, complexity, location, etc. requires attention to the details of how the work will progress and how compliance with the contract will be obtained. The Contractor and Government need to agree on what the definable features of work are for a given project.

The second part of the Quality Assurance Plan is to develop a specific tracking report for each definable feature of work. Details of the tracking report and its usage follow:

Tracking Report

The tracking report is an internal document that tracks inspections, testing, and necessary follow-up to assure all work is in compliance with the contract.

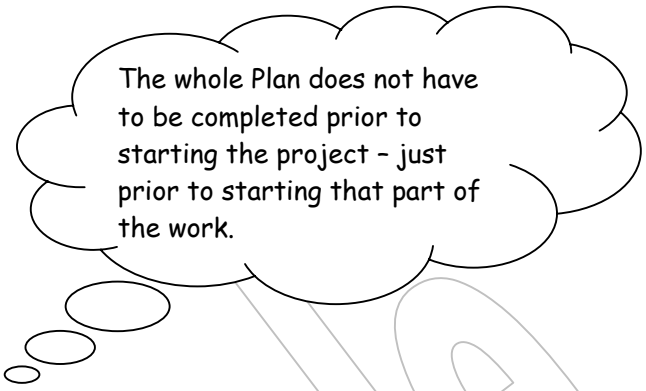
The tracking report is not required by the contract, but it is one example of a way to coordinate and track all the Quality Assurance activities.

Prior to the start of a definable feature of work (including subcontractor and supplier work), the base tracking report will be developed – this will include all areas of testing and inspection, including a pre-work inspection to assure all submittals and, certifications as well as preparatory work is completed and that all materials to be incorporated into the work are in compliance with the contract. A copy of the base report will be submitted to the Government at least 2 weeks prior to starting that portion of the work.

Any deficiencies noted during Quality Control or Quality Assurance inspections of an item of work will be entered into the tracking report for follow-up. Any reoccurring problems will be addressed between Erica Lewis and the foreman (or superintendent if necessary) of the operation.

Upon completion of a feature of work, the original of the tracking report (that includes all notes on inspections) will be provided to the Government. At any time during the work the Government may review the current tracking report or request a copy of the current tracking report.

Copies of the base tracking reports for the surveying and clearing and grubbing items are included in Appendix B. The base tracking reports for erosion control devices and excavation are in the final stages of development and will be forwarded upon completion, but no later than 2 weeks prior to commencing work on these items.



The third part of the Quality Assurance Plan is to hold "toolbox" meetings. On the project as work progresses, prior to the start of each definable feature of work, a "toolbox" meeting will be held with the foreman and crew. The Government will be invited to the meetings. Each meeting will cover the applicable specifications of the contract and the expectations from the crew for the work. Any work requiring specialized training will be reviewed prior to start up (during development of the tracking report – see Appendix B) to assure the work crew is qualified and prepared to complete the work in compliance with the contract. These "toolbox" meetings may occur prior to starting work for the day, during a lunch break or at the end of the day as needed.

SCR 153.04(c), 153.07

5. Record Management.

Erica Lewis will have overall responsibility for managing all paperwork associated with the quality system. A chart of the paperwork to be maintained along with person responsible for completion, timeframe for completion and submission and location of the contractor copy of the paperwork is found below.

Unless otherwise indicated, originals will be provided to the Government upon completion. All reports will be used per contract specifications, except the tracking report (which is a Schmidt Construction Co. report and not required by the contract).

Quality Control and Assurance Plan

Paperwork	Responsible for Completion	Timeframe of Completion and Submission	Location of Contractor Copy
Quality Report	Erica Lewis	End of next work day	Job Trailer
Test Reports	Hernandez Testing and Grace Becker	Per Contract – all results attached to Daily Quality Report	Lab Trailer
Construction Operations Report	Larry Jefferies, Superintendent, Issac Galloway, Foreman and other foremen for subcontractors	End of next work day	Job Trailer
Control Charts & QLPay Results	Hernandez Testing and Grace Becker	Daily or Weekly as appropriate	Lab Trailer (originals too)
WFLHD 470	Erica Lewis	When work ready for inspection per 153.06	Job Trailer
Pay Item Notes	Erica Lewis	When work completed	Job Trailer
Submittals & Certifications	Erica Lewis	As received and reviewed	Job Trailer
Tracking Report	Inspector for each item	Prior to starting work – updated as action taken	Job Trailer
Final Inspection Report	Erica Lewis	Upon completion of a segment of work – prior to Government inspection	Job Trailer

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Survey	Stephanie	Erica	25% of the survey will be randomly checked. If problems are found, more will be checked to delineate the problem area for correction.	Prior to the start of surveying, a meeting with the Government will be held to review the survey and staking process, including methods of notation. 10% of survey will be randomly checked.
Clearing & Grubbing	John	Stephanie	Within 3 hours of starting clearing/grubbing, inspection of operations will occur. If compliance with the contract is found, then inspections will occur once or twice daily or as questions arise.	Work will be inspected once per day for the first three days. If things are ok, will check three times per week.
Erosion Control Devices	Stephanie	Erica	Prior to installation, placement area will be inspected. Within 3 hours of first installation of each type of device, inspection will completed for compliance with the contract and permits. Inspection will occur once per day or as needed if problems.	Each installation will be inspected upon completion of installation. A check of all devices will occur once per week.
Excavation	John	Erica	Within 3 hours of starting excavation, inspection of operations will occur. If ok, then once or twice daily or as questions arise. As each soil type is encountered samples will be taken to classify the soils and obtain maximum density information for use in compaction.	Work will be inspected once per day for the first three days. If things are ok, will check once per week.
Culvert Installation	John	Stephanie	Within 2 hours of starting installation of the first culvert, line and grade of culvert will be checked. Line and grade will be checked with the installation of each culvert segment until three segments are set in a row with no problems with line and grade. After that line and grade will be checked at start of installation, half way through installation and upon completion of installation. Once two culverts are installed without problems, line and grade will be checked once per culvert. If problems are encountered the inspection frequency will increase as indicated above. Excavation and backfill – need details. **Additional details of the inspection testing will be added at least two weeks prior to start of any culvert work.**	First culvert will be inspected midway through installation. Each culvert will be inspected upon completion.

The whole Plan does not have to be completed prior to starting the project – just prior to starting that part of the work.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Crushing	Grace	Stephanie	Quality tests will be performed 3 weeks before crushing operations are scheduled to begin. Full production tests (in conformance with Sampling and Testing Tables in SCRs) will be performed once per six hours with a minimum of twice per shift. Partial production tests will be performed every 2 to 6 hours – depending on the stage of crushing and outcome of results. These test results will be used to modify the crushing operations. Complete final product tests will be performed once per 1000 ton (in conformance with Sampling and Testing Tables in SCRs). Additional final product tests (either full or partial) will be performed as needed depending on test results and conformance to contract requirements. For Emulsified Treated Aggregate Base, whenever gradation tests are performed from the grade, asphalt content will be determined, but not less than one per 1000 tons. Samples for Humphreys curves will be submitted upon determination of final gradation.	Quality test results will be reviewed prior to submission to the Government. Production and placement tests will be input into QLPay to determine quality of aggregates. Any discrepancies or problems will be field reviewed and corrected.
Embankment	John	Erica	At the start of embankment for each new soil type compaction will be checked three times per lift per embankment area until a suitable rolling pattern is established. Then compaction will be checked twice per layer per 5000 square meters until at least 10 compaction tests in a row pass. Then compaction will be checked once per layer per 5000 square meters. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established.	Work will be inspected twice per day for the first three days. If things are ok, will check once per day.
Wall Installation	Lillie	Erica	Excavation limits, backfill operations and compaction tests will be performed per Table 255-1. – need to add details. **Additional details of the inspection testing will be added at least two weeks prior to start of any wall work.**	Work will be inspected once per day for the first week. If things are ok, will check once per day.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Fencing	Stephanie	Erica	Alignment and installation will be checked within one day of start up, then spot checked once per day unless problems occur.	Installation will be inspected the first day. If things ok, will check upon completion of a section, at least once per week.
Finishing Subgrade	John	Erica	Within 4 hours of starting finishing compaction and final line and grade will be checked. Compaction will be checked at least four times per 2000 square meters until a suitable rolling pattern can be confirmed. Then compaction will be checked twice per 2000 square meters until at least 10 compaction tests in a row pass. Then compaction will be checked once per 2000 square meters. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Final line and grade will be checked for 25% of area until all 25% is within tolerances. Then final line and grade will be checked for 10% of area. If problems are found, more will be checked to delineate the problem area for correction. If more than 3 checks are found out of tolerance inspection frequency will be increased to 25% until tolerances are met again.	Work will be inspected once per day for the first three days, then upon completion of a section of work.
Willow Planting	John	Stephanie	Installation will be checked within one day of start up, then checked once per day.	Work will be inspected the first day. If things ok, will check twice per week.
Seeding/Mulching	John	Stephanie	Set up will be checked prior to start up, first batching will be checked and first placement will be checked. If things are ok, inspection will be twice per day.	Work will be inspected the first day. If things ok, will check twice per week.
Bridge Work	Lillie	Erica	Mix design will be performed per the contract at least 1 month before anticipated concrete work. All concrete tests will be performed (need more detail). Prior to concrete placement, forms and rebar will be inspected for compliance with contract requirements. Precast girders will be inspected at the plant during production. **Additional details of the inspection testing will be added at least two weeks prior to start of any bridge work.**	Work will be inspected at each segment of construction.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

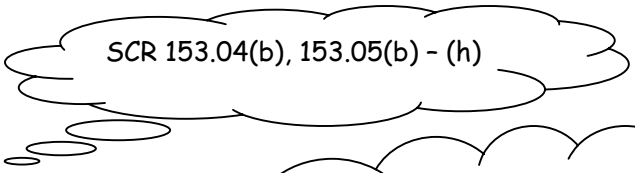
Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Base Rock	John	Stephanie	Gradation testing covered under crushing definable feature. Compaction tests will be completed continuously upon starting of rolling to establish a rolling pattern. Once pattern is established, compaction tests will be one per 200 tons. After 10 passing tests in a row, compaction tests will be one per 500 tons. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Line and grade and surface tolerance will be checked once per 200 square meters on the final course. After 5 checks are within tolerances, line and grade and surface tolerance will be checked once per 500 square meters on the final course. If checks show non-conformance with the contract, checks will increase back to once per 200 square meters until problem is determined and resolved.	Work will be inspected once per day.
ET Aggregate Base	John	Stephanie	Gradation testing and asphalt content covered under crushing definable feature. Asphalt content by ignition will be tested each time a gradation test is performed. Compaction tests will be completed continuously upon starting of rolling to establish a rolling pattern. Once pattern is established, compaction tests will be one per 200 tons. After 10 passing tests in a row, compaction tests will be one per 500 tons. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Line and grade and surface tolerance will be checked once per 200 square meters on the final course. After 5 checks are within tolerances, line and grade and surface tolerance will be checked once per 500 square meters on the final course. If checks show non-conformance with the contract, checks will increase back to once per 200 square meters until problem is determined and resolved.	Work will be inspected once per day.

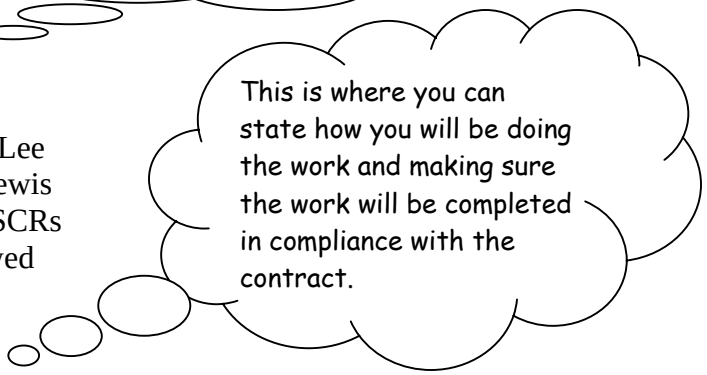
Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Guardrail	Stephanie	Erica	Alignment and installation will be checked within 3 hours of start up, then once per day unless problems occur.	Alignment will be checked prior to installation. Installation will be checked once per day for two days, then once every two days.
Paving	Issac	Stephanie	Asphalt Cement will be sampled per Table 401-9. (need details) Mix temperature, gradation, asphalt content, compaction, width and thickness will be performed per Table 401-9. (need details) If conformance is not met, inspection will be increased until conformance is consistent. The smoothness will be checked upon completion of the final surface course. **Additional details of the inspection testing will be added at least two weeks prior to start of any paving work.**	Mix design will be performed per the contract at least 2 months before anticipated paving start up. Work will be inspected once per day.
Traffic Control	Stephanie	John	Installation of devices will be checked within one day of start up, then checked once every two days of installation. Overall operation will be checked twice per day.	Installation of devices will be checked upon installation and twice per week. Overall operation will be checked twice per day.
Pavement markings & Permanent Signs	John	Stephanie	Survey will be checked prior to start up, placement will be checked at start of operation, then twice per day. **Additional details of the inspection testing will be added at least two weeks prior to start of any pavement markings or permanent sign work.**	Layout of pavement markings will be checked prior to placement of markings. 50% of signs will be inspected after installation. If problems, additional signs will be inspected.

Appendix B – Tracking Report





Definable Feature of Work: Surveying
Quality Control Responsible Inspector: Stephanie Lee
Quality Assurance Responsible Inspector: Erica Lewis
Contract Requirements: Section 152 of FP 96 and SCRs
Checks prior to starting work: Surveyor has reviewed requirements & has survey data needs to do work, submission of staking schedule (per 155 – dates and sequences of each staking activity).
Pre-work meeting topics: (152.02 FP) surveying and staking methods, stake marking, grade control for courses of material, referencing, structure control, work schedule, changes in staking schedule, schedule of turning in notes for survey and other pay items.

Initial Inspection - Plan: The first day of staking each item – check 25% of work
List inspection date/time and outcome:

Control Points:

Clearing and Grubbing:

Slope Stakes:

Erosion Control Devices:

Culvert:

Wall:

Fencing:

Top Subgrade:

Bridge Work:

Top Base:

Top ET Base:

Guardrail:

Signs:

Paving:

Striping:

Appendix B – Tracking Report

SCR 153.04(b), 153.05(b) – (h)

Ongoing Inspection (list inspection date/time and outcome):

Control Points:

Clearing and Grubbing:

Slope Stakes:

Erosion Control Devices:

Culvert:

Wall:

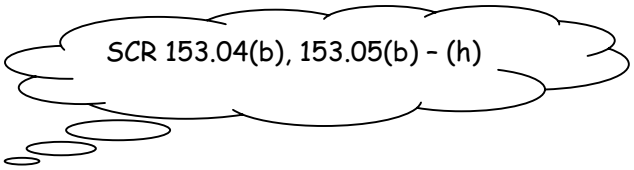
Fencing:

Top Subgrade:

Bridge Work:

Top Base:

Appendix B – Tracking Report



Top ET Base:

Guardrail:

Signs

Paving:

Striping:

Follow-up (list follow-up activities and results):

Appendix B – Tracking Report

SCR 153.04(b), 153.05(b) – (h)

Definable Feature of Work: Clearing and Grubbing
Quality Control Responsible Inspector: John Fisher
Quality Assurance Responsible Inspector: Stephanie Lee
Contract Requirements: Section 201 of FP 96 and SCRs
Checks prior to starting work: Clearing and Grubbing stakes set, logging subcontractor has entered into timber contract with USFS, slash burning locations approved by Government, save trees and oot wad trees are marked. Necessary erosion control devices are installed.

A detailed plan for the work will help in anticipating problems and should limit the number of surprises and areas of rework.

Pre-work meeting topics: Logging subcontractor and grubbing foreman have read 201 requirements and are aware all equipment must be cleaned and inspected prior to starting work. All merchantable timber issues are clear. Slash locations and root wad tree stockpile locations are known and approved. Grubbing foreman is aware of how 201work ties into 204 work. Review the importance of the erosion control devices and the requirement that they be preserved and/or repaired upon damage.

Initial Inspection - Plan: Within 3 hours of starting logging and grubbing – ensure contract requirements being met.
List inspection date/time and outcome:
Logging:

Grubbing:

Ongoing Inspection (list inspection date/time and outcome): (1 to 2 times per day)
Logging:

Grubbing:

Follow-up (list follow-up activities and results):

WFL Contractor Quality Control and Quality Assurance Plans and Systems

These guidelines are intended to assist WFL Contractors in the preparation of acceptable Contractor Quality Control and Quality Assurance Plans (CQCQAP). They are based on the requirements contained in the Special Contract Requirements, Section 153 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP). These guidelines are not contractual requirements, and do not supplement or supersede any contractual requirements.

Introduction

A contractor quality control and quality assurance plan (CQCQAP) is the documentation of the contractor's process for delivering the level of construction quality required by the contract. This document is intended to provide guidance to contractors, subcontractors and suppliers as to what is expected from CQCQAPs.

The CQCQAP is the framework of the contractor's process for delivering quality construction. The plans and specifications define the expected results or outcome. The CQCQAP outlines how those results will be achieved. While it is not possible to determine from the CQCQAP whether the level of construction quality will be acceptable, it is possible to verify that the contractor, as an organization, has addressed the basic elements of its quality process. These guidelines address, not only what should be in the CQQACP in order for it to be acceptable to the Government, but also what elements the Government's QA process needs to have in order to assure quality without usurping the contractor's responsibilities.

The **standard industry definitions** are as follows:

Quality Control: The sum total of activities performed by the seller (producer, manufacturer, and/or contractor) to make sure that a product meets contract specification requirements.

Quality Assurance: All those planned and systematic actions necessary to provide confidence that a product or service will satisfy given requirements for quality.

What does this mean to you and me? Quality Control is doing the work in an acceptable manner. Quality Assurance is making sure the work gets done in an acceptable manner.

How do you explain it?

The contractor is responsible for doing work that meets the contract requirements. **Quality Control** is the things the contractor does to make sure the work meets the contract before and during and after construction. It is testing materials, it is checking the grade of a culvert prior to backfilling, it is making sure the lifts are the right thickness, it is making sure the wall is at the right grade, it is making sure the bolts are tightened properly on the guardrail, it is making sure the subgrade is finished to tolerances.

Quality Assurance is a check of the quality control – is the quality control process working so that the final product meets the contract requirements? It is the spot check of the slope stake notes, it is the checking of the work of a subcontractor such as reinforcement steel spacing, it is the check of the grade of a culvert, it is the check of the excavation and/or embankment slope. It is the verification of previous the quality control activities. It assures that the work will result in the quality product you are looking for. The contractor is being asked to double check his work – to make sure his quality control is working.

FAR Requirements

FAR Clause 52.246-12 Inspection of Construction is the foundation for all contract requirements dealing with quality control and quality assurance. In summary the clause:

• Requires the contractor to maintain an adequate inspection system and perform inspections that will ensure contract compliance.

• Requires the contractor to maintain inspection records and make them available to the Government.

• Allows [but does not require or obligate] the Government to do its own tests and inspections and requires the contractor to assist.

• Says that Government tests and inspections are for its benefit and do not take the place of the contractor's quality control obligations.

• Says that anytime the contractor tells the Government that work is ready for inspection and it is not [i.e. it is in noncompliance], the Government may charge the contractor for the costs of its inspections and tests.

• Says that the contractor is obligated to comply with the contract whether or not a Government inspector is present.

• Says that the Government may order previously completed work torn apart for inspection, and that if it is noncompliance, the Contractor will pay for the inspection and the correction of the work. If it is in compliance the Government will pay for the inspection and disruption to the work.

Organizational Structure – Subsection 153.03

One of the first issues a contractor, or any organization must face when designing its QCQA procedures, is how these systems will relate to, and impact its organizational structure.

Separate Quality Staff – Inspection and testing are very specialized functions. A contractor may elect to hire a separate staff or subcontractor to perform testing and inspection and to generate the documentation required by the FAR Clause and the contract. If a contractor has a separate quality staff, it is important to define the relationship between those personnel and the production organization. What will be the disposition of failing tests/inspections? Who will have authority to order production ceased? Under what circumstances? What will be the conditions of restarting production?

Combined Staff - Quality management experts generally discourage separating quality control and assurance personnel from production personnel. It pits one part of the organization against another. This built in adversity is seen as both inefficient and requiring additional staff. Ideally quality control should be achieved by developing an organizational culture, which encourages quality - a culture that is embraced by everyone in the organization.

However the makeup of the structure, a Quality Manager must be assigned and be available during all phases of the work. This person will manage the contractor’s quality control and quality assurance activities. For most projects the Superintendent, project manager or foreman cannot be designated as quality manager. The contractors quality systems must be a priority and cannot take a back seat to other primary functions.

Quality Control and Quality Assurance Systems- Subsection 153.04, 153.05

Testing and inspection provides a reflection of quality and the process. But only changes to the process can improve quality. Extensive inspection needed to identify defects so that they can be corrected is an indication of a poor process. Ideally frequencies of QC and QA inspections are dependent on characteristics of the overall process. In a transition environment however, when not used to performing formal QC and QA systems, it may be necessary to increase inspections to minimize the risk of serious deficiencies undetected until late in the process.

It is easy to become preoccupied with testing when describing a QCQA plan. Testing is easily defined and leaves a clear documentation trail. But the non-materials based testing and inspection, for example the inspection of a culvert staking survey and location of structures, and the organizational resources that actually will control the quality of the construction are by far, the most important part of the plan, even though describing these resources and procedures [the process] in writing is often difficult.

For materials the contract may contain a listing of mandatory contractor testing including sampling points, frequencies and time limits for delivering results. This testing is intended primarily for the agency's use in documentation and accepting the work. Some contracts require additional testing identified as *production* testing which is intended to provide real time information during the construction and manufacture of materials to allow the contractor to adjust or control the process and ensure that testing at the end of the process will indicate compliance. Whether or not the contract specifies production testing, it is up to the contractor to address whether or not it is needed in the Contractors QCQA. Frequencies of, inspection points and time limits of non-materials based items of work are not normally provided in the contract. This is where the contractor must thoroughly analyze under each definable feature of work what inspections or tests will be performed.

Charts are a simple method in which to describe the QC system for each definable feature of work. In them, persons responsible, testing or inspection activity and frequencies can easily be shown.

Most organizations have intuitive QCQA processes, which have evolved over time to reflect the requirements of company management. For example, most companies have their own way of monitoring production, quality and deficiencies. Describing and documenting these processes formally within a QCQA framework in writing is often difficult. There is almost no physical limit to the length and detail included in this section. Every requirement, every sentence in the contract could precipitate a paragraph or more of detailed process control procedures to describe how that requirement will be fulfilled. From a practical point though, this is excessive. For most typical FLH construction projects the narrative and charts covering quality control and quality assurance system procedures should adequately address the details in one to three pages for each definable feature of work (see below). This does not include, certifications, personnel résumés and other attachments. The fact that many of the detailed requirements of the contract are not specifically addressed in the CQCQAP does not mean they can be ignored. The contract requirements themselves are the foundation for the outcomes expected from the CQCQAP.

For QC systems describe in narrative and chart form QC personnel, what inspections, tests and activities will be performed for each definable feature of work as the work progresses. Describe inspections, testing or other activities that will be used to monitor quality while the work is in progress.

For QA systems develop narrative that describes QA personnel, what inspections, tests, plans and activities such as materials certification verification, site preparation, staking adequacy, methods of construction adequacy, environmental restriction considerations, and training or instructions provided. Describe what steps will be taken when deficiencies are noted during QA review, inspections or testing. QA should describe what will be performed to verify that work is prepared, started and completed in accordance with the contract, and further provide a process to verify that the QC system is functioning.

Categories and Definable Features of Work – Subsection 153.04(b)

To be assist in reviewing project work and developing QCQA plans a typical contract may be divided into multiple categories depending on the nature of the work and the organizations performing the work. For example stakeout, clearing, excavation and embankment might be grouped together as a single category of **Grading**.

Sometimes how categories are defined is influenced by which subcontractors or crews do the work, since each may have its own organizational relationships. It should be left up to the contractor to group items of work in logical categories to facilitate the development of the CQCP. Other typical categories are as follows.

Pavement Structure

Grading

Safety Appurtenances

Seeding and Landscaping

Temporary Traffic Control

Bridge

Definable features of work are sub items within the categories of work, of which specific QCQA activities are outlined in the QCQA Plan. For example definable features of work under "Bridge" would be survey, structural excavation, forming, reinforcing steel, concrete placement and curing. This is where the details of the QCQA process are described for the individual features of work. The **who, what, when, where and how** (see below) need to be adequately described for the separable work items

Preliminary, Startup, Production and Completion Phases

To further understand QCQA the terms preliminary, startup, production and completion phases are terms that are used to help define and grasp the quality control and quality assurance process. The contractor's system does not have to be modeled under this framework but the concept of separating the distinct phases of work may help in defining and developing a process.

The preliminary phase is critical. During the preliminary phase the contractor verifies that everything is in place to begin the work. It is where the contractor has developed a plan to attack the work and knows exactly how the work will be performed barring any glitches. The preliminary phase includes evaluation of equipment, materials and other resources prior to commencing the work. For example, the review and approval of materials certifications. It also includes crew training of contract requirements or other special circumstances. Training does not always mean formal classroom training. The preliminary phase also includes verifying that preliminary work such as staking and clearing for instance, have been completed in accordance with the contract and have been previously evaluated under their own requirements of the QCQA plan.

Startup includes the additional management, training and inspection resources usually needed when a new operation is started. Usually minor changes are made to processes once work is underway.

Production addresses the routine QC and QA resources necessary after the process is established and production is ongoing. Describing what is needed to maintain an adequate quality level during production**.**

The completion phase is a description of the activities that will take place to verify that the final

product meets the requirements of the contract. What testing or inspections will be recorded to document contract compliance? What arrangements have been made for Government QA inspection? What pay note or measurement documentation will be provided?
The Who, What, Where, When and How.

For each definable feature of work, the QCQA plan should answer these questions whether it is framed in the context of the phases described above or with any other developed process.

Who will be responsible for QCQA throughout the operation? A Quality Control Technician may be assigned responsibility for testing and documentation and perhaps even training and monitoring of startup. As the operation moves toward production and closeout however, other QCQA personnel may be assigned increasing responsibility.

What will be done to ensure contract compliance? What work, what stage and at what frequency will work be inspected and tested? What will be inspected, Grade? Alignment? Spacing of reinforcing steel? Construction survey staking? Aggregate gradations? What authority will the person have over operations? What portion of the time during the work will the identified person actually be present to perform QC or QA responsibilities? Testers and inspectors cannot control quality if their responsibilities are limited to testing, measuring and documentation. "What" should address not only personnel and activities, but materials and equipment used in the construction. These items often have stated or implied contract requirements, and the QCQA system must verify that those requirements are met. What documentation will be provided to record inspection and results of inspections?

Where will these activities be performed? Will optional production testing and inspections be performed? Will manufactured materials be inspected at the plant, at the contractor's facility or at the site of work? Will the equipment be inspected at the yard, or will inspections be performed at the site?

When will these activities be performed? How many inspections or tests will be performed at what frequency? The earlier QCQA activities are performed, the more latitude the contractor has in dealing with problems. However, when activities are performed too early there is a risk of unforeseen changes or glitches prior to actual construction. When will test results and inspection narrative be available? This is a key component of the QCQA plan, which determines largely how responsive it can be to deficiencies.

How will inspections be performed? Will standard checklists be developed from the specifications? Have arrangements been made with subcontractors or others to provide access to the work? What equipment will be needed to perform the inspections or tests? What documentation will be produced as a result of the inspections or tests? The more generalized and vague the inspection procedures are, the more likely they will not be consistently effective.

The CQCP should minimize any parroting or paraphrasing of requirements in the contract, and should avoid simply promising to comply with the contract. These kinds of statements and assurances are of essentially no added value. The CQCQA plan must go beyond boilerplate descriptions and address the contractor's QCQA organization and process for consistently delivering the level of quality that the contract requires.

Subcontractors

When subcontractors and suppliers [other than suppliers of commercial items] provide part of the work, then the QCQAP needs to be clear whether their QC responsibilities will be independent, or a part of the prime contractor's responsibilities. Remember the Primes' quality manager is in overall control of the project QCQA. If they are independent, then the subcontractors or suppliers QCQAP must be developed and submitted for approval, through the prime. Otherwise, the prime must address how it will monitor and verify subcontractor quality as a part of its plan. In either case the prime is contractually responsible for all the work.

Manufactured Materials

An important part of the CQQAP is the process for verifying that manufactured materials comply with the requirements of the contract.

> **Commercial Items** - These are materials manufactured and sold to the general public, as opposed to materials made to the unique specifications of the agency. For most commercial items, the contractor's responsibilities are limited to verification that the materials are as required or permitted in the contract, and that the delivered materials are in fact those approved materials. Some materials which are arguably commercial are considered of critical importance, and have specific QCQA requirements in the contract.
>
> **Non-commercial Items** - These are materials manufactured offsite, but specifically to agency specifications for this project. QCQA plan coverage for non-commercial items should be a separate document from the manufacturer, or the manufacture of those items should be included in the QCQA plan of the contractor or a subcontractor. Like critical commercial items, critical non-commercial items may have specific QCQA requirements in the contract.

Records and Documentation. Subsection 153.07

While good documentation is often a reflection of good quality control, documentation is not the same thing as quality control. Adequate documentation is necessary to concisely document the process and results of the contractors QCQA system. Minimum documentation is outlined in the Special Contract Requirements. These include charts or tables of definable features of work describing QC and QA activities, the daily quality control and assurance report where all QCQA activities are documented, Form 470 the notification of completion of work that is used to notify the Government that certain work is completed and is ready for Government QA and pay item measurement notes all make up records and documentation.

Partial Plans – Subsection 153.02

It is possible, and very likely that subcontractors, suppliers and overall responsibilities for some latter phases of the construction, will have not been arranged at the time the prime is ready to begin on the initial phases. It is permissible for the contractor to submit, and the agency to accept a partial plan. In many cases, a contractor may not be able to develop a thorough and concise QCQA plan for many of the definable features of work by the notice to proceed date. The contractor may not have developed an internal plan on the methods, materials and approach or crews that will be used in the performance of the work. A good QCQA plan cannot be developed until the contractor has decided how they intend to complete the work. A QCQA plan that is submitted very early on, and that is full of generalities can be more harmful than beneficial. A QCQA plan without details and specifics that addresses the requirements of the contract will not be acceptable.

Emulsified Asphalt Treated Base Pre-Work, QA/QC Meeting

Pugmill Operations

1. Pugmill is required that the control for the aggregate, oil and water are interlocked to provide consistent material. How is this obtained with this plant? (How is each part monitored)

2. Is water and rock mixed in pug prior to addition of oil?

3. Explain the controls of the plant.

4. Pugmill paperwork. (daily records, tank stickings, computer printouts, oil deliveries)

General knowledge of plant operation.

Scale Operations and Truck Route

1. Explain truck and loader routes through the pit for safety to testers, inspectors and visitors.

2. Scale paperwork, weight tickets and spread sheets.

Laydown Operations

1. List the equipment which is intended for use (number, size and type)

2. Explain the laydown operation. (start with the truck arriving on grade)

3. How will the compaction and moisture content be monitored?

4. How will the public and constructio traffic be routed?

5. Edge Treatment.

Testing

Material Sample Testing

1. Who, where and how will the cold feed sample be taken?

2. Who, where and how will the acceptance testing be behind the paver?

3. Who will transport the samples to the lab?

4. Who will conduct testing in the lab?

5. Cold feed samples requires SE test, Grade samples requires gradation and fracture faces. (Random numbers administered by WFLHD, 1/100 MG)

6. Reporting time on test reports is six (6) hours. How are you going to meet this requirement?

7. Where will the control chart be posted? (QL-Pay does not produce acceptable control charts)

8. Who will up-date QL-Pay status?

9. Lab tour.

Grade Testing

1. Compaction testing required each 500 MG. (Acceptance compaction testing not performed until the contractor has performed and documented on QC report and WFLHD form 470, that the compaction meets the specification, then verification random compaction location will be revealed.

2. Who and how often will the tester test compaction and moisture content during the lay down to ensure consistent and quality product?

3. Who will verify that the placed hubs are within tolerance as described in table 152-1.

Attended:

Contractor:	WFLHD
Project Manager:	Project Engineer:
Superintendent:	Inspector:
QC Manager:	Inspector:
Pugmill Operators:	Inspector:
Scale Operator:	
Lay Down Operations Foreman:	
Grade Foreman:	
Testers:	

Example Only:
Meeting agenda should be modified to meet the job specifications.

All paperwork is to be turned in daily and must be ORIGINAL and LEGIBLE!!

Unnamed Lake Highway, OR PFH 2000 - 1 (10)
Pre-Pave, QA/QC Meeting

Location: Black Rock Pit **Date:** **Time: 0 Dark Thirty**

1. Plant Tour

A. Which bunker will be dedicated to what material?
B. Where will the cold feed and oil samples be taken from?
C. How will the trucks be routed through the pit?
    1. What is the site distance when leaving the pit?
    2. What CB (citizen band) channel will the trucker be utilizing?
D. Where and what products will the trucks use to soap down?
    (ensure truck boxes are clean first)
E. How are the trucks weighted?
    1. What will the tickets or scale tickets look like?
    2. Explanation of what is required to conduct a scale check.
    3. What is the scale verses the truck lengths?
F. All trucks are required to have tarps.
G. What is the number of trucks planned for an average day?
H. How is the plant controlled?
    (aggregate flow, oil content, oil temp., drum temp., moisture, etc…)
I. What is the proposed plant production rate?
J. Explain the Plant control panel.
K. Oil chart from the asphalt supplier displaying oil temperature verses usage.
L. What type of communication is there between the grade and the asphalt plant?

2. Paver Site

A. How do you plan to construct joints, both transverse and longitudinal?
B. Do you have a straight edge to use when pulling from a joint (3 meter required)?
C. How do you plan to do the temporary striping?
D. How do you plan to take samples behind the paver?
E. How do you propose to ensure consistent temperature across the screed?
F. What is the maximum usable screed width?
G. What is the number and specifications for the rollers intended for use on the paving?
H. Who and when will be monitoring the depth and compaction during paving?
I. Plan of attach, direction of paving, from where to where, which lift verses which lane, offset and width.

3. Test Strip

A. The length of the test strip is approximately 300 meters.

B. What is the date, time and location of the test strip.

C. Samples to be taken and tested during the test strip.

1. three (3) gradations.
2. three (3) SE's.
3. four (4) cores with Nuclear density correlation.

D. Proposed roller pattern to start with.

4. Testing

A. Graduation samples, 1 per 700 tonne , from behind the paver.

B. Se from plant cold feed, 1 per 700 tonne.

C. What is the percent of moisture to be tested from graduation samples?

D. Cores must be 6" O.D. Which requires a 6" I.D. core bit.

E. Fill core holes with asphalt mix (prefer fine mix for this with tack).

F. There is a 6 hour reporting time on test results, cores have a 24 hour reporting time.

G. Boxes for mix samples, bags for SE samples, metal cans for oil samples.

H. Bruce Wasill or Brad NeitzkeWill be on site for the test strip day and will answer any direct test procedure questions.

I. When is the correction factor for the oven to be done so that we may witness this?

Attended:

Contractor:	WFLHD
Project Manager:	Project Engineer:
Superintendent:	Inspector:
QC Manager:	Inspector:
Pugmill Operators:	Inspector:
Scale Operator:	
Lay Down Operations Foreman:	
Grade Foreman:	
Testers:	

All paperwork is to be turned in daily and must be ORIGINAL and LEGIBLE!!

APPENDIX 'E'

CONCRETE REINFORCING STEEL INSTITUTE CRSI

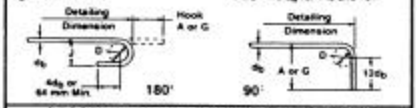
933 N. Plum Grove Road, Schaumburg, IL 60173
Phone: (847) 517-1200

STANDARD METRIC HOOK DETAILS

(SUPERSEDES CARDS ISSUED BEFORE OCTOBER 1993)

All Grades
D = Finished inside bend diameter
d_b = Bar diameter

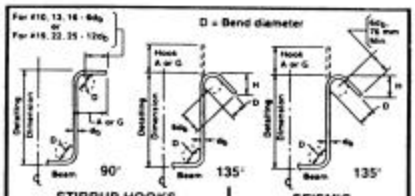
Min. D = 6 d_b for #10 through #25
Min. D = 8 d_b for #29, #32 and #36
Min. D = 10 d_b for #43 and #57



RECOMMENDED END HOOKS, ALL GRADES

BAR SIZE	D	180° HOOKS		90° HOOKS
		A or G	J	A or G
#10	60	125	80	150
#13	80	150	105	200
#16	95	175	130	250
#19	115	200	155	300
#22	135	250	180	375
#25	155	275	205	425
#29	240	375	300	475
#32	275	425	335	550
#36	305	475	375	600
#43	465	675	550	775
#57	610	925	725	1050

NOTE: All dimensions are in millimeters (mm)



STIRRUP HOOKS (Tie Bends Similar)

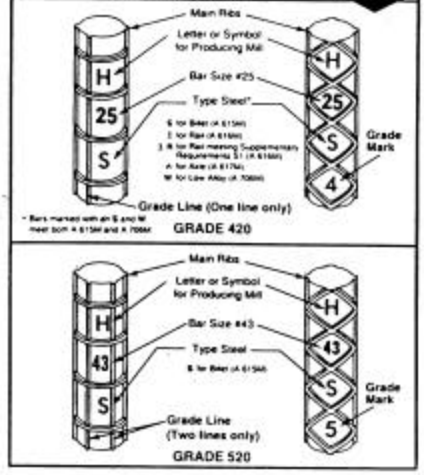
BAR SIZE	D	90°	135°		BAR SIZE	135° SEISMIC HOOK		
		A or G	A or G	*H		D	A or G	*H
#10	40	105	105	65	#10	40	110	80
#13	50	115	115	80	#13	50	115	80
#16	65	155	140	95	#16	65	140	95
#19	115	305	205	115	#19	115	205	115
#22	135	355	230	135	#22	135	230	135
#25	155	410	270	155	#25	155	270	155

SEISMIC STIRRUP / TIE

*H dimension is approximate
NOTE: All dimensions are in millimeters (mm)

CONCRETE REINFORCING STEEL INSTITUTE CRSI

933 N. Plum Grove Road, Schaumburg, IL 60173
Phone: (847) 517-1200



METRIC BAR DESIG. NO.	Nominal Dimensions Round Section DIA. mm	X-SECT. AREA mm2	MASS kg/m	ENGLISH BAR DESIG. NO.	Nominal Dimensions Round Section DIA. inches	X-SECT. AREA sq. in.	WEIGHT lb/ft
10	9.5	71	0.560	3	0.375	0.11	0.376
13	12.7	129	0.994	4	0.500	0.20	0.668
16	15.9	199	1.552	5	0.625	0.31	1.043
19	19.1	284	2.235	6	0.750	0.44	1.502
22	22.2	387	3.042	7	0.875	0.60	2.044
25	25.4	510	3.973	8	1.000	0.79	2.670
29	28.7	645	5.060	9	1.128	1.00	3.400
32	32.3	819	6.404	10	1.270	1.27	4.303
36	35.8	1006	7.907	11	1.410	1.56	5.313
43	43.0	1452	11.380	14	1.693	2.25	7.650
57	57.3	2581	20.240	18	2.257	4.00	13.600

Metric bar designation numbers approximate the number of millimeters of the nominal diameter of the bar.

STEEL TYPE	BAR SIZE RANGE	GRADE	MINIMUM YIELD MPa	MINIMUM TENSILE MPa
BILLET	#10 - #19	300	300	500
ASTM	#10 - #57	420	420	620
A615M	#19 - #57	520	520	690
RAIL	#10 - #36	350	350	550
ASTM	#10 - #36	420	420	620
A616M				
AXLE	#10 - #36	300	300	500
ASTM	#10 - #36	420	420	620
A617M				
LOW ALLOY ASTM A706M	#10 - #57	420	420	550

NOTE: Bars are of three minimum yield levels:
300 MPa (40,000 psi), designated as Grade 40
420 MPa (60,000 psi), designated as Grade 60
520 MPa (75,000 psi), designated as Grade 75

APPENDIX 'F'

Contractor Furnished Data for Wave Equation

Contract No. _____ Structure Name and/or No. _____

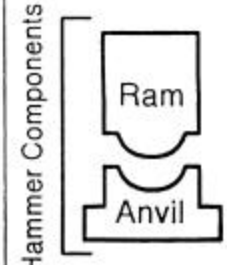
Project _____ _____

_____ Pile Driving Contractor or Subcontractor _____

County _____ _____

(Piles driven by)

Hammer Components



Hammer

Manufacturer: _____ Model No: _____

Hammer Type: _____ Serial No: _____

Manufacturers Maximum Rated Energy _____ (Joules)

Stroke at Maximum Rated Energy _____ (meters)

Range in Operating Energy _____ to _____ (Joules)

Range in Operating Stroke: _____ to _____ (meters)

Ram Weight: _____ (kg)

Modifications: _____

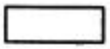
_____

_____

Striker Plate

Weight: _____ (N) Diameter: _____ (mm)

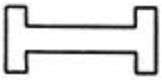
Thickness: _____ (mm)



Hammer Cushion

	Material #1	Material #2 (for Composite Cushion)
Name:	_____	_____
Area:	_____ (cm^2)	_____ (cm^2)
Thickness/Plate:	_____ (mm)	_____ (mm)
No. of Plates:	_____	_____

Total Thickness of Hammer Cushion: _____



Helmet (Drive Head)

Weight: _____ (kN)

Pile Cushion

Material: _____

Area: _____ (cm^2) Thickness/Sheet: _____ (mm)

No. of Sheets: _____

Total Thickness of Pile Cushion: _____ (mm)

Pile

Pile Type: _____

Wall Thickness: _____ (mm) Taper: _____

Cross Sectional Area: _____ (cm^2) Weight/Meter: _____

Ordered Length: _____ (m)

Design Load: _____ (kN)

Ultimate Pile Capacity: _____ (kN)

Description of Splice: _____

_____

Driving Shoe/Closure Plate Description: _____

_____

Submitted By: _____ Date: _____

Telephone No.: _____ Fax No: _____

PILE AND DRIVING EQUIPMENT DATA FORM

APPENDIX "F"

Diesel Hammer Listing

GRLWEAP ID	Hammer Mfgr	Hammer Name E	Max. Energy kN-m	Ram Weight kN	Eq. Max. Stroke m	Hammer Type T
81	LINKBELT	LB 180	10.98	7.70	1.43	CED
120	ICE	180	11.03	7.70	1.43	CED
1	DELMAG	D 5	11.16	4.89	2.28	OED
36	DELMAG	D 6-32	14.24	5.88	2.42	OED
82	LINKBELT	LB 312	20.37	17.18	1.19	CED
147	MKT	DE 20	21.70	8.90	2.44	OED
2	DELMAG	D 8-22	23.87	7.83	3.05	OED
402	BERMINGH	B200	24.41	8.90	2.74	OED
83	LINKBELT	LB 440	24.69	17.80	1.39	CED
122	ICE	440	25.17	17.80	1.41	CED
141	MKT 20	DE333020	27.13	8.90	3.05	OED
151	MKT	DA 35B	28.48	12.46	2.29	CED
148	MKT	DE 30	30.38	12.46	2.44	OED
41	FEC	FEC 1200	30.51	12.24	2.49	OED
127	ICE	30-S	30.52	13.35	2.29	OED
401	BERMINGH	B23	31.18	12.46	2.50	CED
414	BERMINGH	B23 5	31.18	12.46	2.50	CED
121	ICE	422	31.36	17.80	1.76	CED
3	DELMAG	D 12	32.00	12.24	2.62	OED
149	MKT	DA35B SA	32.28	12.46	2.59	OED
150	MKT	DE 30B	32.28	12.46	2.59	OED
61	MITSUB.	M 14	34.24	13.22	2.59	OED
350	HERA	1250	34.38	12.50	2.75	OED
101	KOBE	K 13	34.49	12.77	2.70	OED
84	LINKBELT	LB 520	35.69	22.56	1.58	CED
42	FEC	FEC 1500	36.75	14.68	2.50	OED
201	VULCANI	VUL V12	36.77	12.26	3.00	OED
142	MKT 30	DE333020	37.98	12.46	3.05	OED
62	MITSUB.	MH 15	38.16	14.73	2.59	OED
4	DELMAG	D 15	38.40	14.68	2.62	OED
403	BERMINGH	B225	39.67	13.35	2.97	OED
123	ICE	520	41.19	22.56	1.83	CED
351	HERA	1500	41.25	15.00	2.75	OED
152	MKT	DA 45	41.67	17.80	2.34	CED
37	DELMAG	D 12-32	42.50	12.55	3.39	OED
153	MKT	DE 40	43.40	17.80	2.44	OED
143	MKT 33	DE333020	44.76	14.68	3.05	OED
415	BERMINGH	B250 5	48.02	13.35	3.60	OED
161	MKT	DA 55B	51.81	22.25	2.33	CED
202	VULCAN	VUL V18	52.97	17.66	3.00	OED
5	DELMAG	D 16-32	53.23	15.66	3.40	OED

APPENDIX 'F'

Diesel Hammer Listing

GRLWEAP ID	Hammer Mfgr	Hammer Name E	Max. Energy kN-m	Ram Weight kN	Eq. Max. Stroke m	Hammer Type T
128	ICE	40-S	54.25	17.80	3.05	OED
144	MKT 40	DE333020	54.25	17.80	3.05	OED
160	MKT	DA55B SA	54.25	22.25	2.44	OED
404	BERMINGH	B300	54.68	16.69	3.28	OED
410	BERMINGH	B300 M	54.68	16.69	3.28	OED
6	DELMAG	D 22	55.08	21.85	2.52	OED
124	ICE	640	55.10	26.70	2.06	CED
129	ICE	42-S	56.97	18.19	3.13	OED
38	DELMAG	D 19-32	57.51	17.80	3.23	OED
159	MKT	DE 50B	57.65	22.25	2.59	OED
63	MITSUB.	M 23	58.34	22.52	2.59	OED
412	BERMINGH	B400 4.8	58.59	21.36	2.74	OED
413	BERMINGH	B400 5.0	61.04	22.25	2.74	OED
103	KOBE	K22-Est	61.51	21.58	2.85	OED
64	MITSUB.	MH 25	63.53	24.52	2.59	OED
416	BERMINGH	B350 5	64.02	17.80	3.60	OED
7	DELMAG	D 22-02	65.78	21.58	3.05	OED
8	DELMAG	D 22-13	65.78	21.58	3.05	OED
43	FEC	FEC 2500	67.81	24.47	2.77	OED
163	MKT 50	DE70/50B	67.82	22.25	3.05	OED
352	HERA	2500	68.75	25.00	2.75	OED
9	DELMAG	D 22-23	69.53	21.58	3.22	OED
104	KOBE	K 25	69.88	24.52	2.85	OED
125	ICE	660	70.03	33.69	2.08	CED
85	LINKBELT	LB 660	70.03	33.69	2.08	CED
405	BERMINGH	B400	72.90	22.25	3.28	OED
411	BERMINGH	B400 M	72.90	22.25	3.28	OED
44	FEC	FEC 2800	75.95	27.41	2.77	OED
353	HERA	2800	77.00	28.00	2.75	OED
203	VULCAN	VUL V25	78.51	24.53	3.20	OED
417	BERMINGH	B400 5	80.03	22.25	3.60	OED
162	MKT	DE 70B	80.70	31.15	2.59	OED
11	DELMAG	D 30	80.84	29.37	2.75	OED
130	ICE	60-S	81.37	31.15	2.61	OED
10	DELMAG	D 25-32	83.40	24.52	3.40	OED
65	MITSUB.	M 33	83.70	32.31	2.59	OED
45	FEC	FEC 3000	85.49	29.37	2.91	OED
66	MITSUB.	MH 35	89.00	34.35	2.59	OED
12	DELMAG	D 30-02	89.52	29.37	3.05	OED
13	DELMAG	D 30-13	89.52	29.37	3.05	OED
131	ICE	70-S	94.95	31.15	3.05	OED

APPENDIX "F"

Diesel Hammer Listing

GRLWEAP ID	Hammer Mfgr	Hammer Name E	Max. Energy kN-m	Ram Weight kN	Eq. Max. Stroke m	Hammer Type T
164	MKT 70	DE70/50B	94.95	31.15	3.05	OED
354	HERA	3500	96.25	35.00	2.75	OED
107	KOBE	K 35	97.90	34.35	2.85	OED
126	ICE	1070	98.47	44.50	2.21	CED
46	FEC	FEC 3400	99.02	33.29	2.97	OED
14	DELMAG	D 30-23	99.90	29.37	3.40	OED
15	DELMAG	D 30-32	99.90	29.37	3.40	OED
418	BERMINGH	B450 5	105.63	29.37	3.60	OED
132	ICE	80-S	108.51	35.60	3.05	OED
67	MITSUB.	M 43	109.06	42.10	2.59	OED
16	DELMAG	D 36	113.69	35.29	3.22	OED
17	DELMAG	D 36-02	113.69	35.29	3.22	OED
18	DELMAG	D 36-13	113.69	35.29	3.22	OED
68	MITSUB.	MH 45	115.87	44.72	2.59	OED
421	BERMINGH	B550 C	119.36	48.95	2.44	OED
19	DELMAG	D 36-23	120.04	35.29	3.40	OED
20	DELMAG	D 36-32	120.04	35.29	3.40	OED
133	ICE	90-S	122.07	40.05	3.05	OED
21	DELMAG	D 44	122.67	42.27	2.90	OED
419	BERMINGH	B500 5	124.84	34.71	3.60	OED
110	KOBE	K 45	125.81	44.14	2.85	OED
24	DELMAG	D 46-13	130.93	45.12	2.90	OED
134	ICE	100-S	135.64	44.50	3.50	OED
136	ICE	200-S	135.64	89.00	1.52	OED
355	HERA	5000	137.50	50.00	2.75	OED
420	BERMINGH	B550 5	144.05	40.05	3.60	OED
22	DELMAG	D 46	145.37	45.12	3.22	OED
23	DELMAG	D 46-02	145.37	45.12	3.22	OED
25	DELMAG	D 46-23	145.37	45.12	3.22	OED
165	MKT 110	DE110150	149.20	48.95	3.05	OED
26	DELMAG	D 46-32	153.49	45.12	3.40	OED
356	HERA	5700	156.75	57.00	2.75	OED
135	ICE	120-S	162.76	53.40	3.05	OED
27	DELMAG	D 55	168.91	52.78	3.20	OED
357	HERA	6200	170.50	62.00	2.75	OED
112	KOBE	KB 60	176.58	58.87	3.00	OED
70	MITSUB.	MH 72B	183.31	70.75	2.59	OED
71	MITSUB.	MH 80B	202.91	78.32	2.59	OED
166	MKT 150	DE110150	203.45	66.75	3.05	OED
358	HERA	7500	206.25	75.00	2.75	OED
28	DELMAG	D 62-02	206.77	60.79	3.40	OED

APPENDIX 'F'

Diesel Hammer Listing

GRLWEAP ID	Hammer Mfgr	Hammer Name E	Max. Energy kN-m	Ram Weight kN	Eq. Max Stroke m	Hammer Type T
29	DELMAG	D 62-12	206.77	60.79	3.40	OED
30	DELMAG	D 62-22	206.77	60.79	3.40	OED
113	KOBE	KB 80	235.43	78.50	3.00	OED
359	HERA	8800	242.00	88.00	2.75	OED
31	DELMAG	D 80-12	252.61	78.41	3.22	OED
32	DELMAG	D 80-23	266.71	78.41	3.40	OED
33	DELMAG	D100-13	333.47	98.03	3.40	OED

WFLHD SAMPLE SIZE GUIDANCE SHEET

Masses (weights) listed below are minimum amounts required by WFLHD lab to run tests. One canvas bag holds approximately 23kg (50 pounds).

DEFINITION OF 'NOMINAL': For processed aggregate, the nominal maximum size of particles is the largest sieve size listed in the applicable specification, upon which any material is permitted to be retained. (AASHTO T 2)

NOTE: For tests not listed below, contact the WFLHD Materials Laboratory. April 1, 2001

TESTS ON SUBBASE, BASE, & SURFACING AGGREGATES:

		kgs	lbs
AG-PG Complete Preliminary Testing of Gravel			
AG-1 to 10, 12 & 13	Subbase "A":	180	400
	Subbase "B," or		
	Base "C," "D," or "E":	160	350
AG-PQ Complete Preliminary Testing of Quarry			
AG-4 to 10, 12 & 13	Subbase "A":	160	350
	Subbase "B," or		
	Base "C," "D," or "E":	140	300
AG-EV Base or Subbase Evaluation	Subbase "A":	90	200
AG-1 to 6 & 16	Subbase "B" or		
	Base "C," "D," or "E":	70	150
AG-1 Sieve Analysis AASHTO T 11/T 27	Subbase "A":	45 *	100 *
	Subbase "B" or		
	Base "C," "D," or "E":	23 *	50 *
AG-10 Immersion Compression AASHTO T 165		80	180
AG-16 R-Value, 300 PSI exudation AASHTO T 190		19mm nominal size:	
		50	110
		75mm nominal size:	
		75	160
AG-17 Humphre's Granular Compaction		180	400

(NOTE: The FP-96 calls for 150kg but we would prefer to have 180kg if possible)

*** This is sufficient quantity to process the entire test group AG-1 thru AG-4**

TESTS ON SOILS:

	kgs	lbs
S0-PS Complete Preliminary Testing Soils	40 (3)	90 (3)
SO-1 to 5		
SO-RI Routine Identification (classification) of Soils	25	55
SO-1 & 2		
SO-2 Plasticity Index AASHTO T 89/90	5 (2)	12 (2)
SO-3 Specific Gravity AASHTO T 100	5 (2)	12 (2)
SO-4 R-Value, 300 PSI Exudation	40 (3)	90 (3)
AASHTO T 190		
SO-7 Natural Moisture Content AASHTO T 265	2	5
SO-8 Moisture Density, AASHTO T 99	40 (3)	90 (3)
SO-9 Moisture Density, AASHTO T 180	40 (3)	90 (3)
SO-21 California Bearing Ratio AASHTO T 193	40	90
SO-22 pH of Soil AASHTO T 289	5 (2)	12 (2)
SO-24 Direct Shear AASHTO T 236	5 (2)	12 (2)
SO-25 Resistivity AASHTO T 288	5 (2)	12 (2)
SO-26 Revegetation Analysis	2	4
	soil with no large rocks	
SO-27 Conductivity	1 quart of water in a plastic jug	

TESTS ON CONCRETE AGGREGATES AND CONCRETE:

	kgs	lbs
CO-1 Sieve Analysis AASHTO T 11/T 27	15 (1)	34 (1)
CO-11 Compressive Strength (28-day break) AASHTO T 22	2 cylinders	

TESTS ON BITUMINOUS MATERIALS:

	kgs	lbs
AC-MD Hot Mix Design, consult with laboratory	363	800
AC-IC Preliminary Immersion Compression/CKE T 270	80	180
AB-CC Complete Classification of liquid asphalt	1 quart metal can	
AB-VG Verification of liquid asphalt grading	1 quart metal can	
AB-RI Routine Identification of liquid asphalt	1 quart metal can	
AB-EA Tests on emulsified asphalt	1 gallon plastic jug	
AC-2 Bulk SG & air voids AASHTO T 166	6" diameter core	
AC-5 & AC-3 Asphalt Content & gradation (T 30)	4	9
AC-6 Resilient Modulus	4" diameter core	

(1) Sample size may vary depending on maximum nominal size as follows:

	kgs	lbs
85% - 4.75mm and 5% + 2.36mm	0.5	2
9.5mm nominal maximu m size		
TO	50	110
50.0mm nominal maximum size		
For material with nominal sizes larger than 50mm	Call WFLHD Lab	

(2) Minimum amount of minus 4.75mm (# 4) material that must be contained in the sample material being submitted. If the sample contains other size material, enough **representative material** must be sent so that sufficient minus 4.75mm material is obtained after sieving.

(3) Sample size may vary depending on maximum nominal size as follows:

	kgs	lbs
19.0mm nominal maximum size	40	90
75.0mm nominal maximum size	50	110

APPENDIX 'H'

TEMPERATURE-VOLUME CORRECTIONS FOR ASPHALTIC MATERIALS
(METRIC UNITS)

Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor	
°C	A*	B*	°C	A*	B*	°C	A*	B*	°C	A*	B*
-25.0	1.0290	1.0254	-5.0	1.0144	1.0126	15.0	1.0000	1.0000	35.0	0.9857	0.9875
-24.5	1.0286	1.0251	-4.5	1.0140	1.0123	15.5	0.9996	0.9997	35.5	0.9854	0.9872
-24.0	1.0283	1.0248	-4.0	1.0137	1.0120	16.0	0.9993	0.9994	36.0	0.9850	0.9869
-23.5	1.0279	1.0244	-3.5	1.0133	1.0117	16.5	0.9989	0.9991	36.5	0.9847	0.9866
-23.0	1.0276	1.0241	-3.0	1.0130	1.0114	17.0	0.9986	0.9988	37.0	0.9843	0.9863
-22.5	1.0272	1.0238	-2.5	1.0126	1.0111	17.5	0.9982	0.9985	37.5	0.9840	0.9860
-22.0	1.0268	1.0235	-2.0	1.0122	1.0107	18.0	0.9978	0.9981	38.0	0.9836	0.9856
-21.5	1.0265	1.0232	-1.5	1.0119	1.0104	18.5	0.9976	0.9978	38.5	0.9833	0.9853
-21.0	1.0261	1.0228	-1.0	1.0115	1.0101	19.0	0.9971	0.9975	39.0	0.9829	0.9850
-20.5	1.0258	1.0225	-0.5	1.0112	1.0098	19.5	0.9968	0.9972	39.5	0.9826	0.9847
-20.0	1.0254	1.0222	0.0	1.0108	1.0095	20.0	0.9964	0.9969	40.0	0.9822	0.9844
-19.5	1.0250	1.0219	0.5	1.0104	1.0092	20.5	0.9961	0.9966	40.5	0.9819	0.9841
-19.0	1.0247	1.0216	1.0	1.0101	1.0089	21.0	0.9957	0.9963	41.0	0.9815	0.9838
-18.5	1.0243	1.0212	1.5	1.0970	1.0085	21.5	0.9954	0.9959	41.5	0.9812	0.9835
18.0	1.0239	1.0209	2.0	1.0094	1.0082	22.0	0.9950	0.9956	42.0	0.9808	0.9832
-17.5	1.0236	1.0206	2.5	1.0090	1.0079	22.5	0.9947	0.9953	42.5	0.9805	0.9829
-17.0	1.0232	1.0203	3.0	1.0086	1.0076	23.0	0.9943	0.9950	43.0	0.9801	0.9825
-16.5	1.0228	1.0200	3.5	1.0083	1.0073	23.5	0.9940	0.9947	43.5	0.9798	0.9822
-16.0	1.0224	1.0196	4.0	1.0079	1.0069	24.0	0.9936	0.9943	44.0	0.9794	0.9819
-15.5	1.0221	1.0193	4.5	1.0076	1.0066	24.5	0.9933	0.9940	44.5	0.9791	0.9816
-15.0	1.0217	1.0190	5.0	1.0072	1.0063	25.0	0.9929	0.9937	45.0	0.9787	0.9813
-14.5	1.0213	1.0187	5.5	1.0068	1.0060	25.5	0.9925	0.9934	45.5	0.9784	0.9810
-14.0	1.0210	1.0184	6.0	1.0065	1.0057	26.0	0.9922	0.9931	46.0	0.9780	0.9807
-13.5	1.0206	1.0180	6.5	1.0061	1.0053	26.5	0.9918	0.9928	46.5	0.9777	0.9804
-13.0	1.0203	1.0177	7.0	1.0058	1.0050	27.0	0.9915	0.9925	47.0	0.9773	0.9801
-12.5	1.0199	1.0174	7.5	1.0054	1.0047	27.5	0.9911	0.9922	47.5	0.9770	0.9798
-12.0	1.0195	1.0171	8.0	1.0050	1.0044	28.0	0.9907	0.9918	48.0	0.9766	0.9794
-11.5	1.0192	1.0168	8.5	1.0047	1.0041	28.5	0.9904	0.9915	48.5	0.9763	0.9791
-11.0	1.0188	1.0164	9.0	1.0043	1.0037	29.0	0.9900	0.9912	49.0	0.9759	0.9788
-10.5	1.0185	1.0161	9.5	1.0040	1.0034	29.5	0.9897	0.1100	49.5	0.9756	0.9785
-10.0	1.0181	1.0158	10.0	1.0036	1.0031	30.0	0.9893	0.9906	50.0	0.9752	0.9782
-9.5	1.0177	1.0155	10.5	1.0032	1.0028	30.5	0.9889	0.9903	50.5	0.9749	0.9779
-9.0	1.0174	1.0152	11.0	1.0029	1.0025	31.0	0.9886	0.9900	51.0	0.9745	0.9776
-8.5	1.0170	1.0148	11.5	1.0025	1.0022	31.5	0.9882	0.9897	51.5	0.9742	0.9773
-8.0	1.0166	1.0145	12.0	1.0022	1.0019	32.0	0.9879	0.9894	52.0	0.9738	0.9770
-7.5	1.0163	1.0142	12.5	1.0018	1.0016	32.5	0.9875	0.9891	52.5	0.9735	0.9767
-7.0	1.0159	1.0139	13.0	1.0014	1.0012	33.0	0.9871	0.9887	53.0	0.9731	0.9763
-6.5	1.0155	1.0136	13.5	1.0011	1.0009	33.5	0.9868	0.9884	53.5	0.9728	0.9760
-6.0	1.0151	1.0132	14.0	1.0007	1.0006	34.0	0.9864	0.9881	54.0	0.9724	0.9757
-5.5	1.0148	1.0129	14.5	1.0004	1.0003	34.5	0.9861	0.9878	54.5	0.9721	0.9754

* Use column A factors for asphalts with a specific gravity between 0.8495 and 0.9653 at 15° C
Use column B factors for asphalts with a specific gravity above 0.9654 at 15° C

TEMPERATURE-VOLUME CORRECTIONS FOR ASPHALTIC MATERIALS
(METRIC UNITS)

Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor	
°C	A*	B*	°C	A*	B*	°C	A*	B*	°C	A*	B*
55.0	0.9717	0.9751	75.0	0.9578	0.9628	95.0	0.9441	0.9506	115.0	0.9305	0.9385
55.5	0.9714	0.9748	75.5	0.9575	0.9625	95.5	0.9438	0.9503	115.5	0.9302	0.9382
56.0	0.9710	0.9745	76.0	0.9571	0.9622	96.0	0.9434	0.9500	116.0	0.9298	0.9379
56.5	0.9707	0.9742	76.5	0.9568	0.9619	96.5	0.9431	0.9497	116.5	0.9295	0.9376
57.0	0.9703	0.9739	77.0	0.9564	0.9616	97.0	0.9427	0.9494	117.0	0.9292	0.9373
57.5	0.9700	0.9736	77.5	0.9561	0.9613	97.5	0.9424	0.9491	117.5	0.9289	0.9371
58.0	0.9696	0.9732	78.0	0.9557	0.9609	98.0	0.9421	0.9488	118.0	0.9285	0.9368
58.5	0.9693	0.9729	78.5	0.9554	0.9606	98.5	0.9417	0.9485	118.5	0.9282	0.9365
59.0	0.9689	0.9726	79.0	0.9550	0.9603	99.0	0.9414	0.9482	119.0	0.9279	0.9362
59.5	0.9686	0.9723	79.5	0.9547	0.9600	99.5	0.9410	0.9479	119.5	0.9275	0.9359
60.0	0.9682	0.9720	80.0	0.9543	0.9597	100.0	0.9407	0.9476	120.0	0.9272	0.9356
60.5	0.9679	0.9717	80.5	0.9540	0.9594	100.5	0.9404	0.9473	120.5	0.9269	0.9353
61.0	0.9675	0.9714	81.0	0.9536	0.9591	101.0	0.9400	0.9470	121.0	0.9265	0.9350
61.5	0.9672	0.9711	81.5	0.9533	0.9588	101.5	0.9397	0.9467	121.5	0.9262	0.9347
62.0	0.9668	0.9708	82.0	0.9529	0.9585	102.0	0.9393	0.9464	122.0	0.9258	0.9344
62.5	0.9665	0.9705	82.5	0.9526	0.9582	102.5	0.9390	0.9461	122.5	0.9255	0.9341
63.0	0.9661	0.9701	83.0	0.9523	0.9578	103.0	0.9387	0.9458	123.0	0.9252	0.9338
63.5	0.9658	0.9698	83.5	0.9519	0.9576	103.5	0.9383	0.9455	123.5	0.9248	0.9335
64.0	0.9654	0.9695	84.0	0.9516	0.9573	104.0	0.9380	0.9452	124.0	0.9245	0.9332
64.5	0.9651	0.9692	84.5	0.9512	0.9570	104.5	0.9376	0.9449	124.5	0.9241	0.9329
65.0	0.9647	0.9689	85.0	0.9509	0.9567	105.0	0.9373	0.9446	125.0	0.9238	0.9326
65.5	0.9644	0.9686	85.5	0.9506	0.9564	105.5	0.9370	0.9443	125.5	0.9235	0.9323
66.0	0.9640	0.9683	86.0	0.9502	0.9561	106.0	0.9366	0.9440	126.0	0.9231	0.9320
66.6	0.9637	0.9680	86.5	0.9499	0.9558	106.5	0.9363	0.9437	126.5	0.9228	0.9317
67.0	0.9633	0.9677	87.0	0.9495	0.9555	107.0	0.9359	0.9434	127.0	0.9225	0.9314
67.5	0.9630	0.9674	87.5	0.9492	0.9552	107.5	0.9356	0.9431	127.5	0.9222	0.9311
68.0	0.9626	0.9670	88.0	0.9489	0.9548	108.0	0.9353	0.9428	128.0	0.9218	0.9308
68.5	0.9623	0.9667	88.5	0.9485	0.9545	108.5	0.9349	0.9425	128.5	0.9215	0.9305
69.0	0.9619	0.9664	89.0	0.9482	0.9542	109.0	0.9346	0.9422	129.0	0.9212	0.9302
69.5	0.9616	0.9661	89.5	0.9478	0.9539	109.5	0.9342	0.9419	129.5	0.9208	0.9299
70.0	0.9612	0.9658	90.0	0.9475	0.9536	110.0	0.9339	0.9416	130.0	0.9205	0.9296
70.5	0.9609	0.9655	90.5	0.9472	0.9533	110.5	0.9336	0.9413	130.5	0.9202	0.9293
71.0	0.9605	0.9652	91.0	0.9468	0.9530	111.0	0.9332	0.9410	131.0	0.9198	0.9290
71.5	0.9602	0.9649	91.5	0.9465	0.9527	111.5	0.9329	0.9407	131.5	0.9195	0.9287
72.0	0.9598	0.9646	92.0	0.9461	0.9524	112.0	0.9325	0.9404	132.0	0.9191	0.9284
72.5	0.9595	0.9643	92.5	0.9458	0.9521	112.5	0.9322	0.9401	132.5	0.9188	0.9281
73.0	0.9592	0.9640	93.0	0.9455	0.9518	113.0	0.9319	0.9397	133.0	0.9185	0.9278
73.5	0.9588	0.9637	93.5	0.9451	0.9515	113.5	0.9315	0.9394	133.5	0.9181	0.9275
74.0	0.9585	0.9634	94.0	0.9448	0.9512	114.0	0.9312	0.9391	134.0	0.9178	0.9272
74.5	0.9581	0.9631	94.5	0.9444	0.9509	114.5	0.9308	0.9388	134.5	0.9174	0.9269

* Use column A factors for asphalts with a specific gravity between 0.8495 and 0.9653 at 15° C
Use column B factors for asphalts with a specific gravity above 0.9654 at 15° C

TEMPERATURE-VOLUME CORRECTIONS FOR ASPHALTIC MATERIALS
(METRIC UNITS)

Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor	
°C	A*	B*	°C	A*	B*	°C	A*	B*	°C	A*	B*
135.0	0.9171	0.9266	155.0	0.9039	0.9148	175.0	0.8909	0.9031	195.0	0.8781	0.8915
135.5	0.9168	0.9263	155.5	0.0250	0.9145	175.5	0.8906	0.9028	195.5	0.8778	0.8912
136.0	0.9164	0.9260	156.0	0.9033	0.9142	176.0	0.8903	0.9025	196.0	0.8775	0.8909
136.5	0.9161	0.9257	156.5	0.9029	0.9139	176.5	0.8899	0.9022	196.5	0.8771	0.8906
137.0	0.9158	0.9254	157.0	0.9026	0.9136	177.0	0.8896	0.9019	197.0	0.8768	0.8903
137.5	0.9156	0.9251	157.5	0.9023	0.9133	177.5	0.8893	0.9017	197.5	0.8765	0.8901
138.0	0.9151	0.9248	158.0	0.9020	0.9130	178.0	0.8890	0.9014	198.0	0.8762	0.8898
138.5	0.9148	0.9246	158.5	0.9017	0.9127	178.5	0.8887	0.9011	198.5	0.8759	0.8895
139.0	0.9145	0.9242	159.0	0.9013	0.9124	179.0	0.8883	0.9008	199.0	0.8755	0.8892
139.5	0.9141	0.9239	159.5	0.9010	0.9121	179.5	0.8880	0.9005	199.5	0.8752	0.8889
140.0	0.9138	0.9236	160.0	0.9007	0.9118	180.0	0.8877	0.9002	200.0	0.8749	0.8886
140.5	0.9135	0.9233	160.5	0.9004	0.9115	180.5	0.8874	0.8999	200.5	0.8746	0.8883
141.0	0.9131	0.9230	161.0	0.9000	0.9112	181.0	0.8874	0.8996	201.0	0.8743	0.8880
141.5	0.9128	0.9227	161.5	0.8997	0.9109	181.5	0.8867	0.8993	201.5	0.8739	0.8877
142.0	0.9125	0.9224	162.0	0.8994	0.9106	182.0	0.8864	0.8990	202.0	0.8736	0.8874
142.5	0.9122	0.9222	162.5	0.8991	0.9104	182.5	0.8861	0.8988	202.5	0.8733	0.8872
143.0	0.9118	0.9219	163.0	0.8987	0.9101	183.0	0.8858	0.8985	203.0	0.8730	0.8869
143.5	0.9115	0.9216	163.5	0.8984	0.9098	183.5	0.8855	0.8982	203.5	0.8727	0.8866
144.0	0.9112	0.9213	164.0	0.8981	0.9095	184.0	0.8851	0.8979	204.0	0.8723	0.8863
144.5	0.9108	0.9210	164.5	0.8977	0.9092	184.5	0.8848	0.8976	204.5	0.8720	0.8860
145.0	0.9105	0.9207	165.0	0.8974	0.9089	185.0	0.8845	0.8973	205.0	0.8717	0.8857
145.5	0.9102	0.9204	165.5	0.8971	0.9086	185.5	0.8842	0.8970	205.5	0.8714	0.8854
146.0	0.9098	0.9201	166.0	0.8968	0.0108	186.0	0.8839	0.8967	206.0	0.8711	0.8851
146.5	0.9095	0.9198	166.5	0.8964	0.9080	186.5	0.8835	0.8964	206.5	0.8708	0.8849
147.0	0.9092	0.9195	167.0	0.8961	0.9077	187.0	0.8832	0.8961	207.0	0.8705	0.8846
147.5	0.9089	0.9192	167.5	0.8958	0.9075	187.5	0.8829	0.8959	207.5	0.8702	0.8843
148.0	0.9085	0.9189	168.0	0.8955	0.9072	188.0	0.8826	0.8956	208.0	0.8698	0.8840
148.5	0.9082	0.9186	168.5	0.8952	0.9069	188.5	0.8823	0.8953	208.5	0.8695	0.8837
149.0	0.9079	0.9183	169.0	0.8948	0.9066	189.0	0.8819	0.8950	209.0	0.8692	0.8835
149.5	0.9075	0.9180	169.5	0.8945	0.9063	189.5	0.8816	0.8947	209.5	0.8689	0.8832
150.0	0.9072	0.9177	170.0	0.8942	0.9060	190.0	0.8813	0.8944	210.0	0.8686	0.8829
150.5	0.9069	0.9174	170.5	0.8939	0.9057	190.5	0.8810	0.8941	210.5	0.8683	0.8826
151.0	0.9065	0.9171	171.0	0.8935	0.9054	191.0	0.8807	0.8938	211.0	0.8680	0.8823
151.5	0.9065	0.9168	171.5	0.8932	0.9051	191.5	0.8803	0.8935	211.5	0.8676	0.8820
152.0	0.9059	0.9165	172.0	0.8929	0.9048	192.0	0.8800	0.8932	212.0	0.8673	0.8817
152.5	0.9056	0.9163	172.5	0.8926	0.9046	192.5	0.8797	0.8930	212.5	0.8670	0.8815
153.0	0.9052	0.9160	173.0	0.8922	0.9043	193.0	0.8794	0.8927	213.0	0.8667	0.8812
153.5	0.9049	0.9157	173.5	0.8919	0.9040	193.5	0.8791	0.8924	213.5	0.8664	0.8809
154.0	0.9046	0.9154	174.0	0.8916	0.9037	194.0	0.8787	0.8921	214.0	0.8660	0.8806
154.5	0.9042	0.9151	174.5	0.8912	0.9034	194.5	0.8784	0.8918	214.5	0.8657	0.8803

* Use column A factors for asphalts with a specific gravity between 0.8495 and 0.9653 at 15° C
Use column B factors for asphalts with a specific gravity above 0.9654 at 15° C

TEMPERATURE-VOLUME CORRECTIONS FOR ASPHALTIC MATERIALS
(METRIC UNITS)

Actual	Volume Factor		Actual	Volume Factor		Actual	Volume Factor	
°C	A*	B*	°C	A*	B*	°C	A*	B*
215.5	0.8654	0.8800	235.0	0.8529	0.8687	255.0	0.8406	0.8574
215.5	0.8651	0.8797	235.5	0.8526	0.8684	255.5	0.8403	0.8571
216.0	0.8648	0.8794	236.0	0.8523	0.8681	256.0	0.8400	0.8568
216.5	0.8645	0.8792	236.5	0.8520	0.8678	256.5	0.8397	0.8566
217.0	0.8642	0.8789	237.0	0.8517	0.8675	257.0	0.8394	0.8563
217.5	0.8639	0.8786	237.5	0.8514	0.8673	257.5	0.8391	0.8560
218.0	0.8635	0.8783	238.0	0.8510	0.8670	258.0	0.8388	0.8557
218.5	0.8632	0.8780	238.5	0.8507	0.8667	258.5	0.8385	0.8554
219.0	0.8629	0.8778	239.0	0.8504	0.8664	259.0	0.8382	0.8552
219.5	0.8626	0.8775	239.5	0.8501	0.8661	259.5	0.8379	0.8549
220.0	0.8623	0.8772	240.0	0.8498	0.8658	260.0	0.8376	0.8546
220.5	0.8620	0.8769	240.5	0.8495	0.8655	260.5	0.8373	0.8543
221.0	0.8617	0.8766	241.0	0.8492	0.8652	261.0	0.8370	0.8540
221.5	0.8614	0.8763	241.5	0.8489	0.8650	261.5	0.8367	0.8538
222.0	0.8611	0.8760	242.0	0.8486	0.8647	262.0	0.8364	0.8535
222.5	0.8608	0.8758	242.5	0.8483	0.8644	262.5	0.8361	0.8532
223.0	0.8604	0.8755	243.0	0.8480	0.8641	263.0	0.8357	0.8529
223.5	0.8601	0.8752	243.5	0.8477	0.8638	263.5	0.8354	0.8526
224.0	0.8598	0.8749	244.0	0.8474	0.8636	264.0	0.8351	0.8524
224.5	0.8595	0.8746	244.5	0.8471	0.8633	264.5	0.8348	0.8521
225.0	0.8592	0.8743	245.0	0.8468	0.8630	265.0	0.8345	0.8518
225.5	0.8589	0.8740	245.5	0.8465	0.8627	265.5	0.8342	0.8515
226.0	0.8586	0.8737	246.0	0.8462	0.8624	266.0	0.8339	0.8512
226.5	0.8582	0.8735	246.5	0.8459	0.8622	266.5	0.8336	0.8510
227.0	0.8579	0.8732	247.0	0.8456	0.8619	267.0	0.8333	0.8507
227.5	0.8576	0.8729	247.5	0.8453	0.8616	267.5	0.8330	0.8504
228.0	0.8573	0.8726	248.0	0.8449	0.8613	268.0	0.8326	0.8501
228.5	0.8570	0.8723	248.5	0.8446	0.8610	268.5	0.8323	0.8498
229.0	0.8566	0.8721	249.0	0.8443	0.8608	269.0	0.8320	0.8496
229.5	0.8563	0.8718	249.5	0.8440	0.8605	269.5	0.8317	0.8493
230.0	0.8560	0.8715	250.0	0.8437	0.8602	270.0	0.8314	0.8490
230.5	0.8557	0.8712	250.5	0.8434	0.8599	270.5	0.8311	0.8487
231.0	0.8554	0.8709	251.0	0.8431	0.8596	271.0	0.8308	0.8484
231.5	0.8551	0.8707	251.5	0.8428	0.8594	271.5	0.8305	0.8482
232.0	0.8548	0.8704	252.0	0.8425	0.8591	272.0	0.8302	0.8479
232.5	0.8545	0.8701	252.5	0.8422	0.8588	272.5	0.8299	0.8476
233.0	0.8541	0.8698	253.0	0.8418	0.8585	273.0	0.8296	0.8473
233.5	0.8538	0.8695	253.5	0.8415	0.8582	273.5	0.8293	0.8470
234.0	0.8538	0.8693	254.0	0.8412	0.8580	274.0	0.8290	0.8468
234.5	0.8532	0.8690	254.5	0.8409	0.8577	274.5	0.8287	0.8465

* Use column A factors for asphalts with a specific gravity between 0.8495 and 0.9653 at 15 °C
Use column B factors for asphalts with a specific gravity above 0.9654 at 15 °C

... CONTRACTORS, INC.

DRUM PLANT DAILY REPORT

CONTRACT/PROJECT # 223

HOT PLANT # 136

DATE 9 / 26 / 02

ASPHALT INVENTORY
START: TANK DIP 75"
END: TANK DIP 57"
HOT GAL. TOTAL 10339 GALS
A.C. TEMPERATURE 308° °F

HOT MIX INVENTORY
R. A. P. ______ TONS
DED. WASTE 5.0 TONS
MIX PROD.: 1934.26 TONS

LIME INVENTORY
START ______ TONS
END ______ TONS
TOTAL ______ TONS
H20 USED ______ GALS

DIP TOTAL: 56.46 TONS
- TOTAL DELIV: 99.56 TONS
= COMB. OIL: 156.02 TONS
- END TOTAL: 40.49 TONS
= TOT. USED: 115.53 TONS
% BY TOTAL: 5.42 %

M.T.D. 15,348.93 TONS
Y.T.D. 167,609.21 TONS
P.T.D. 12873.83 TONS

PLANT HOURS
TODAY: 6.7 HRS
MONTH: 50.8 HRS
YEAR: 485 HRS

MAGNEHELIC
PRESSURE DROP: 10
H20 GALS/MIN: 350
WEATHER:

SCRUBBER NOZZLES
CHECKED: 9-22-02
CLEANED: 9-22-02
REPLACED: 9-10-02

FUGITIVE DUST CONTROL:
TYPE OF DUST CONTROL USED: Water Truck
FREQUENCY OF APPLICATION / DAY: 2
AMOUNT APPLIED / DAY: 6000 gal
WEATHER: Sunny Cool

LOADER HOURS: 2701-7
LABOR HOURS: 2207-2
TEMPERATURE: 60 °F

37"

FUEL USAGE

BURNER FUEL:	3558 GAL.	27406 GAL. M.T.D.	217,413 GAL. Y.T.D.
AUX. FUEL:	350 GAL. (300 gal - 136-10)	3600 GAL. M.T.D.	21050 GAL. Y.T.D.

OIL DELIVERIES

TICKET NUMBER	TONS OF OIL
1. B20539	34.08
2. B20544	33.05
3. B20546	32.43
4.	
5.	
6.	
7.	

LIME DELIVERIES

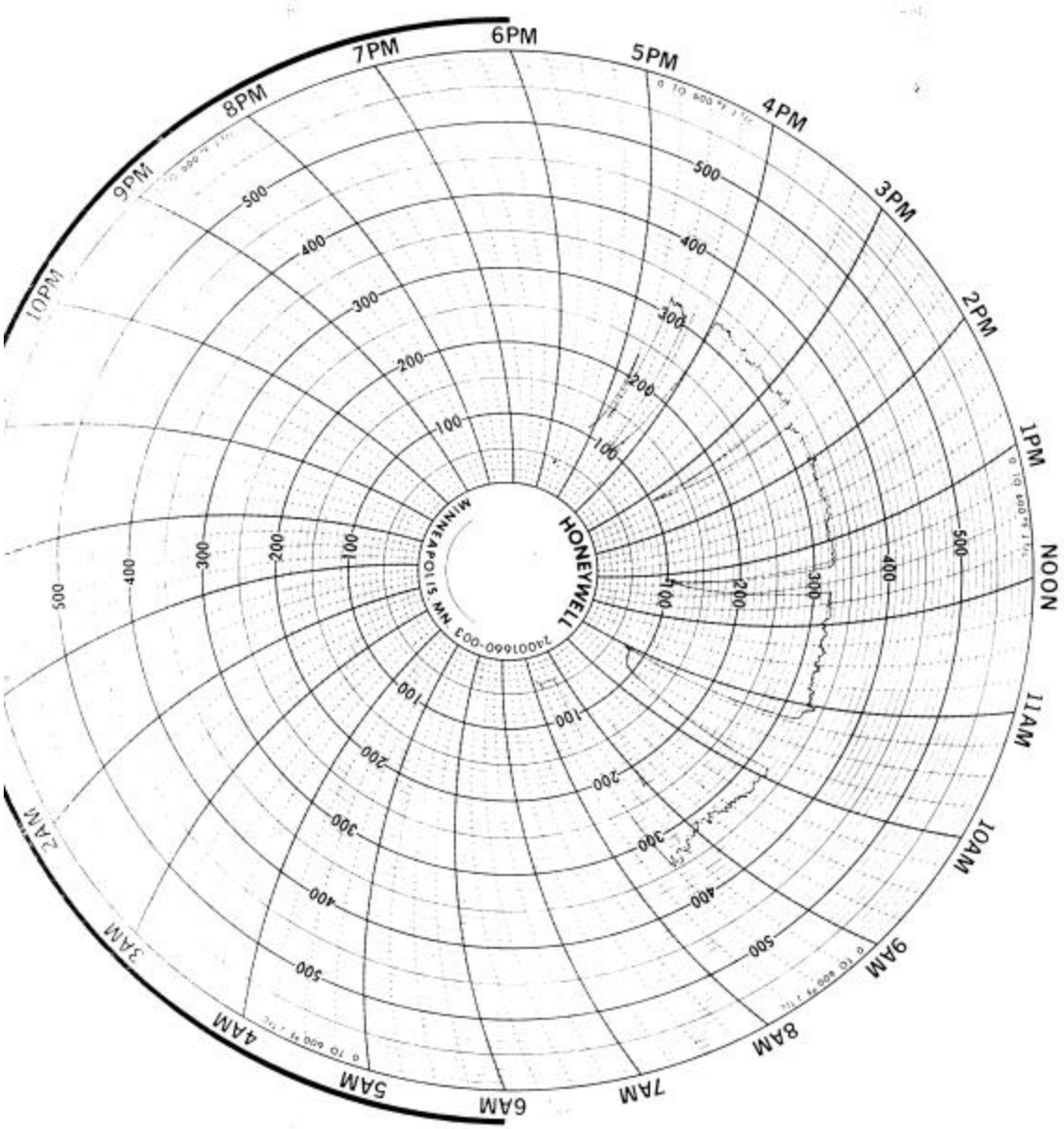
TICKET NUMBER	TONS OF LIME
1.	
2.	
8.	
9.	
10.	
11.	

RECEIVED
OCT 1 2002
BY PROJECT ENGINEER

OPERATOR COMMENTS: Plant Fired at 8:30 Am Today. Had 4 more Trucks, Ran Much Better Trucks Cycling Much Better.
Plant Cleaned out at 4:45 pm. Try For Same Tomorrow.
Ross Helped Load Base For old Faithful JDL Billed Them 2 hrs

CA-18
AQ-10

OPERATOR SIGNATURE: [signature]


HONEYWELL
MINNEAPOLIS MN
NOON
1PM
2PM
3PM
4PM
5PM
6PM
7PM
8PM
9PM
10PM
11AM
10AM
9AM
8AM
7AM
6AM
5AM
4AM
3AM
2AM
100
200
300
400
500

AREA OF A CIRCLE
In square meters
Formulas

$C^2 \times 0.0795775 = \text{Area}$

Use when Circumference is given

C	Area	C	Area	C	Area	C	Area	C	Area	C	Area	C	Area
0.0	0.000	5.0	1.989	10.0	7.958	15.0	17.905	20.0	31.831	25.0	49.736	30.0	71.620
.1	.001	.1	2.070	.1	8.118	.1	18.144	.1	32.150	.1	50.135	.1	72.098
.2	.003	.2	2.152	.2	8.279	.2	18.386	.2	32.471	.2	50.535	.2	72.578
.3	.007	.3	2.235	.3	8.442	.3	18.628	.3	32.793	.3	50.937	.3	73.059
.4	.013	.4	2.320	.4	8.607	.4	18.873	.4	33.117	.4	51.340	.4	73.542
.5	.020	.5	2.407	.5	8.773	.5	19.118	.5	33.442	.5	51.745	.5	74.027
.6	.029	.6	2.496	.6	8.941	.6	19.366	.6	33.770	.6	52.152	.6	74.513
.7	.039	.7	2.585	.7	9.111	.7	19.615	.7	34.098	.7	52.560	.7	75.001
.8	.051	.8	2.677	.8	9.282	.8	19.866	.8	34.428	.8	52.970	.8	75.490
.9	.064	.9	2.770	.9	9.455	.9	20.118	.9	34.760	.9	53.381	.9	75.981
1.0	.080	6.0	2.865	11.0	9.629	16.0	20.372	21.0	35.094	26.0	53.794	31.0	76.474
.1	.096	.1	2.961	.1	9.805	.1	20.627	.1	35.429	.1	54.209	.1	76.968
.2	.115	.2	3.059	.2	9.982	.2	20.884	.2	35.765	.2	54.625	.2	77.464
.3	.134	.3	3.158	.3	10.161	.3	21.143	.3	36.104	.3	55.043	.3	77.961
.4	.156	.4	3.259	.4	10.342	.4	21.403	.4	36.443	.4	55.462	.4	78.460
.5	.179	.5	3.362	.5	10.524	.5	21.665	.5	36.785	.5	55.883	.5	78.961
.6	.204	.6	3.466	.6	10.708	.6	21.928	.6	37.128	.6	56.306	.6	79.463
.7	.230	.7	3.572	.7	10.893	.7	22.193	.7	37.472	.7	56.730	.7	79.967
.8	.258	.8	3.680	.8	11.080	.8	22.460	.8	37.818	.8	57.156	.8	80.472
.9	.267	.9	3.789	.9	11.269	.9	22.728	.9	38.166	.9	57.583	.9	80.979
2.0	.318	7.0	3.899	12.0	11.459	17.0	22.998	22.0	38.516	27.0	58.012	32.0	81.487
.1	.351	.1	4.012	.1	11.651	.1	23.269	.1	38.866	.1	58.443	.1	81.997
.2	.385	.2	4.125	.2	11.844	.2	23.542	.2	39.219	.2	58.875	.2	82.509
.3	.421	.3	4.241	.3	12.039	.3	23.817	.3	39.573	.3	59.308	.3	83.022
.4	.458	.4	4.358	.4	12.236	.4	24.093	.4	39.929	.4	59.744	.4	83.537
.5	.497	.5	4.476	.5	12.434	.5	24.371	.5	40.286	.5	60.180	.5	84.054
.6	.536	.6	4.596	.6	12.634	.6	24.650	.6	40.645	.6	60.619	.6	84.572
.7	.580	.7	4.718	.7	12.835	.7	24.931	.7	41.005	.7	61.059	.7	85.091
.8	.624	.8	4.841	.8	13.038	.8	25.213	.8	41.368	.8	61.501	.8	85.613
.9	.669	.9	4.966	.9	13.242	.9	25.497	.9	41.731	.9	61.944	.9	86.135
3.0	.716	8.0	5.093	13.0	13.449	18.0	25.783	23.0	42.096	28.0	62.389	33.0	86.660
.1	.765	.1	5.221	.1	13.656	.1	26.070	.1	42.463	.1	62.835	.1	87.186
.2	.815	.2	5.351	.2	13.866	.2	26.359	.2	42.832	.2	63.283	.2	87.714
.3	.867	.3	5.482	.3	14.076	.3	26.650	.3	43.202	.3	63.733	.3	88.243
.4	.920	.4	5.615	.4	14.289	.4	26.942	.4	43.573	.4	64.164	.4	88.773
.5	.975	.5	5.749	.5	14.503	.5	27.235	.5	43.947	.5	64.637	.5	89.306
.6	1.031	.6	5.886	.6	14.719	.6	27.531	.6	44.321	.6	65.091	.6	89.840
.7	1.089	.7	6.023	.7	14.936	.7	27.827	.7	44.698	.7	65.547	.7	90.375
.8	1.149	.8	6.162	.8	15.155	.8	28.126	.8	45.076	.8	66.005	.8	90.913
.9	1.210	.9	6.303	.9	15.375	.9	28.426	.9	45.455	.9	66.464	.9	91.451
4.0	1.273	9.0	6.446	14.0	15.597	19.0	28.727	24.0	45.837	29.0	66.925	34.0	91.992
.1	1.338	.1	6.590	.1	15.821	.1	29.031	.1	46.219	.1	67.387	.1	92.534
.2	1.404	.2	6.735	.2	16.046	.2	29.335	.2	46.604	.2	67.851	.2	93.077
.3	1.471	.3	6.883	.3	16.273	.3	29.642	.3	46.990	.3	68.316	.3	93.622
.4	1.541	.4	7.031	.4	16.501	.4	29.950	.4	47.377	.4	68.784	.4	94.169
.5	1.611	.5	7.182	.5	16.731	.5	30.259	.5	47.766	.5	69.252	.5	94.717
.6	1.684	.6	7.334	.6	16.963	.6	30.570	.6	48.157	.6	69.723	.6	95.267
.7	1.758	.7	7.487	.7	17.196	.7	30.883	.7	48.549	.7	70.195	.7	95.818
.8	1.833	.8	7.643	.8	17.431	.8	31.198	.8	48.943	.8	70.668	.8	96.372
.9	1.911	.9	7.799	.9	17.667	.9	31.513	.9	49.339	.9	71.143	.9	96.926

$D^2 \times 0.7853982 = \text{Area}$

Use when Diameter is given

D	Area	D	Area
0.0	.000	5.0	19.635
.1	.008	.1	20.428
.2	.031	.2	21.237
.3	.071	.3	22.062
.4	.126	.4	22.902
.5	.196	.5	23.758
.6	.283	.6	24.630
.7	.385	.7	25.518
.8	.503	.8	26.421
.9	.636	.9	27.340
1.0	.785	6.0	28.274
.1	.950	.1	29.225
.2	1.131	.2	30.191
.3	1.327	.3	31.172
.4	1.539	.4	32.170
.5	1.767	.5	33.183
.6	2.011	.6	34.212
.7	2.270	.7	35.257
.8	2.545	.8	36.317
.9	2.835	.9	37.393
2.0	3.142	7.0	38.485
.1	3.464	.1	39.592
.2	3.801	.2	40.715
.3	4.155	.3	41.854
.4	4.524	.4	43.008
.5	4.909	.5	44.179
.6	5.309	.6	45.365
.7	5.726	.7	46.566
.8	6.158	.8	47.784
.9	6.605	.9	49.017
3.0	7.069	8.0	50.265
.1	7.548	.1	51.530
.2	8.042	.2	52.810
.3	8.553	.3	54.106
.4	9.079	.4	55.418
.5	9.621	.5	56.745
.6	10.179	.6	58.088
.7	10.752	.7	59.447
.8	11.341	.8	60.821
.9	11.946	.9	62.211
4.0	12.566	9.0	63.617
.1	13.203	.1	65.039
.2	13.854	.2	66.476
.3	14.522	.3	67.929
.4	15.205	.4	69.398
.5	15.904	.5	70.882
.6	16.619	.6	72.382
.7	17.349	.7	73.898
.8	18.096	.8	75.430
.9	18.857	.9	76.977

APPENDIX 'J'

U.S. - SI Conversion Factors

From English	To SI	Multiply by	Quantity	From SI	To English	Multiply by
ft	m	0.3048	Length	m	ft	3.2808
inch	mm	25.40		mm	inch	0.039
ft^2	m^2	0.0929	Area	m^2	ft^2	10.764
$inch^2$	mm^2	645.2		mm^2	in^2	0.0015
ft^3	m^3	0.028	Volume	m^3	ft^3	35.714
$inch^3$	mm^3	16387		mm^3	$inch^3$	$61x10^{-6}$
ft^4	m^4	0.0086	Second	m^4	ft^4	115856
$inch^4$	mm^4	416231	Moment of Area	mm^4	$inch^4$	$2x10^{-6}$
lbm	kg	0.4536	Mass	kg	lbm	2.2046
lbm/ft^3	kg/m^3	16.02	Mass Density	kg/m^3	lbm/ft^3	0.062
lb	N	4.448	Force	N	lb	0.2248
kip	kN	4.448		kN	kip	0.2248
lbs/ft	N/m	14.59	Force/Unit-	N/m	lbs/ft	0.0685
kips/ft	kN/m	14.59	Length	kN/m	kips/ft	0.0685
lbs/in^2	kPa	6.895	Force/Unit-	kPa	lbs/in^2	0.145
$kips/in^2$	MPa	6.895	Area; Stress;	MPa	$kips/in^2$	0.145
lbs/ft^2	Pa	47.88	Pressure;	Pa	lbs/ft^2	0.021
$kips/ft^2$	kPa	47.88	Elastic Mod.	kPa	$kips/ft^2$	0.021

see over for survey foot

U.S. - SI Conversion Factors (continued)

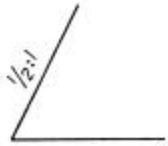
From English	To SI	Multiply by	Quantity	From SI	To English	Multiply by
lbs/ft^3	N/m^3	157.1	Force/Unit-Volume	N/m^3	lbs/ft^3	0.0064
kips/ft^3	kN/m^3	157.1		kN/m^3	kips/ft^3	0.0064
lb-inch	N-mm	112.98	Moment; or Energy	N-mm	lb-inch	0.0089
kip-inch	kN-mm	112.98		kN-mm	kip-inch	0.0089
lb-ft	N-m	1.356		N-m	lb-ft	0.7375
kip-ft	kN-m	1.356		kN-m	kip-ft	0.7375
ft-lb	Joule	1.356		Joule	ft-lb	0.7375
ft-kip	kJoule	1.356		kJoule	ft-kip	0.7375
s/ft	s/m	3.2808	Damping	s/m	s/ft	0.3048
blows/ft	blows/m	3.2808	Blow count	blows/m	blows/ft	0.3048

GUIDELINE FOR U.S. SURVEY FOOT CONVERSION:

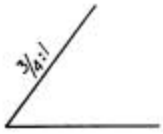
to convert feet to meters use 0.3048006
to convert meters to feet use 3.2808333

ENGLISH - METRIC SLOPE RATIO CONVERSIONS

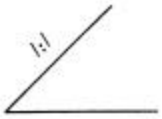
In English: 1/4:1 - 1 unit of run and 4 units of rise
In Metric: 4:1 - 1 unit of run and 4 units of rise



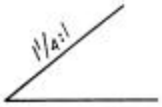
In English: 1/2:1 = 2 units of run and 4 units of rise
In Metric: 2:1 - 2 units of run and 4 units of rise



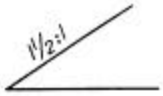
In English: 3/4:1 = 3 units of run and 4 units of rise
In Metric: 1.33:1 - 3 units of run and 4 units of rise



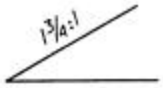
In English: 1:1 - 4 units of run and 4 units of rise
In Metric: 1:1 - 4 units of run and 4 units of rise



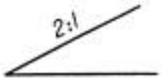
In English: 1 1/4:1 - 5 units of run and 4 units of rise
In Metric: 1:1.25 - 5 units of run and 4 units of rise



In English: 1 1/2:1 - 6 units of run and 4 units of rise
In Metric: 1:1.5 - 6 units of run and 4 units of rise



In English: 1 3/4:1 - 7 units of run and 4 units of rise
In Metric: 1:1.75 - 7 units of run and 4 units of rise



In English: 2:1 - 8 units of run and 4 units of rise
In Metric: 1:2 - 8 units of run and 4 units of rise

METRIC SLOPES

ENGLISH CONVENTION		METRIC CONVENTION
H : V		V : H
	≤ 45 DEGREES	
20 : 1		1 : 20
10 : 1		1 : 10
6 : 1		1 : 6
4 : 1		1 : 4
3 : 1		1 : 3
2 : 1		1 : 2
1.5 : 1		1 : 1.5
1.25 : 1		1 : 1.25
1 : 1		1 : 1
	> 45 DEGREES	
0.75 : 1		1.33 : 1
0.5 : 1		2.00 : 1
0.3 : 1		3.33 : 1
0.25 : 1		4.00 : 1
0.1 : 1		10.00 : 1

CONVERSION FROM GAL / YD^2 TO L / M^2 & YD^3 / MILE TO M^3 TO M

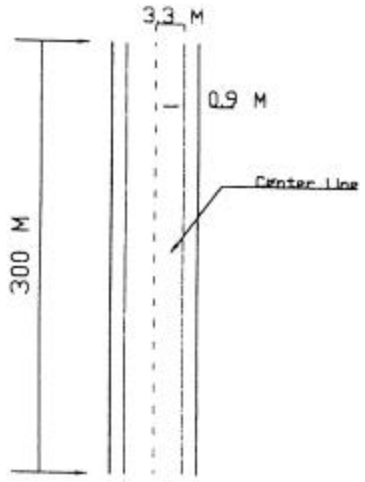
Shot Rate = 0.5 Gal / $Yard^2$

Aggregate = 250 $yard^3$ / mile

Shot Rate = **0.5 gal / $yard^2$** * 3.785412 Liters / gal * 1 $yard^2$ / 0.8361274 M^2 = **2.26 L / M^2**

Aggregate = **250 $yard^3$ / mile** * 0.7645549 M^3 / $Yard^3$ * 1 Mile / 1609.344 M = **0.118768097 M^3 / M**

For a Road 300 m x 8.4 m



Area = 2520 M^2

Oil = 2520 * 2.26 = **5695.2 Liters**
Aggregate = 300 * 0.118768097 = **35.63 M^3**

APPENDIX "K"

STANDARD WFLHD

BLANK FORMS

WFLHD-465
(Rev. 10/90)

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION

FEDERAL LANDS HIGHWAY
"Commitment to Excellence"

DESCRIPTION AND LOCATION OF WORK
(PLEASE BE CONCISE)

(A) -
(B) -
(C) -
(D) -
(E) -
(F) -
(G) -
(H) -
(I) -
(J) -
(K) -

CONTRACTOR'S DAILY RECORD OF CONSTRUCTION OPERATIONS

PROJECT: _____

CONTRACTOR/SUB-CONTRACTOR:

_____

DATE: _____ DAY: _____

WEATHER _____

SHIFT:
_____TO: _____

NO:	LABOR CLASSIFICATION:	NO:	EQUIPMENT TYPE:	PRODUCTION TIME: (PERSON HOURS WORKED) (A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	EQUIPMENT TIME WORK	IDLE	DOWN

CONTINUE TO BACK OF SHEET

BY: _____
SIGNATURE FOR CONTRACTOR (*)

_____
DATE: _____

REVIEWED BY: _____
SIGNATURE, PROJECT ENGINEER OR INSPECTOR:

DATE: _____

(*) IT IS HEREBY CERTIFIED THAT THE INFORMATION CONTAINED IN THIS RECORD IS ACCURATE, AND THAT ALL WORK DOCUMENTED HEREIN COMPLIES WITH THE REQUIREMENTS OF THE CONTRACT. ANY EXCEPTIONS TO THIS CERTIFICATION ARE DOCUMENTED AS PART OF THIS RECORD. ALSO, I CERTIFY THAT ALL CONSTRUCTION SIGNING AND TRAFFIC CONTROL (INCLUDING TEMPORARY STRIPING) IS CORRECT FOR THE STATUS OF THE PROJECT AND IS IN FULL CONFORMANCE WITH THE "MUTCD" AND THE CONTRACT REQUIREMENTS FOR THE PROJECT IDENTIFIED ABOVE.

EQUIPMENT MOVE-IN/MOVE-OUT

EQUIPMENT:			DATE:	
TYPE:	MAKE:	MODEL/SIZE:	IN:	OUT:

REMARKS:

ACCIDENTS	PRODUCTION SUMMARY (Loads, Tons, Cu. Yd. Lin. Ft., etc.)		
YES _____ NO _____	ITEM NO.	STATION TO STATION	QUANTITY
UNSAFE OPERATIONS			
YES _____ NO _____			
INTENTIONALLY LEFT BLANK			

Save Data Only | Clear Form | Save Form & Data | Email Form | Retrieve Data

FORM FHWA 17-348 (8/82)

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN

DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Item Number _____

DESCRIPTION, LOCATION, ETC.	QUANTITY
TOTAL	0

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

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FORM FHWA 17-348 (8/82)

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN

DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Item Number _____

DESCRIPTION, LOCATION, ETC.	QUANTITY
TOTAL	0

I certify that the above quantity was performed and/or used in the construction of this project.

Contractor

Project Engineer/Inspector

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FORM FHWA 17-348 (8/82)

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN

DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Item Number _____

DESCRIPTION, LOCATION, ETC.	QUANTITY
TOTAL	0

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

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FORM FHWA 17-348 (8/82)

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN

DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Item Number _____

DESCRIPTION, LOCATION, ETC.	QUANTITY
TOTAL ➧	0

I certify that the above quantity was performed and/or used in the construction of this project.

_____ Contractor

_____ Project Engineer/Inspector

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FORM FHWA 17-348 (8/82)

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Western Federal Lands Highway Division
Vancouver, Washington 98661

REGION SEVENTEEN

DAILY RECORD OF MISCELLANEOUS ITEMS

Project: _____ Date: _____

Item Number _____

DESCRIPTION, LOCATION, ETC.	QUANTITY
TOTAL	0

I certify that the above quantity was performed and/or used in the construction of this project.

Contractor

Project Engineer/Inspector

Save Data Only | Clear Form | Save Form & Data | Email Form | Retrieve Data

WFLHD 470

Notification of Completion of Work

Date/Time: _____

Project: _____

Item Number:_____ Item Description: _____

Location: _____

I certify that the work identified above has been completed according to the contract requirements and checked for compliance. I further certify that I am qualified and designated, in writing, to perform this Quality Control/Assurance function on this project.

_____ _____

Name (printed) Signature

Remarks:

[FHWA use below line]

If box one or two is checked, the contractor can proceed immediately with the next phase of work.

Received by: _____ _____

(name: signature/print) (date/time)

☐ 1. This work will not be inspected.

☐ 2. This work was inspected and no deficiencies were found.

☐ 3. This work was inspected and deficiencies were found as noted below. The contractor must resubmit a WFLHD 470 upon correction of this work.

☐ 4. This work was inspected and deficiencies were found as noted below. The contractor can proceed with the next phase of work as noted below.

Remarks:

Completed by: _____ _____

(name: signature/print) (date/time)

Returned to Contractor by: _____ _____

(name: signature/print) (date/time)

Save Data Only | Clear Form | Save Form & Data | Email Form | Retrieve Data

U.S. Department of Transportation
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

Page: _____

Date: _____

Project: _____

Culvert Notes

Staking crew: _____

Station	Size	Length	Gauge or Class	Type	Inspector's Signature

Beveled End Sections Inlet _____ In Place Ft. Lt. _____ Extend: Ft. Lt. _____

Outet _____ Ft. Rt. _____ Ft. Rt. _____

Pipe Installed Date: _____ New: _____ Salvaged _____

Elevation Lt. _____ Rt. _____ Total Fall: _____

Cover Min: _____ Max: _____ Grade: _____

Skew: _____

Station	Elevation Grade	Ground	CROSS - SECTION NOTES	

SUMMARY OF QUANTITIES

Item No.	Description	Quantity	Unit	Ent. in Sum Book Page No.	Date

Computed by: _____ Checked by: _____

Date: _____ Date: _____

U.S. Department of Transportation
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, Washington 98661

Page: _____

Date: _____

Project: _____

Culvert Notes

Staking crew: _____

Station	Size	Length	Gauge or Class	Type	Inspector's Signature

Beveled End Sections Inlet _____ In Place m Lt. _____ Extend: m Lt. _____

Outet _____ m Rt. _____ m Rt. _____

Pipe Installed Date: _____ New: _____ Salvaged _____

Elevation Lt. _____ Rt. _____ Total Fall: _____

Cover Min: _____ Max: _____ Grade: _____

Skew: _____

Station	Elevation Grade	Ground	CROSS - SECTION NOTES	

SUMMARY OF QUANTITIES

Item No.	Description	Quantity	Unit	Ent. in Sum Book Page No.	Date

Computed by: _____ Checked by: _____

Date: _____ Date: _____

culvert.wpf

WFLHD-422M
(Rev 4/99)

DAILY MASS RECORD

PAGE NO. ______

PROJECT: ______

ITEM NO.: ______

DATE ______

SOURCE NO.: ______

Pay Lot No.: ______

SHEET NO. ____ OF ____

LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)	LOAD NO.	TRUCK NO.	TIME	GROSS MASS (kg)

DAILY SUMMARY

MASS (kg) ______

TARE (kg) ______

NET (kg) ______

metric tons ______

WEIGHED BY: ______

CHECKED BY: ______

OFFICE USE ONLY

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION

SIGNED ______

DATE ______

COMPANY ______

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______

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WFLHD-422V
(Rev 4/99)

DAILY VOLUME RECORD

PAGE NO. ______________

PROJECT: ______________________

ITEM NO.: ______________________

DATE ______________

SOURCE NO.: ______________________

Pay Lot No.: ______________

SHEET NO. _____ OF _____

LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME	LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME	LOAD NO.	TRUCK NO.	TIME	GROSS VOLUME

DAILY SUMMARY

OFFICE USE ONLY

VOLUME ______________

____

____

m3 ______________

WEIGHED BY: ______________

CHECKED BY: ______________

Loads not appearing on street delivery report will be deleted unless satisfactory explained.

I CERTIFY THIS INFORMATION

SIGNED ______________

DATE ______________

COMPANY ______________

Truck Re-weigh

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______________

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______________

☐ AGREE WITH ☐ DOES NOT AGREE Inspector: ______________

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WFLHD-443M
(Rev 4/99)

PROJECT: ______________________

ITEM NO.: ______________________

SOURCE NO.: ______________________

TARE CHART

LOADS NOT APPEARING ON STREET DELIVERY REPORT WILL BE DELETED UNLESS SATISFACTORILY EXPLAINED.

Pay Lot No.: ____________

PAGE NO. ____________

DATE ____________

SHEET NO. ____ OF ____

TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVE. (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVE. (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TRUCK NO.					
TARE 1 (kg)					
TARE 2 (kg)					
TARE 3 (kg)					
TARE AVE. (kg)					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT (kg)					

TOTAL TARE WEIGHT (kg) ______________________

I CERTIFY THIS INFORMATION TO BE CORRECT

BY: ______________________

DATE: ______________________

COMPANY: ______________________

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WFLHD-443
(Rev 12/90)

PROJECT: ______________________

ITEM NO.: ______________________

SOURCE NO.: ______________________

TARE CHART

LOADS NOT APPEARING ON STREET DELIVERY REPORT WILL BE DELETED UNLESS SATISFACTORILY EXPLAINED.

Pay Lot No.: __________

PAGE NO. __________

DATE __________

SHEET NO. _____ OF _____

TRUCK NO.					
TARE 1					
TARE 2					
TARE 3					
TARE AVERAGE					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT					
TRUCK NO.					
TARE 1					
TARE 2					
TARE 3					
TARE AVERAGE					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT					
TRUCK NO.					
TARE 1					
TARE 2					
TARE 3					
TARE AVERAGE					
TRUCK TALLY					
NUMBER LOADS					
TARE WEIGHT					

TOTAL TARE WEIGHT ______________________

I CERTIFY THIS INFORMATION TO BE CORRECT

BY: ______________________

DATE: ______________________

COMPANY: ______________________

Save Data Only | Clear Form | Save Form & Data | Email Form | Retrieve Data

WFLHD-434
(Rev 12/90)

STREET DELIVERY REPORT
SPREAD REPORT

PAGE NO. _____

PROJECT: _____

ITEM NO.: _____ DATE _____

SOURCE NO.: _____ Pay Lot No.: _____ SHEET NO. _____ OF _____

LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS	LOAD NO.	TRUCK NO.	TIME	STATION TO STATION	REMARKS

CERTIFICATION

I CERTIFY THAT THE ABOVE LOADS WERE PLACED AS SHOWN AND ARE THE SOLE BASIS FOR PAYMENT.

Contractor signature _____ Received by: _____ Date _____

wflhd434.wpf

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

TRAFFIC SAFETY CHECKLIST
FLAGGER OPERATIONS

PROJECT _____ STATION TO STATION _____

DAY MONTH YEAR _____ WEATHER _____

REVIEWER(Print Name:)

	O.K.	Needs Correction
1. Are appropriate number of flaggers being utilized?	☐	☐
2. Are flaggers properly equipped with hardhat (any color) vest, shirt, or jacket (orange) (reflectorized for night work)?	☐	☐
3. Are flaggers equipped with required hand signaling device (stop/slow sign 18" or more diameter)?	☐	☐
4. Does flagger meet minimum qualifications:		
a) Average intelligence	☐	☐
b) Good physical condition-sight-hearing?	☐	☐
c) Mental alertness?	☐	☐
d) Courteous - firm manner?	☐	☐
e) Neat appearance?	☐	☐
f) Sense of responsibility?	☐	☐
5. Are flaggers trained:		
a) By State Certification or	☐	☐
b) By Formal training by contractor or	☐	☐
c) By Contractor's Traffic Control Designee?	☐	☐
6. Are flaggers checked for quality of operations by Contractor on a frequent basis?	☐	☐
7. Does flagger stop traffic properly?	☐	☐
8. Does flagger direct traffic to proceed properly?	☐	☐

WFLHD-404C (10-81)
TRAFFIC SAFETY CHECKLIST - FLAGGER OPERATIONS
(DOC. #2458C)

	O.K.	Needs Correction
9. Does flagger alert or slow traffic properly?	☐	☐
10. Is the flagger stationed the proper distance from the traffic hazard to construction site (200 - 300 feet desirable)?	☐	☐
11. Is flagger's station highly visible to approaching traffic?	☐	☐
12. Is flagger's station adequately protected and preceeded by the proper number of warning signs?	☐	☐
13. Are signs the proper size, shape, color?	☐	☐
14. Are signs properly spaced?	☐	☐
15. Are signs unobstructed and clean?	☐	☐
16. Are signs positioned properly horizontally and vertically from edge of road?	☐	☐
17. Are night positioned properly horizontally and vertically from edge of road?	☐	☐
18. Are floggers equipped with two-way radio communication equipment when out of sight from each other?	☐	☐
19. Roadway condition through construction zone?	☐	☐

REMARKS

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U.S, Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

Laboratory Control No. _____

REQUEST FOR LABORATORY TESTS

Project Name: _____ Project Number: _____

DELPHI Project Number: _____ DELPHI Task Number: _____

Agency: _____ State: _____ County: _____

Submitted by: _____ Address:

Phone Number: _____

Fax Number: _____

Field Sample Number: _____ Sampled by: _____ Date Sampled: _____

Number & Type Containers: _____ Witnessed by: _____ Date Shipped: _____

Quantity Represented: _____ Intended Use: _____

Sample Type (Acceptance, PC, IAS, CVS, etc.): _____ Date Results Needed: _____

Source Name: _____ Source Number: _____

Source Location: _____

Material Description: _____ Contractor/Owner: _____

Invoice Number: _____ Sample Location: _____

Station: _____ Offset: _____ Milepost: _____ Hole Number: _____ Depth: _____

QL-PAY ID: _____ Item No: _____ Lot No: _____ QL-PAY Sample No: _____

List Tests To Be Performed:

Project Specifications and Field Test Results			
Parameters/Sieves	Specifications	Test Results	Target Values
37.5 mm			
25.0 mm			
19.0 mm			
12.5 mm			
9.5 mm			
4.75 mm			
2.36 mm			
2.00 mm			
1.18 mm			
600 µm			
425 µm			
300 µm			
150 µm			
75 µm			
Liquid Limit			
PI			
Sand Equivalent			
Fractured Faces			
Asphalt Content			
Density			
Flakiness Index			
Concrete Strength			

Special Instructions:

Portland Cement Concrete Data

Air Content (%): _____ Slump: _____

Break Age in Days (7,14,28, other):

Form FHWA 4000W (Revised 04-04)

Save Data Only | Clear Form | Save Form & Data | Email Form | Retrieve Data

INSTRUCTIONS FOR SUBMITTING SAMPLE

1. Fill out the transmittal completely, (use "NK" for not known).
2. Make three copies of the transmittal.
3. Place the first transmittal inside a waterproof envelope and place inside the container.
4. Place a second transmittal in a waterproof envelope and attach to the outsi de of container.
5. Address the envelope to the Laboratory. (610 E. Fifth St. Vancouver, WA 98661)
6. Mail the third transmittal directly to the Laboratory.
7. Keep the original copy of the transmittal for your records.

TESTS ON SUBBASE, BASE, & SURFACING AGGREGATES:

AG-PG Complete Preliminary Testing Of Gravel.
AG-1 to 10, 12 & 13

AG-PQ Complete Preliminary Testing Of Quarries.
AG-4 to 10, 12 & 13

AG-EV Base or Subbase Evaluation.
AG-1 to 6 & 16

AG-1 Sieve Analysis as received. AASHTO T 11 & T 27
AG-2 Plasticity Index as received. AASHTO T 89 & T 90
AG-3 SE as received, Referee Method. AASHTO T 176
AG-4 Durability. AASHTO T 210
AG-5 Apparent Specific Gravity, Fine & Coarse.
AG-6 Los Angeles Abrasion. AASHTO T 96
AG-7 Fine Aggregate Angularity
AG-8 Soundness by Sodium Sulfate. AASHTO T 104
AG-9 Accelerated Weathering, EG & DMSO
AG-10 Immersion Compression. AASHTO T 165
AG-11 Cement Treated Base, Mix Design.
AG-12 Plasticity Index, Lab Manufactured. AASHTO T 89 & T 90
AG-13 SE, Lab Manufactured, Referee Method. AASHTO T 176
AG-14 Specific Gravity, Coarse. AASHTO T 85
AG-15 Specific Gravity, Fine. AASHTO T 84
AG-16 R-Value, 300 PSI Exudation. AASHTO T 190
AG-17 Humphre's Granular Compaction.
AG-18 Fractured Faces. ASTM D5821
AG-19 Unit Weight. AASHTO T 19
AG-20 Flat and Elongated Particles

TESTS ON SOILS:

SO-PS Complete Preliminary Testing Soils.
SO-1 to 5
SO-RI Routine Identification of Soils.
SO-1 & 2
SO-1 Mechanical Analysis to 0.02 mm.
AASHTO T 88
SO-2 Plasticity Index. AASHTO T 89 & T 90
SO-3 Specific Gravity. AASHTO T 100
SO-4 R-Value, 300 PSI Exudation.
AASHTO T 190
SO-5 AASHTO Structural Design, Flexible
SO-6 Complete Hydrometer. AASHTO T 88
SO-7 Natural Moisture Content. AASHTO T 265
SO-8 Moisture Density. AASHTO T 99
SO-9 Moisture Density. AASHTO T 180
SO-10 SE, Referee Method. AASHTO T 176
SO-11 Unconfined Compression.
SO-12 Ignition Loss.
SO-13 Triaxial "Q" Test.
SO-14 Triaxial "R" Test.
SO-15 Triaxial "S" Test.
SO-16 Permeability Constant Head.
SO-17 Permeability Variable Head.
SO-18 Shrinkage Limit. AASHTO T 92
SO-19 Consolidation.
SO-20 Additive Stabilization, Specify Type.
SO-21 California Bearing Ratio. AASHTO T 193
SO-22 PH of Soil. AASHTO T 289
SO-23 Zinc Coating, Iron or Steel. AASHTO T 65
SO-24 Direct Shear AASHTO T 236
SO-25 Resistivitv AASHTO T 288

TESTS ON CONCRETE AGGREGATES AND CONCRETE:

CO-1 Sieve Analysis. AASHTO T 11 & T 27
CO-2 Sand Equivalent. AASHTO T 176
CO-3 Los Angeles Abrasion. AASHTO T 96
CO-4 Soundness by Sodium Sulfate. AASHTO T 104
CO-5 Specific Gravity, Coarse & Fine. AASHTO T 85 & T 84
CO-6 Unit Weight. AASHTO T 19
CO-7 Organic Impurities. AASHTO T 21
CO-8 Clay Lumps. AASHTO T 112
CO-9 Lightweight Pieces. AASHTO T 113
CO-10 Mortar Strength. AASHTO T 71
CO-11 Compressive Strength, Cylinders. AASHTO T 22

TESTS ON BITUMINOUS MATERIALS:

AC-MD Hot Mix Design, Consult w/ Laboratory.

AC-IC Preliminary Immersion Compression

AB-CC Complete Classification of Liquid Asphalt

AB-VG Verification of Liquid Asphalt Grading

AB-RI Routine Identification of Liquid Asphalt

AB-EA Tests on Emulsified Asphalts

AC-1 Dispose of Unneeded Backup Samples
AC-2 Bulk SG & Air Voids. AASHTO T 166
AC-3 Sieve Analysis. AASHTO T 30
AC-4 Immersion Compression. AASHTO T 165
AC-5 Asphalt Content, specify Ignition or Extraction
AC-6 Resilient Modulus

Special Instructions (continued):

WFLHD-247 (Rev. 7/82)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SIEVE ANALYSIS OF FINE & COARSE AGGREGATE

WESTERN FEDERAL LANDS HIGHWAY DIVISION

PROJECT _____ NO. _____ FIELD SAMPLE _____

SAMPLE OF _____ DATE _____ SAMPLE BY _____

LOCATION _____ TESTED BY _____

MOISTURE

MOISTURE CONTENT	COARSE	FINE
Wt. Wet Aggr.		
Wt. Dry Aggr.		
Wt. of Water		
Percent of Moisture		

P-200 WASH	COARSE	FINE
P-200 CONTENT		
Wt. Dry Aggr.		
Wt. Washed Dry Aggr.		
Wt. P-200		

REMARKS

CERTIFY THIS INFORMATION TO BE CORRECT

SIGNED BY:

DATE: _____

COMPANY: _____

SIEVE SIZE COARSE AGGR.	RETAINED Wt. WET	RETAINED Wt. DRY	RETAINED %	TOTAL & PASSING	SPECIFI-CATIONS
INCH					
INCH					
INCH					
INCH					
INCH					
INCH					
No. 4					
No. 4 MINUS					
Total Sample Wt.					

SIEVE SIZE FINE AGGREGATE	WASHED FROM COARSE RETAINED Wt. Dry	WASHED FROM COARSE RETAINED %	WASHED FROM COARSE PERCENT PASSING	WASHED FROM COARSE PASSING	DRY No. 4 MINUS RETAINED Wt. Dry	DRY No. 4 MINUS RETAINED %	DRY No. 4 MINUS PERCENT PASSING	DRY No. 4 MINUS PASSING	TOTAL & PASSING	SPECIFI-CATIONS
No.										
No.										
No.										
No.										
No.										
No.										
Pan										
Wt. P-200										
Total P-200										
Orig. Dry Wt										

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U.S. Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

WORKSHEET FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE AASHTO T 11 AND AASHTO T 27

Project: _____ Source: _____ Sample no.: _____

Sample of: _____ Quantity represented: _____ Lot no.: _____

Sampled by: _____ Date: _____ Tested by: _____ Date: _____

MOISTURE DETERMINATION		
Moisture Content	**Coarse**	**Fine**
Mass of wet aggregate		
Mass of dry aggregate		
Mass of water		
Moisture (%)		

PERCENT PASSING 75 µm SIEVE (P-75) WASH		
P-75 Content	**Coarse**	**Fine**
Mass of wet aggregate		
Mass of dry aggregate		
Mass of washed dry aggregate		
Mass of 75µm minus		

REMARKS:

Coarse Aggregate Sieve Size	Retained			Total Passing (%)	Spec's
	Mass Wet	Mass Dry	%		
mm					
mm					
mm					
mm					
mm					
mm					
4.75 mm					
4.75 mm minus					
Total sample mass					

Fine Aggregate Sieve Size	WASHED FROM COARSE				DRY 4.75 mm MINUS				Total Passing (%)	Spec's
	Retained		Percent Passing	Adjusted (%) Passing	Retained		Percent Passing	Adjusted (%) Passing		
	Mass Dry	%			Mass Dry	%				
4.75 mm										
Pan										
Mass P-75										
Total P-75										
Orig. dry mass										

Form FHWA 1621 (Rev 10-96)

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U.S. Department of Transportation
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WORKSHEET FOR DETERMINING SAND EQUIVALENT
AASHTO T 176

Project: _____ Source: _____

Where sampled: _____ Quantity represented: _____

Sample of: _____ Lot no.: _____ Sample No.: _____

Sampled by: _____ Date: _____ Tested by: _____ Date: _____

The following method was used to prepare the sample: ☐ Air dry ☐ Pre-wet ☐ Oven dried

NOTE: In each cylinder, place about 85 mL by volume of quartered material passing the 4.75-mm sieve.

Soaking Time (10 minutes ± 1 minute)			
Determination	1	2	3
Cylinder no.			
Starting time			
Finish time			

Sedimentation Period (20 minutes ± 15 seconds)			
Determination	1	2	3
Cylinder no.			
Starting time			
Finish time			
Sand reading			
Clay reading			
Sand equivalent (SE) values[1]			

CALCULATIONS: SE = $\frac{\textit{Sand Reading}}{\textit{Clay Reading}}$ *** 100**

Sand Equivalent (mean) [2] = ☐

Remarks: _____

_____

_____

_____

[1] Mathematically round calculated value to nearest 0.1. After rounding to nearest 0.1, then round the result up to a whole number and record.

[2] Mathematically round calculated SE mean to nearest 0.1. After rounding to nearest 0.1, then round the result up to a whole number and record that as the SE value of the sample.

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Form FHWA 1626 (Rev 10-96)

U.S. Department of Transportation
Federal Highway Administration
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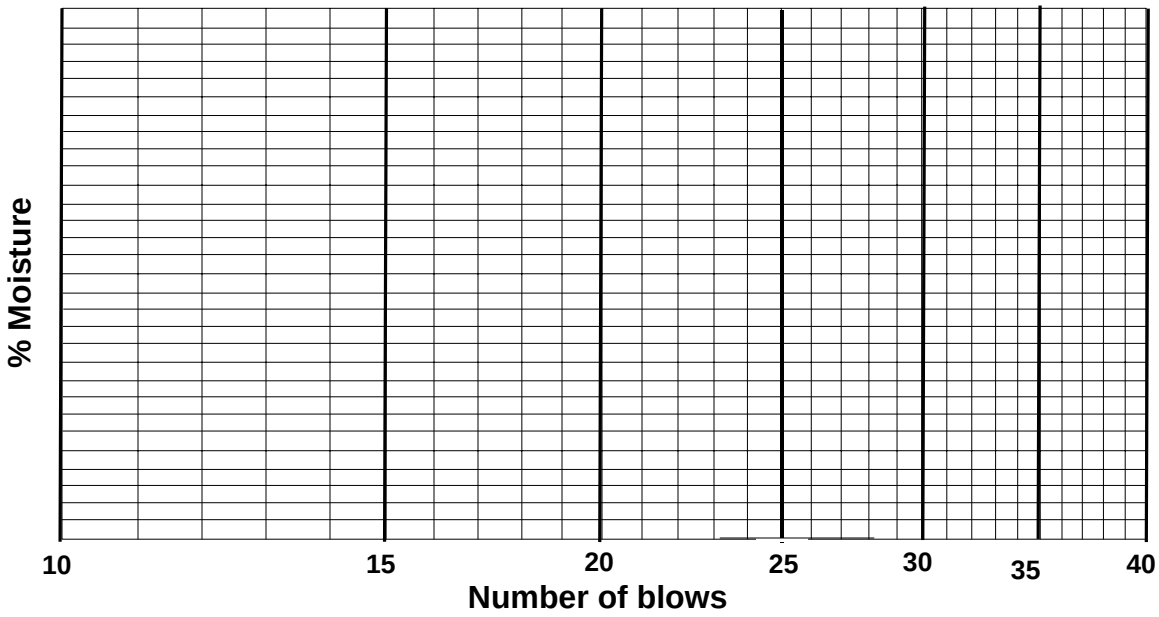
Worksheet for Determining Liquid Limit and Plastic Limit of Soils
AASHTO T 89, Method A or B and AASHTO T 90

Project: _____ Source: _____ Sample of: _____ Quantity represented: _____

Lot no. _____ Sample no. _____ Sampled by: _____ Date: _____ Tested by: _____ Date: _____

Liquid Limit AASHTO T 89				
Determination No.	1	2	3	4
Number of blows				
Container No.				
Mass of container & wet soil				
Mass of container & dry soil				
Mass of water				
Mass of container				
Mass of dry soil				
Water content (%)				
Liquid limit				
			Final liquid limit (LL):	0

Plastic Limit AASHTO T 90				
Determination No.	1	2	3	4
Container No.				
Mass of container & wet soil				
Mass of container & dry soil				
Mass of water				
Mass of container				
Mass of dry soil				
Water content (%)				
Plastic limit				
			Final plastic limit (PL):	0



CALCULATIONS

Plasticity Index = _____ (LL) - _____ (PL) = _____

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Form FHWA 1624 (Rev 3-94)

U. S. Department of Transportation
Federal Highway Administration

Worksheet for In-Place Nuclear/Moisture DensityTesting
FLH T 513, AASHTO T 238 and AASHTO T 239

Project: _____ Source: _____ Quantity Represented: _____

Item No. _____ Lot No. _____ Gauge No. _____ Tested By _____ Date _____

Test No.									
Station									
Offset									
Elevation									
Mode-Depth									
Density Count									
Wet Density									
Moisture Count									
Moisture									
Dry Density									
% Moisture									
Max. Dry Density									
T 99 / T 180									
Optimum Moisture									
% Relative Compaction									
Moisture Correction									
Classification									

Density Standard	Moisture Standard

Remarks:

FORM FHWA-1618 (Rev. 3-94)

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U.S. Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

Worksheet for Determining Moisture/Density Relationships AASHTO T 99 AND AASHTO T 180

Project: _____ Source: _____

Where sampled: _____ Quantity represented: _____

Sample of: _____ Lot No. _____ Sample No. _____

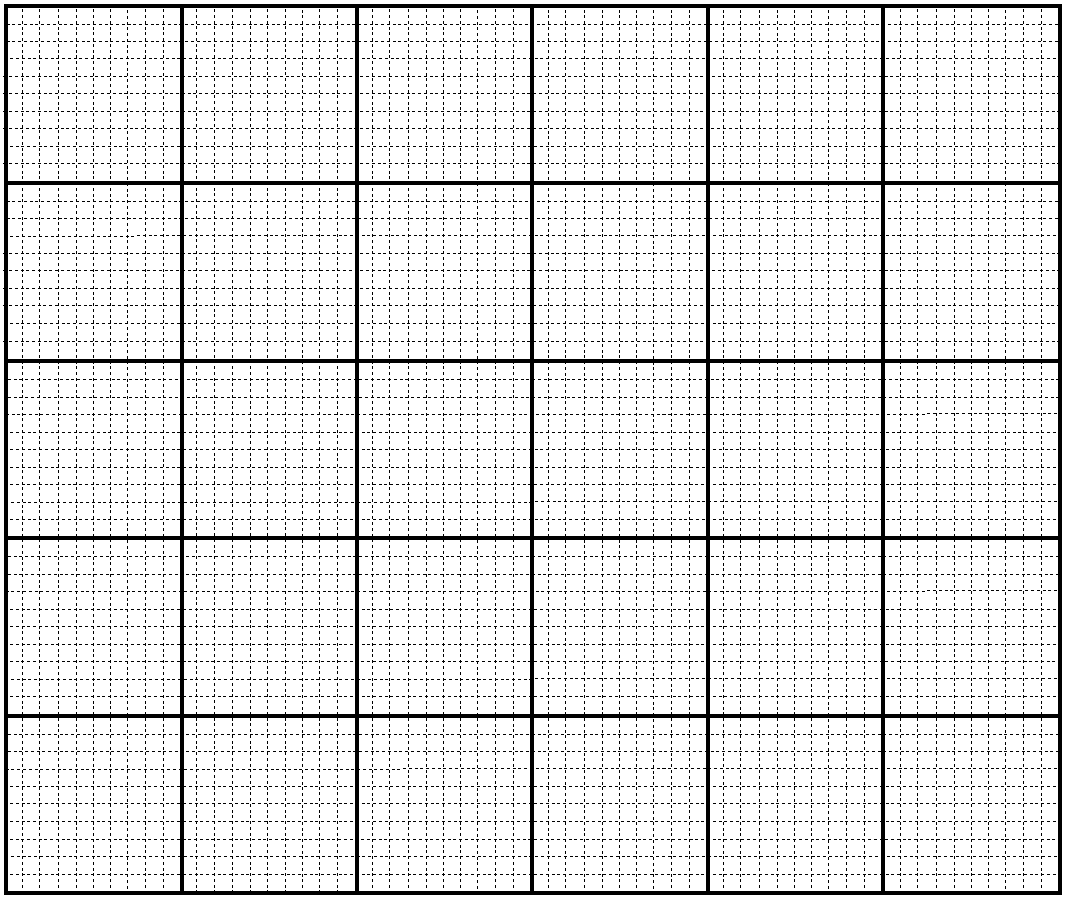
Sampled by: _____ Date: _____ Tested by: _____ Date: _____

AASHTO T 99 ☐ AASHTO T 180 ☐ Method ☐ A ☐ B ☐ C ☐ D

Density Determination								
	Test No. →							
	(a) Wet soil + mold tare [kg]							
	(b) Mold tare [kg]							
	(c) [a-b] Wet wt. [kg]							
	(d) Wet density (*)c [kg/m³]							
	Dry density $(\frac{c}{1 + 0.01w})$ [kg/m³]							

* For molds within tolerance, use a constant factor 1059.43 for methods A and C or 470.74 for methods B and D.

Moisture Determination								
	Pan No. →							
	(r) Wet soil wt. + tare [g]							
	(s) Dry soil wt. + tare [g]							
	(t) Tare [g]							
	(u) Dry soil wt. [s-t] [g]							
	(v) Water wt. [r-s] [g]							
	(w) Moisture $(\frac{v}{u}(100))$ [%]							



Maximum Dry Density:

_____ kg/m³

Optimum Moisture:

_____ %

Form FHWA 1625 (Rev 3-94)

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U.S. Department of Transportation
Federal Highway Administration
Federal Lands Highway Office

WORKSHEET FOR DETERMINING GRADATION AND ASPHALT CONTENT OF ASPHALT CONCRETE AASHTO T 30, AND MOISTURE CONTENT BY OVEN AND ASPHALT CONTENT BY IGNITION - WFLHD METHODS

Project: _____ Source: _____

Sample of _____ Lot No _____ Sample No. _____

Where sampled: _____ Time Sampled: _____

Sampled by: _____ Date: _____ Tested by: _____

ASPHALT CONTENT BY IGNITION

Reported Ticket Information

A. Furnace chamber set point, °C _____
B. Total Elapsed Time _____
C. Initial Sample Weight, g _____
D. Weight Loss during ignition, g _____
E. Percent Loss, % _____
F. Temperature Compensation, % _____
G. Job Mix Correction Factor [2], % _____
H. Corrected Asphalt Content, % _____

Recorded Data and Calculated Values

I. Wt. of basket assembly and sample before ignition, g _____
J. Basket assembly tare weight, g _____
K. Initial Sample Weight, g [I - J] _____
L. Wt. of basket assembly and residual aggregate, g _____
M. Weight of residual aggregate, g [L - J] _____
N. Weight of residual aggregate after washing, g _____
O. Weight lost during washing, g [M - N] _____
P. Final Corrected % Asphalt by wt of mix [H - U] _____

SIEVE ANALYSIS (AASHTO T 30)

Sieve Size	Wt. [1] Retained	% Retained	% Passing	Target Values	Allowable Deviation
Pan					
Washed -75µm (O)					
Total [3]					
Residual Wt (M)					

[1] All weights are in grams.
[2] Individual oven Job Mix Correction (Calibration) Factor.
[3] Total weight should be within 0.2% of the weight of residual aggregate

MOISTURE CONTENT (OVEN METHOD)

Q. Wt. of sample + container, Initial _____
R. Weight of sample container _____
S. Weight of sample, Initial [Q - R] _____
T. Weight of sample + container, Dry _____
U. Moisture, % [100 x (Q - T) ÷ S] _____

SAND EQUIVALENT (AASHTO T 176)

Cylinder No.	_____	_____	_____
Time (20 min)	_____	_____	_____
Sand reading	_____	_____	_____
Clay reading	_____	_____	_____
Sand Equivalent	_____	_____	_____

Average SE value _____

FRACTURED FACES (FLH T 507)

V. Weight of Fractured aggregate, g _____
W. Weight of Non-Fractured aggregate, g _____
X. Percent Fractured, % [100 x V ÷ (V + W)] _____

REMARKS: _____

JOB MIX CORRECTION FACTOR

Project: _____ **Date:** _____

Sample #: _____

Asphalt Content:

Target % AC (by wt. of mix) [1]			
Target % AC (by wt. of agg.)			

[1] Three calibration samples are required. One at the design asphalt content, one at 0.5% above and one at 0.5% below design asphalt content.

Tare Weights:

Sample Basket Assembly	T_1			
Mixing Bowl, "Buttered" [2]	T_2			

[2] Every effort should be made to ensure that the buttered bowl and spoon (if used) weigh as nearly as possible the same before and after mixing each calibration sample.

Material Weights:

Dry aggregate weight	A_1			
Dry aggregate weight	A_2			
Total aggregate weight [3]	A_t			
Asphalt weight	B_1			
Asphalt weight	B_2			
Total asphalt weight [3]	B_t			
Sum of all materials	$A_t + B_t = C$			
Wt. of sample basket & mix	D			
Weight of mix	$D - T_1 = E$			

[3] Space is provided for multiple aggregate and asphalt weights however if each trial can be mixed in a single sample, only one weight need be entered.

Job Mix Correction Factor

% AC from burn ticket	F			
% AC by mix	$100 \times (B_t \div C) = G$			
Job Mix Correction Factor	F - G			

Average JMCF [4] [ ] Enter this value into the furnace controller for production testing.

[4] If the results of any of the individual correction factor determinations are not within 0.10 of the mean of the tests performed, that test is considered invalid and another test must be run until at least three valid results are obtained.

U.S. Department of Transportation
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WORKSHEET FOR DETERMINING BULK SPECIFIC GRAVITY OF COMPACTED BITUMINOUS MIXTURES AASHTO T 166

Project: _____ Source: _____

Where sampled: _____ Quantity represented: _____

Sample of: _____ Lot no.: _____

Sampled by: _____ Date: _____ Tested by: _____ Date: _____

(A) Mix Design Maximum Specific Gravity, AASHTO T 209 =

Sample No.	Height (mm)	Station	(B) Dry Mass in Air (g)	(C) Saturated Surface Dry Mass (g)	(D) Mass in Water (g)	(E) Volume (C - D) (cm^3)	(F) Bulk Specific Gravity (B / E)	(G) Percent Compaction (F/A * 100) (%)

Remarks: _____

Form FHWA 1611 (Rev 10-96)

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U.S. Department of Transportation
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WORKSHEET FOR A HVEEM ASPHALT CONCRETE MIX DESIGN AASHTO T 246

Project: _____ Date: _____

Contractor: _____ Class of mixture: _____

Asphalt supplier: _____ Grade of asphalt: _____

Sources for : Aggregates: _____ , Mineral filler: _____

Admixtures: _____ , _____

Testing laboratory name: _____ Phone: _____

Testing performed by: _____

Testing reported by: _____

SUMMARY OF THE PROPOSED JOB-MIX-FORMULA

1. Percent asphalt by mass of total mix[1] _____
2. Percent asphalt by mass of aggregate _____
3. Air voids _____
4. Voids in mineral aggregate (VMA) _____
5. Maximum specific gravity (AASHTO T 209) _____
6. Recommended plant mixing temperature, ºC _____
7. Effective specific gravity of aggregate _____
8. Stabilometer value (AASHTO T 246) _____
9. Specific gravity of asphalt _____
10. Specific gravity of mineral filler _____
11. Dust/asphalt ratio _____
12. Immersion compression test results:
    a. Dry strength, kPa _____
    b. Wet strength, kPa _____
    c. Index of retained strength, % _____

GRADATION TARGET VALUES AND ALLOWABLE DEVIATIONS			SPECIFIC GRAVITY AND ABSORPTION			CKE
Sieve Sizes	Target Value[2] % by Mass Passing	Allowable Deviation[3] %		Fine Aggregate (AASHTO T 84)	Coarse Aggregate (AASHTO T 85)	Centrifuge Kerosene Equivalent (AASHTO T 270)
_____	_____		Bulk SG	_____	_____	Surface Area: _____ m²/kg
_____	_____					
_____	_____	_____	Bulk SSD SG	_____	_____	
_____	_____	_____				
_____	_____	_____	Apparent SG	_____	_____	Asphalt % by CKE: _____ %
_____	_____	_____				
_____	_____	_____	Absorption	_____%	_____%	
_____	_____	_____				
_____	_____	_____				

[1] Asphalt cement content (percent by mass of mix) shall be established to the nearest 0.01 percent.
[2] Target values to be established by the contractor as part of the JMF. Target value shall be established to the nearest 0.1 percent.
[3] Allowable deviations plus or minus from established target values.

WORKSHEET FOR A HVEEM ASPHALT CONCRETE MIX DESIGN (Continued)

	Stockpile Description	Quantity Represented	Blend Ratio
Stockpile A	_____	_____	_____ %
Stockpile B	_____	_____	_____ %
Stockpile C	_____	_____	_____ %
Stockpile D	_____	_____	_____ %
Stockpile E	_____	_____	_____ %

Stockpile Gradation

Sieve Size	Stockpile A _____ %	Stockpile B _____ %	Stockpile C _____ %	Stockpile D _____ %	Stockpile E _____ %	Blended Stockpile Gradation	Target Values	Specification Limits
_____								100.0
_____								97.0 - 100.0
_____								
_____								
_____								
_____								
_____								
_____								
_____								

Remarks: _____

WORKSHEET FOR A HVEEM ASPHALT CONCRETE MIX DESIGN (Continued)

Trial Number[1]	1			2			3		
% Asphalt by mass of total mix									
% Asphalt by mass of aggregate									
Specimen height in millimeters									
Stabilometer value									
Bulk specific gravity									
Bulk unit mass (kg/m³)									
Max. specific gr. (AASHTO T 209)									
Max. unit mass (AASHTO T 209)									
Dust/asphalt ratio									
% Air voids									
Voids in mineral aggregate (VMA)									

Trial Number[1]	4			5			6		
% Asphalt by mass of total mix									
% Asphalt by mass of aggregate									
Specimen height in millimeters									
Stabilometer value									
Bulk specific gravity									
Bulk unit mass (kg/m³)									
Max. specific gr. (AASHTO T 209)									
Max. unit mass (AASHTO T 209)									
Dust/asphalt ratio									
% Air voids									
Voids in mineral aggregate (VMA)									

[1] Three test trials are required for each asphalt content.

Test Results for Each of the Individual Immersion Compression Test Specimens

Percent asphalt cement: _____

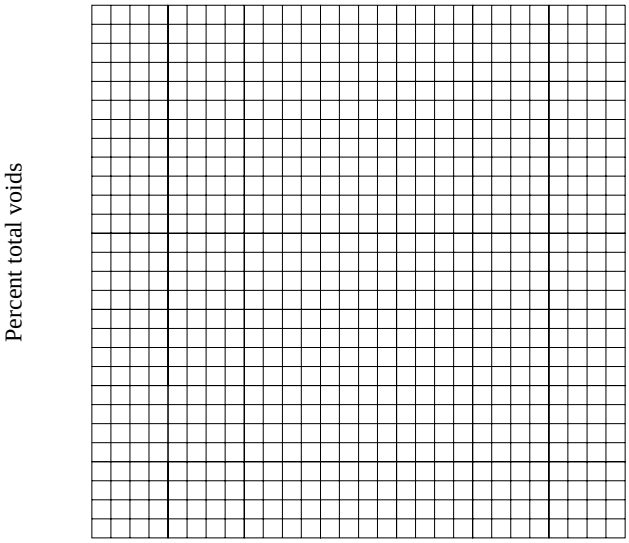
Specimen ID		Specimen Height (mm)		Bulk Specific Gravity		Air Voids (%)		Compressive Strength (kPa)	
Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
			Averages						

Index of retained strength: _____ %

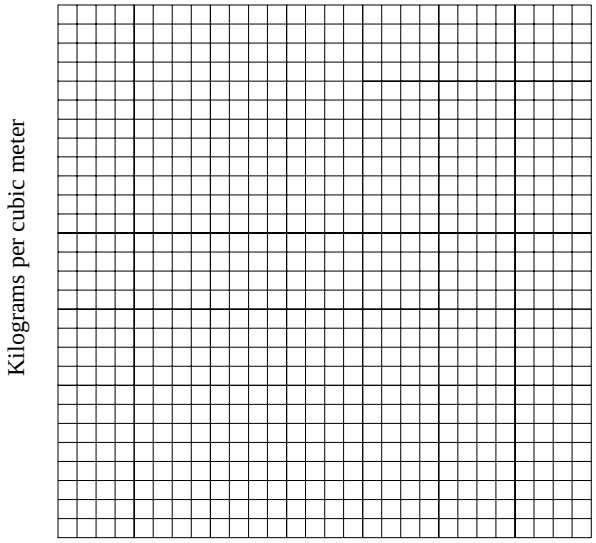
WORKSHEET FOR A HVEEM ASPHALT CONCRETE MIX DESIGN (Continued)

Design Curves for Proposed Job Mix Formula (JMF)

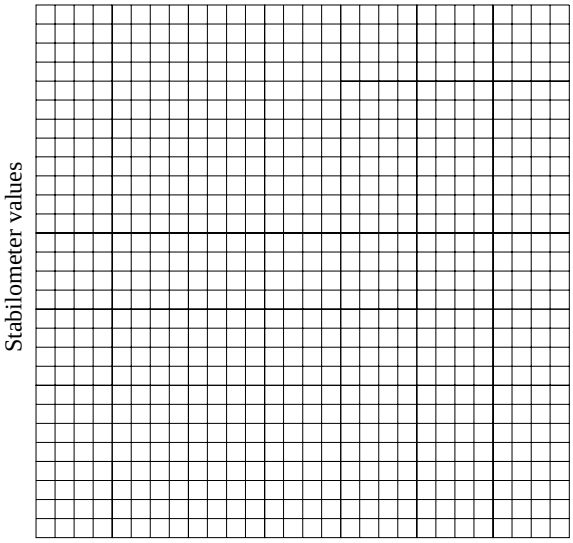
AIR VOIDS



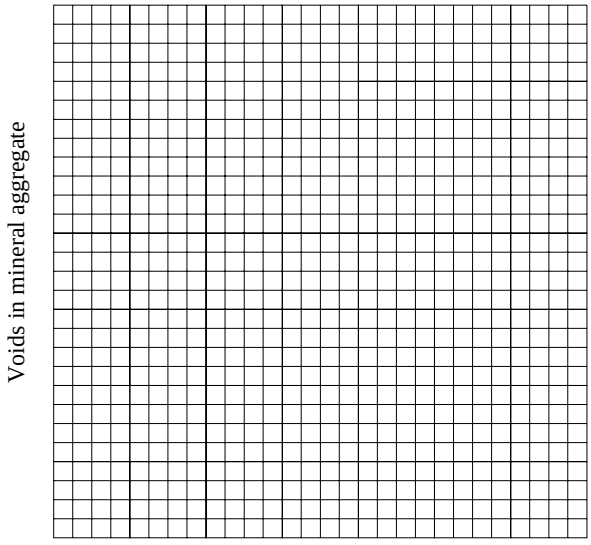
UNIT MASS



STABILOMETER

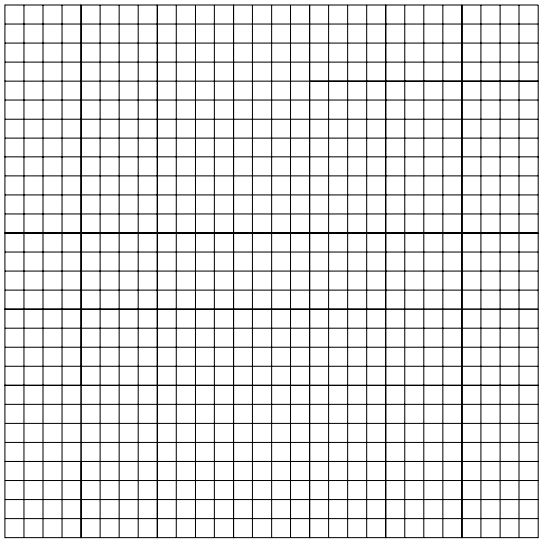


VMA

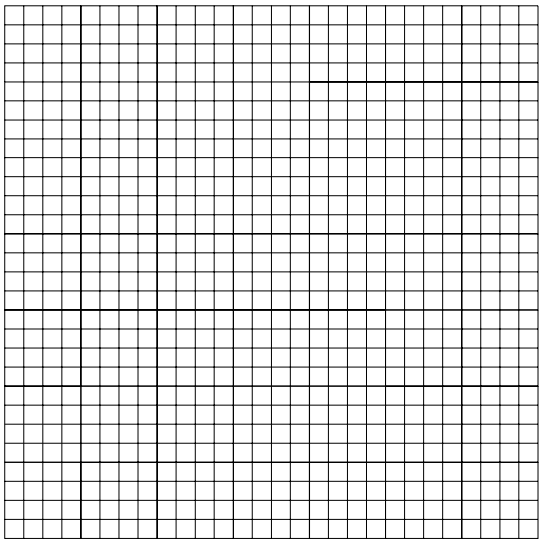


WORKSHEET FOR HVEEM ASPHALT CONCRETE MIX DESIGN (Continued)

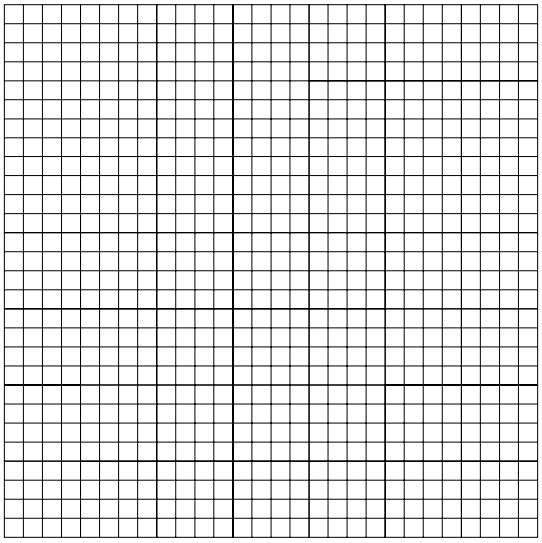
Design Curves for Proposed Job Mix Formula (JMF)



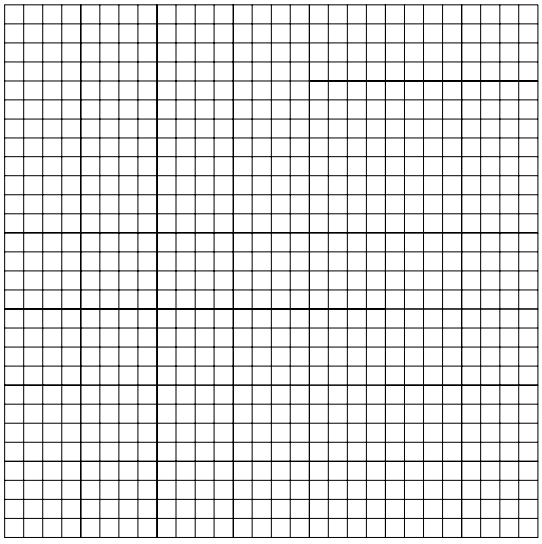
% Asphalt cement



% Asphalt cement



% Asphalt cement



% Asphalt cement

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MINOR PORTLAND CEMENT CONCRETE MIX DESIGN TRIAL BATCH SUMMARY

Project: _____ Date: _____

Contractor: _____ Concrete for: _____

Concrete producer: _____ Class of concrete: _____

_____ Mix designation: _____

● COMPRESSIVE STRENGTH (28 DAY)

Minimum average strength required [1] (f_{cr}) _____ megapascals (MPa)

Design strength specified (f_{c}') _____ MPa

● PROPORTIONS

Material	Specific Gravity (SSD)	SSD Mass per m^3 (kg)	Absolute Volume (m^3)	Tolerance %(±)
Cement [2]	3.15	_____	_____	1
Water	1.00	_____	_____	1
Coarse aggregate	_____	_____	_____	2
Fine aggregate	_____	_____	_____	2
Total air			_____	
Other _____	_____	_____	_____	
Totals:		_____ kg	_____ m^3	

Admixtures	Dosage per m^3 (mL)
Air entertainment	_____
Water reducer	_____
Retarder	_____
Color	_____
Accelerator	_____
Other _____	_____

1 See ACI 214
2 The water/cement ratio for modified concrete is the ratio of the mass of water to the combined masses of portland cement and
cement subtitute.

● SIGNATURES

Contractor: _____

Mix Designer: _____

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U.S. Department of Transportation
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PORTLAND CEMENT CONCRETE MIX DESIGN[1]
TRIAL BATCH SUMMARY

Project: _____ Date: _____

Contractor: _____ Concrete for: _____

Concrete producer: _____ Class of concrete: _____

_____ Mix designation: _____

• COMPRESSIVE STRENGTH (28 DAY)

Minimum average strength required[2] (f_{cr}) _____ megapascals (MPa)

Design strength specified (f_c') _____ MPa

• PROPORTIONS

Material	Specific Gravity (SSD)	SSD Mass per m³ (kg)	Absolute Volume (m³)	Tolerance % (±)
Cement	3.15	_____	_____	1
Water	1.00	_____	_____	1
Coarse aggregate[3]	_____	_____	_____	2
Fine aggregate[3]	_____	_____	_____	2
Total air			_____	
Other _____	_____	_____	_____	
Totals		_____ kg	_____ m³	

Admixtures	Dosage per m³ (mL)
Air entrainment	_____
Water reducer	_____
Retarder	_____
Color	_____
Accelerator	_____
Other _____	_____

• PROPERTIES

Water/cement ratio (by mass)[4] _____

Measured unit mass _____ kg/m³

Theoretical unit mass _____ kg/m³

Measured air content _____ percent

Measured slump _____ mm

• MEASURED COMPRESSIVE STRENGTH

Individual 7-day, MPa _____, _____, _____. Average (7 day): _____ MPa

Individual 28-day, MPa _____, _____, _____. Average (28 day): _____ MPa

[1] For normal mass portland cement concrete (2300 - 2500 kg/m³).
[2] See page 5.
[3] Bulk SSD.
The water/cement ratio for modified concrete is the ratio of the mass of water to the combined masses of portland cement and cement substitute.

• SIGNATURES

Contractor: _____

Mix Designer: _____

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PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
MATERIALS SOURCE SUMMARY

- **CEMENT (AASHTO M 85)**

Name and address of cement producer: _____

Source of manufacture: _____

_____

Type of cement: _____ Materials certification attached: ☐ Yes ☐ No

- **WATER (725.01 and AASHTO T 26)**

Water potable: ☐ Yes ☐ No If no, provide the following:

Water pH number	_____
Chloride concentration	_____(ppm)
Sulphate ion concentration	_____(ppm)
Total solids content	_____(%)

- **ADMIXTURES**

Material	Producer and Product Designation	Certification Attached	
		Yes	No
Air entraining admixture	_____	☐	☐
Water reducing admixture, type A	_____	☐	☐
Retarding admixture, type B	_____	☐	☐
Accelerating admixture, type C	_____	☐	☐
Water reducing and retarding admixture, type D	_____	☐	☐
Water reducing and accelerating admixture, type E	_____	☐	☐
Water reducing, high range admixture, type F	_____	☐	☐
Fly ash, type___	_____	☐	☐
Ground iron blast-furnace slag	_____	☐	☐
Silica fume (microsilica)	_____	☐	☐
Color additive	_____	☐	☐
Other: _____	_____	☐	☐

[1]For normal mass portland cement concrete (2300 - 2500 kg/m^3).

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PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
MATERIALS SOURCE SUMMARY

- **COARSE AGGREGATE (703.02 AND AASHTO M 80)**

Name of supplier/producer: _____

Location of material source: _____

Material type: ☐ Gravel ☐ Crushed gravel ☐ Crushed stone ☐ Crushed blast furnace slag

Grading no.: _____

Sieve Analysis:

Sieve Designation	Percent Passing	Specification
50 mm	_____	_____
37.5 mm	_____	_____
25.0 mm	_____	_____
19.0 mm	_____	_____
12.5 mm	_____	_____
9.5 mm	_____	_____
4.75 mm	_____	_____
2.36 mm	_____	_____
1.18 mm	_____	_____

Properties:

(1) Coal and lignite _____ (%) (0-0.5)[3]
(2) Deleterious chert _____ (%) (0-3)[3]
(3) Sodium sulfate soundness[2] _____ (%) (0-12)[3]
(4) Clay lumps and friable particles _____ (%) (0-2)[3]
(5) LA abrasion _____, grading _____, _____ % loss (0-40)[3]
(6) Bulk specific gravity _____
(7) Absorption _____ (%)
(8) Bulk SSD specific gravity _____
(9) Dry rodded unit mass _____ (kg/m^3)
(10) Minus 75 μm _____ (%) (0-1)[3]
(11) Adherent fines _____ (%) (0-1)[3]
(12) Other _____

- **FINE AGGREGATE (703.01 AND AASHTO M 6)**

Name of supplier/producer: _____

Location of material source: _____

☐ Manufactured sand ☐ Natural sand ☐ Blend

Sieve Analysis:

Sieve Designation	Percent Passing	Accumulative Percent Retained
9.5 mm	_____	_____
4.75 mm	_____	_____
2.36 mm	_____	_____
1.18 mm	_____	_____
600 μm	_____	_____
300 μm	_____	_____
150 μm	_____	_____

Fineness modulus: _____

Properties:

(1) Clay lumps _____ (%) (0-3)[3]
(2) Coal and lignite _____ (%) (0-1)[3]
(3) Sodium sulfate soundness[2] _____ (%) (0-10)[3]
(4) Sand equivalent value, alt. 2 _____ (>75)[3]
(5) Bulk specific gravity _____
(6) Bulk SSD specific gravity _____
(7) Absorption _____ (%)
(8) Organic impurities _____
(9) Minus 75 μm _____ (%) (0-3)[3]
(10) Other _____

[1] For normal mass portland cement concrete (2300 - 2500 kg/m^3).
[2] At five cycles.
[3] Specification limits.

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
DATA FOR COMPUTING THE COEFFICIENT OF VARIATION OF BATCHES

Batch No.	Date Batched	7-Day Compressive Strengths (MPa)				28-Day Compressive Strengths (MPa)			
		Cyl. 1	Cyl. 2	Cyl. 3	Average ($\bar{x}$)	Cyl. 1	Cyl. 2	Cyl. 3	Average ($\bar{x}$)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

[1] For normal mass portland cement concrete (2300 - 2500 kg/m^3).

$$\bar{X} = \frac{\Sigma X}{N} = \frac{\quad}{N} = \quad \text{(MPa)} \qquad s = \sqrt{\frac{N\,\Sigma (X^2) - (\Sigma X)^2}{N\,(N-1)}} = \quad$$

Where:

X = The 28-day batch average of at least 2 cylinders (3 preferred).
$\bar{X}$ = The mean of the averages of 28-day compressive results.
s = The sample standard deviation of the 28-day batch averages.
N = The number of batches sampled.

PORTLAND CEMENT CONCRETE MIX DESIGN[1] (Continued)
DETERMINATION OF MINIMUM MIX DESIGN COMPRESSIVE STRENGTH

- **MINIMUM MIX DESIGN COMPRESSIVE STRENGTH (f_{cr})**

Computed values from page 4:

$\bar{X}$ = _____ (MPa) s = _____

Where:

s = The sample standard deviation of the 28-day compressive strength test results from page 4.

$\bar{X}$ = The mean of the 28-day compressive strength test results from page 4.

V = The *coefficient of variation*[2] expressed as a decimal and calculated as follows:

$$V = \frac{s}{\bar{X}} = \frac{\quad}{\quad} = \quad \text{or } 0.15$$

$$f_{cr} = \frac{f'_c}{1 - kV} = \frac{\quad}{1 - 1.28 (\quad)} = \quad \text{(Mpa)}$$

Where:

f'_c = The 28-day design compressive strength specified in the contract.

k = A constant (1.28) for a probability that not more than 1 in 10 tests will fall below the specified compressive strength (f'_c).

[1] For normal mass portland cement concrete (2300 - 2500 kg/m^3).
[2] Use 0.15 for the coefficient of variation when there is insufficient test data available.

PORTLAND CEMENT CONCRETE MIX DESIGN [1] (Continued)
LABORATORY TRIAL BATCH MIX DESIGN SUMMARY

Description	Equivalent Batch Masses (SSD mass/m^3)				
Materials:	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5
Cement (kg)					
Water (kg)					
Coarse aggregate (kg)					
Fine aggregate (kg)					
Air entrainer (mL)					
Water reducer (mL)					
High range water reducer (mL)					
Other _____					
Properties:					
Water/cement ratio					
Theoretical unit mass (kg/m^3)					
Measured unit mass (kg/m^3)					
Measured air content (%)					
Measured slump [2] (mm)					
Ambient temperature (ºC)					
Concrete temperature (ºC)					
Measured Compressive Strengths (MPa):					
Individual 7-day					
Individual 7-day					
Individual 7-day					
Average (7-day)					
Individual 28-day					
Individual 28-day					
Individual 28-day					
Average (28-day)					

[1] For normal mass portland cement concrete (2300 - 2500 kg/m^3).
[2] Measure slump values on concrete before and after addition of high range water reducer if used.

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WFLHD-298
(Rev. 8/00)

Contractor's Delegation of Authority
(Authorized Signatures)

GENERAL INSTRUCTIONS: Please submit this information in single copy promptly to avoid payment delays. Please advise us promptly if any changes are made in the authorization or delegations show below.

Contract No:		
Project Number/Name:		
Item *	**Name**	**Signature**

** Please use this key when completing the "Item" column:*

1 - This individual is authorized to sign directives, including suspend and resume orders. (Please include at least one representative who will be available at the work site.)

2 - Authorized to sign contract modifications.

3 - Authorized to sign the final voucher.

Date:	**Name/Title:** *(must be the same individual who signed the contract)*	**Signature:**

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