

Unit 8

00600
Bases



00600 – Bases

- Cold Plane Pavement Removal (00620)
- Aggregate Base and Shoulders (00640)
- Aggregate Subbase, Base, and Shoulders (00641)



Unit 8 Topics:

- Cold plane pavement removal
- Difference between Sections 00640 & 00641
- Base aggregate compaction requirements
- Base aggregate acceptance
- Base aggregate measurement and payment



00620 – Cold Plane Pavement Removal



00620 – Cold Plane Pavement Removal

- Surface tolerances
- Construction practices
- Grinding around manholes and inlets



00620 – Cold Plane Pavement Removal

00620.80 Measurement

00620.90 Payment

- Measure width in several locations and calculate average
- Use simple geometric shapes for measurement



00641 – Base Aggregate Construction



**00640 – Aggregate Base and Shoulders versus
00641 – Aggregate Subbase, Base, and Shoulders**

	00640	00641
Scope (.00)	Placing aggregate in one or more lifts	Same as 00640
Materials (.10)	Accepted visually	Requires testing by a CDT (except subbase which may be accepted visually)
Construction (.40)	<ul style="list-style-type: none"> Place base material in 6" max layer Place shoulder material in 9" max layer 	<ul style="list-style-type: none"> Base same as 00640 Shoulder same as 00640 Place subbase material in 9" max layer
Measurement and Payment (.80 and .90)	<ul style="list-style-type: none"> Weight basis (tickets) 	<ul style="list-style-type: none"> Weight basis Volume basis as measured in hauling vehicle Area basis in place



00641 – Base Aggregate Construction

00641.10 Materials

- Subbase
- Shoulder aggregate
- Base aggregate



00641 – Base Aggregate Construction

- Maximum thickness of base aggregate 6 inches
- Compact to 95 percent of maximum density



00641 – Base Aggregate Construction

00641.45 Surface Tolerance

- Hubs (blue tops)
- Confidence points



00641 – Base Aggregate Construction

00641.80 Measurement

- Weigh memos from certified scales
- Need check weights

00641.90 Payment

- No separate payment for water used in mixture



00641 – Base Aggregate

Check Weight Example

Project Scale	Check Scale
39.69 tons (gross)	39.74 tons (gross)

$$\frac{(39.69 - 39.74)}{39.69} \times 100 = 0.1 \text{ percent}$$

Check weight acceptable?



Key Inspection Points:

- Make sure Contractor does not overwork base aggregate
- May be difficult to compact gravel source base aggregate
- Have a positive way to verify quantity of base aggregate
 - Many similar aggregates are incidental to work
 - Pipe zone material
- Have confidence points and compaction results prior to paving
- Timely collection and summary of tickets



Unit 8 Review:

- ✓ Cold plane pavement removal
- ✓ Difference between Sections 640 & 641
- ✓ Base aggregate acceptance
- ✓ Base aggregate compaction requirements
- ✓ Base aggregate measurement and payment



00190.20(f) - Check weight criteria:

If more than 50 tons per Day of all types of Materials are received from a scale, the Contractor shall make random check weighings at least every tenth Day on which more than 50 tons is received or at each interval that 10,000 tons has been weighed, whichever occurs first, or as directed by the Engineer.

The Contractor shall make at least one check weighing on projects where more than 2,000 tons of all types of Materials are received from a scale.

Check weights within 0.4% of the Contractor-provided weight are acceptable.

Aggregate Base Scale		
Daily Total (tons)	Cumulative Total (tons)	Days over 50 tons per day
248.87	248.87	1
371.97	620.84	2
341.20	962.04	3
186.29	1148.33	4
503.27	1651.6	5
587.75	2239.35	6
401.00	2640.35	7
217.31	2857.66	8
93.35	2951.01	9
376.06	3327.07	10
479.48	3806.55	11
45.08	3851.63	11
69.20	3920.83	12
601.70	4522.53	13
300.57	4823.1	14
52.27	4875.37	15
283.48	5158.85	16
270.41	5429.26	17

Number of required check weights

2

ACP Scale		
Daily Total (tons)	Cumulative Total	Days over 50 tons per day
3403.37	3403.37	1
4817.59	8220.96	2
4625.63	12846.59	3
5050.47	17897.06	4
2459.54	20356.60	5
5051.72	25408.32	6
5625.69	31034.01	7
6013.00	37047.01	8
1658.91	38705.92	9
6796.90	45502.82	10
6669.51	52172.33	11
5826.40	57998.73	12
5716.31	63715.04	13
138.52	63853.56	14
6291.77	70145.33	15
5751.24	75896.57	16
426.44	76323.01	17
125.85	76448.86	18

Number of required check weights

8

Stone Embankment Scale		
Daily Total (tons)	Cumulative Total (tons)	Days over 50 tons per day
48.87	48.87	0
11.85	60.72	0
1150.25	1210.97	1
443.45	1654.42	2
221.31	1875.73	3
108.56	1984.29	4
32.13	2016.42	4
65.45	2081.87	5
75.14	2157.01	6

Number of required check weights

1

General Scale Information

Scale Certification Requirements (00190.20(d)) - No materials weighed on scales without current certifications according to this Subsection will be accepted. The Contractor shall provide a copy of all required certifications (not simply the commercial scale license) to the Engineer (**EXAMPLES 1A & 2A**). Scales used to weigh materials paid by the ton shall be certified:

- Before used (if installed at new site)
- 60 Calendar Days after initial inspection
- Every six months thereafter (Boilerplate special provisions extends this to annual certification)
- When directed by Engineer

Check Weighing Requirements (00190.20(f-1)) - If more than 50 tons per Day of all types of Materials are received from a scale, the Contractor shall make random check weights at least:

- Every tenth Day on which more than 50 tons is received or
- Once each 10,000 ton interval, whichever occurs first

The Contractor shall make at least one check weighing on projects where 2,000 tons of all types of Materials are received from a scale. The Contractor shall provide the Engineer with the results of the check weighing (**EXAMPLE 2**).

Check weights within 0.4% of the Contractor-provided weight are acceptable.

If a different scale is not available within a 30 mile round trip from the regular haul route the Agency will allow check weighing on an approved alternate basis. (Contact Contract Administration for approved alternate methods)

Scales without Automatic Printer (00190.20(f-2)) - The Contractor shall inform the Engineer at least 3 working Days before weighing begins with a scale that does not have an automatic printer. The Contractor shall pay costs for the ODOT weigh witness. In addition, the Engineer may periodically check the weight of loads on another certified scale.

Contractor's Weigh Technician Duties (0019.20(f-3)) - The Contractor's weigh technician shall:

- For scales where the haul vehicle is not tared for each load, determine at least twice a Day the empty haul masses of vehicles.
- Furnish a daily listing of tare (empty haul) masses if more than 10 loads are hauled (**EXAMPLE 3**).
- Furnish a daily listing of net masses and total mass for each type of material hauled that day (**EXAMPLE 4**).
- Furnish legible weigh memo (ticket) for each load of Materials to the Agency's Materials receiver at the point of delivery, or as directed by the Engineer. The memo shall be serially numbered and identify:
 - o Project name
 - o Material type
 - o Date
 - o Net weight (gross and tare as appropriate)
 - o Vehicle identification
 - o Vehicle driver name
 - o Weigh Technician name

Inspector Duties for Weighed Bid Items

- Weigh Memos collected directly from Haul Vehicles (12D-19) – Record the following information on each Weigh Memo (**EXAMPLE 5**):
 - o Location of delivered Material (station, mile point, etc.)
 - o Haul truck identification, if not already noted
 - o Time Material was delivered
 - o Signature and date of Materials Receiver (ticket taker)
 - o Note on the ticket if any loads are rejected
 - o Perform yield calculations at least once per day when 10 trucks or more loads of ACP are placed (form 734-2792)
- Weigh Memos NOT Collected From Haul Vehicles (12D-20) – If the PM determines that field conditions are not safe enough for the Weigh Memos to be collected directly from the haul vehicles the Materials Receiver shall record the following information for each load on the Materials Delivery and Yield Check Sheet (form 734-2792) or similar format:
 - o Location of delivered Material (station, mile point, etc.)
 - o Haul truck identification
 - o Time Material was delivered
 - o Note if any loads are rejected
 - o Perform yield calculations at least once per day when 10 or more loads of ACP are placed
- Duties of Materials Receiver at end of shift
 - o Collect all tickets and daily listing of net masses and tare summary (if ten or more loads have been delivered) from the weigh scales
 - o Perform final pay quantity calculation by either running two tapes (adding machine or other similar means) (**EXAMPLES 6A & 6B**) or recording and totaling loads on the Materials Delivery and Yield Check sheet and running one tape (adding machine or other similar means) (**EXAMPLE 7**)
 - o Verify the two tapes or one tape and Materials Delivery and Yield Check sheet total agree and match
 - o Resolve any discrepancies with the weigh technicians net mass summary (rejected or unused loads)
 - o Bind the Weigh Memos and signed and dated adding tapes (along with tare mass summary, if applicable, and net mass and total mass summary from weigh technician) and submit for checking by a second person before payment is made for the Materials.

Check Weighing Example

	<u>Project or Contractor Scale</u>	<u>Check Scale</u>
Gross Weight	39.69	39.74
	$\frac{(39.69) - (39.74)}{39.69} = 0.1 \text{ percent difference}$	

EXAMPLE 1B

CHECK SCALE



UNITEC*1480P
CCB#70108

**COMMERCIAL
SCALE TEST REPORT**

Date Tested 10/20/14

Reg. No. C2507

Name Cardinal Coffee Quizzes Address Newport, OR
 Indicator Make/Model Cardinal 825 Indicator Serial No. _____
 Capacity 160,000# Minimum Grad. 20# Unit Type 105 Platform Size 10 x 90
 Number of Sections 5 Ticket Printer Make/Model Epson T-MU590
 Location Newport Scale Type Unitec SP-C Scale Serial No. _____

Initial Test				Final Test			
Load Position	Load Applied	Scale Indication	Error	Load Position	Load Applied	Scale Indication	Error
1	44,520	44,520	∅				
2	}	44,540	+20				
3		44,540	+20				
4		44,520	∅				
5		44,540	+20				
1	20,000	20,000	∅				

STRAIN LOAD TEST

Empty Truck Weight	Test Weight Added	Truck & Test Weight Total	Error

Remarks and/or Instructions Scale tested within tolerance.

* Adjusted scale filtering

DATE 10/20/2014

TIME 12:40

Scale Technician [Signature] Meets H.B. 44 Specifications Yes No

EXAMPLE 2

#44

CHECK WEIGHING (00190.20(f))

Contract Number: 14670

Job Name: FFO-US20PME:UPRR-EDDYVILLE (Phase 3)

Date: 1/11/2016

Ticket Number: 28022218

Check Scale Location: Blodgett

Contractor: Scarsella Brothers Inc.

	Contractor Scale	Check Scale
GROSS	104060	104150
TARE	39980	
NET	64080	

Percent Difference:

(0.4% Maximum Allowable)

Check Weight Witnessed By : Anthony Carr

Signature: 

TARE WEIGHT SUMMARY

EXAMPLE 3242810 Hardrock Aggregate
01/11/2016Customer 482039
Order 27989

<u>VehicleID</u>	<u>Vehicle Description</u>	<u>Driver</u>	<u>Tare</u>	<u>Time</u>
KNI005TP	KNIFE RIVER INC		39,980	6:56 AM
KNI005TP	KNIFE RIVER INC		39,620	2:13 PM
KNI006TP	KNIFE RIVER INC		41,180	7:44 AM
KNI006TP	KNIFE RIVER INC		40,660	2:05 PM
KNI339TP	KNIFE RIVER TRUCK & PUP		38,180	7:30 AM
KNI339TP	KNIFE RIVER TRUCK & PUP		38,020	2:57 PM
KNI521TP	KNIFE RIVER TRUCK PUP		39,480	7:08 AM
KNI521TP	KNIFE RIVER TRUCK PUP		39,180	2:18 PM
KNI522TP	KNIFE RIVER TRUCK & PUP		38,500	7:06 AM
KNI522TP	KNIFE RIVER TRUCK & PUP		38,160	2:48 PM
KNI525TP	KNIFE RIVER INC		38,880	7:18 AM
KNI525TP	KNIFE RIVER INC		38,680	2:43 PM
KNI527TP	KNIFE RIVER TRUCK & PUP		37,780	7:14 AM
KNI527TP	KNIFE RIVER TRUCK & PUP		37,520	2:27 PM
KNI528TP	KNIFE RIVER		38,540	7:12 AM
KNI528TP	KNIFE RIVER		38,060	2:53 PM
KNI602TP	KNIFERIVER T&P		42,480	7:02 AM
KNI602TP	KNIFERIVER T&P		42,380	1:04 PM
KNI738TR	KNIFE RIVER INC		40,620	7:00 AM
LW4TP	LEO WINK TRUCKING	LEO	39,260	7:28 AM
LW4TP	LEO WINK TRUCKING	LEO	39,060	3:06 PM
SD5TP	Steve Dundas Trucking	JD	40,100	7:22 AM
SD5TP	Steve Dundas Trucking	JD	39,980	3:02 PM

EXAMPLE 4

SCALE TICKET INQUIRY

BEGIN DATE	1/11/2016	LOCATION	242810	PRODUCT	24992120
END DATE	1/11/2016	CUSTOMER	482039		
SELL/BUY/TRANS	ALL	ORDER	27989		
SHIP/RECEIVE	ALL				

<u>Ticket</u>	<u>Loc</u>	<u>Date</u>	<u>Time</u>	<u>Customer</u>	<u>Order</u>	<u>Product</u>	<u>Carrier</u>	<u>Vehicle</u>	<u>Qty</u>	<u>Unit</u>
28,022,178	2428	1/11/2016	5:56:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI005TP	32.71	Ton
28,022,179	2428	1/11/2016	7:00:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI738TR	32.16	Ton
28,022,180	2428	1/11/2016	7:02:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI602TP	31.00	Ton
28,022,181	2428	1/11/2016	7:06:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI522TP	33.07	Ton
28,022,182	2428	1/11/2016	7:08:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI521TP	31.52	Ton
28,022,183	2428	1/11/2016	7:12:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI528TP	32.38	Ton
28,022,184	2428	1/11/2016	7:14:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI527TP	32.62	Ton
28,022,185	2428	1/11/2016	7:18:00AM	SCARSELLA	27989	2 1/2" - 0" CI	OREGON OL	KNI525TP	30.63	Ton
28,022,186	2428	1/11/2016	7:22:00AM	SCARSELLA	27989	2 1/2" - 0" CI	OREGON OL	SD5TP	28.39	Ton
28,022,187	2428	1/11/2016	7:28:00AM	SCARSELLA	27989	2 1/2" - 0" CI	OREGON OL	LW4TP	30.24	Ton
28,022,188	2428	1/11/2016	7:30:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI339TP	30.69	Ton
28,022,190	2428	1/11/2016	7:44:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI006TP	30.68	Ton
28,022,191	2428	1/11/2016	3:13:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI005TP	31.68	Ton
28,022,192	2428	1/11/2016	3:16:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI602TP	29.80	Ton
28,022,193	2428	1/11/2016	3:19:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI521TP	30.95	Ton
28,022,194	2428	1/11/2016	3:27:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI528TP	32.18	Ton
28,022,196	2428	1/11/2016	3:39:00AM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI738TR	30.39	Ton
28,022,257	2428	1/11/2016	2:05:00PM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI006TP	32.48	Ton
28,022,259	2428	1/11/2016	2:13:00PM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI005TP	32.35	Ton
28,022,260	2428	1/11/2016	2:18:00PM	SCARSELLA	27989	2 1/2" - 0" CI	KNIFE RIVER	KNI521TP	32.80	Ton
28,022,269	2428	1/11/2016	3:06:00PM	SCARSELLA	27989	2 1/2" - 0" CI	OREGON OL	LW4TP	29.92	Ton

Tickets 21

658.64



Hardrock Aggregate

Ticket No.:

28022178

*CUT 3 STOCKPIC
7:43 Delivered*

Date: 1/11/2016 Time: 6:56:44AM

Vehicle: KNI005TP KNIFE RIVER INC

Customer: 482039 SCARSELLA BROTHERS INC

Order: 27989 EDDYVILLE PHASE 3 EAST SIDE

P.O.:

Product: 24992120 2 1/2" - 0" CRUSHED

PH3:US20 PME UPRR- Eddyville
Corvallis - Newport Hwy 47V-039
Lincoln Co C14670 CON03608
NHPP-S033(049) K18327

Bl *170* Note Est Date

RECEIVED

32.71 Ton

TERMS: NET - CASH SALES PAYABLE
UPON PICKUP OR DELIVERY.
CHARGE SALES DUE AND PAYABLE
BY THE 10TH OF MONTH FOLLOWING
PURCHASE. A service charge of 1.5%
per month on remaining balance will
be made on the invoice to start at the
end of the following month's billing
cycle. This is an ANNUAL
PERCENTAGE RATE OF 18%.
PERSONAL NOTICE: We reserve the
right to claim lien for all labor and
material consumed on this job according
to WASHINGTON REVISED STATUTE
87.021

CUSTOMER COPY

	Pounds	Tons	Metric
Gross	105400	52.70	47.81
Tare	39980	19.99	18.13
Net	65420	32.71	29.67

Ordered	
Remaining	
Today:	32.71 Loads: 1

Weighmaster: Ashley Scheer

As the owner or contractor for this job, I hereby save and hold harmless from any and all liability Knife River or their driver as a result of the Knife River Vehicle being driven inside property or curblines. I also accept full responsibility for any property damage or any equipment damage to Knife River, which may occur beyond this point. I further agree to pay any towing or stand-by charges

EXAMPLE 6A

Note #:	COUNT #			DIF	COUNT #			DIF	COUNT #			DIF
	1	2			1	2			1	2		
Estimate #:	LOAD				LOAD	Ton			LOAD	Ton	Ton	
UNIT = Ton	1	32.71	29.92		71				141			
TOTAL = 658.64	2	32.16	32.80		72				142			
TOTAL = 658.64	3	31.00	32.35		73				143			
<u>PROJECT</u>	4	33.07	32.48		74				144			
FFO-	5	31.52	30.39		75				145			
US20PME:UPRR-	6	32.38	32.18		76				146			
<u>CONTRACTOR</u>	7	32.62	30.95		77				147			
Scarsella Bros	8	30.63	29.80		78				148			
BI# 1170	9	28.39	31.68		79				149			
<u>MATERIAL</u>	10	30.24	30.68		80				150			
Aggregate Base 2	11	30.69	30.69		81				151			
1/2" - 0" Knife	12	30.68	30.24		82				152			
River	13	31.68	28.39		83				153			
<u>DATE</u>	14	29.80	30.63		84				154			
1/11/2016	15	30.95	32.62		85				155			
<u>LOCATION</u>	16	32.18	32.38		86				156			
Cut 3 Stockpile	17	30.39	31.52		87				157			
	18	32.48	33.07		88				158			
	19	32.35	31.00		89				159			
	20	32.80	32.16		90				160			
	21	29.92	32.71		91				161			
	22				92				162			
	23				93				163			
	24				94				164			
	25				95				165			
	26				96				166			
	27				97				167			
	28				98				168			
	29				99				169			
	30				100				170			
	31				101				171			
	32				102				172			
	33				103				173			
	34				104				174			
	35				105				175			
	36				106				176			
	37				107				177			
	38				108				178			
	39				109				179			
	40				110				180			
	41				111				181			
	42				112				182			
	43				113				183			
	44				114				184			
	45				115				185			
	46				116				186			
	47				117				187			
	48				118				188			
	49				119				189			
	50				120				190			
	51				121				191			
	52				122				192			
	53				123				193			
	54				124				194			
	55				125				195			
	56				126				196			
	57				127				197			
	58				128				198			
	59				129				199			
	60				130				200			
	61				131				201			
	62				132				202			
	63				133				203			
	64				134				204			
	65				135				205			
	66				136				206			
	67				137				207			
	68				138				208			
	69				139				209			
	70				140				210			

Handwritten signature
1/20/16

EXAMPLE 6B

TWO ADDING MACHINE TAPES

0°c

32°71
32°16
31°
3°07
31°52
32°38
31°62
30°33
28°39
30°24
30°69
30°68
31°58
29°8
30°35
32°18
30°39
32°48
32°35
32°8
31°92
658°64*

PH3:US20 PME UPRR- Eddyville
 Corvallis - Newport Hwy 47V-039
 Lincoln Co C14670 CON03608
 NHPP-S033(049) K18327
 BI Note Est Date

[Signature]
1/11/16

0°c

32°71
32°16
31°
3°07
31°52
32°38
31°62
30°33
28°39
30°24
30°69
30°68
31°58
29°8
30°35
32°18
30°39
32°48
32°35
32°8
31°92
658°64*

PH3:US20 PME UPRR- Eddyville
 Corvallis - Newport Hwy 47V-039
 Lincoln Co C14670 CON03608
 NHPP-S033(049) K18327
 BI Note Est Date

EXAMPLE 7

ONE ADDING MACHINE TAPE AND
MATERIAL DELIVERY SHEET

0.0

32.71 :
32.16 :
31. :
30.07 :
31.52 :
32.38 :
31.62 :
30.53 :
28.79 :
30.24 :
30.69 :
30.68 :
31.58 :
29.0 :
30.35 :
32.18 :
30.39 :
32.48 :
32.35 :
32.8 :
31.92 :
658.64*

PH3:US20 PME UPRR- Eddyville
Corvallis - Newport Hwy 47V-039
Lincoln Co C14670 CON03608
NHPP-S033(049) K18327
BI Note Est Date

[Handwritten signature]
1/11/16

EXAMPLE 7



MATERIAL DELIVERY & YIELD CHECK SHEET

Page 1 of 2

PROJECT US 20 PME Phase 3

CONTRACT C14670

DATE 1/11/2016

SOURCE Hard Rock Quarry

BID ITEM 1170

MATERIAL 2 1/2 Inch - 0 Aggregate Base

MATERIAL DELIVERY

LOAD #	TICKET #	QUANTITY DELIVERED	LOCATION PLACED	TIME DELIVERED	REMARKS
1	178	32.71			
2	179	32.16			
3	180	31.00			
4	181	33.07			
5	182	31.52			
6	183	32.38			
7	184	32.62			
8	185	30.63			
9	186	28.39			
10	187	30.24			
(A) Total		314.72			

(B) THEORETICAL YIELD CALC: $(\text{Width} \times \text{Length} \times (\text{Depth}/12) \times (\text{MAMD} \times \% \text{Comp.}/100) / 2000) = \text{TONS}$

WIDTH (Feet)	LENGTH (Feet)	DEPTH (Inches)	MAMD	% COMPACTION	THEORETICAL TONS

(C) COMPARISON CALC: $(A/B) \times 100$ **(D) % TOLERANCE CALC:** $(100-C)$ (must be within +/- 10% tolerance)

Ten Load Yield (A)	<u>314.72</u>
Theoretical Tons (B)	
Comparison (C)	
% Tolerance (D)	

*Need Yield Calculation

*** Initial here if yield calculations are not applicable due to irregular areas or lack of consistent placement**

Inspected by (Print Name) _____

Inspected by (Signature)

Date 1/11/16

OFFICE USE ONLY

Checked by (Print Name) _____

Checked by (Signature) _____

Date _____

Quantity This Note _____

Pay Unit _____

Quality Checked

Estimate Number _____

Note No. _____

Quantity Checked

EXAMPLE 7



MATERIAL DELIVERY & YIELD CHECK SHEET

Page 2 of 2

PROJECT US 20 PME Phase 3

CONTRACT C14670

DATE 1/11/2016

SOURCE Hard Rock Quarry

BID ITEM 1170

MATERIAL 2 1/2 Inch - 0 Aggregte Base

LOAD #	TICKET #	QUANTITY DELIVERED	LOCATION PLACED	TIME DELIVERED	REMARKS
11	188	30.69			
12	190	30.68			
13	191	31.68			
14	192	29.80			
15	193	30.95			
16	194	32.18			
17	196	30.39			
18	257	32.48			
19	259	32.35			
20	260	32.80			
Subtotal		314.00			
Running Total		628.72			

LOAD #	TICKET #	QUANTITY DELIVERED	LOCATION PLACED	TIME DELIVERED	REMARKS
21	269	29.92			
22					
23					
24					
25					
26					
27					
28					
29					
30					
Subtotal		29.92			
Running Total		658.64			

Milling Operations Inspection Checks

- ✓ Proper Location
- ✓ Proper Depth (uniform across width?)
- ✓ Proper Slope
- ✓ Properly Cleaned
- ✓ Need to go Deeper?
- ✓ Measure Area

Resources

- 2008 Oregon Standard Specifications for Construction Sec. 00620, 00730, 00745
- ODOT Pavement Design Guide:
<http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/Pages/PSIndex.aspx>
- ODOT HMAC Inspector Certification Manual
http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/pages/hmac_inspection_manual.aspx

Contact Us

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Spec Notes are prepared by the Construction Section QA Unit for inspectors to provide background information around design elements and specifications to help with making field decisions.

If you have a topic you would like to see addressed in this format, please contact us.

00620 – Cold Plane Pavement Removal



Cold plane pavement removal is used for a variety of treatments including repairing localized failures and removing long segments of highways in preparation for new pavement. Like any construction, a bit of judgment is required to create a good quality milled

pavement that comes in on budget and results in a good quality finished pavement. Here are some questions and answers around the intent of the grinding and the associated specifications.

Q -- Why grind?

A – Grinding is specified for a variety of reasons including:

- to remove all or part of the cracked surface to help control reflective cracking;
- to remove poorly bonded (delaminated) layers which can slide creating pot holes;
- to remove poor quality/unstable asphalt pavement;
- to remove an open graded wearing surface thereby removing a potential water-retaining layer;
- to restore the pavement surface without changing the pavement grade.

Q – Section 00620.43 in the Special Provisions sometimes states that *Traffic will not be allowed to travel on cold planed surfaces*. Why not?

A – The design reason is that traffic could damage a thin layer of pavement left in place that otherwise would be good enough to pave on. We don't want to delaminate or crack up a good base. Also, there may be safety issues including flying rock and friction.

Q – What happens if we grind deeper than the design?

A – Grinding deeper may result in leaving a thin section of pavement that could become dislodged and delaminate. In some areas, like shoulders, aggregate base may be encountered. Going deeper can result in significant pavement quantity overruns. If an extra 1/2" of mix is required for 500 feet for a 14-foot wide section, the added mix is more than 20 tons. It adds up!

Q – So then, how deep is deep enough?

A – For most situations, the design section should be adequate. For delaminated pavements, once the grinding starts, it is the inspector's duty to verify that adequate preparation has been made. Check for loose chunks or slabs of material that are left after the pavement has been swept. Can you kick off pieces around the edges? Can you dislodge large sections easily either with your boot or shovel?

Loose and delaminated sections need to be removed which should be readily accomplished with a shovel. When in doubt, check with your PM! The photo below shows a pavement ready for an inlay that was partially delaminated. The loose



slabs have been removed and the pavement swept. While it might not look perfect, all broken edges are

gone and the remaining section adheres well to the layer below it. Once prepared, try to minimize the truck traffic on the pavement to reduce the potential for dislodging more material.

Q – What happens if we are overrunning our quantities and decide to grind a thinner section?

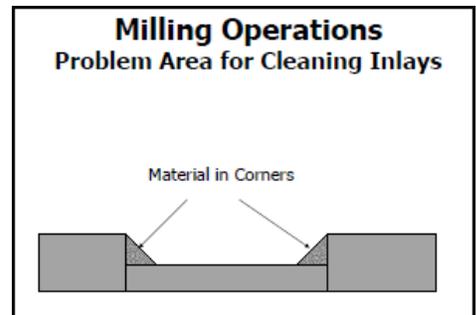
A – Grinding thinner can increase the potential for reflective cracking or increase the potential to leave delaminated pavement sections in place that will lead to shoving and pot holes. With an open graded wearing surface, we typically don't want to leave an open graded layer under a dense graded pavement because it can trap water and lead to

future problems. Also, depending on the pavement design, a thinner pavement could compromise the pavement life as the design may require new HMAC thickness to accommodate future traffic.

Q – We are done with the grinding, what should we look for during sweeping?

A – Per the specifications (00730.42 and 00745.42), prior to applying tack, *remove all material, loose or otherwise, that will reduce adhesion of the tack by brooming, flushing with water, or other approved methods.*

Dust behind a fast-moving vehicle driving on the milled



surface is an indicator of inadequate preparation. The areas to pay close attention to are the corners as shown in the graphic.

Q – The sweeping is done, can we start paving?

A – Maybe. If traffic has been running on the cold planed surface, Section 00620.43 states that *...Before beginning paving operations, make repairs to the existing cold planed surface as directed.* The intent of the specification is to locate any areas that have cracked or delaminated under traffic. Also, Section 00745.42 requires *Preparation of Underlying Surfaces* which refers to Section 00610 *Reconditioning Existing Roadway* which requires removal of unstable material. Now, back to the boilerplate for Section 00620.43, *Payment for the repairs will be made according to Section 00196.* Bottom line, repair the failed sections caused by traffic and pay for it as Extra Work.

Q – What's important about applying tack?

A –After the pavement is swept, per 00745.42 all surfaces that will be next to new HMAC, should be tack coated. This includes the edges of the trench; many joint failures have been attributed to missing tack. Be sure that enough tack is placed and that the trucks are not picking it up during paving. The goal is to glue the pavement layers together for long term performance.