

C.M.B.L.

From

The Chief Engineer,
H.S.A.M. Board,
Panchkula.

To

1-The Superintending Engineers,
Panchkula/Karnal/Rhtak.

Sub:

2- All Ex.En's in HSAM Board.
C.E-89/2845-87 dt 27-2-89

Technical Circular:-Guidelines for submitting
detailed estimate for roads.

It has been noticed that the detailed estimates for roads being received in C.E. office do not contain uniform standard and seal, and therefore are returned again and again for correction/amending or for attachment of more drawings. As a matter of fact only one standard should be followed for all estimates of roads.

Following guidelines, therefore, are being sent to you for strict compliance. Each S.E/Ex.Ens should ensure that the estimates being submitted by them ^{are} as per guide-

lines :

1. Detailed estimate for each project should consist of :
 - (a) Proper report of the estimate.
 - (b) Abstract of cost.
 - (c) Estimates of quantities.
 - (d) Analysis of Rate of items not covered by the relevant schedule of rates and
 - (e) Quarry/material source charts.
Index plan showing the rates road development and other features.

Where the project work is to be proposed in stages (according to budget), estimate should be prepared for each stage separately.

2. Drawings:

Project drawings should depict the proposed work in relation to the existing features. For easy understanding and interpretation, it is desirable that the drawing should follow a uniform practice with regard to size, scale and the

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details. Drawings should be of adequate size to accommodate reasonable length of the road or a structural unit in full detail. At the same time it should not be too large to necessitate several folds. Recommended size by IRC is 594 mm x 420 mm. So that it could be easily stitched in a folder for convenient handling. On this size, it can accommodate plan and L section of one K.M. length at a scale of 1:1000 (1 cm = 10 m) in horizontal scale & 1 cm to 1 meter in vertical scale.

Components of drawings:

1. Locality map cum site plan (index Map)
2. Land acquisition Plan (Shajra plan with proper Curves)
3. Plan and longitudinal sections.
4. Typical cross section sheet.
5. Detailed cross sections.
6. Drawings for cross-drainage structures.
7. Road junction drawings.

1. Locality Map cum-site Plan: This is a combination of key map and index map drawn on a single sheet. The Key map (locality map) should show the location of the road with respect to important towns. This should be copied from survey of India maps of 1: 50,000 scale.

Site plan (index Map) should show the project road and its immediate neighbourhood covering the important physical features such as hills, rivers, tanks, railway lines, Mandis, sub-yards, purchase centres etc. & show the kilometerage from beginning to end.

2. Land Acquisition Plans: These should be prepared on existing village maps or settlement maps (shajra plan) giving the detail of property boundaries, and khasra number. Plan should show the final centre line of the road the right of way limit, buildings, wells, monuments trees, etc. affected by the road alignment. The alignment with proper curves be shown on the shajra plan, with proposals

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to by pass the villages & to connect the proposed road at end junctions.

3. Plan and L-Section : Plan and longitudinal section should be shown on a single drawings sheet for the one KM length. The Plan should be at top and L-section at the bottom. Common scale adopted is 1:1000. (1 cm to 10m) for the horizontal and 1:100 (1 cm to 1m) for vertical.

The plan among other things should show the final centre line of the road, right of way. ^{to} Location of existing road; where applicable,

existing structures drainage courses, intersecting roads/railway lines, Electric & telephone lines, cable, location of cross drainage structure, design detail of horizontal curves, bench marks, location of cross-section, contour, north direction.

4. The longitudinal section should show the profile of the proposed road, the natural surface level, formation level, H.F.L., gradient, cutting or filling at each chainage, the location of drainage crossings and intersecting roads etc. R.L.'s & R.D.'s at distances of 20m centre to centre.

5. Typical Cross Section Sheet : In a road estimate elements like width of carriage way and roadway, side slopes and pavement cross-fall will generally remain constant, for most of the road length. Instead of repeating these details on every cross section it shall be desirable to show these on a typical cross section sheet. Generally it may be necessary to show at least one cross section each for road in fill, cut and curve.

6. Detailed cross Section : The cross sections should be presented serially along the continuous chainage at 20m intervals. These should show the ground level, (existing road level where applicable) and the proposed road level. The area of cut and or fill involved should be indicated as also the type & thickness of different pavement courses.

7. Drawings for cross drainage structure : In the construction of road, a large number of small cross drainage structures (i.e. culverts) will require to be constructed. Unless there is a special problem, it should

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normally be convenient to adopt standard designs for these standard designs for RCC culvert. A standard drawings of 2m x 2m culvert design is enclosed. Standard drawing of I.R.C. if available be followed other standard drawings of PWD B&R Deptt. be followed.

7. Road Junction Drawings : Junction drawings should show the existing features of the intersecting roads.

8. Drawings for retaining Walls & other structures :

These drawings should clearly show the foundation and structure details as also the materials proposed to be used. The scale chosen should be large enough to show all the details.

9. High Flood Level : Information in this regard can normally be had from the Irrigation Deptt. who maintain & analyse such data. The road level should be kept one metre above High Flood Level. This be shown on L-Sections.

A set of drawings as required is attached for the guidance of the field officer.

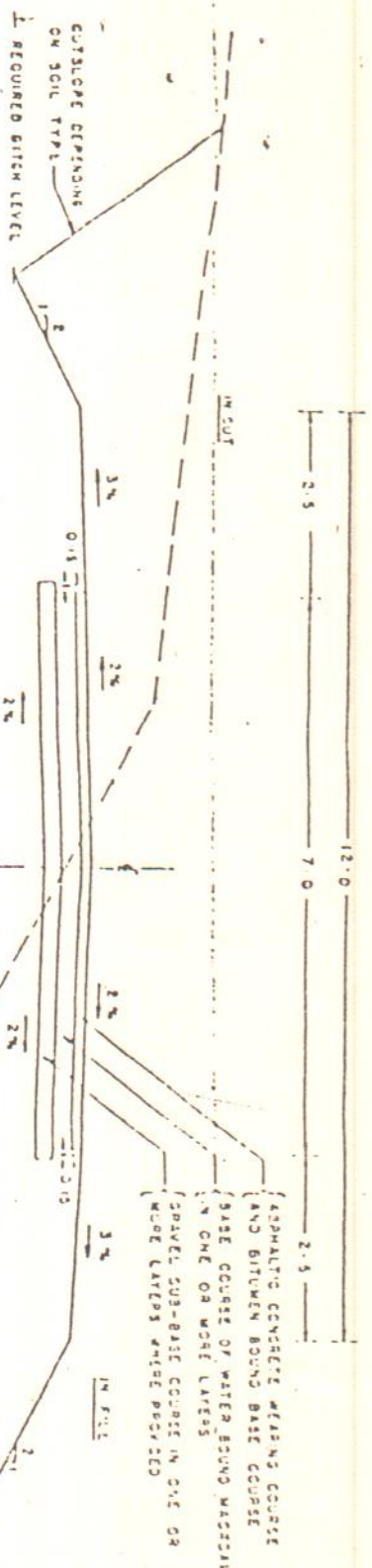
These instructions should be read alongwith the instruction for preparation of R/C/Estimates issued vide this office letter No. CEA-89/2300 17.2.89.

The above instructions are a brief of I.R.C. standard - Special Publication 19 i.e. "Manual for survey, Investigation & preparation of Road Projects". These instructions should be followed to ensure sending of complete estimates in the 1st instances. Every J.E./S.D.E./B.E./S.E. in addition to the Drawing Branch staff i.e. the ADM/HDM/C.H.D. should have a personal copy of this publication for reference. These booklets be arranged by the XENs by charging these to the project estimates.

1. Locality Map/Index Plan
2. L-Section and Plan
3. Typical X-section.
4. Detailed Cross Section.
5. Standard Design for RCC Slab culvert of Size 2m x 2m.
6. Standard design of RCC pipe culvert with single pipe of 1m dia.
7. Road junction drawing.

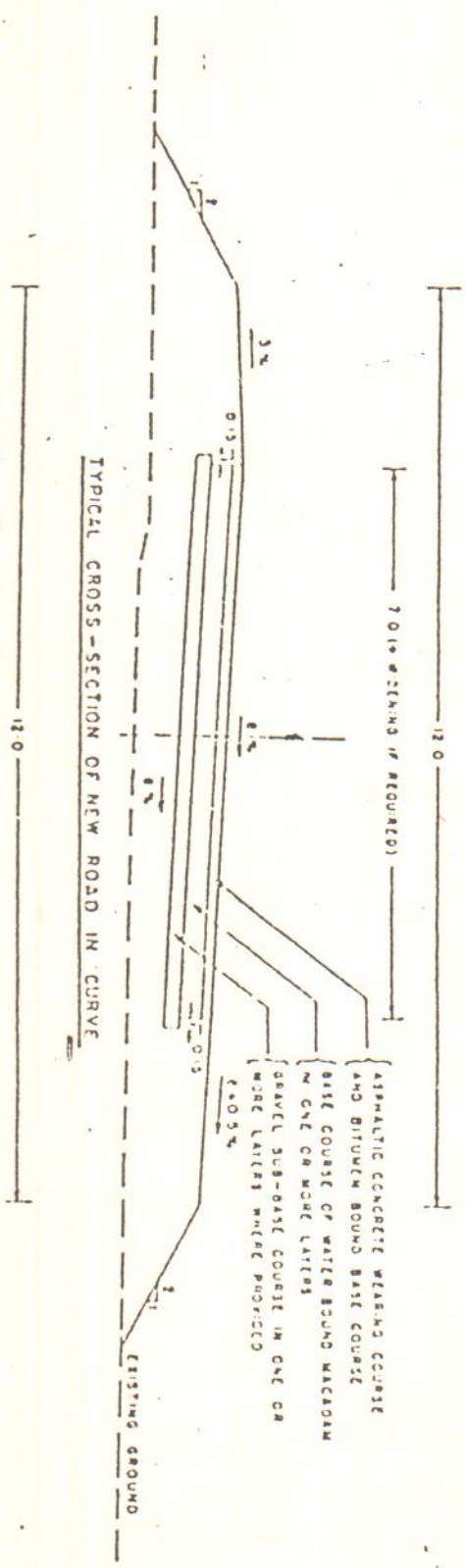
Chief Engineer

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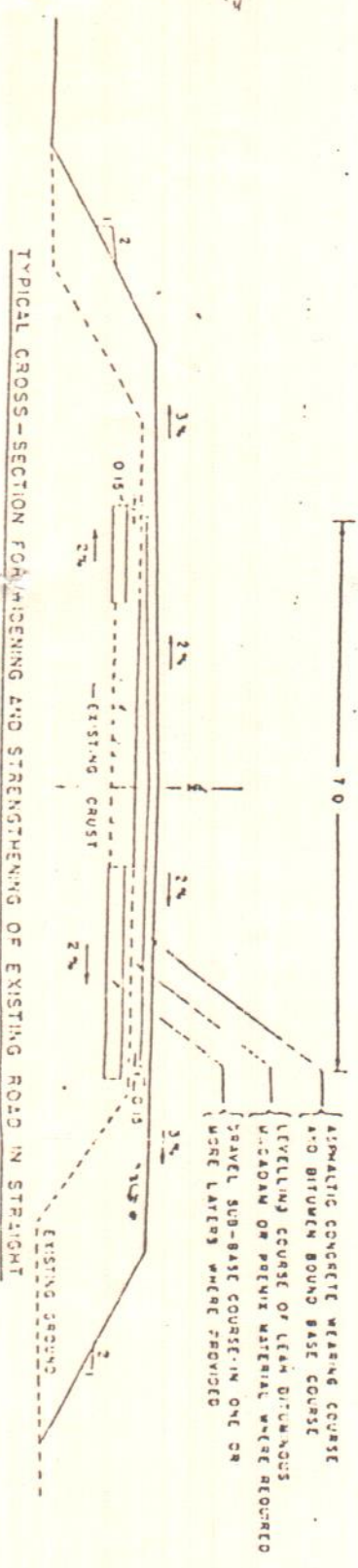


TYPICAL CROSS-SECTION OF NEW ROAD IN STRAIGHT

- 1. ASPHALTIC CONCRETE
- 2. BITUMENOUS MACADAM
- 3. BITUMENOUS LEVELLING COURSE
- 4. WATER BOUND MACADAM (175mm MIN)
- 5. GRAVEL
- 6. PROPOSED ROAD
- 7. EXISTING PAVEMENT
- 8. PAVEMENT COMPOSITION
- 9. THICKNESS OF COURSE (mm)
- 10. FOR STRENGTHENING
- 11. THICKNESS OF COURSE (mm) FOR WEAR / NEW CONSTRUCTION



TYPICAL CROSS-SECTION OF NEW ROAD IN CURVE



TYPICAL CROSS-SECTION FOR WIDENING AND STRENGTHENING OF EXISTING ROAD IN STRAIGHT

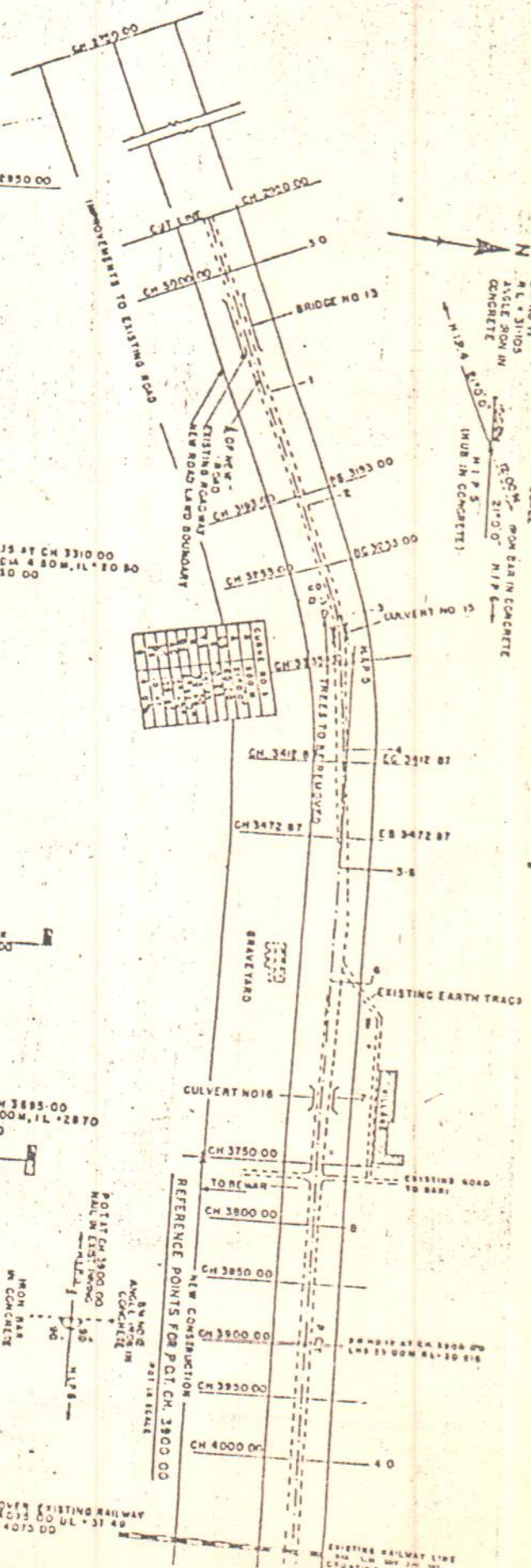
NOTES:-
1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN METRES
2. THICKNESS OF PAVEMENT COURSES IS NOT TO SCALE

M 1 0 5 0
SCALE 1:100

TYPICAL
CROSS-SECTIONS

NOT IN SCALE

BM NO. 11
AT 3105
ANGLE 200 IN
CONCRETE
N 13° 4' 30" E
N 13° 5' 0" E
N 13° 6' 0" E



CUT LINE CH 2950 00

CULVERT NO. 15 AT CH 3310 00
PIPE 40 CM DIA. 4.80 M, I.L. 20.80
P.V. CH 3310 00
R.L. 31.40

EARTH TRACK
AT CH 3380 00

CULVERT NO. 18 AT CH 3695 00
PIPE 75 CM DIA. 15.00 M, I.L. 28.70
P.V. CH 3741 00
R.L. 30.17
ROAD CROSSING
AT CH 3740 00

REFERENCE POINTS FOR P.O.T. CH 2900 00
NEW CONSTRUCTION
CH 2900 00
CH 2950 00
CH 3000 00
CH 3050 00
CH 3100 00
CH 3150 00
CH 3200 00
CH 3250 00
CH 3300 00
CH 3350 00
CH 3400 00
CH 3450 00
CH 3500 00
CH 3550 00
CH 3600 00
CH 3650 00
CH 3700 00
CH 3750 00
CH 3800 00
CH 3850 00
CH 3900 00
CH 3950 00
CH 4000 00
CH 4050 00
CH 4100 00

MON. R.A.
IN CONCRETE

BLOCK OVER EXISTING RAILWAY
AT CH 4075 00 U.L. 31.40
P.V. CH 4075 00

EXISTING GENERAL GROUND LEVEL	NEW ROAD LEVEL	NEW ROAD LEVEL	VERTICAL ALIGNMENT	HORIZONTAL ALIGNMENT	SUPER ELEVATION CROSS FALL	PAVEMENT	CHANGING
31.40	31.15	31.10	31.05	31.00	30.95	30.90	30.85
31.40	31.10	31.05	31.00	30.95	30.90	30.85	30.80
31.40	31.05	31.00	30.95	30.90	30.85	30.80	30.75
31.40	31.00	30.95	30.90	30.85	30.80	30.75	30.70
31.40	30.95	30.90	30.85	30.80	30.75	30.70	30.65
31.40	30.90	30.85	30.80	30.75	30.70	30.65	30.60
31.40	30.85	30.80	30.75	30.70	30.65	30.60	30.55
31.40	30.80	30.75	30.70	30.65	30.60	30.55	30.50
31.40	30.75	30.70	30.65	30.60	30.55	30.50	30.45
31.40	30.70	30.65	30.60	30.55	30.50	30.45	30.40
31.40	30.65	30.60	30.55	30.50	30.45	30.40	30.35
31.40	30.60	30.55	30.50	30.45	30.40	30.35	30.30
31.40	30.55	30.50	30.45	30.40	30.35	30.30	30.25
31.40	30.50	30.45	30.40	30.35	30.30	30.25	30.20
31.40	30.45	30.40	30.35	30.30	30.25	30.20	30.15
31.40	30.40	30.35	30.30	30.25	30.20	30.15	30.10
31.40	30.35	30.30	30.25	30.20	30.15	30.10	30.05
31.40	30.30	30.25	30.20	30.15	30.10	30.05	30.00
31.40	30.25	30.20	30.15	30.10	30.05	30.00	29.95
31.40	30.20	30.15	30.10	30.05	30.00	29.95	29.90
31.40	30.15	30.10	30.05	30.00	29.95	29.90	29.85
31.40	30.10	30.05	30.00	29.95	29.90	29.85	29.80
31.40	30.05	30.00	29.95	29.90	29.85	29.80	29.75
31.40	30.00	29.95	29.90	29.85	29.80	29.75	29.70
31.40	29.95	29.90	29.85	29.80	29.75	29.70	29.65
31.40	29.90	29.85	29.80	29.75	29.70	29.65	29.60
31.40	29.85	29.80	29.75	29.70	29.65	29.60	29.55
31.40	29.80	29.75	29.70	29.65	29.60	29.55	29.50
31.40	29.75	29.70	29.65	29.60	29.55	29.50	29.45
31.40	29.70	29.65	29.60	29.55	29.50	29.45	29.40
31.40	29.65	29.60	29.55	29.50	29.45	29.40	29.35
31.40	29.60	29.55	29.50	29.45	29.40	29.35	29.30
31.40	29.55	29.50	29.45	29.40	29.35	29.30	29.25
31.40	29.50	29.45	29.40	29.35	29.30	29.25	29.20
31.40	29.45	29.40	29.35	29.30	29.25	29.20	29.15
31.40	29.40	29.35	29.30	29.25	29.20	29.15	29.10
31.40	29.35	29.30	29.25	29.20	29.15	29.10	29.05
31.40	29.30	29.25	29.20	29.15	29.10	29.05	29.00
31.40	29.25	29.20	29.15	29.10	29.05	29.00	28.95
31.40	29.20	29.15	29.10	29.05	29.00	28.95	28.90
31.40	29.15	29.10	29.05	29.00	28.95	28.90	28.85
31.40	29.10	29.05	29.00	28.95	28.90	28.85	28.80
31.40	29.05	29.00	28.95	28.90	28.85	28.80	28.75
31.40	29.00	28.95	28.90	28.85	28.80	28.75	28.70
31.40	28.95	28.90	28.85	28.80	28.75	28.70	28.65
31.40	28.90	28.85	28.80	28.75	28.70	28.65	28.60
31.40	28.85	28.80	28.75	28.70	28.65	28.60	28.55
31.40	28.80	28.75	28.70	28.65	28.60	28.55	28.50
31.40	28.75	28.70	28.65	28.60	28.55	28.50	28.45
31.40	28.70	28.65	28.60	28.55	28.50	28.45	28.40
31.40	28.65	28.60	28.55	28.50	28.45	28.40	28.35
31.40	28.60	28.55	28.50	28.45	28.40	28.35	28.30
31.40	28.55	28.50	28.45	28.40	28.35	28.30	28.25
31.40	28.50	28.45	28.40	28.35	28.30	28.25	28.20
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31.40	28.40	28.35	28.30	28.25	28.20	28.15	28.10
31.40	28.35	28.30	28.25	28.20	28.15	28.10	28.05
31.40	28.30	28.25	28.20	28.15	28.10	28.05	28.00
31.40	28.25	28.20	28.15	28.10	28.05	28.00	27.95
31.40	28.20	28.15	28.10	28.05	28.00	27.95	27.90
31.40	28.15	28.10	28.05	28.00	27.95	27.90	27.85
31.40	28.10	28.05	28.00	27.95	27.90	27.85	27.80
31.40	28.05	28.00	27.95	27.90	27.85	27.80	27.75
31.40	28.00	27.95	27.90	27.85	27.80	27.75	27.70
31.40	27.95	27.90	27.85	27.80	27.75	27.70	27.65
31.40	27.90	27.85	27.80	27.75	27.70	27.65	27.60
31.40	27.85	27.80	27.75	27.70	27.65	27.60	27.55
31.40	27.80	27.75	27.70	27.65	27.60	27.55	27.50
31.40	27.75	27.70	27.65	27.60	27.55	27.50	27.45
31.40	27.70	27.65	27.60	27.55	27.50	27.45	27.40
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31.40	27.60	27.55	27.50	27.45	27.40	27.35	27.30
31.40	27.55	27.50	27.45	27.40	27.35	27.30	27.25
31.40	27.50	27.45	27.40	27.35	27.30	27.25	27.20
31.40	27.45	27.40	27.35	27.30	27.25	27.20	27.15
31.40	27.40	27.35	27.30	27.25	27.20	27.15	27.10
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31.40	27.25	27.20	27.15	27.10	27.05	27.00	26.95
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31.40	26.95	26.90	26.85	26.80	26.75	26.70	26.65
31.40	26.90	26.85	26.80	26.75	26.70	26.65	26.60
31.40	26.85	26.80	26.75	26.70	26.65	26.60	26.55
31.40	26.80	26.75	26.70	26.65	26.60	26.55	26.50
31.40	26.75	26.70	26.65	26.60	26.55	26.50	26.45
31.40	26.70	26.65	26.60	26.55	26.50	26.45	26.40
31.40	26.65	26.60	26.55	26.50	26.45	26.40	26.35
31.40	26.60	26.55	26.50	26.45	26.40	26.35	26.30
31.40	26.55	26.50	26.45	26.40	26.35	26.30	26.25
31.40	26.50	26.45	26.40	26.35	26.30	26.25	26.20
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31.40	26.40	26.35	26.30	26.25	26.20	26.15	26.10
31.40	26.35	26.30	26.25	26.20	26.15	26.10	26.05
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31.40	26.00	25.95	25.90	25.85	25.80	25.75	25.70
31.40	25.95	25.90	25.85	25.80	25.75	25.70	25.65
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31.40	25.80	25.75	25.70	25.65	25.60	25.55	25.50
31.40	25.75	25.70	25.65	25.60	25.55	25.50	25.45
31.40	25.70	25.65	25.60	25.55	25.50	25.45	25.40
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31.40	25.60	25.55	25.50	25.45	25.40	25.35	25.30
31.40	25.55	25.50	25.45	25.40	25.35	25.30	25.25
31.40	25.50	25.45	25.40	25.35	25.30	25.25	25.20
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