



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TENDER CHANGE NOTE 04 (TCN – 04) DT: 11-10-08

WITH REFERENCE TO THE NIT, PUBLISHED IN THE WEB SITES FOR FOR CONSTRUCTION OF FOUNDATIONS, PILE CAPS, ROADS, DRAINS, TRENCHES, SUPER STRUCTURE CIVIL AND ARCHITECTURAL FINISHING WORK AT 3X18 MW POWER & BLOWING STATION, IISCO STEEL PLANT AT BURNPUR, WEST BENGAL. FOLLOWING CHANGES MAY PLEASE BE NOTED AND COMPLIED WHILE SUBMITTING THE OFFER FOR THE SUBJECT JOB.

REF: TENDER DOCUMENT NO-PSER:SCT:IIS-C912:08

- 01. The drawings & Documents for Gratings vide drawing no. 4-38144-00003 (Rev-0) (10 pages Sheet 1 to 10)**
- 02. The Documents and drawings for Seismic arrestor vide Drawing no. 3-38144-00036 (Rev-00) (One page -Sheet -1)**

BIDDERS TO NOTE THAT ALL TCNS WILL FORM PART OF TECHNICAL SPECIFICATION & SPECIAL CONDITION OF CONTRACT OF TENDER DOCUMENT.

ALL OTHER TERMS & CONDITIONS OF THE TENDER SHALL REMAIN UNCHANGED.

BIDDERS ARE REQUESTED TO SUBMIT OFFER BY THE DUE DATE of 14/10/2008.

SDGM (SCT)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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CIVIL ENGINEERING

NO

DATE

REVISIONS

DRN

CHD

APPD

0

05/02/93

ISSUED AS STANDARD

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SHEET 1 OF 10



PROJECT ENGINEERING
BHEL HYDERABAD

STANDARD GRATING
DETAIL

DRAWING NO

4-38144-00003

REV

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0	05/02/93	ISSUED AS STANDARD	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

NOTES

1. THIS STANDARD GIVES THE LOAD CARRYING CAPACITY AND FABRICATION DETAILS OF ELECTROFORGED AND HAND WELDED MILD STEEL FLOOR GRATINGS INCLUDING STEP TREADS.
2. ALL DIMENSIONS ARE IN MM.
3. THE TYPE OF GRATING TO BE USED SHALL BE CALLED OUT ON THE DESIGN DRAWING. MATERIAL FOR THE GRATING SHALL CONFORM TO THE FOLLOWING STANDARDS :
 FLATS - IS : 226, ROUNDS - IS : 432 (GR-1)
4. ROLLED FLATS ARE PREFERRED FOR THE MANUFACTURE OF FLOOR GRATINGS. IF SHEARED PLATES ARE USED SHARP EDGES SHOULD BE ROUNDED OFF AND SHALL BE FREE FROM BURRS. COMMERCIAL QUALITY MATERIAL WILL BE ALLOWED ONLY AFTER ASCERTAING WELDABILITY.
5. TOLERANCE :-
 - (a) PITCH OF MAIN MEMBERS — ± 1 mm
 - (b) SQUARENESS OF THE PANEL CHECKED BY DIFFERENCE IN DIAGONALS — ± 5 mm
 - (c) PERMISSIBLE LONGITUDINAL/ TRANSVERSE UNILATERAL DEVIATION FROM STRAIGHTNESS (BOW) — 3 mm / METRE
 - (d) ROLLED FLAT DIMENSIONS - AS PER IS 1852
6. THE STANDARD PANEL OVERALL WIDTH AS SHOWN IN SHTS 5 AND 6 IS 1005. IT MAY BE INCREASED OR DECREASED AS REQUIRED TO SUIT THE GEOMETRY OF THE PLATFORM AND CONVENIENCE OF HANDLING.
7. IN CASE OF PANELS WITH CUT OUTS, ADEQUATE WORKING LOAD CAPACITY SHALL BE ENSURED BY PROVISION OF

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PROJECT ENGINEERING
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- ADDITIONAL SUPPORTING MEMBERS WHEREVER REQUIRED.
8. FABRICATION OF THE FLOOR GRATINGS ARE TO BE DONE BY ELECTROFORGING METHOD UNLESS STATED OTHERWISE ELSEWHERE IN DESIGN DRAWINGS, TENDER DOCUMENT, ETC.
9. FINISH SHALL BE ONE OF THE FOLLOWING, TO BE SPECIFIED SEPARATELY. :-

(a) RED OXIDE PRIMER - FOR NORMAL CONDITIONS

(b) GALVANISED - FOR CORROSIVE AND DAMP SITUATIONS

GALVANISING SHALL BE AS PER IS:2629 WHICH GUARANTEES A MINIMUM COATING OF ZINC OF 86 MICRONS. FURTHER, THE SPELTER USED IN THE HOT DIP PROCESS SHOULD NOT CONTAIN LESS THAN 98% PURE ZINC. GALVANISING SHOULD ALSO CONFORM TO

ASTM: 123 GIVING A COATING OF 610 gms/Sq mtr OF ZINC. GALVANISING SHALL BE DONE AFTER ALL WELDING WORKS ARE COMPLETED. ALL EXPOSED AREAS WHERE SITE WELDING IS EMPLOYED SHALL RECEIVE TWO COATS OF ALUMINUM PAINT OVER A PRIMER COAT/COLD GALVANISING PASTE PAINTED.

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LOAD TABLE FOR STEEL GRATING

40mm CENTRE OF LOAD BEARING BARS (ELECTROFORGED)

BEARING BAR SIZE IN mm		SPAN							
		300	450	600	750	900	1050	1200	1350
25 X 3 (TYPE 1)	U	11000	4880	2740	1760	1230	900	680	
	D	0.6	1.4	2.6	3.9	5.9	7.9	10.0	
	C	1660	1100	820	660	550	470	410	
	D	0.5	1.1	2.0	3.1	4.3	6.1	8.0	
25 X 5 (TYPE 2)	U	18300	8100	4560	2920	2020	1490	1150	850
	D	0.6	1.4	2.5	3.9	5.6	7.5	10.0	12.7
	C	2740	1820	1370	1100	910	780	690	570
	D	0.5	1.1	2.0	3.1	4.3	6.1	8.0	10.5

UNIT STRESS 1650 Kg/sq m.

U - UNIFORMLY DISTRIBUTED LOAD IN Kg/sq m

C - CONCENTRATED LOAD IN Kg/METRE WIDTH AT MID SPAN

D - DEFLECTION IN MILLIMETERS

SPANS TO LEFT OF HEAVY LINE PRODUCE A DEFLECTION OF 6mm OR LESS UNDER A UNIFORM LOAD OF 500 Kg/sq m.

THIS DEFLECTION IS RECOMMENDED AS PER BS : 4592 - 1970.

NOTE :

AVERAGE WEIGHT OF GRATINGS BASED ON SIZE 900 (SPAN X 1005 WIDTH) ARE AS FOLLOWS :

TYPE 1 : 22.76 Kg/sq m

TYPE 2 : 34.32 Kg/sq m

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PROJECT ENGINEERING
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STANDARD GRATING
DETAIL

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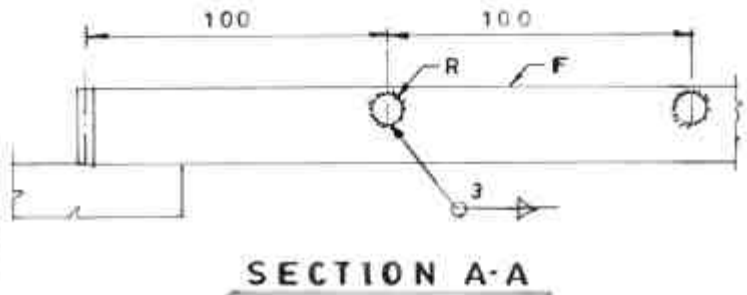
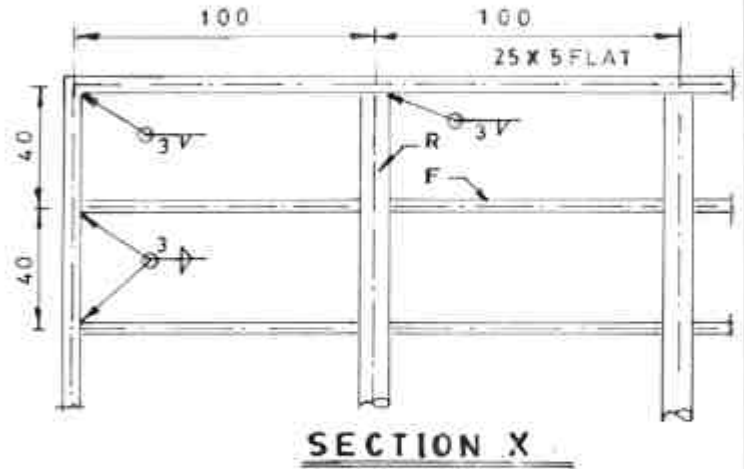
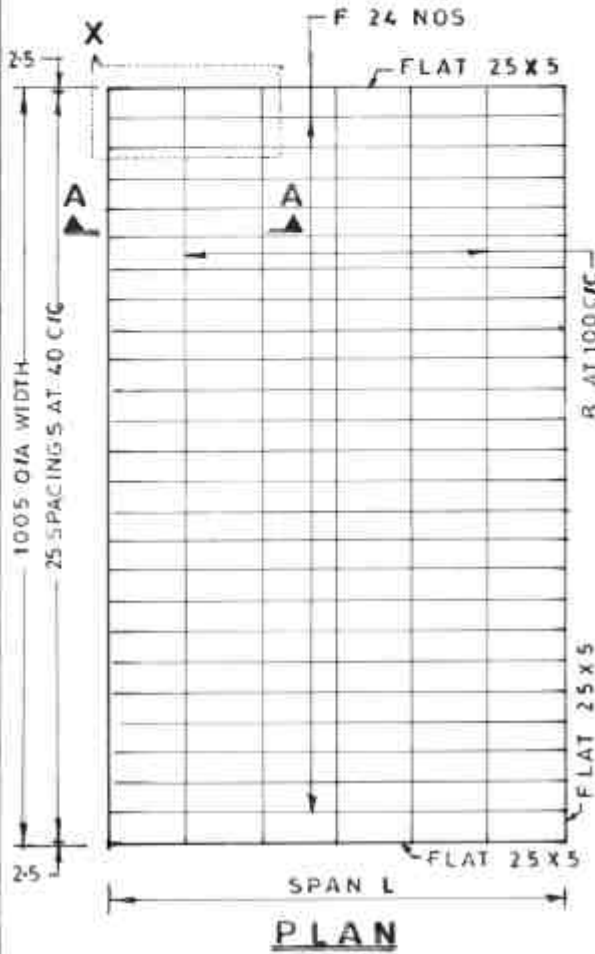
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GRATING LAYOUT (HAND WELDED)



		F	R	
TYPE 1	ORD	25 X 3	10 Ø	FOR LIGHT LOADS
	ANTISKID	25 X 3 SERRATED	10 Ø TWISTED	FOR LIGHT LOADS
TYPE 2	ORD	25 X 5	12 Ø	FOR MEDIUM LOADS
	ANTISKID	25 X 5 SERRATED	12 Ø TWISTED	FOR MEDIUM LOADS

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PROJECT ENGINEERING
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STANDARD GRATING
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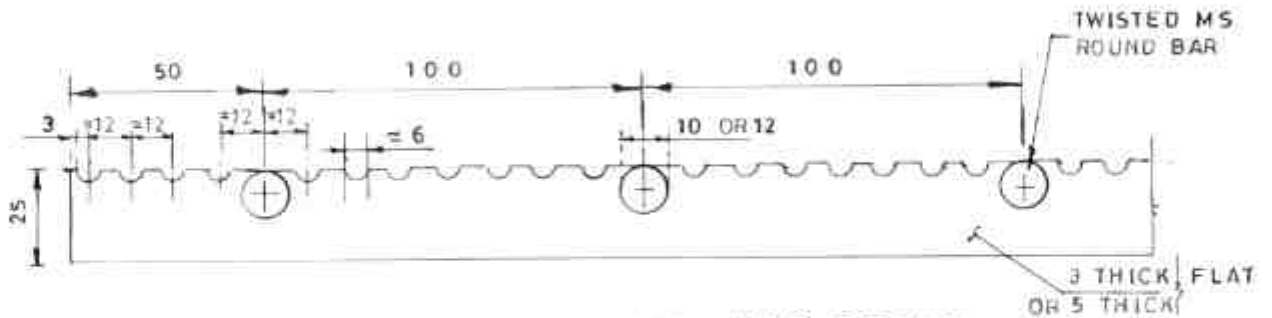
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SERRATED LOAD BEARING BAR DETAIL

NOTES:-

1. THESE ARE TO BE USED FOR FABRICATION OF ANTI SKID GRATINGS.
2. FURTHER DETAILS AS PER SHTS 5 & 6

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PROJECT ENGINEERING
BHEL HYDERABAD

STANDARD GRATING
DETAIL

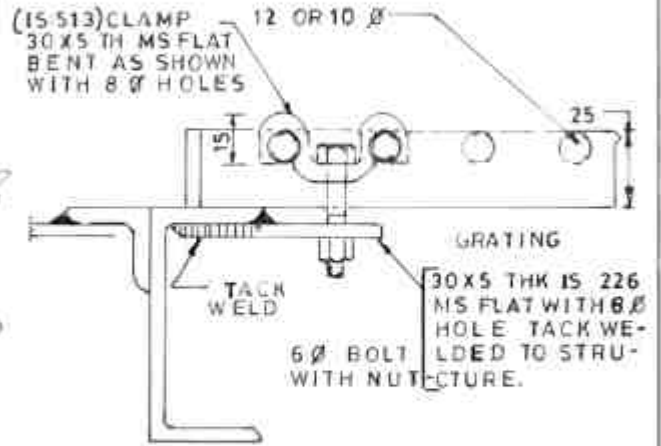
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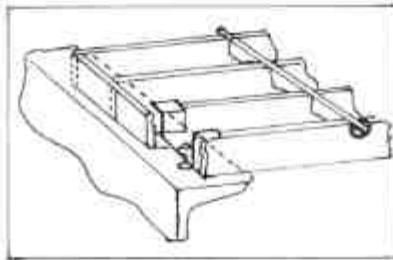
TYPICAL CLAMP DETAIL (TYPE 1)

(GRATING TO BE CLAMPED AT EVERY 900mm WITH ATLEAST 4 NOS OF CLAMPS PER GRATING UNIT)

FIXED

REMOVABLE

FIXING DETAIL

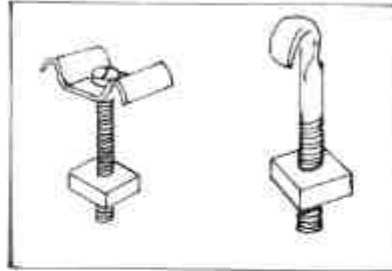


CLAMP TYPE 2

STUD BOLTS ARE CENTERED BETWEEN TWO MAIN BARS AND WELDED TO SUPPORTING MEMBERS. U-SHAPED CLIP ENGAGING TWO MAIN BEARING BARS IS PLACED OVER STUD BOLT AND THEN HEX NUT IS TIGHTENED.

CLAMP TYPE 3

HOLES ARE DRILLED IN THE BEAM TO SUIT 6mm SCREWS THE CLIP FITTED FROM ABOVE ON TWO ADJACENT BEARING BARS, THE SCREW IS FITTED AFTER WHICH THE NUT CAN BE SCREWED ON FROM BELOW.



CLAMP TYPE 4

HOLES ARE DRILLED IN THE BEAM TO SUIT 8mm SCREWS. THE HOOK IS PASSED OVER A BEARER AND THE NUT TIGHTENED FROM BELOW.

NOTE:-

REMOVABLE GRATING PANEL SHALL BE CLAMPED OR TACK WELDED TO SUPPORTING MEMBERS AS CALLED OUT ON DESIGN DRGS. IN LATER CASE PANEL CAN BE REMOVED AFTER GAS CUTTING THE TACK WELDS.

FIXING DETAIL

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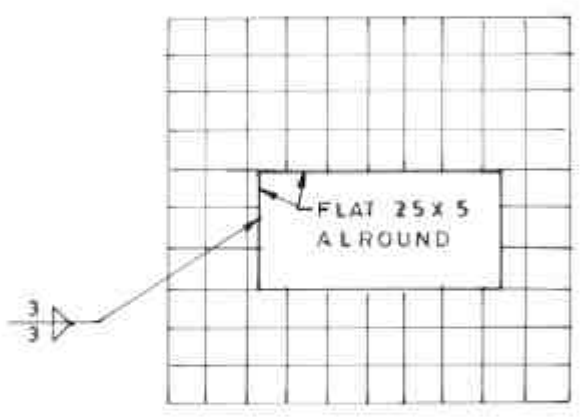
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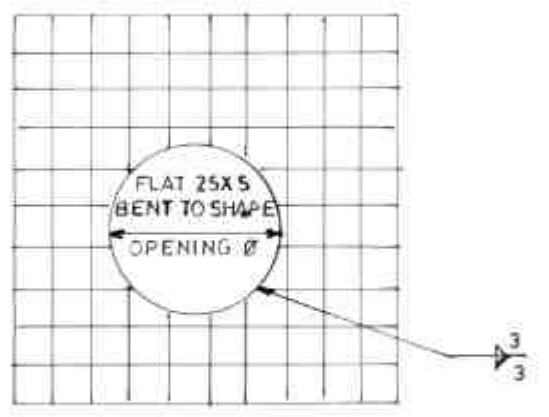
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RECTANGULAR



CIRCULAR

TYPICAL DETAIL AT OPENINGS

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PROJECT ENGINEERING
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STANDARD GRATING
DETAIL

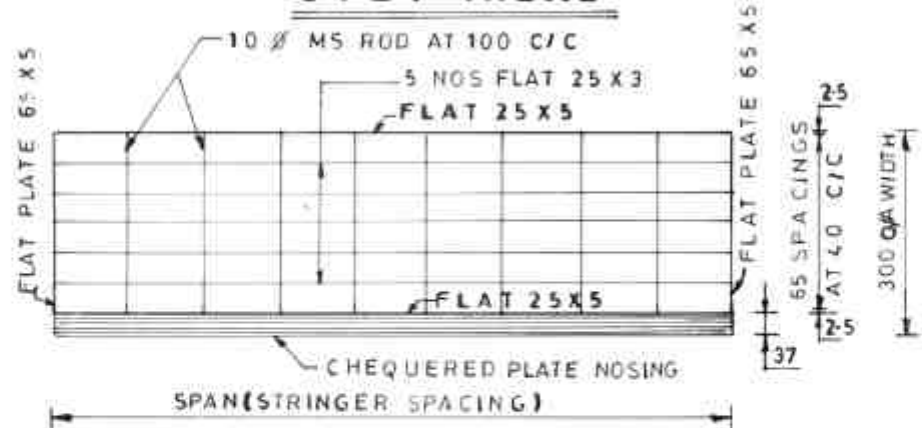
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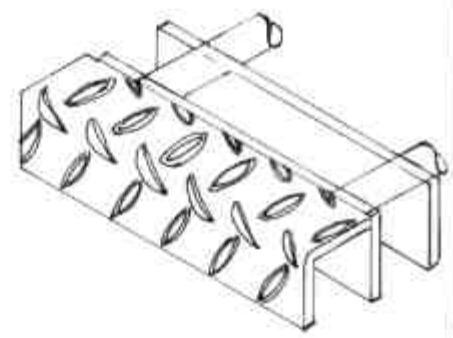
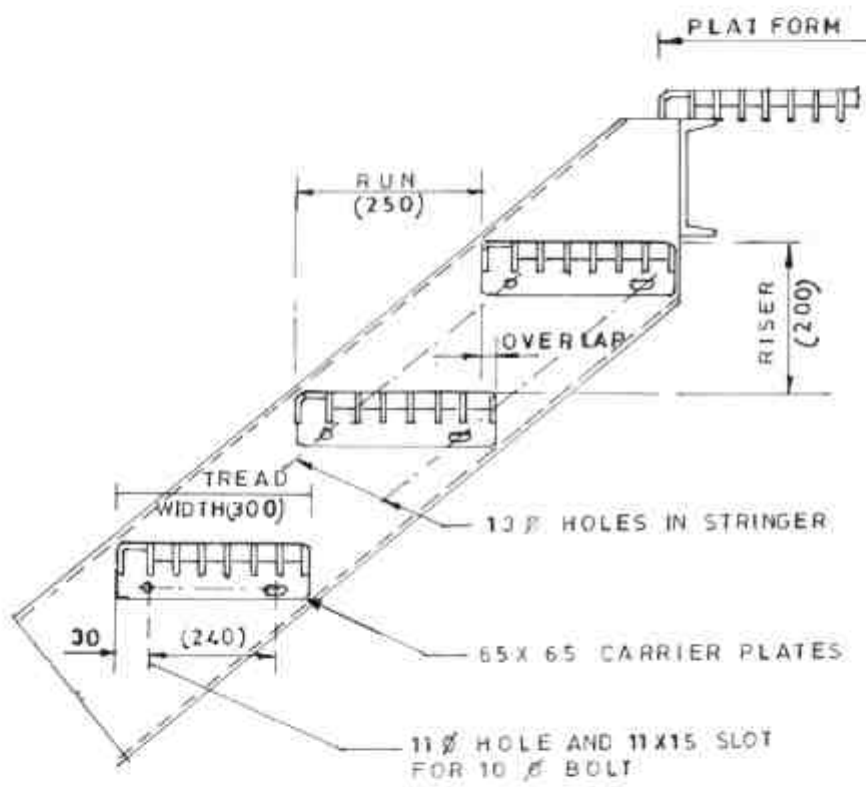
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STEP TREAD



PLAN OF STEP TREAD



STEEL CHECKERED PLATE NOSING FOR WELDED STYLE STEEL STAIR PLATFORMS AND TREADS (TO BE WELDED TO LEADING EDGE OF TREAD)

DETAIL OF STEP TREAD FIXING ON STAIRCASE STRINGER BEAM

NOTE

STEP TREAD FABRICATION DETAILS ARE AS FOR FLOOR GRATINGS SHEETS (5 & 6)

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PROJECT ENGINEERING
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STANDARD GRATING
DETAIL

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