MAX J. KUNEY COMPANY

120 N Ralph Spokane WA 99202-4744
PO Box 4008 Spokane WA 99220-0008
Phone: (509) 535-0651 Fax: (509) 534-6828

Submittal Transmittal

To:

Will Smith, P.E.
WSDOT
PO Box 12560
Yakima WA 98909-2560

Copy to: Jobsite 80

Date	
3/26/10	**80-ROT-001**

Attention
Bob Hooker

Regarding
I-90 Hyak to Snowshed Vicinity

Contract No.
7852

F.A.P. No.
State Project

WE ARE SENDING THE FOLLOWING ITEMS BY: ☒ US MAIL ☒ FAX O HAND DELIVERED **O E-MAIL** O FED-X

O DRAWINGS O PRINTS O PLAN O SAMPLES O SPECIFICATIONS
O COPY OF LETTER O CHANGE ORDER

COPIES	DATE	NUMBER	DESCRIPTION
6			**Rotec International** Moveable Rockfall Barrier Drawings **FOR YOUR APPROVAL**

THESE ARE TRANSMITTED as checked below:
o For approval
o For your use
o Approved as submitted
o Approved as noted
o Returned for corrections
o Resubmit _____copies for approval
o Submit ____copies for distribution
o Return ____corrected prints
o For review and comment
o Prints returned after loan to us
o As requested

REMARKS

SIGNED: K. Griffith
Kelly Griffith - Project Manager

ROTEC INTERNATIONAL, LLC

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

I 90 – HYAK TO SNOWSHED, KITTITAS COUNTY, WA

ONE (1) MOVABLE ROCKFALL BARRIER

General Note:

Debris flow mitigation is not a perfect science and therefore no fences and/or any other debris flow retaining measures available today will guarantee the safety of individuals and the loss of property. However, debris flow can be controlled. Risk to life and the loss of property can be reduced by the use of properly engineered retaining barriers in identified risk zones. The movable rock retaining fences supplied by Rotec was executed in accordance with WDOT's specifications and drawings.

Enclosures:

• General Layout:	Dwg. #: ROTEC- MB-1
• Sliding Plates Details:	Dwg. #: ROTEC- MB-2
• Structural Column Details:	Dwg. #: ROTEC- MB-3
• Typical Cable Net Detail:	Dwg. #: ROTEC/ SN-1
• Net Support Ropes Details:	Dwg: #: ROTEC/ SR-1
• Net Seaming Detail:	Dwg. #: ROTEC/ NS-1
• Wire Rope Loop Detail w/ Torque Values	Dwg. # ROTEC-A
• Rotec's Standard Terms and Conditions of Sales	Inclosed

Submitted by: Robert L Allen

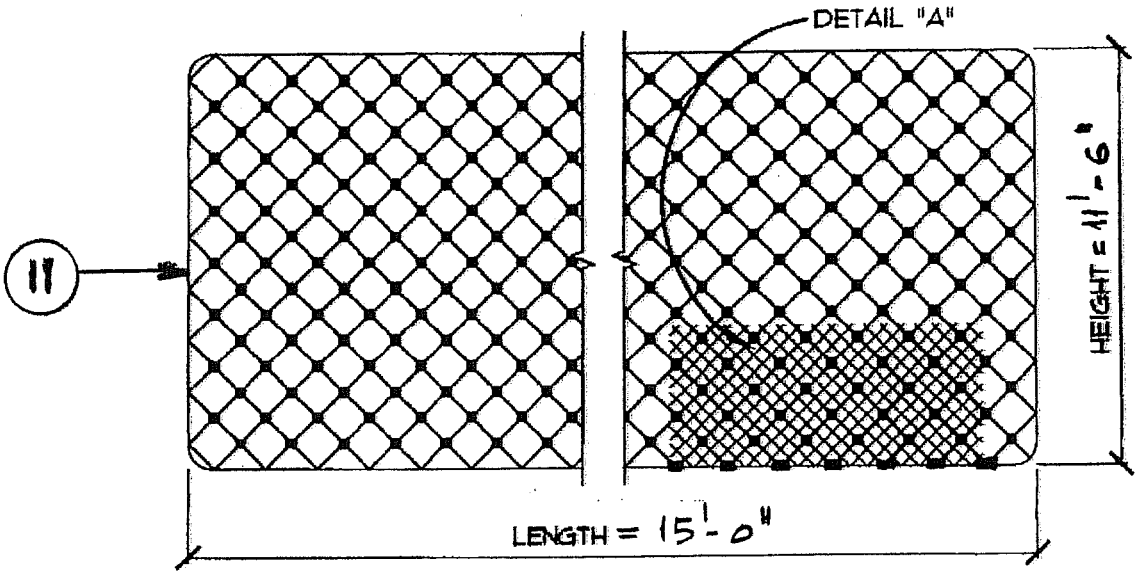
Date: 3/8/2010

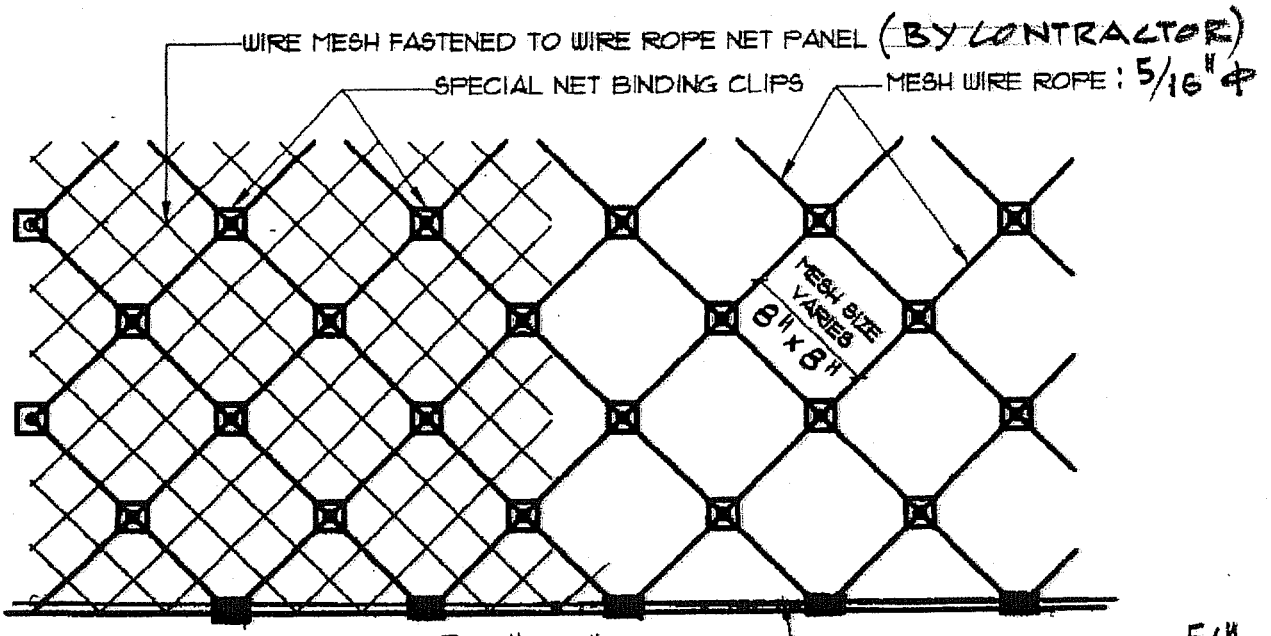
80 ROT 001

Item Number	Description	Quantity Required	Remarks
1	Sliding Plates: 8'-0"x 20'-0"x 1" Thk.	1	In accordance to WDOT Dwg. No: MRB1 & 2
2	Sliding Plates: 8'-0"x 20'-0"x 1" Thk.	3	In accordance to WDOT Dwg. No: MRB1 & 2
3	Sliding Plates: 8'-0"x 20'-0"x 1" Thk.	2	In accordance to WDOT Dwg. No: MRB1 & 2
4	Sliding Plates: 8'-0"x 20'-0"x 1" Thk.	2	In accordance to WDOT Dwg. No: MRB1 & 2
5	Sliding Plates: 8'-0"x 20'-0"x 1" Thk.	1	In accordance to WDOT Dwg. No: MRB 1 & 2
6	Structural Posts w/ Base Plate : WF 31# -12'-0" Lg.	12	In accordance to WDOT Dwg. No: MRB 3
7	Anchor Plates for Fence Retaining Ropes (Welded to Sliding Plate)	12	In accordance to WDOT Dwg. No: MRB 2
7A	Anchor Plates for Fence Lateral Ropes (Welded to Sliding Plate)	2	In accordance to WDOT Dwg. No: MRB 2
8	Sliding Plate Connection Assembly [A] & [B] (Welded to Sliding Plate)	24	In accordance to WDOT Dwg. No: MRB 2
9	Sliding Plate Pulling Lugs (Welded to Sliding Plate)	4	In accordance to WDOT Dwg. No: MRB 2
10	Posts Fastening Plates (Welded to Sliding Plate)	12	In accordance to WDOT Dwg. No: MRB 2
11	Wire Rope Nets 11'-6" x 15'- 0" 8"x 8" Mesh made from 5/16" dia. Wire Rope	11	Galvanized Aircraft Cable , Class GAC / 7x7 or 7/19 Construction Nominal Breaking Strength = 9,200#
12	5/8" Dia. Top & Bottom Net Support Ropes with Braking Elements	10	Galvanized Wire Rope , Class 6 x 19 IWRC Construction Nominal Breaking Strength = 41,200#
13	5/8" dia. Top & Bottom Net Support Ropes without Braking Element	4	Galvanized Wire Rope , Class 6 x 19 IWRC Construction Nominal Breaking Strength = 41,200#
14	5/8" dia. End Post Vertical Net Fastening Ropes	2	Galvanized Wire Rope , Class 6 x 19 IWRC Construction Nominal Breaking Strength = 41,200#
15	5/8" End Post Lateral Bracing Ropes	2	Galvanized Wire Rope , Class 6 x 19 IWRC Construction Nominal Breaking Strength = 41,200#
16	3/4" Screw Pin Shackles	6	Galvanized
17	5/8" Wire Rope Clips	185	Galvanized
18	5/8" Thimbles (Open)	52	Galvanized
19	5/8" Column Retaining Ropes (To be cut to size in the field)	200 Lft.	Galvanized Wire Rope , Class 6 x 19 IWRC Construction Nominal Breaking Strength = 41,200#
20	5/8" Single Loop Braking Elements	12	Tested and Factory Assembled
21	5/16" dia. Seam Ropes (To be cut to size in the field)	1 Lot	Galvanized Aircraft Cable , Class GAC / 7x7 or 7/19 Construction Nominal Breaking Strength = 9,200#
22	5/16" Wire Rope Clips for fastening the nets to the support ropes w/ Seam Ropes	50	Galvanized
	Note: All Material is "Imported"		

Washington State DOT / Movable Barrier
MATERIAL INDEX

Rotec Project No: RO-1133
Client Order No:
Signed/Date: 3/10/10





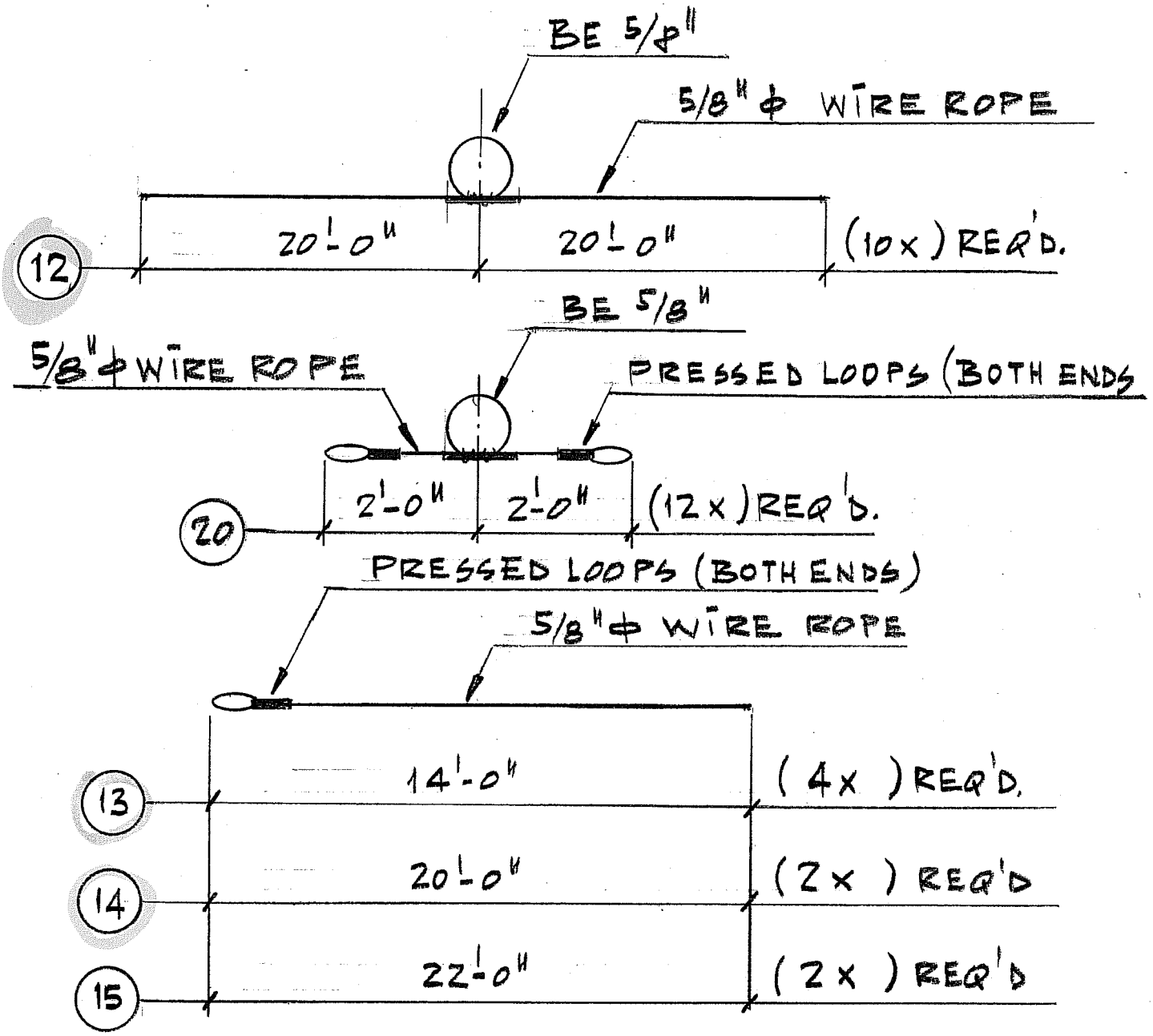
DETAIL "A"

WASHINGTON STATE DOT	Client No:	Rotec No:	Drawn/Date
HYAK SNOWSHED VICINITY, PHASE 1B		RO-1133	3/10/10

ROTEC INTERNATIONAL LLC

DRAWING No: ROTEC

TYPICAL CABLE NET



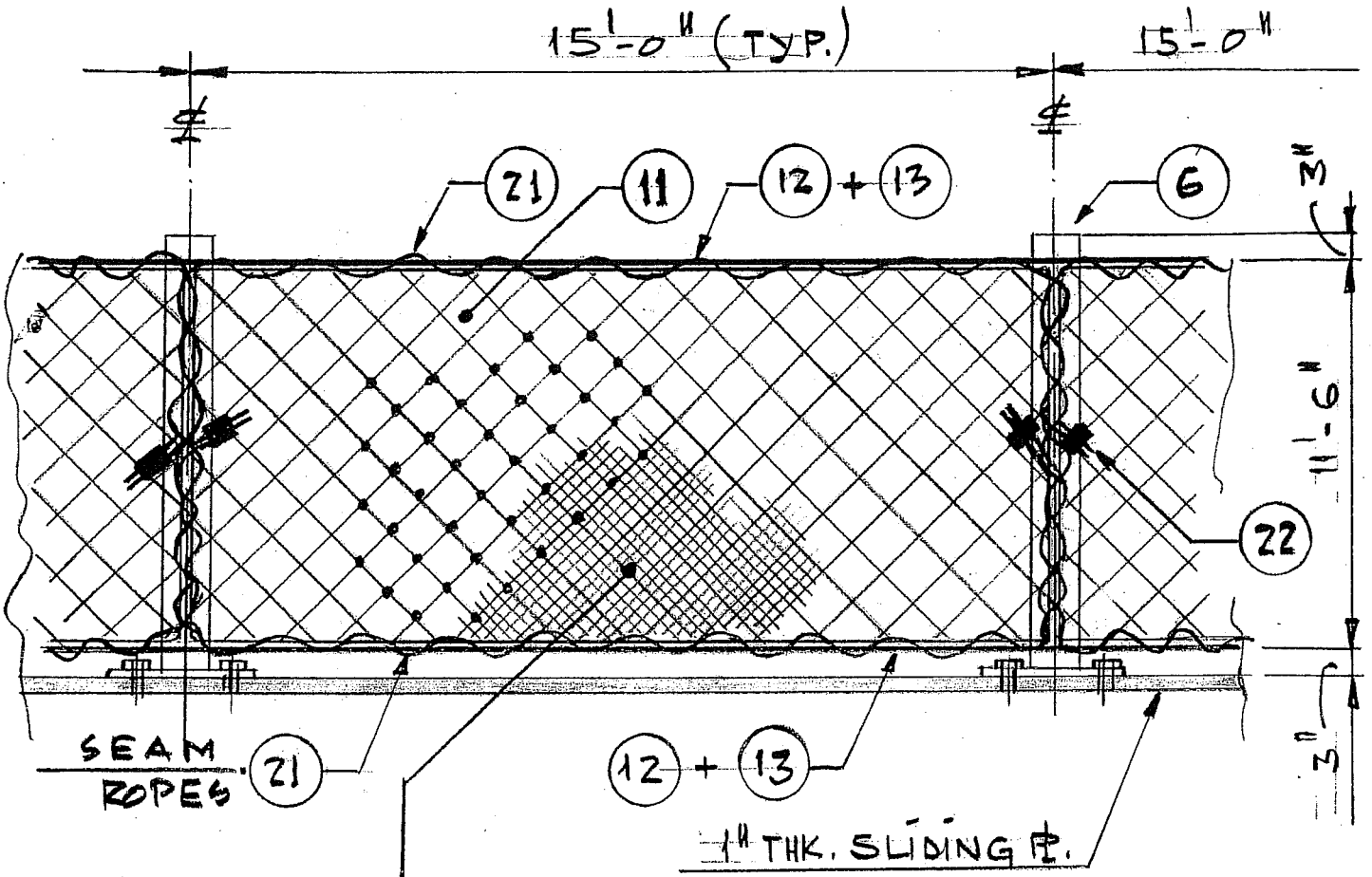
WASHINGTON STATE DOT	Client No:	Rotec No:	Drawn/Date
HYACK TO SNOWSHED VISINITY, PHASE 1B		RO-1133	3/8/10

ROTEC INTERNATIONAL LLC

DRAWING No: ROTEC/SR-1

NET SUPPORT ROPES DETAILS

ELEVATION



Wire Mesh: (Supplied by Contractor)
The wire rope woven nets shall be covered with wire mesh material and be attached to the netting and fastened with galvanized heavy duty hog rings and/or other interlocking fasteners on 16 inch centers, horizontally and vertically.

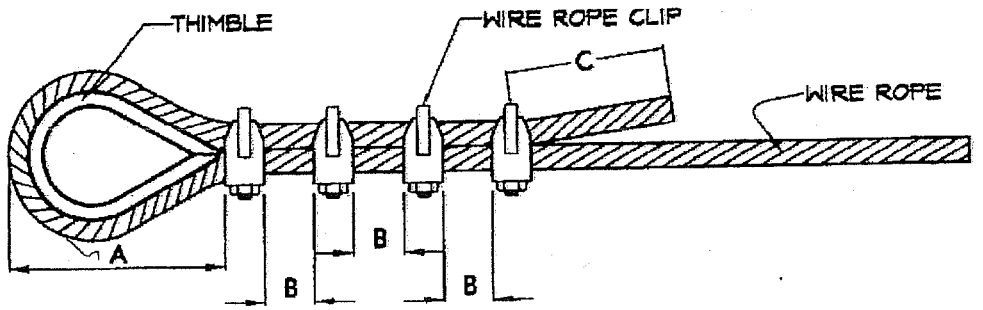
The wire mesh used for this application shall consist of galvanized, 9-gauge chainlink material, having a mesh opening of 2 inches and/or 8x10 double-twisted hexagon galvanized wire mesh material.

WASHINGTON STATE DOT	Client No:	Rotec No:	Drawn/Date
HYAK TO SNOWSHED VICINITY, PHASE 1B		RO-1133	3/10/10

ROTEC INTERNATIONAL LLC

DRAWING No: ROTEC

WIRE ROPE NET LACING (SEAMING) DETAIL



SEE DRAWING #: ROTEC - MB 1 & 3

ROPE DIA. IN	ROPE DIA. MM	WIRE ROPE CLIP SIZE	WIRE ROPE CLIP QUANTITY	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	TORQUE REQUIRED ft-lbs
1/4"	6	1/4"	3	4"	2"	2"	15
5/16"	8	5/16"	4/NET	5"	2"	3"	30
3/8"	9.5	3/8"	4	6"	3"	3"	45
1/2"	12	1/2"	4	7"	3"	4"	65
5/8"	16	5/8"	3 + 4	9"	4"	6"	95
3/4"	18	3/4"	5	11"	5"	6"	130
1"	24	1"	5	11"	5"	6"	225

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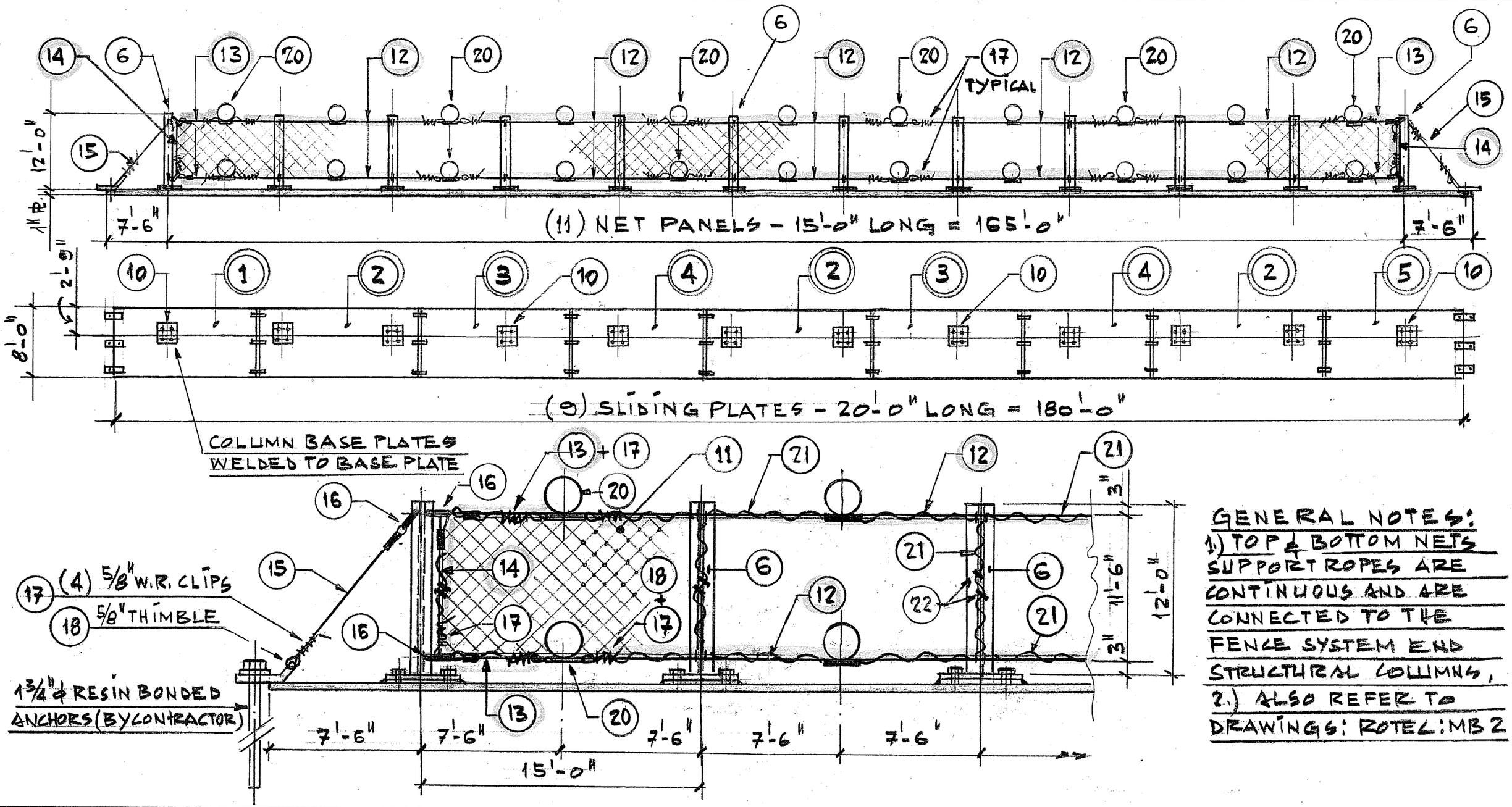
WASHINGTON STATE DOT	Client No:	Rotec No:	Drawn/Date
HYAK SNOWSHED VICINITY, PHASE 1B		RO-1133	3/10/10

ROTEC INTERNATIONAL LLC

DRAWING No: ROTEC

WIRE ROPE LOOP DETAIL W/ TORQUE VALUE



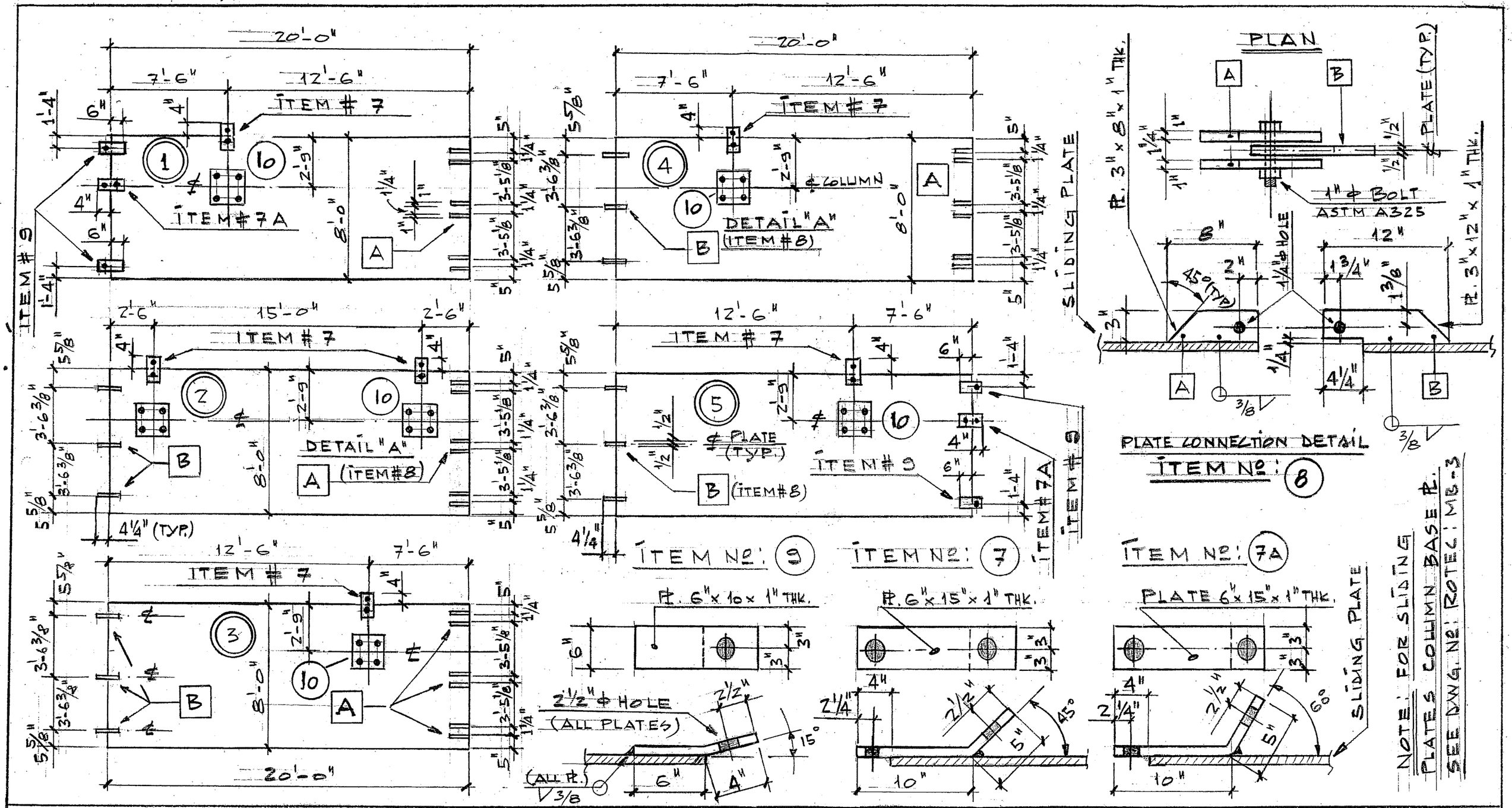
GENERAL NOTES:

1.) TOP & BOTTOM NETS SUPPORT ROPES ARE CONTINUOUS AND ARE CONNECTED TO THE FENCE SYSTEM END STRUCTURAL COLUMNS,

2.) ALSO REFER TO DRAWINGS: ROTEC:MB2

ROTEC	WASHINGTON STATE DOT HYAK TO SNOWSHED VICINITY, PHASE 1B	DRAWN /DATE: 3/9/10	SCALE: N.T.S.	DRAWING NO: ROTEC : MB-1
	MOVABLE ROCKFALL BARRIER GENERAL LAYOUT	CLIENT CONTRACT NO:	ROTEC PROJECT NO: RO-1133	

80 ROT 001

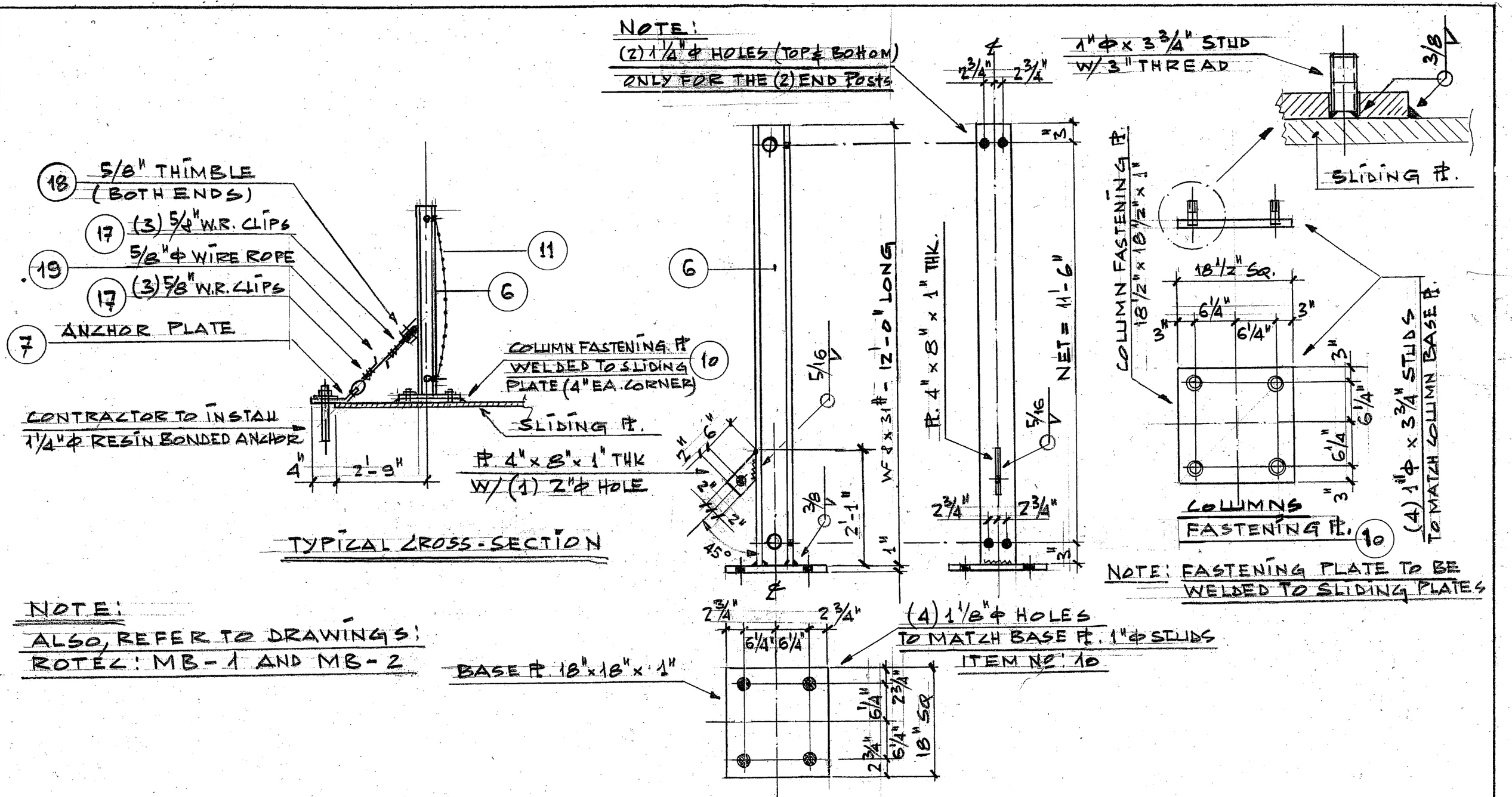


ROTEC

WASHINGTON STATE DOT
HYAK TO SNOWSHED VICINITY, PHASE 1B

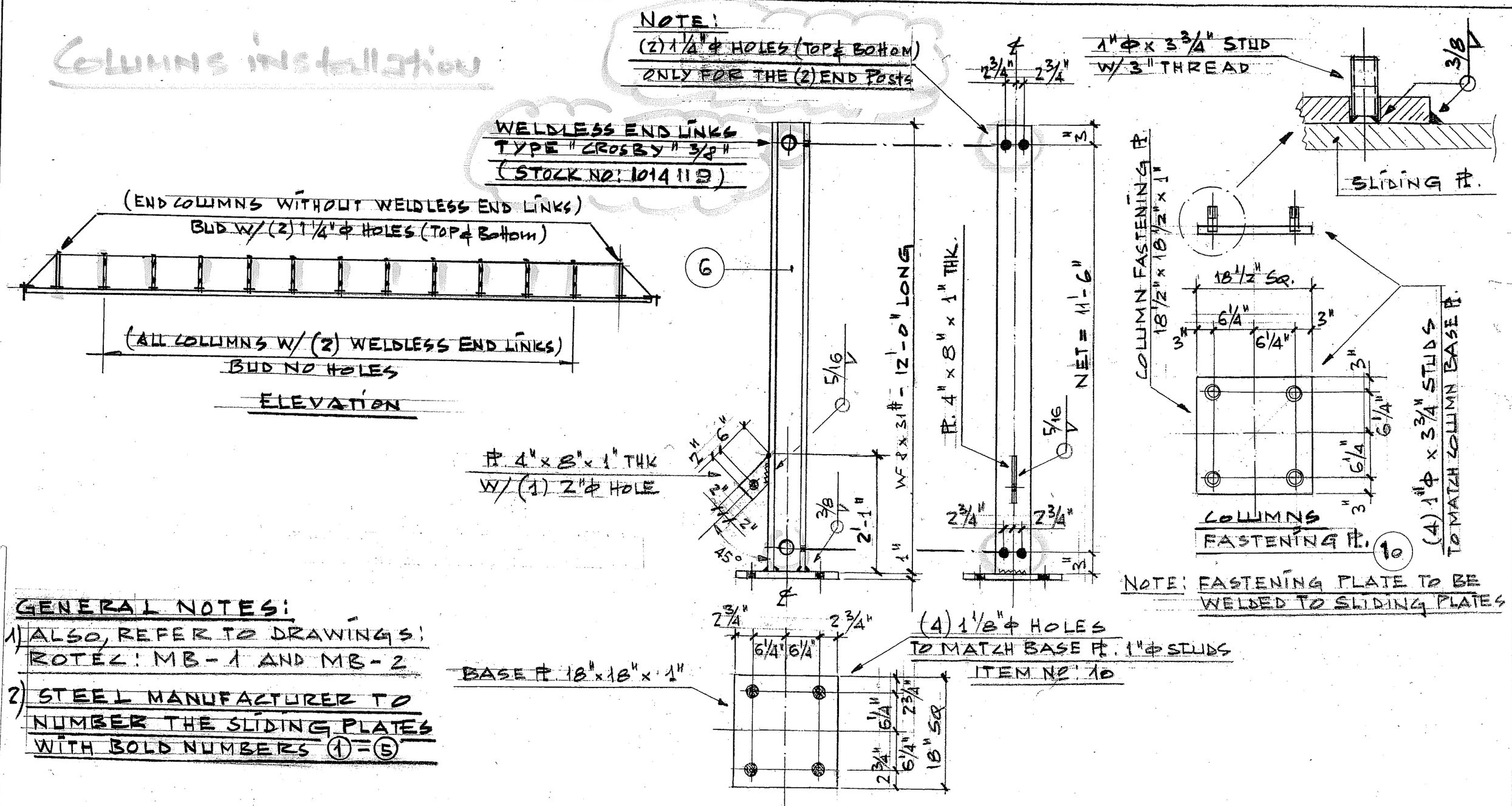
MOVABLE ROCKFALL FENCE
SLIDING PLATES DETAIL

DRAWN /DATE:	SCALE:	DRAWING NO:
3/8/2010	N.T.S	ROTEC: MB - 2
CLIENT CONTRACT NO:	ROTEC PROJECT NO:	
	RO - 1133	



ROTEC	WASHINGTON STATE DOT HYAK TO SNOWSHED VICINITY, PHASE 1B	DRAWN /DATE: 3/8/2010	SCALE: N.T.S.	DRAWING NO: ROTEC: MB-3
	MOVABLE ROCKFALL FENCE COLUMN DETAIL	CLIENT CONTRACT NO:	ROTEC PROJECT NO: RO-1133	

Columns installation



GENERAL NOTES:

1) ALSO, REFER TO DRAWINGS: ROTEC: MB-1 AND MB-2
2) STEEL MANUFACTURER TO NUMBER THE SLIDING PLATES WITH BOLD NUMBERS 1 - 5

ROTEC	WASHINGTON STATE DOT HYAK TO SNOWSHED VICINITY, PHASE 1B	DRAWN /DATE: 3/8/2010	SCALE: N.T.S.	DRAWING NO: ROTEC: MB-3/A
	MOVABLE ROCKFALL FENCE COLUMN DETAIL	CLIENT CONTRACT NO:	ROTEC PROJECT NO: RO-1133	INSTALLATION DRAWING