

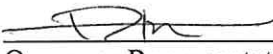
Village of Taos Ski Valley
Planning & Community Development Department
LAND USE & DEVELOPMENT APPLICATION



<u>Applicant/Developer:</u> <i>TAOS SKI VALLEY, INC.</i>	<u>Property Address:</u> <i>#3 COYOTE LANE</i>
<u>Current Owner Address:</u> <i>116 SUTTON PLACE</i>	<u>Lot/Block:</u> <u>Subdivision:</u>
<u>Architect/Engineer:</u> <i>DOUGLAS PATTERSON, LLC ARCHITECTS</i>	<u>Contractor:</u> <i>DIAMOND FINISH CONSTRUCTION</i>

Authorization and Acknowledgment

I, the undersigned, am the owner of the above described property, or am authorized to represent the owners (proof of such authorization is attached). I recognize the fees paid with the application may not constitute the total cost to process this request and that I will be responsible for the additional costs incurred by the Village of Taos Ski Valley to review and process this request. I agree to pay these costs upon receipt of a statement from the Village.


Owner or Representative

6.6.22
Date

APPLICATION INFORMATION

SUBDIVISION	FEE	ZONING	FEE
Sketch Plat:	\$1,000	Conditional Use	\$1,500
Parcel Conceptual Plan (CVZ)	\$500	Zone Change	\$1,500
Preliminary Plat:		Variance	\$800
Category I - less than 3 lots	\$1,250	Variance (minimum)	\$250
Category II - less than 10 lots	\$2,500	Special Use	\$500
Category III- 10 - 20 lots	\$4,000	CERTIFICATE of COMPATIBILITY	\$1,000
Each lot > 20	\$250	PUBLIC NOTICE SIGNS	\$50
Final Plat (½ cost of preliminary plat)		APPEALS	\$250
Summary Subdivision	\$500	PERMITS	
Lot Line Adjustment	\$250	Fence Tree Sign Lighting	\$25
Variance	\$500	Accessory Structure	\$25
		Excavation / Grading	\$250

Application Received: Date: _____

Total Fees Paid: \$ _____

Received by: _____ (VTSV staff)

LIVING DESIGNS GROUP ARCHITECTS

122A Doña Luz St. | Taos, NM 87571 | T: 575.751.9481 | arch@ldgtaos.com

6.7.22

RE: CONDITIONAL USE PERMIT FOR # 3 COYOTE LANE

To: Village of Taos Ski Valley
Patrick Nicholson, Planner

Patrick,

Please accept this letter on behalf of TSVI in regards to the former Wellman Residence at 3 Coyote Lane.

Justification Narrative:

The Conditional Use is for a multi-family unit in a Single Family Zone. The residence was damaged by an avalanche in 2020, and has since been unused.

The justification for the use is that the building was originally built as a multifamily unit prior to Village zoning being in place. The intent of TSVI is to restore the residence to the original configuration it was built to in 1976.

Please see the attached Exhibit A – First and second floor blue prints from 1976 showing a first floor configuration of 2 bedrooms, kitchen, living and dining, and a second floor configuration showing 2 bedrooms, kitchen, living and dining.

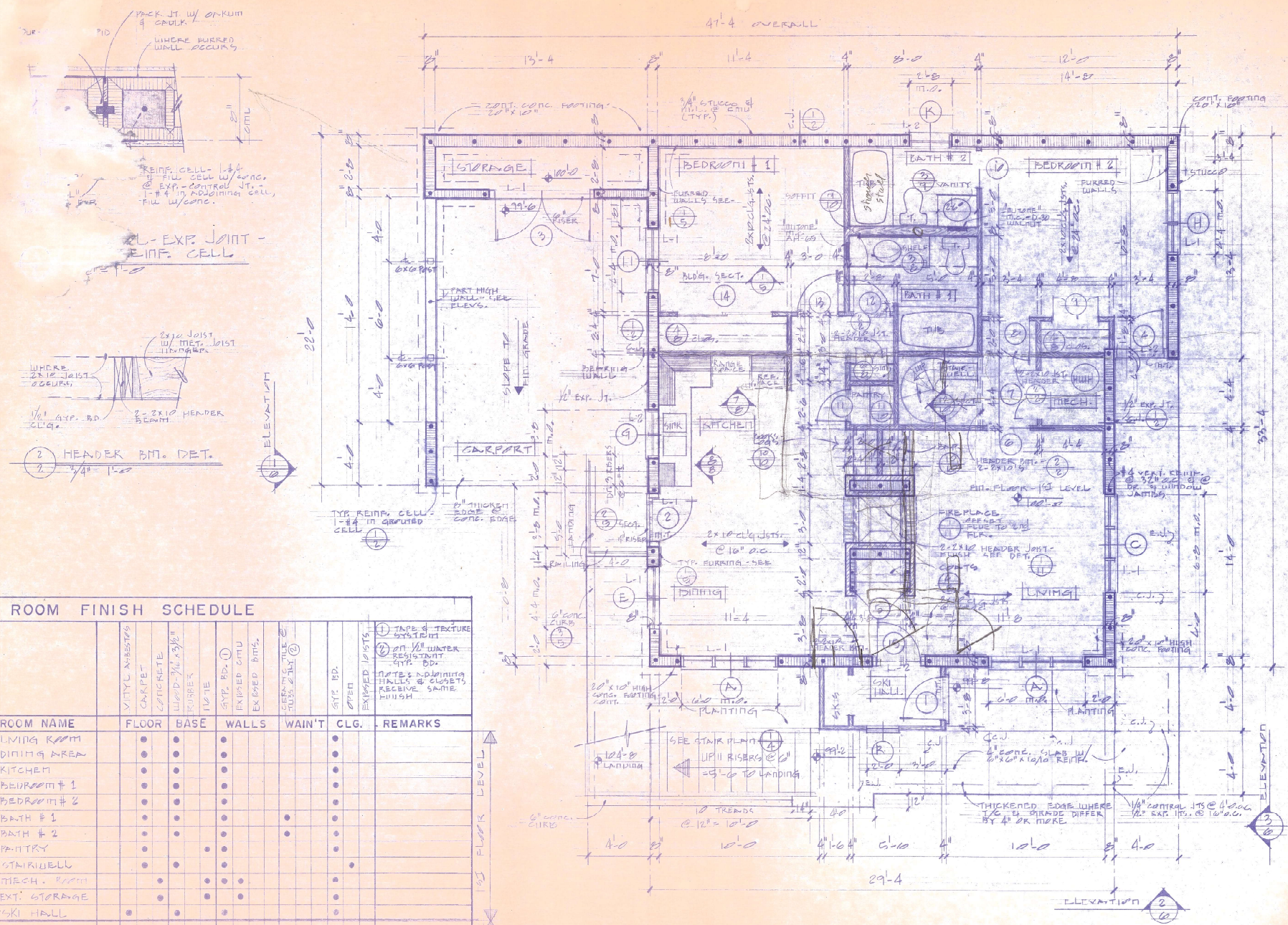
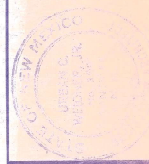
Guidelines:

- 1) Access to the property is unchanged from its original configuration, the property is conveniently located with walking distance from Kachina Road for pedestrian and emergency vehicle access
- 2) The economic, noise, glare, and odor control are not changed from its original use.
- 3) The residence is compatible with adjacent properties in regard to height, landscaping, setbacks, lighting, parking and design standards.
- 4) The property is compliant with regulations in the single family zone.
- 5) The improvements required by the planning department in terms of avalanche mitigation have been complied with; engineered stamped plans for avalanche mitigation measures are included with the application.

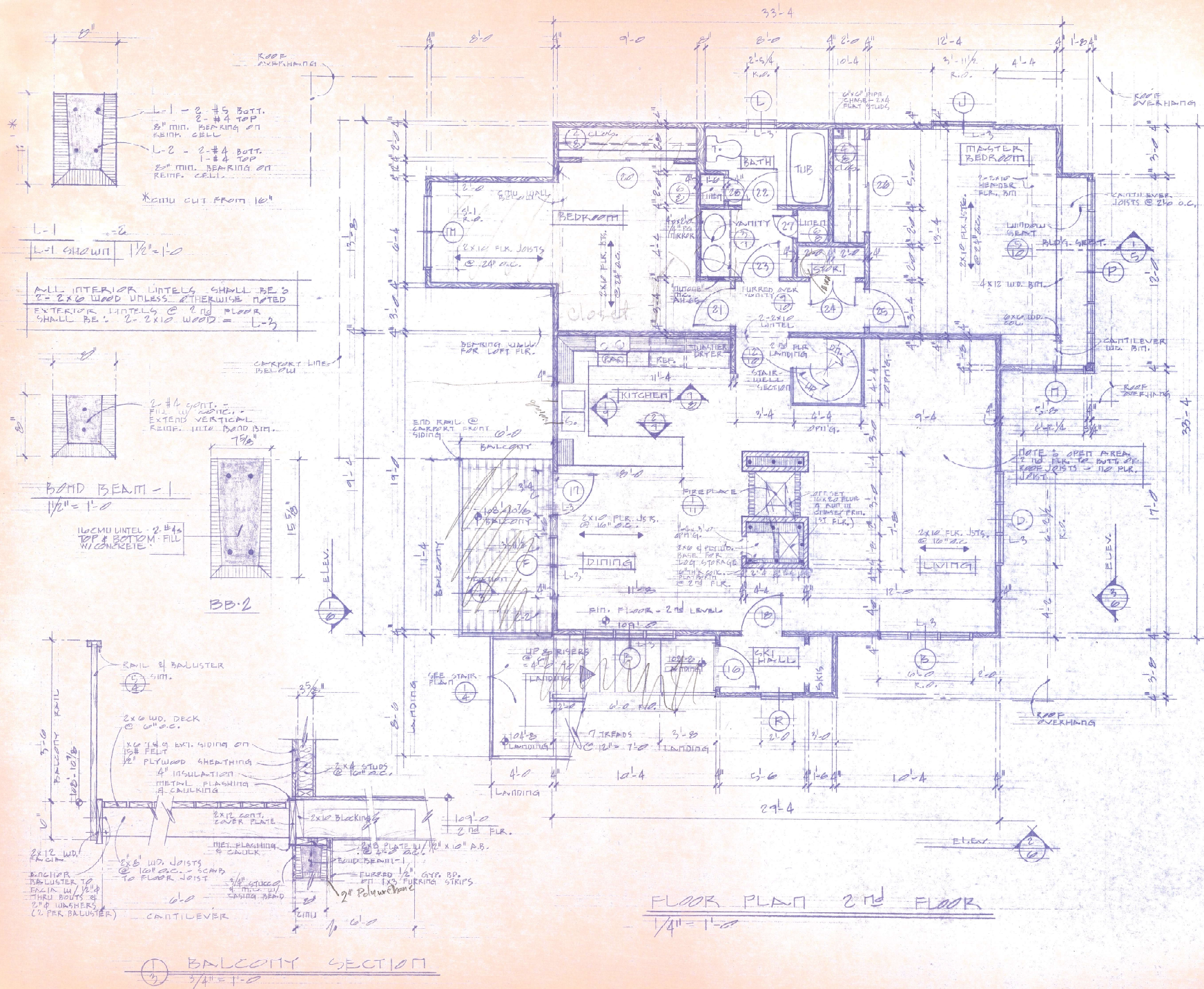
Sincerely,



Douglas J. Patterson, AIA
Living Designs Group Architects
122 Dona Luz St. – Suite A
Taos, NM 87571
575-770-6562



FLOOR PLAN - 1ST FLOOR
1/4" = 1'-0"



Coyote Lane Residence - Interior Renovations

GENERAL NOTES:

1. THESE CONSTRUCTION DOCUMENTS ARE DIAGRAMMATIC ONLY. IT IS NOT THE INTENT OF THESE DOCUMENTS TO SHOW EVERY DETAIL OF CONSTRUCTION. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL FURNISH AND INSTALL ALL ITEMS NECESSARY FOR COMPLETION AS INDICATED ON THESE DRAWINGS.
2. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL BE FAMILIAR WITH THE CONSTRUCTION DOCUMENTS PRIOR TO SUBMITTING BIDS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
3. CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS AND SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR OMISSIONS WHICH WOULD INTERFERE WITH THE SATISFACTORY COMPLETION OF THE WORK.
4. ALL DIMENSIONS, SPECIFICATIONS AND NOTES PROVIDED HEREIN SHALL BE VERIFIED BY EACH SUBCONTRACTOR PRIOR TO PERFORMANCE OF THE WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
5. WHEN TWO OR MORE REQUIREMENTS OR STANDARDS ARE SPECIFIED ESTABLISHING DIFFERENT OR CONFLICTING LEVELS OF QUALITY, THE MOST STRINGENT REQUIREMENT IS INTENDED AND WILL BE ENFORCED.
6. CONTRACTOR SHALL MAKE NO CHANGES OR SUBSTITUTIONS WITHOUT WRITTEN APPROVAL BY ADDENDUM FROM THE OWNER/ARCHITECT.
7. CONTRACTOR SHALL MEET WITH THE BUILDING OWNER OR MANAGER PRIOR TO THE BID IN ORDER TO OBTAIN A COPY OF THE BUILDING STANDARD GUIDELINES AND TO DISCUSS THE BUILDING MANAGER'S REQUIREMENTS FOR PROTECTION OF PUBLIC SPACES, DAILY CLEANING, CONSTRUCTION, STAGING, MATERIAL, DELIVERIES, LOCATION OF CONSTRUCTION DUMPSTERS, PARKING, ETC. THE COST TO MEET THESE REQUIREMENTS SHALL BE INCLUDED IN BID.
8. REPLIES TO ALL REQUESTS FOR CLARIFICATION WILL BE ISSUED TO ALL PRIME BIDDERS, AS ADDENDA TO THE DRAWINGS AND SPECIFICATIONS, AND WILL BECOME PART OF THE CONTRACT. THE ARCHITECT AND OWNER WILL NOT BE RESPONSIBLE FOR ORAL CLARIFICATION.
9. ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF APPLICABLE LOCAL, STATE AND FEDERAL CODES AND ORDINANCES.
10. CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE TO THE ARCHITECT AND OWNER FOR REVIEW PRIOR TO COMMENCING WORK.
11. CONTRACTOR AND ALL SUBCONTRACTORS SHALL COORDINATE AND OBTAIN ALL PERMITS REQUIRED TO COMPLETE THE CONSTRUCTION OF THE WORK AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
12. CONTRACTOR SHALL INCLUDE IN THE BASE BID ALL FEES ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT, INCLUDING BUT NOT LIMITED TO PERMIT FEES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY COORDINATING ALL ASPECTS OF THE CONSTRUCTION INCLUDING CROSS REFERENCING ALL OBVIOUSLY RELATED DOCUMENTS AND DRAWINGS. SHOULD PROBLEMS ARISE OUT OF A LACK OF COORDINATION IN AREAS THAT COULD HAVE REASONABLY BEEN FORESEEN, NO ADDITIONAL PAYMENT SHALL BE WARRANTED OR APPROVED BY THE OWNER OR THE ARCHITECT. SHOULD THE SERVICES OF THE ARCHITECT AND/OR ARCHITECT'S CONSULTANTS BE REQUIRED TO REMEDY OR REVISE THE CONSTRUCTION DUE TO ERRORS AND/OR OMISSIONS BY SUBCONTRACTOR, COMPENSATION FOR THESE SERVICES SHALL BE MADE BY THE GENERAL CONTRACTOR THROUGH THE CHANGE ORDER PROCESS OR BY SEPARATE AGREEMENT WITH THE ARCHITECT AND/OR ARCHITECT'S CONSULTANTS.
14. ALL WORK DETAILED IN THESE CONSTRUCTION DOCUMENTS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR WHO SHALL SUBCONTRACT AND/OR ASSIGN PORTIONS OF THE WORK TO THE MOST QUALIFIED TRADE. FAILURE BY ANY SUBCONTRACTOR TO INCLUDE CERTAIN WORK REQUIRED SHALL NOT RELIEVE THE GENERAL CONTRACTOR OF ITS RESPONSIBILITY AS PART OF THE CONTRACT FOR CONSTRUCTION TO PROVIDE A COMPLETE JOB.
15. CONTRACTOR IS TO COORDINATE AND ORGANIZE THE CONSTRUCTION PROCESS AND COMPLETE SAME IN A MANNER WHICH LEAST IMPACTS THE OWNER. SEE PROJECT MANUAL DIVISION 01, SECTION 1000.17 - "COORDINATION WITH OCCUPANTS."
16. SUBCONTRACTOR SHALL DELIVER TO OWNER PRIOR TO FINAL PAYMENT ALL GUARANTIES, WARRANTIES AND TWO COPIES OF ALL MANUALS AND OPERATING INSTRUCTIONS AND ARRANGE TO GIVE PHYSICAL DEMONSTRATION OF ALL EQUIPMENT TO OWNER OR HIS REPRESENTATIVE.
17. ALL LABOR AND MATERIALS SHALL BE GUARANTEED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION, EXCEPT LONGER AS REQUIRED IN THE DRAWINGS AND/OR SPECIFICATIONS.
18. ALL NEW CONSTRUCTION MUST MEET FEDERAL AND STATE BARRIER FREE REQUIREMENTS.
19. MATERIAL OR SYSTEMS SHALL BE INSTALLED ACCORDING TO EXACT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
20. ALL MATERIALS USED DURING CONSTRUCTION SHALL BE NEW AND FREE FROM BLEMISHES, NO USED MATERIALS WILL BE ALLOWED, EXCEPT AS NOTED HEREIN. COORDINATE WITH ARCHITECT AND OWNER/REPRESENTATIVE IN ADVANCE.
21. DELIVERY AND STORAGE OF ALL MATERIAL SHALL BE ACCEPTABLE TO MANUFACTURER'S PRODUCT, REVIEW BY THE ARCHITECT AND SHALL PROVIDE COMPLETE PROTECTION OF PRODUCT.
22. GENERAL CONTRACTOR SHALL VERIFY FINAL SELECTION OF ALL FINISHES WITH OWNER.
23. CONCRETE SLABS SHALL BE LEVELED AND PREPARED TO RECEIVE FLOOR FINISH, PER OWNER INSTRUCTIONS.
24. WHEREVER DISSIMILAR METALS CONTACT EACH OTHER, AND ARE SEPARATED FURTHER ON THE BELOW SCALE THAN BY A SINGLE INTERMEDIATE METAL, THE CONTACTING SURFACES SHALL BE INSULATED FROM EACH OTHER BY A BITUMINOUS COATING, 15# ASPHALT SATURATED FELT OR OTHER ARCHITECT APPROVED MEANS. METALS ARRANGED IN ORDER OF GALVANIC ACTIVITY: ALUMINUM, ZINC, GALVANIZED IRON, TIN ON STEEL, LEAD (HARD), STAINLESS STEEL, COPPER, MONEL.
25. GENERAL CONTRACTOR SHALL COORDINATE AND INSTALL ALL NECESSARY BACKING SUPPORTS FOR CABINETRY, SHELVING, TOILET ACCESSORIES, PLUMBING/LIGHTING FIXTURES, ETC.
26. ALL GYPSUM BOARD SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE UNITED STATES GYPSUM "GYPSUM CONSTRUCTION HANDBOOK".
27. ALL GYPSUM BOARD SHALL RECEIVE A PAINT FINISH. NOTE FINISHED CONCRETE SLAB IS CALLED FOR THROUGHOUT.
28. CONTRACTOR WITH APPROPRIATE SUBCONTRACTORS SHALL COORDINATE THE LOCATION OF OUTLETS, SWITCHES, THERMOSTATS, ETC. WITH THE FURNITURE LAYOUT AND WITH CONSIDERATION GIVEN TO THE PLACEMENT OF ART, PICTURES, PLAQUES, ETC. THIS SHALL BE REVIEWED WITH THE ARCHITECT AND TENANT PRIOR TO WORK.
29. PRIOR TO FINAL COMPLETION, CONTRACTOR SHALL THOROUGHLY CLEAN ALL SURFACES.
30. PRIOR TO FINAL COMPLETION, CONTRACTOR TO ASSEMBLE AND DISTRIBUTE PUNCHLIST OF ITEMS TO COMPLETE. LIST SHALL BE REVIEWED AT CONTRACTOR'S SCHEDULED WALKTHROUGH WITH OWNER AND ARCHITECT. LIST SHALL BE REVISED AS REQUIRED TO COMPLETE WORK.

VICINITY MAP



AREA

GROSS SQUARE FOOTAGE		
Name	Area	Heated GSF
LEVEL 1	1066 SF	Yes
LEVEL 2	1095 SF	Yes
LOFT	467 SF	Yes

ABBREVIATIONS

@	AT	NA	NOT APPLICABLE
A.F.F.	ARCHITECTURAL FINISH FLOOR	O.C.	ON CENTER
B.O.	BOTTOM OF	OSB	ORIENTED STRAND BOARD
CFCI	CONTRACTOR FURNISHED & INSTALLED	OFCI	OWNER FURNISHED/ CONTRACTOR INSTALLED
CMU	CONCRETE MASONRY UNIT	OFOI	OWNER FURNISHED/ OWNER INSTALLED
DIA.	DIAMETER	P.T.	PRESSURE TREATED
(E)	EXISTING	SIM.	SIMILAR
EL.	ELEVATION	SPEC.	SPECIFICATION; SEE PROJECT MANUAL
EXT.	EXTERIOR	STRUCT.	STRUCTURAL; SEE STRUCTURAL
FDN	FOUNDATION	T&G	TONGUE AND GROOVE
FEC	FIRE EXTINGUISHER CABINET	T.O.	TOP OF
FF	FINISH FLOOR	T.FIN.	TOP OF FINISH
H	HORIZONTAL	TYP.	TYPICAL
INSUL.	INSULATION	U.N.O.	UNLESS NOTED OTHERWISE
INT	INTERIOR	V	VERTICAL
MTL	METAL	V.I.F.	VERIFY IN FIELD
(N)	NEW	W/	WITH
NTS	NOT TO SCALE	WD	WOOD
N.I.C.	NOT IN CONTRACT		

PROJECT TEAM

OWNER:
TAOS SKI VALLEY, INC.
PO BOX 90
116 SUTTON PLACE
VILLAGE OF TAOS SKI VALLEY, NM 87525
T: 575.776.2291

ARCHITECT:
LIVING DESIGNS GROUP ARCHITECTS
122A DOÑA LUZ ST.
TAOS, NM 87571
CONTACT: DOUGLAS PATTERSON, AIA
T: 575.751.9481

SHEET INDEX

GENERAL	
G100	COVER SHEET
SITE	
AS100	SITE PLAN
DEMOLITION	
AD101	DEMOLITION FLOOR PLANS
ARCHITECTURAL	
A101	PROPOSED FLOOR PLANS



PROJ. NO:

2022-120

ISSUE DATE:

6/10/22

ISSUED FOR:

PERMIT

REVISIONS:

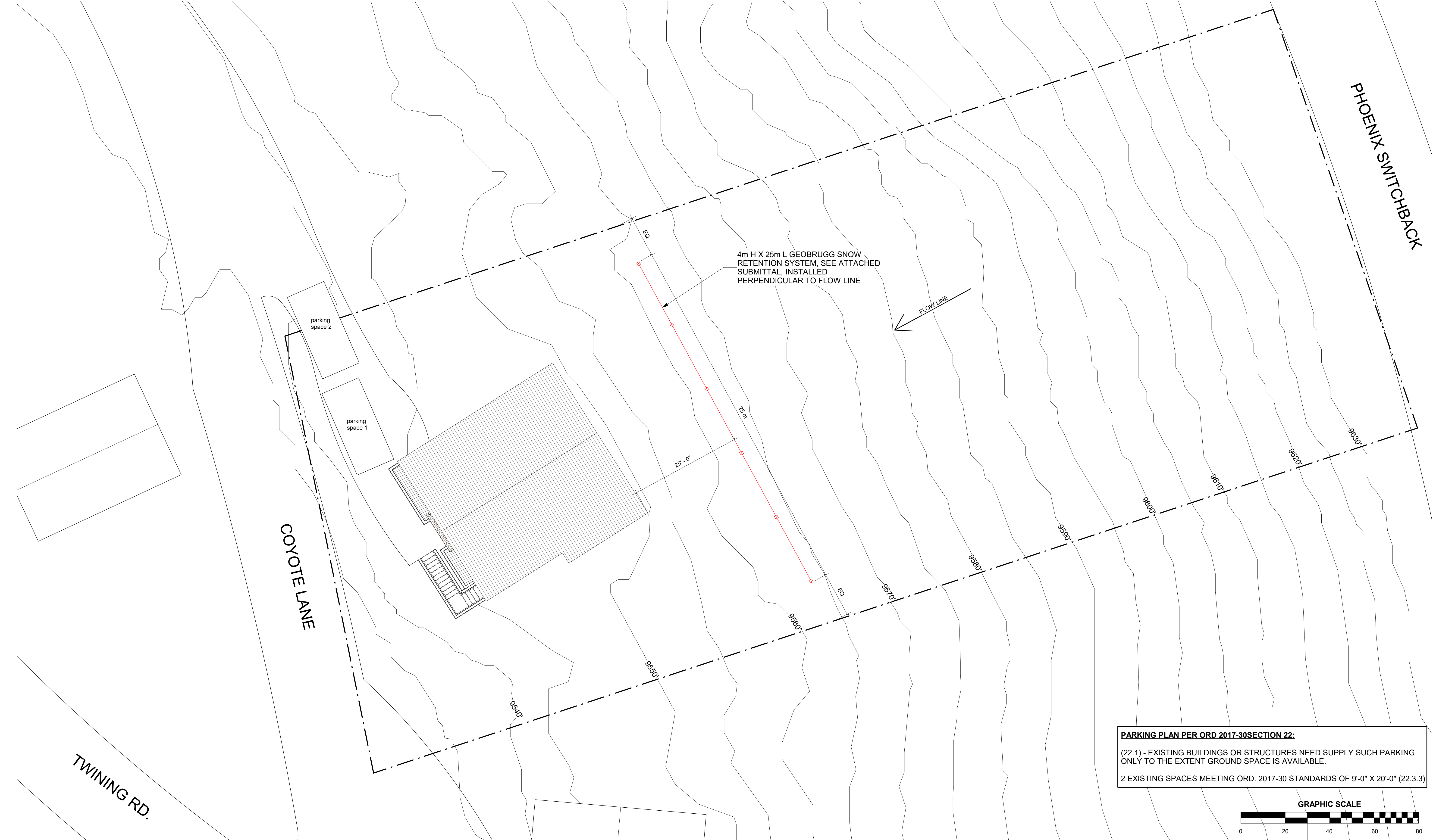
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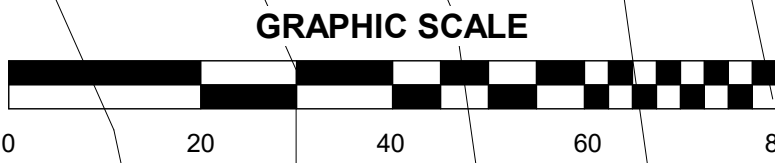
ITV

APPROVED BY:

LDG



PARKING PLAN PER ORD 2017-30SECTION 22:
(22.1) - EXISTING BUILDINGS OR STRUCTURES NEED SUPPLY SUCH PARKING ONLY TO THE EXTENT GROUND SPACE IS AVAILABLE.
2 EXISTING SPACES MEETING ORD. 2017-30 STANDARDS OF 9'-0" X 20'-0" (22.3.3)



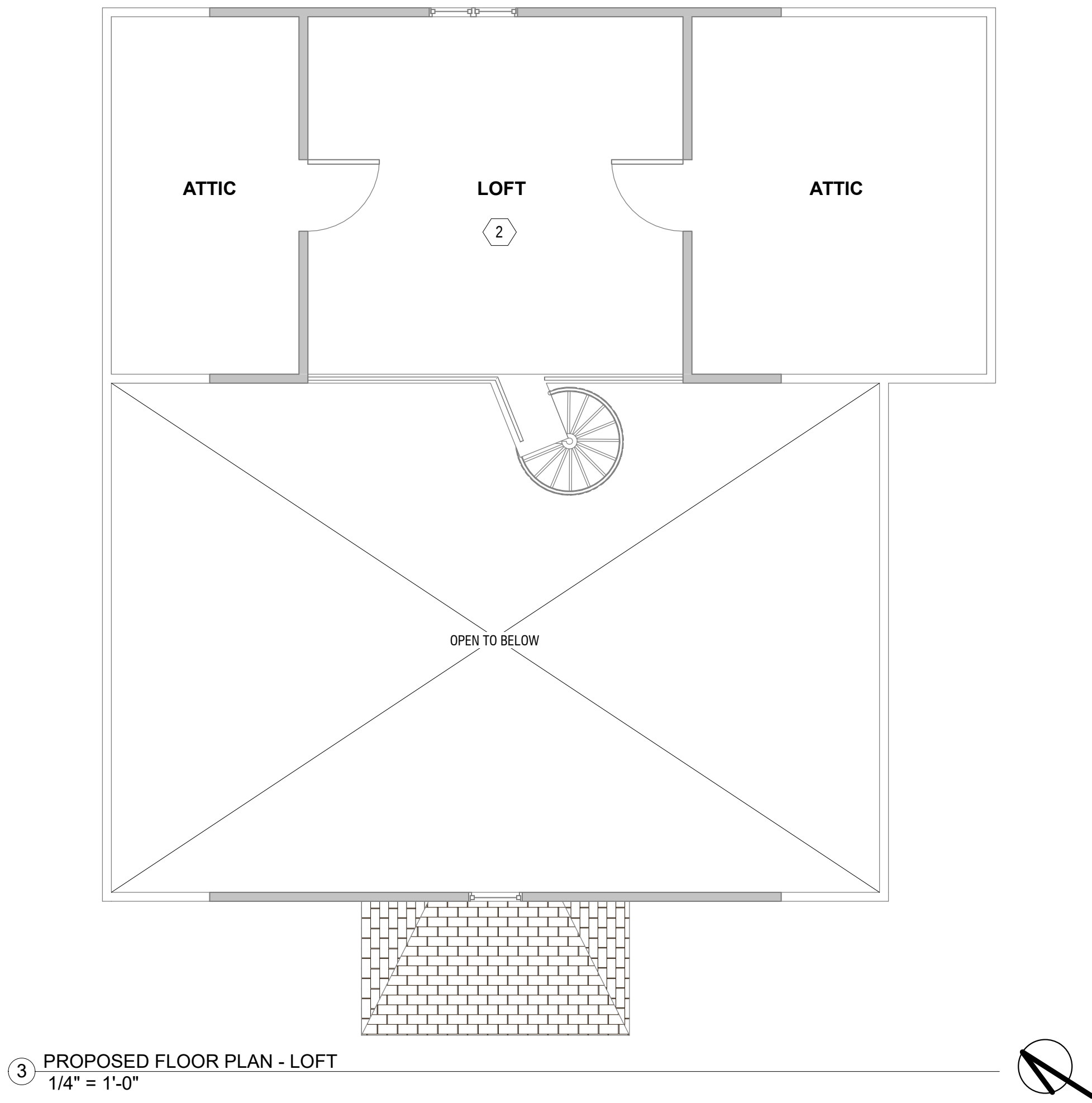
COYOTE LANE RESIDENCE
TSVI
3 Coyote Ln, VTSV, NM 87525

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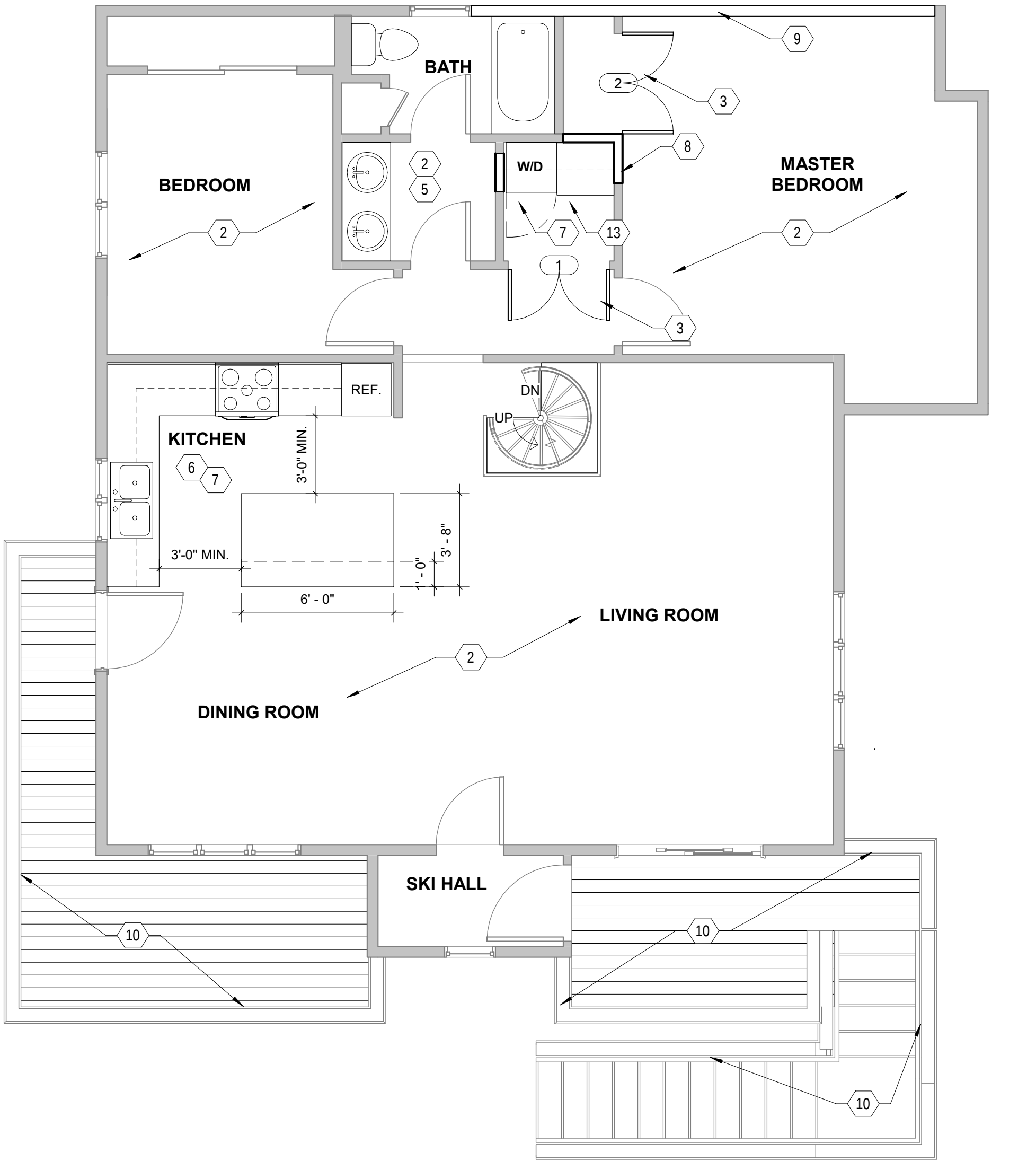
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APPROVED BY: LDG

SCALE: 1" = 10'-0"

SITE PLAN

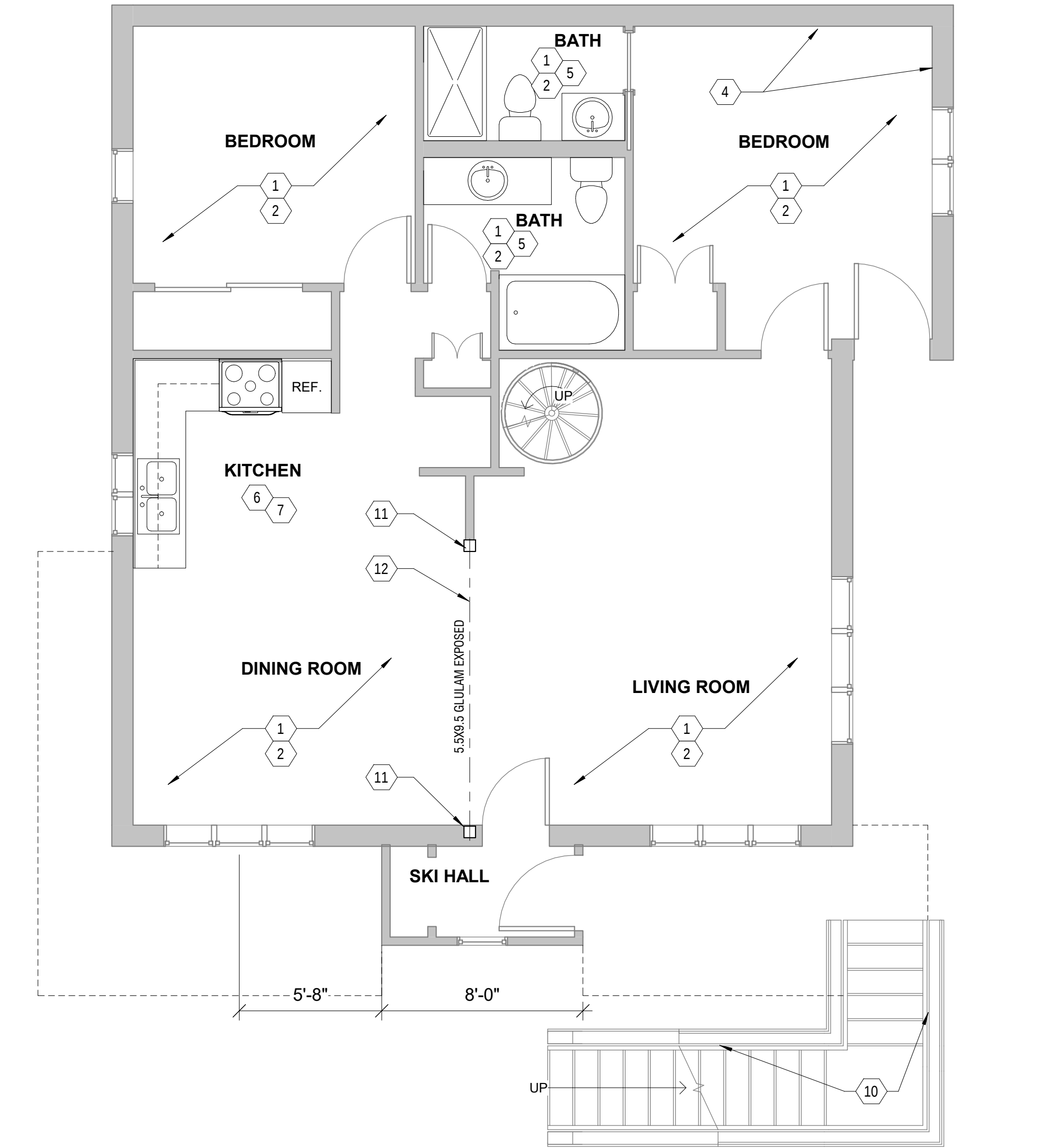


3 PROPOSED FLOOR PLAN - LOFT
1/4" = 1'-0"



2 PROPOSED FLOOR PLAN LEVEL 2
1/4" = 1'-0"

FINISHES	
WALLS & CEILING	
099100 PAINT (P-X)	
P-1	MFG SHERWIN WILLIAMS
COLOR	SW 7103 WHITETAIL
FINISH	VELVET
NOTES	WALLS & CEILINGS
P-1A	MFG SHERWIN WILLIAMS
COLOR	SW 7103 WHITETAIL
FINISH	EGGSHELL
NOTES	RESTROOM WALLS & CEILINGS
CASEWORK	
064150 SOLID SURFACE (SS-X)	
SS-1	MFG STARON
SIZE	3CM
COLOR	ASPEN CONCRETE
NUMBER	AC629
NOTES	COUNTERTOPS
PL-1	MFG WILSONART
PRODUCT	HPL VENEER OVER 3/4" SUBSTRATE
COLOR	7061 NATURAL PEAR
FINISH	MATTE
NOTES	RESTROOM AND KITCHEN CASEWORK
FLOORING	
096500 RESILIENT FLOORING (RF-1)	
RF-1	MFG. TANDUS CENTIVA
PRODUCT/STYLE	RESOLVE WOOD
COLOR	RIDGE OAK
NUMBER	2505
SIZE	7.56" X 48.43"
NOTES	RESTROOMS AND MECH LEVELS 1&2
096513 RESILIENT FLOORING BASE & ACCESSORIES (RB-X)	
RB-1	MFG. JOHNSONITE
COLOR	29 MOONROCK
MODEL	1/8" VINYL WALL BASE
SIZE	4" HEIGHT
NOTES	COVE TYPE



1 PROPOSED FLOOR PLAN LEVEL 1
1/4" = 1'-0"

GENERAL NOTES	
1. CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS & CONDITIONS PRIOR TO CONSTRUCTION. 2. CONTRACTOR TO VERIFY MECHANICAL, PLUMBING, AND ELECTRICAL REQUIRED CONNECTIONS PRIOR TO COMMENCING WORK. 3. CONSTRUCTION LIMITS ARE SHOWN FOR MAJOR WORK ONLY. TEMPORARILY RELOCATE AS NECESSARY TO SECURE WORK AREA FOR UTILITY CONNECTIONS, SITE WORK, ETC. BEYOND LIMITS SHOWN. 4. ADEQUATE SITE ACCESS & ADJACENT CONSTRUCTION STAGING TO BE DETERMINED PRIOR TO PROJECT COMMENCEMENT. 5. ALL FREESTANDING FURNITURE, FIXTURES AND EQUIPMENT SHOWN ON PLAN ARE NOT INCLUDED IN CONTRACT AND ARE SHOWN FOR REFERENCE ONLY, UNLESS NOTED OTHERWISE. 6. WINDOWS AND DOORS ARE SHOWN & NOTED AS NOMINAL SIZES. 7. ALL DIMENSIONS TO FACE OF FRAMING UNLESS NOTED OTHERWISE. 8. ALL AREAS TO BE FINISHED PER FINISH SCHEDULE. 9. CLEAN PATCH AND REPAIR ALL EXISTING WALLS AND CEILINGS. PAINT P-1. 10. HIGH CEILING AND RAFTERS TO BE PAINTED WITH WHITEWASH MADE FROM P-1, 3:1 DILUTION. 11. ALL DOORS AND WINDOWS TO REMAIN TO BE ADJUSTED FOR SMOOTH OPERATION. REPAIR AS NECESSARY. 12. INSPECT ROOF, REPLACE DAMAGED AND MISSING METAL ROOFING PANELS. 13. REPLACE ALL DAMAGED OR NON-WORKING ELECTRICAL LIGHTING FIXTURES WITH NEW LED FIXTURES ON EXISTING SWITCHES AND CIRCUITS. CONFIRM CAPACITY OF EXISTING CIRCUITS. 14. INSTALL NEW ELECTRICAL OUTLETS PER NEC AND IRC. ALL OUTLETS TO REPLACE EXISTING OUTLETS ON EXISTING CIRCUITS. IF NEW CIRCUIT IS REQUIRED, PROVIDE NEW BREAKER AND HOME RUN PER NEC. 15. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 VOLTS WITH TYPE THHN/THWN, 90 DEGREE INSULATION UNLESS OTHERWISE INDICATED. MINIMUM WIRE SIZE SHALL BE #12 AWG FOR POWER CIRCUITS UNDER 100FT AND #10 AWG FOR POWER CIRCUITS OVER 100FT. CONDUCTORS SHALL BE SOLID FOR #12 AWG AND STRANDED FOR #10 AWG OR LARGER. ALL WIRING SHALL BE RUN IN CONDUIT INCLUDING LOW VOLTAGE CONTROL WIRING. SIGNAL WIRING MAY BE RUN IN PVC CONDUIT OR PVC FLEXIBLE TUBING. 16. SUPPORT ALL CONDUIT INDEPENDENTLY FROM THE BUILDING STRUCTURE. DO NOT SUPPORT FROM VENTILATION DUCTS, MECHANICAL PIPING, SUSPENDED CEILING GRIDS, OR THEIR HANGERS. USE ACCEPTABLE METHODS OF SUPPORT. 17. PROVIDE WIRING DEVICES RATED FOR THE GIVEN APPLICATION AS REQUIRED BY CODE. 18. SIZE ALL BOXES AND ENCLOSURES PER THE NEC. PROVIDE WORKING SPACE FOR ELECTRICAL INSTALLATIONS IN ACCORDANCE WITH NEC, ARTICLE 110.	
KEYED NOTES	
1. PATCH AND REPAIR CONCRETE SLAB AS NECESSARY. INSTALL FLUID APPLIED MOISTURE BARRIER OVER ITS ENTIRETY. EXTEND 6" UP EXTERIOR CMU WALLS. INSTALL R-3 INSULATED ZIP PANEL SYSTEM W/ SEAM TAPE. INSTALL 1 LAYER 1/2" PLYWOOD SUBFLOOR PERPENDICULAR TO ZIP SYSTEM. NEW LVT FLOORING OVER NEW SUBFLOOR. SEE FINISH SCHEDULE. 2. NEW LVT PLANK FLOORING OVER EXISTING SUBFLOOR. SEE FINISH SCHEDULE. 3. NEW 48"X80" DOUBLE CLOSET DOOR. BALL CATCH LATCH WITH PULL HANDLES TO MATCH EXISTING. 4. ADHERE 1/2" RIGID INSULATION TO CMU BETWEEN EXISTING PURLINS. NEW 5/8" GYP WALL BOARD OVER PURLINS. PAINT P-1. 5. NEW BATHROOM FIXTURES, CASEWORK AND SOLID SURFACE COUNTERTOP PER FINISH SCHEDULE. 6. NEW KITCHEN CASEWORK, ISLAND AND SOLID SURFACE COUNTERTOP TO REPLACE EXISTING PER FINISH SCHEDULE. 7. NEW KITCHEN APPLIANCES AND WASHER DRYER O.F.C.I. CONTRACTOR TO INSTALL OR MODIFY APPLIANCE VENTING AS NECESSARY. 8. NEW 2X4 WALL, ACOUSTIC BATT INSULATION GYP BOARD BOTH SIDES, PAINT P-1. 9. NEW 2X6 WALL, R-22 BATT INSULATION, GYP BOARD INTERIOR, PAINT P-1. 1/2" APA RATED SHEATHING W/ BUILDING WRAP AND SIDING TO MATCH EXISTING. 10. INSTALL ADDITIONAL 2X4 RAILS TO MATCH EXISTING UNDER TOP RAIL AND AT DECKING. INSTALL 4"X4" GALVANIZED STEEL WELDED WIRE MESH CONTINUOUS FROM TOP RAIL TO DECKING BETWEEN BALUSTERS. PAINT ALL WOODWORK TO MATCH EXISTING. PROVIDE ABRASIVE ADDITIVE ON STAIRS AND DECK. 11. NEW 6X6 WOOD COLUMN IN WALL. 12. INSTALL STRUCTURAL BEAM IN LOCATION OF DEMOLISHED WALL. BEAM TO BEAR COMPLETELY ON NEW 6X6 WOOD COLUMNS AT EACH END. 13. NEW CASEWORK, UPPER AND LOWER AND SOLID SURFACE COUNTERTOP.	
LEGEND	
	LIMITS OF WORK
	NEW WALLS/PARTITIONS, INFILL, ETC
	EXISTING WALL OR PARTITION
	KEYED NOTE
	NEW ELECTRICAL OUTLET

LIVING DESIGNS GROUP
ARCHITECTS

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Taos, NM 87571
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COYOTE LANE RESIDENCE

TSVI

3 Coyote Ln, VTSV, NM 87525

PROJ. NO:
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ISSUED FOR:
PERMIT

REVISIONS:
NO | Date | Description

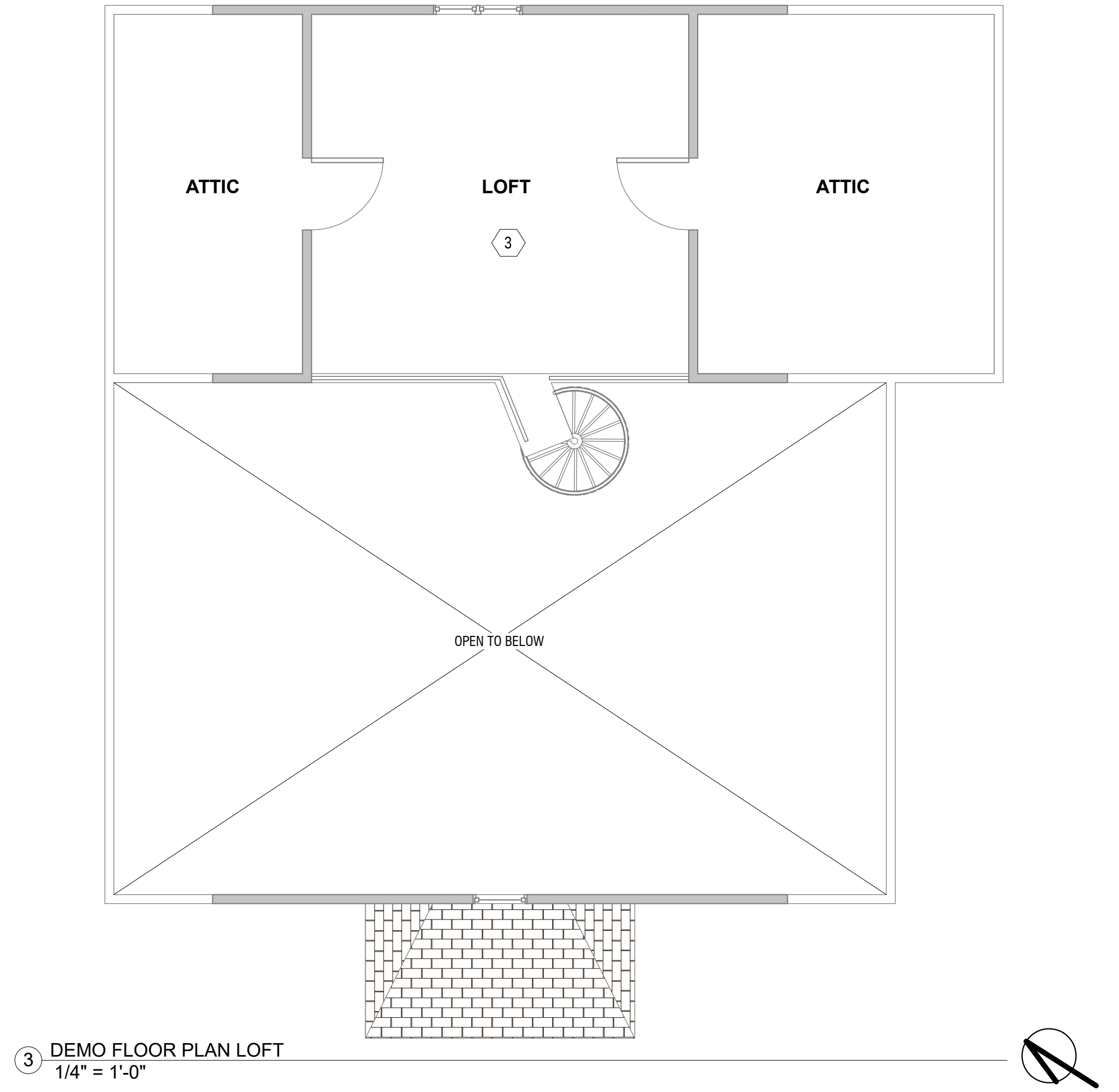
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APPROVED BY: Checker

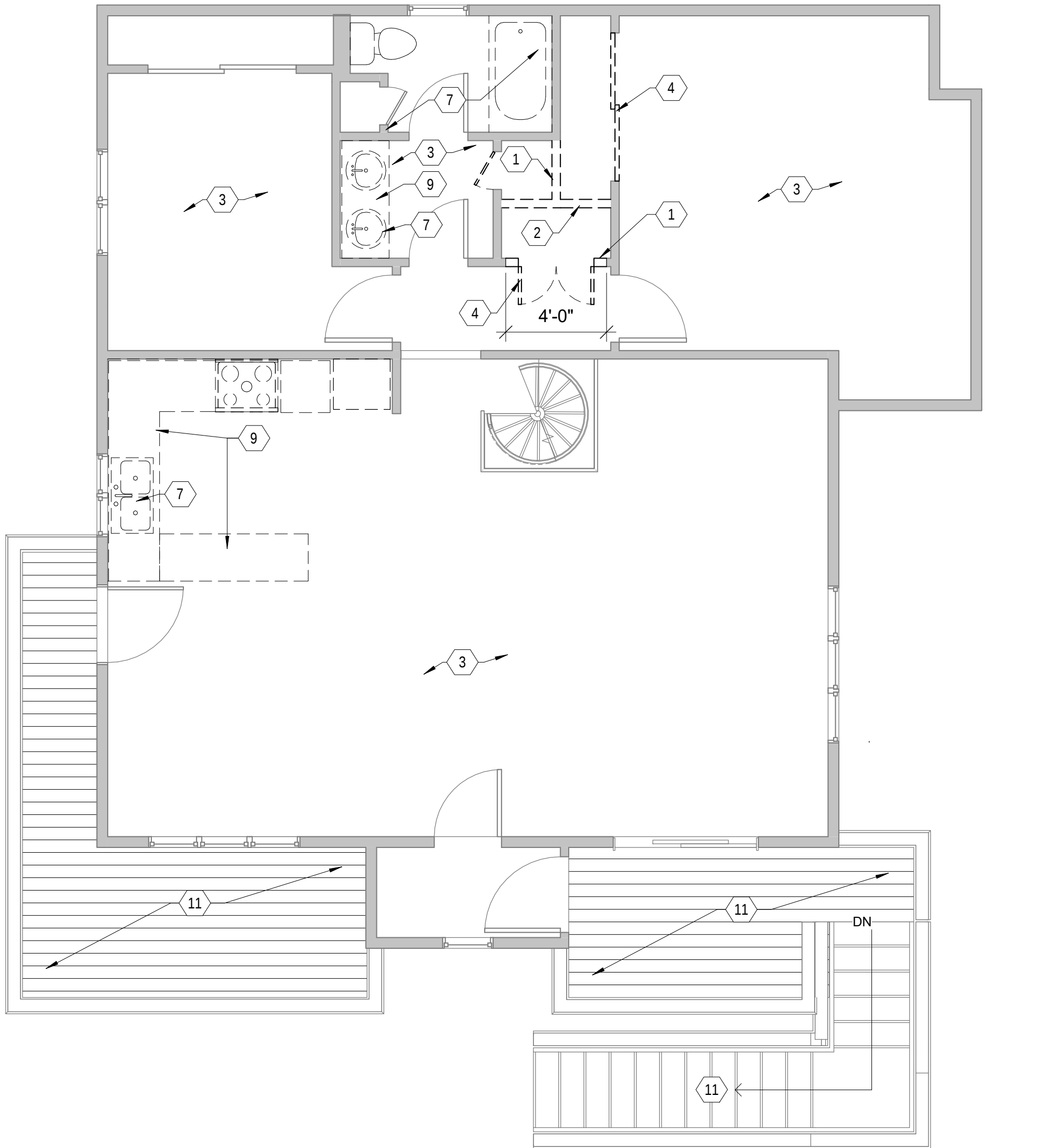
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PROPOSED
FLOOR
PLANS

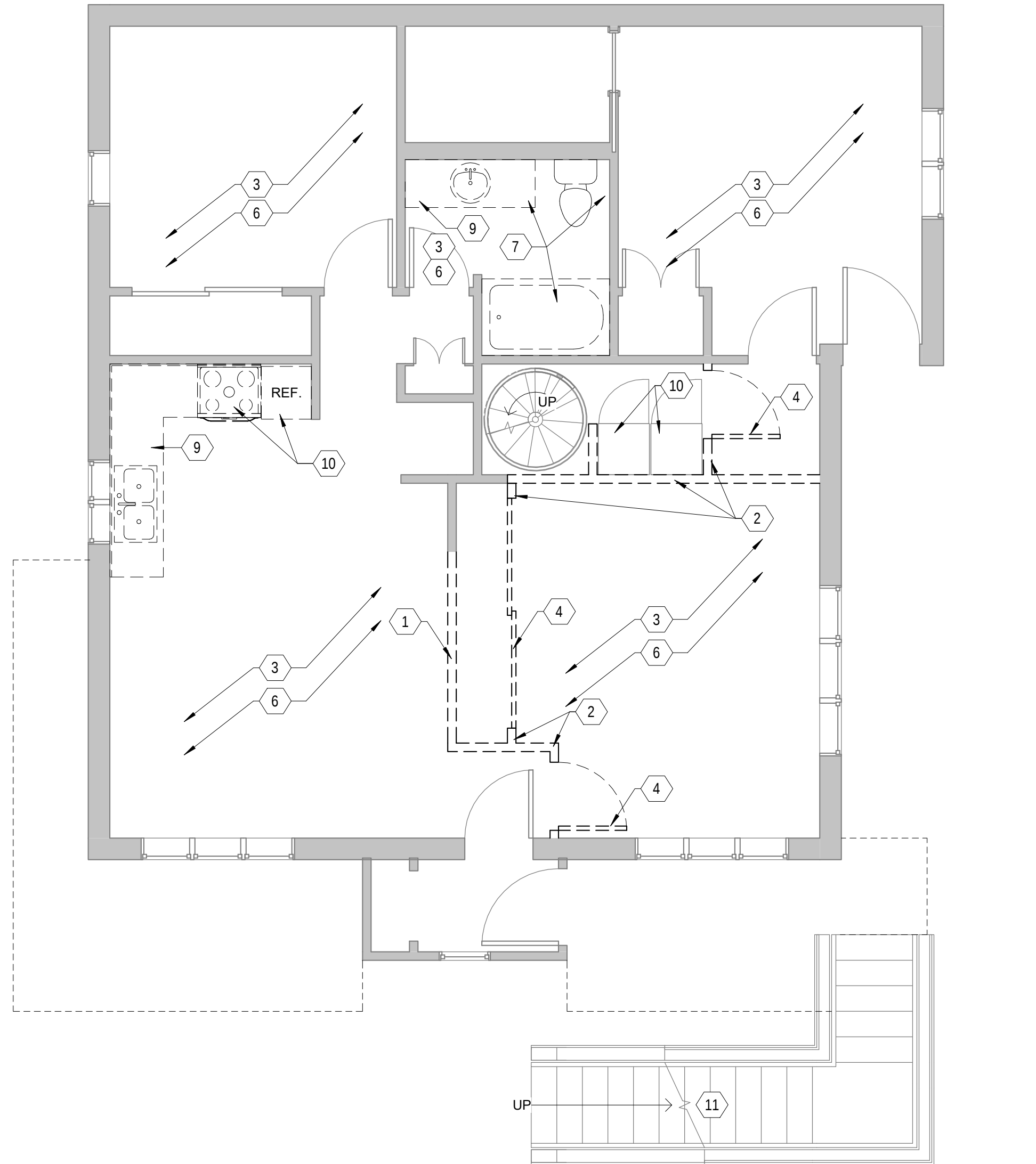
A101



3 DEMO FLOOR PLAN LOFT
1/4" = 1'-0"



2 DEMO FLOOR PLAN LEVEL 2
1/4" = 1'-0"



1 DEMO FLOOR PLAN LEVEL 1
1/4" = 1'-0"

GENERAL NOTES

- PRIOR TO DEMO, CONTRACTOR TO SECURE ALL UTILITIES TO PREVENT GAS, ELECTRICAL OR STRUCTURAL SAFETY ISSUES. REVIEW WITH OWNER.
- CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE SAFETY OF THE PUBLIC AND/OR WORKMEN ON SITE TO PREVENT ACCIDENTS OR INJURY TO ANY PERSON ON, ABOUT OR ADJACENT TO THE PREMISES.
- THE DEMOLITION PLAN SHALL BE USED AS A SCHEMATIC GUIDE TO DEMOLITION ONLY. ADDITIONAL DEMOLITION MAY BE REQUIRED TO COMPLETE THE WORK AS INDICATED ON THE DRAWINGS. DEMOLITION REQUIRED TO COMPLETE THE PROJECT WORK BUT NOT INDICATED, SHALL BE INCLUDED IN THE CONTRACT SUM. DO NOT ALLOW MATERIALS AND DEBRIS GENERATED BY DEMOLITION ACTIVITIES TO ACCUMULATE ON THE JOB SITE. REMOVE DAILY AND DISPOSE OF IN A LEGAL MANNER, NO ON SITE SALE OR BURNING OF REMOVED ITEMS PERMITTED.
- COVER AND SEAL AND PROTECT EXISTING EQUIPMENT NOT BEING REMOVED FROM DAMAGE. THIS APPLIES TO ALL NEW EQUIPMENT AND SYSTEMS WHICH WILL CONTINUE TO BE OPERATED AT COMPLETION OF THE WORK.
- DURING THE DEMOLITION OR CONSTRUCTION PHASE, ANY DAMAGE ON THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR OR A PARTY TO THE CONTRACTOR SHALL BE REPAIRED PRIOR TO CONTRACT DATE OF SUBSTANTIAL COMPLETION AT NO ADDITIONAL EXPENSE TO THE OWNER.
- CONTRACTOR TO STOCKPILE RE-USABLE MATERIAL AND EQUIPMENT FOR AN INSPECTION BY THE OWNER TO DETERMINE WHAT WILL BE SALVAGED. ALL MATERIAL NOT SALVAGED WILL BE HAULED OFF THE SITE BY THE CONTRACTOR IN APPROVED MANNER AND PER STATE AND LOCAL REGULATIONS.
- REMOVE AND SECURE FOR RE-INSTALLATION ALL CEILING MOUNT DEVICES, INCLUDING BUT NOT LIMITED TO SMOKE DETECTORS AND SURVEILLANCE CAMERAS. COORDINATE INSPECTION BY OWNER TO DETERMINE WHAT IS APPROPRIATE FOR RE-USE.
- IMMEDIATELY NOTIFY THE OWNER/ARCHITECT IF ANY UNFORSEEN CONDITIONS ARE EXPOSED DURING THE DEMOLITION OR CONSTRUCTION PHASE.
- ALL ELECTRICAL OUTLETS AND FIXTURES TO BE ABANDONED ARE TO HAVE WIRE REMOVED BACK TO PREVIOUS ELECTRICAL BOX.
- DISCONNECT POWER TO ELECTRICAL CIRCUITS AND EQUIPMENT IN DEMOLITION AREAS, INCLUDING ALL ASSOCIATED WIRE AND EXPOSED CONDUIT ENTIRELY BACK TO PANEL CIRCUIT BREAKER. THE ONLY EXCEPTION WILL BE FOR THE NEW WORK WHERE EXISTING AND UNDAMAGED BOXES/CONDUIT CAN BE UTILIZED, PROVIDING THAT THEY ARE IN GOOD CONDITION AND UP TO CURRENT CODES AND STANDARDS.
- DURING DEMOLITION OR WHEN ELECTRICAL AND PLUMBING SYSTEMS ARE BEING MODIFIED, COVER AND SEAL AND PROTECT EXISTING EQUIPMENT NOT BEING REMOVED FROM DAMAGE.
- AT ALL PLUMBING FIXTURES TO BE ABANDONED, EXISTING PIPING TO BE REMOVED BACK TO CONCEALED SPACE AND CAPPED. PATCH AND REPAIR SURFACES AS NECESSARY.

KEYED NOTES

- DEMO PORTION OF EXISTING WALL.
- DEMO EXISTING WALL IN ITS ENTIRETY.
- REMOVE ALL EXISTING CARPETING, PADDING AND FLOORING. PREPARE FOR INSTALLATION OF NEW FINISH MATERIALS.
- REMOVE EXISTING DOOR AND FRAME.
- REMOVE EXISTING DOOR AND FRAME; PATCH AND REPAIR WALL OPENING TO MATCH ADJACENT SURFACES.
- CLEAN FLOOR AND PREPARE FOR INSTALLATION OF FLUID APPLIED MOISTURE BARRIER.
- DEMO EXISTING PLUMBING FIXTURES. PREPARE FOR INSTALLATION OF NEW.
- REMOVE AND PROTECT WASHER AND DRYER FOR OWNER INSPECTION AND REINSTALLATION.
- DEMO EXISTING CASEWORK AND COUNTERTOP. PREPARE AREA FOR INSTALLATION OF NEW.
- REMOVE AND PROTECT EXISTING APPLIANCES FOR OWNER INSPECTION.
- PREPARE EXISTING DECK AND STAIR FOR NEW PAINT. REPLACE OR REPAIR DECKING BOARDS AS NECESSARY.

LEGEND

- | | |
|-------|---|
| [---] | LIMITS OF WORK |
| [---] | DEMO ITEMS: WALLS/PARTITIONS, DOORS, WINDOWS, ETC |
| [---] | EXISTING WALL OR PARTITION: TO REMAIN |
| [X] | KEYED DEMO NOTE |



COYOTE LANE RESIDENCE

TSVI
3 Coyote Ln, VTSV, NM 87525

PROJ. NO:
2022-120
ISSUE DATE:
6/10/22
ISSUED FOR:
PERMIT

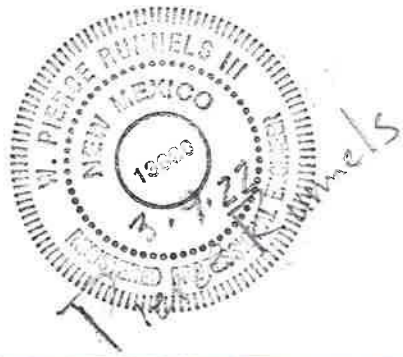
REVISIONS:
NO | Date | Description

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APPROVED BY: LDG

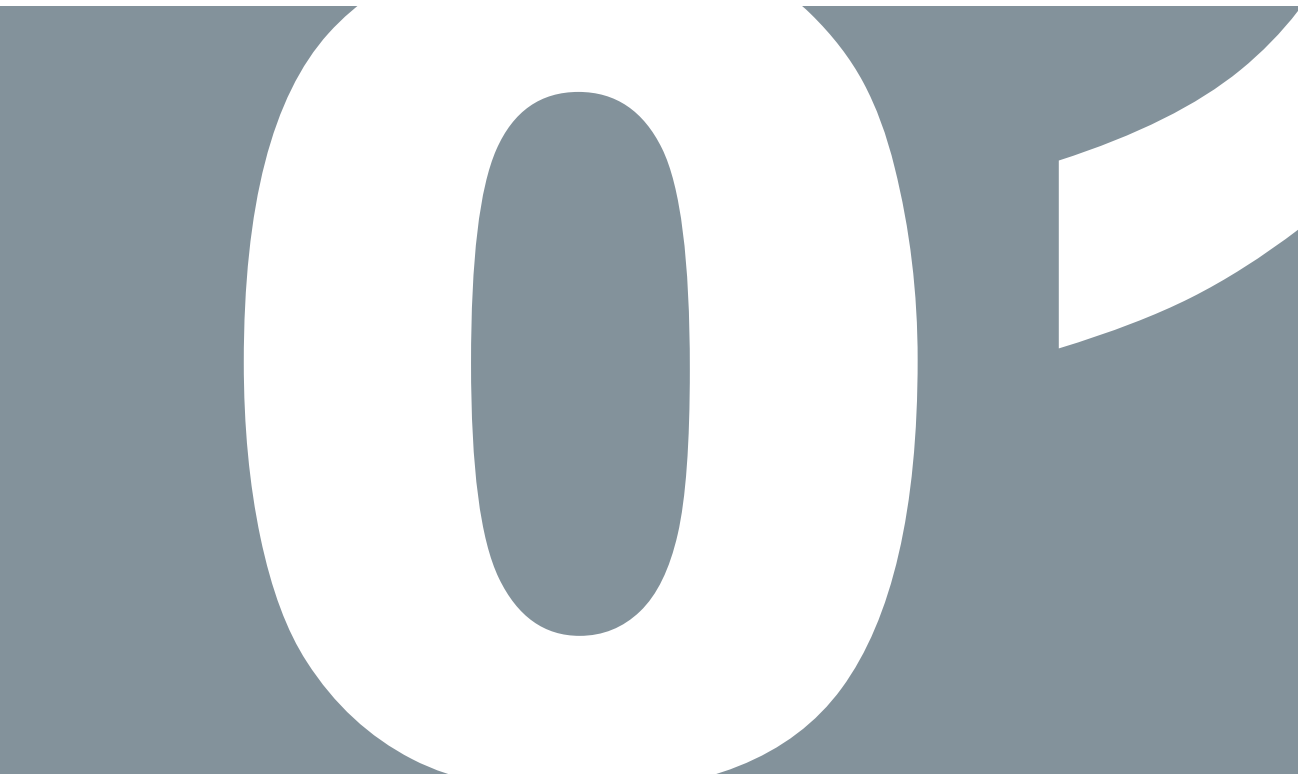
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**DEMOLITION
FLOOR
PLANS**

AD101



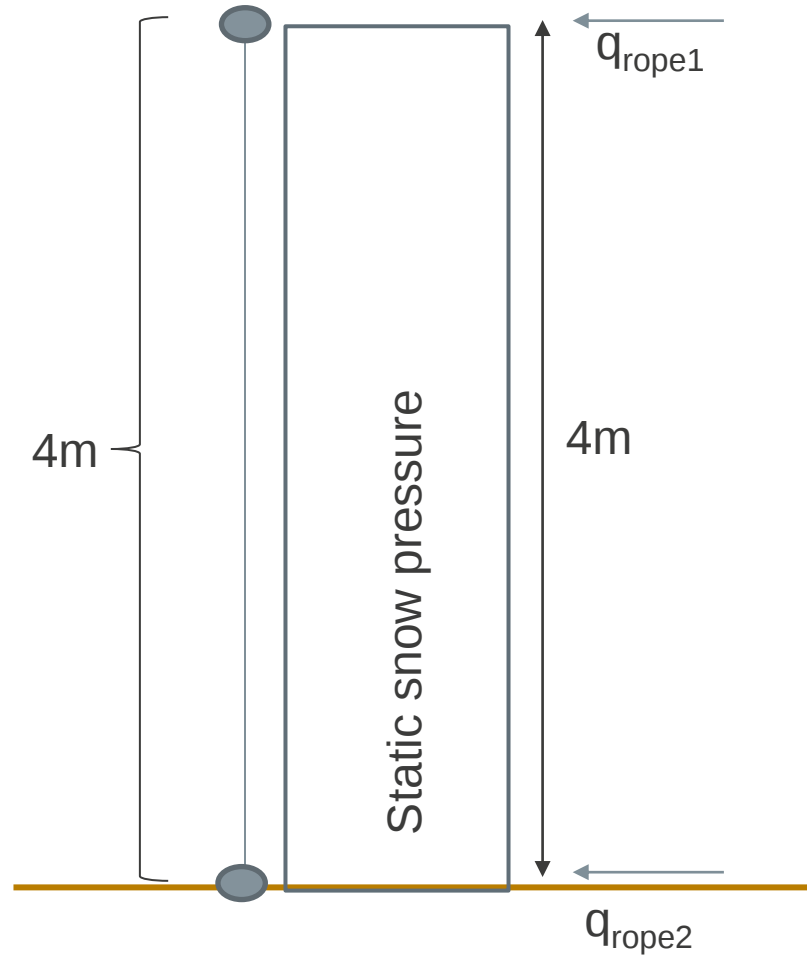
Snow fence
3 Coyote Lane, Taos ski valley
New Mexico, USA



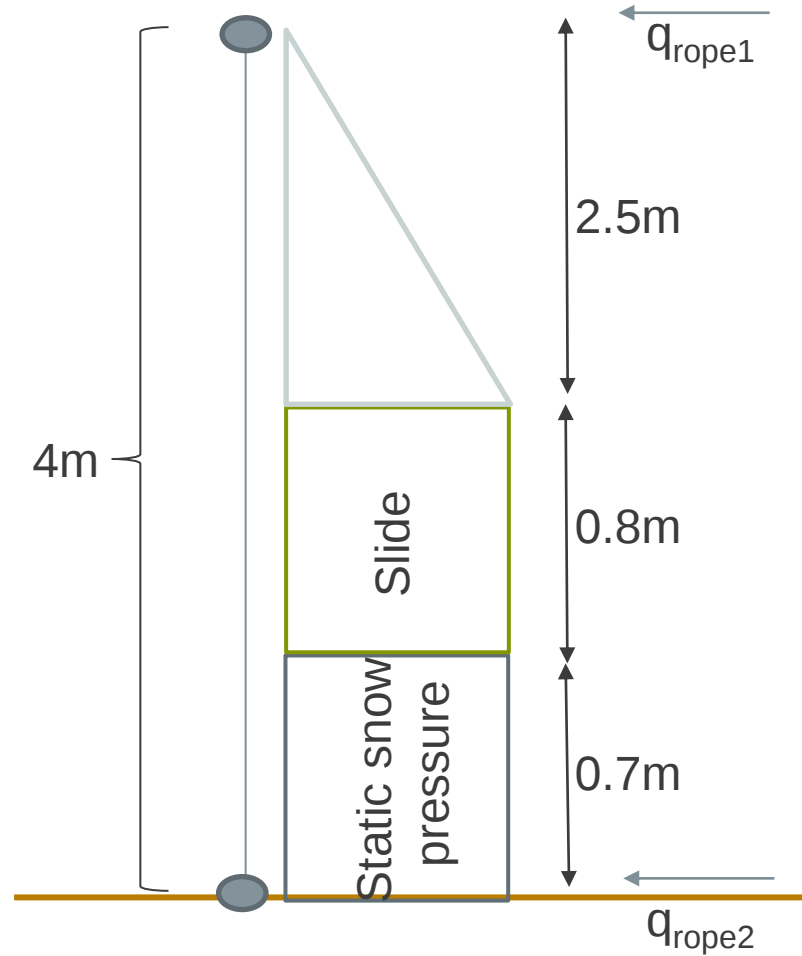
INPUT PARAMETER & LOAD

LOAD CASES

Creep conditions



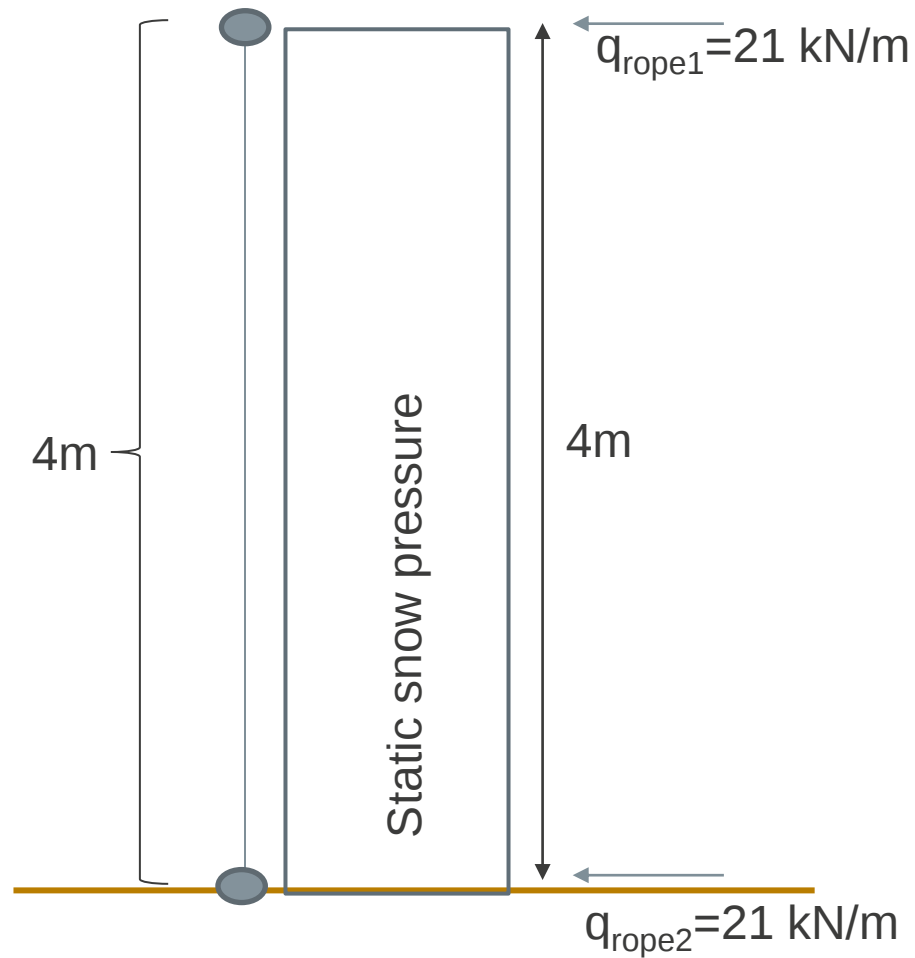
Slide conditions



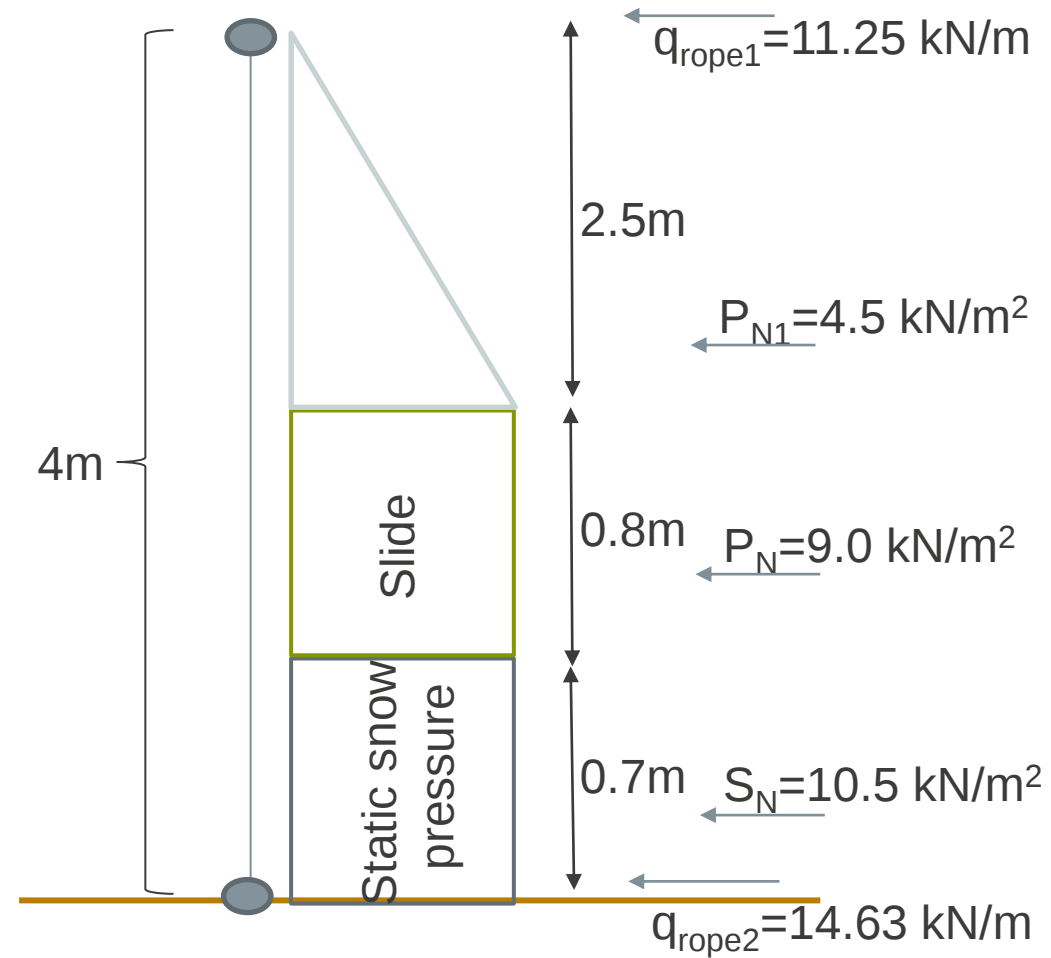
LOAD CASES

Creep conditions

$$S_n = 42 \text{ kN/m} \longrightarrow S_N = 10.5 \text{ kN/m}^2$$



Slide conditions



DECISIVE LOAD CASE

Load coefficient: $\gamma_Q := 1.5$
Resistance coefficient: $\gamma_M := 1.05$
Resistance coefficient WRA: $\gamma_{M2} := 1.35$

Load case creep conditions:

Creep load per meter: $S_n = 42 \frac{\text{kN}}{\text{m}}$

Total impact load: $F_{\text{creep}} := \frac{S_n}{H}$

Design value: $F_{\text{Ed;creep}} := F_{\text{creep}} \cdot \gamma_Q$

Total load: $Q_{\text{tot;creep}} := F_{\text{creep}} \cdot A$

Top support rope: $q_{\text{rope1;creep}} := F_{\text{creep}} \cdot \frac{H}{2}$

Bottom support rope: $q_{\text{rope2;creep}} := F_{\text{creep}} \cdot \frac{H}{2}$

$$F_{\text{creep}} = 10.5 \frac{\text{kN}}{\text{m}^2}$$

$$F_{\text{Ed;creep}} = 15.75 \frac{\text{kN}}{\text{m}^2}$$

$$Q_{\text{tot;creep}} = 1050 \text{ kN}$$

$$q_{\text{rope1;creep}} = 21 \frac{\text{kN}}{\text{m}}$$

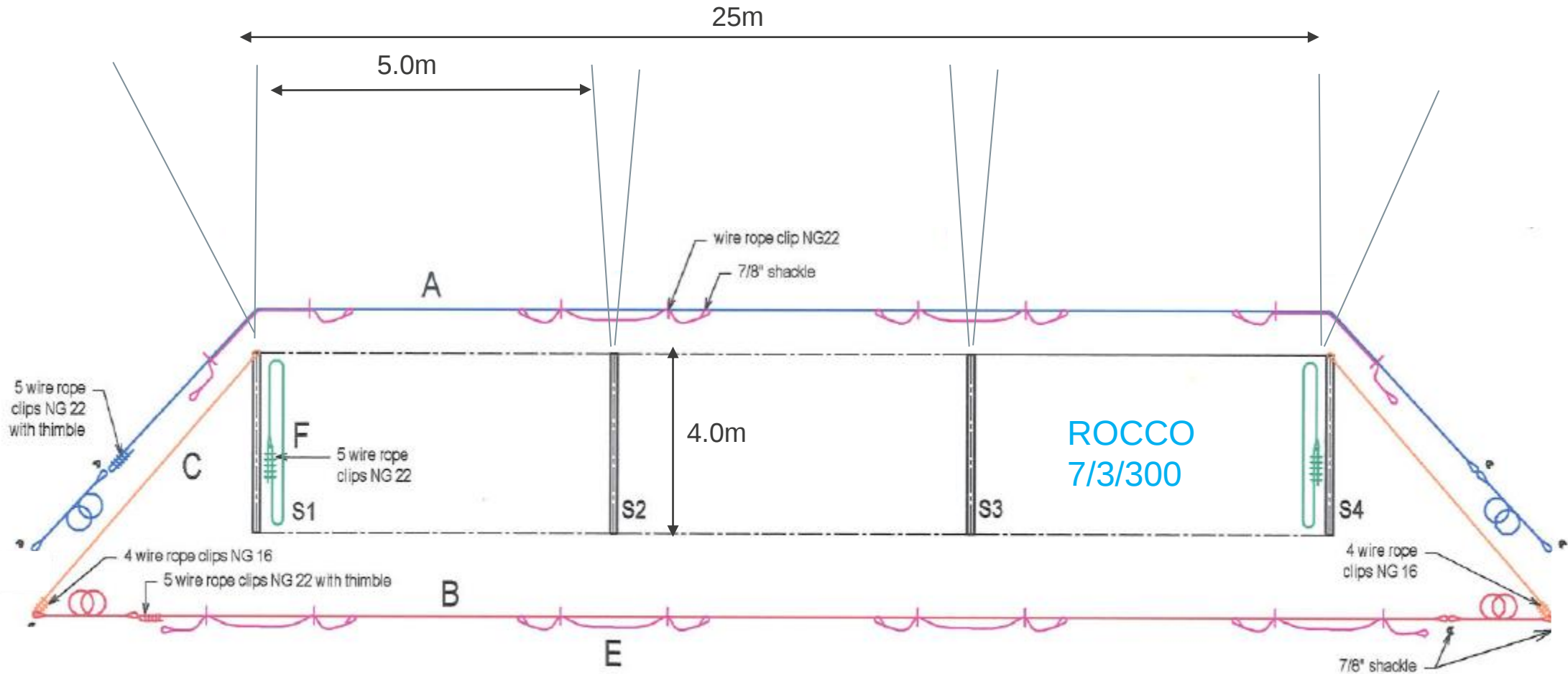
$$q_{\text{rope2;creep}} = 21 \frac{\text{kN}}{\text{m}}$$



DESIGN

ADAPTED RXI-050

Retaining ropes: 18mm
Support ropes: 20mm with brake slings 2x GS-8002
Lateral rope: 18mm
Vertical rope: 20mm
Post: HEB 160 S235

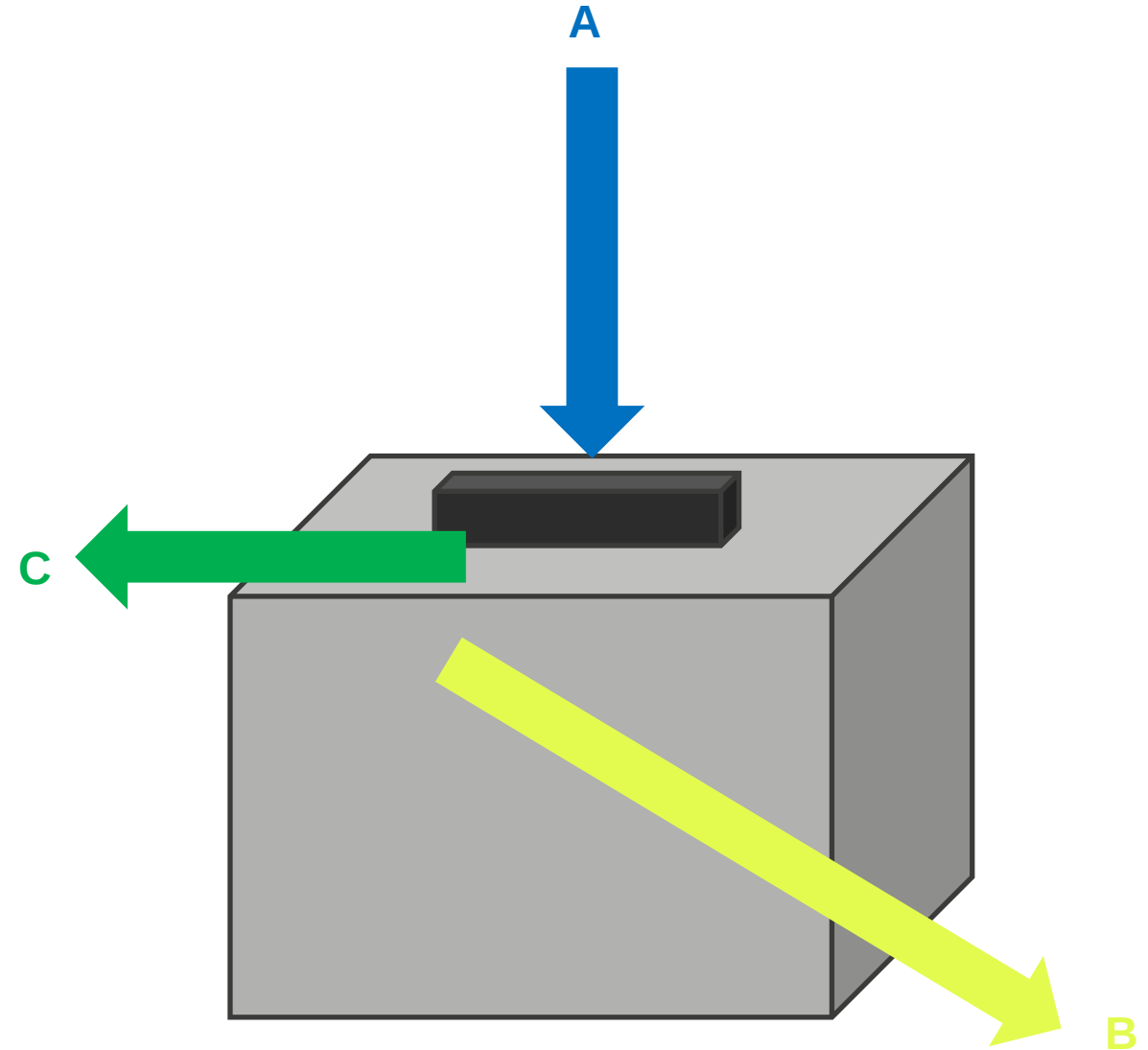
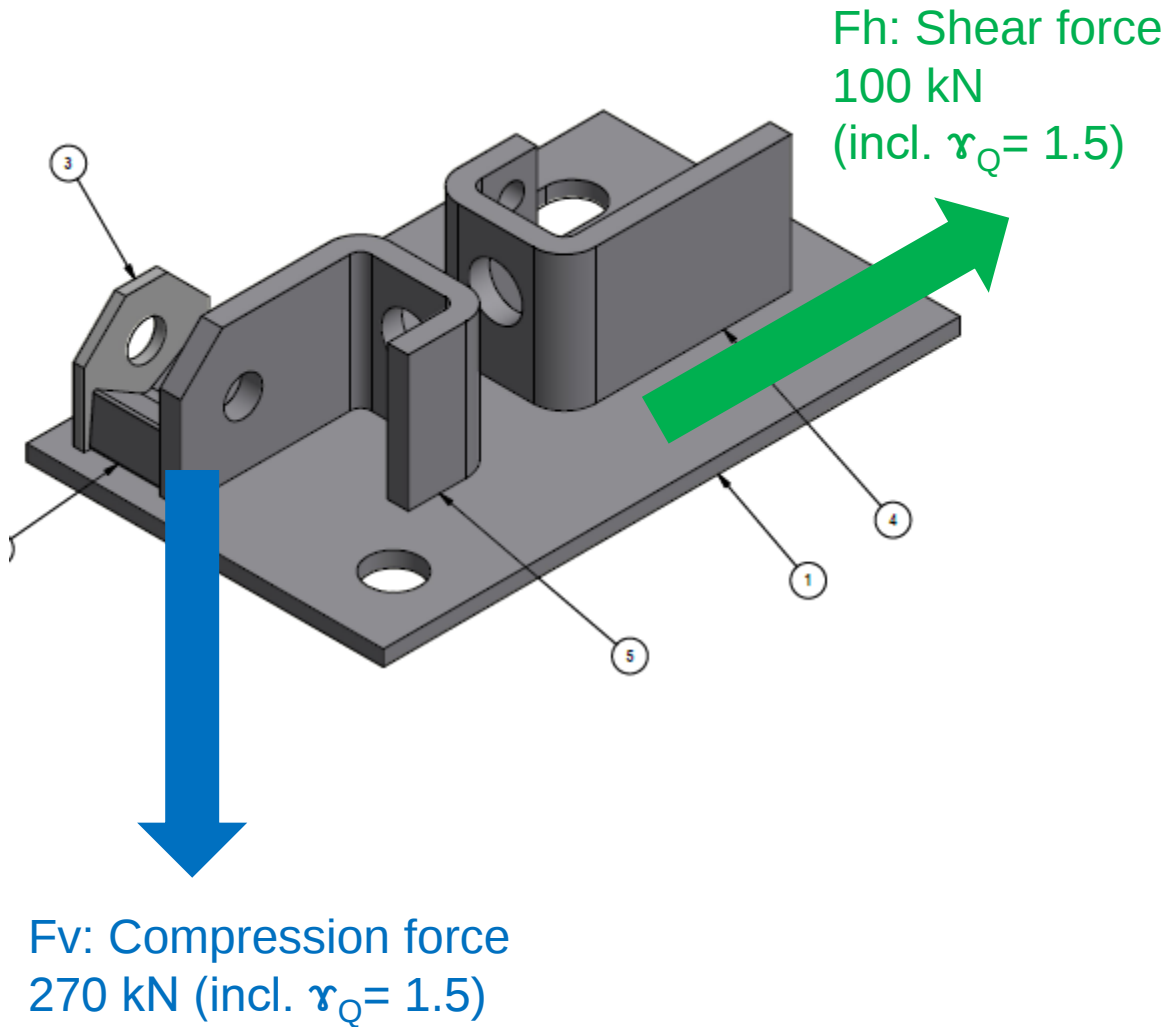




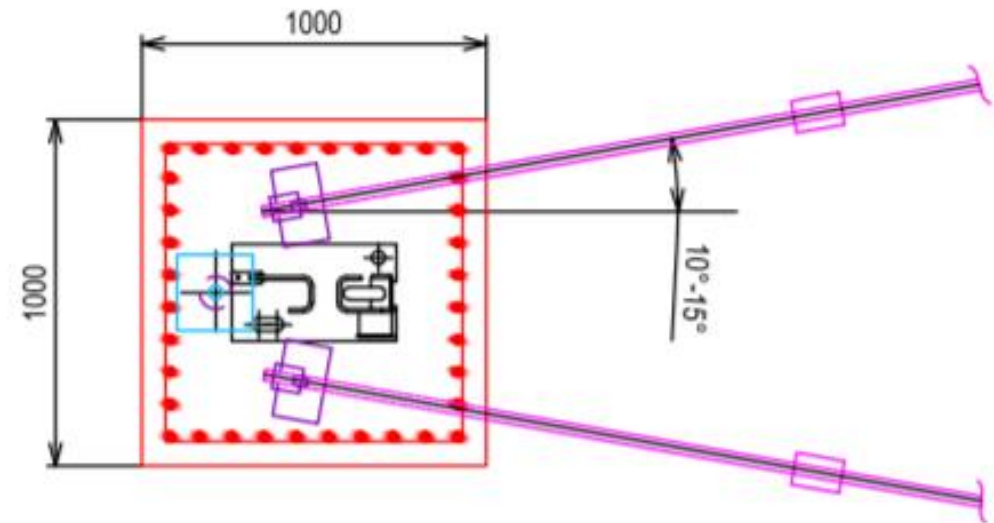
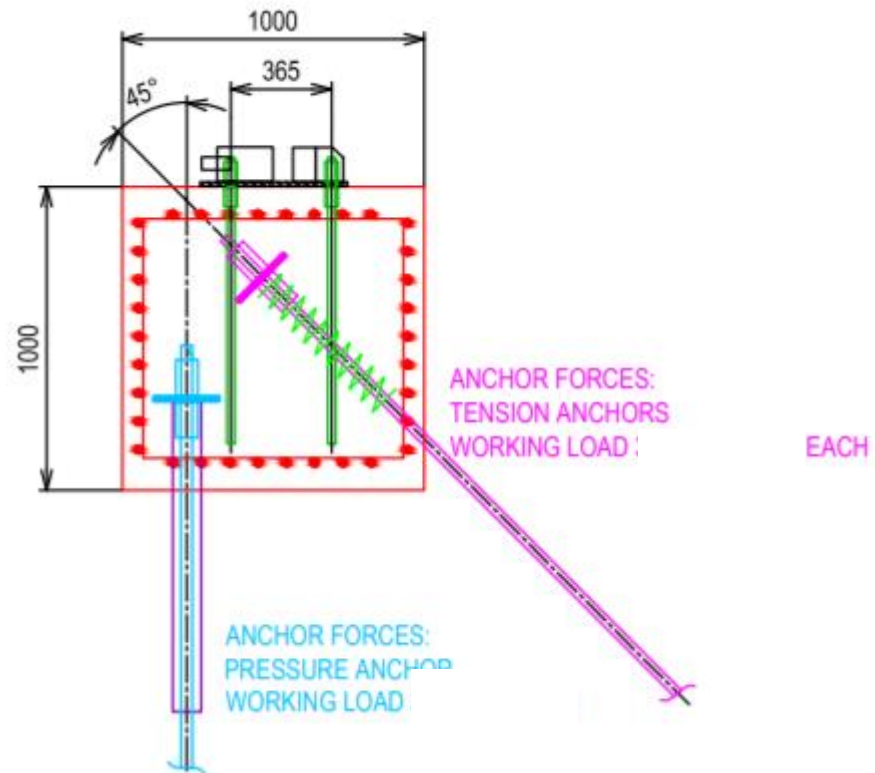
ANCHOR FORCES

ANCHOR FORCES

Foundation

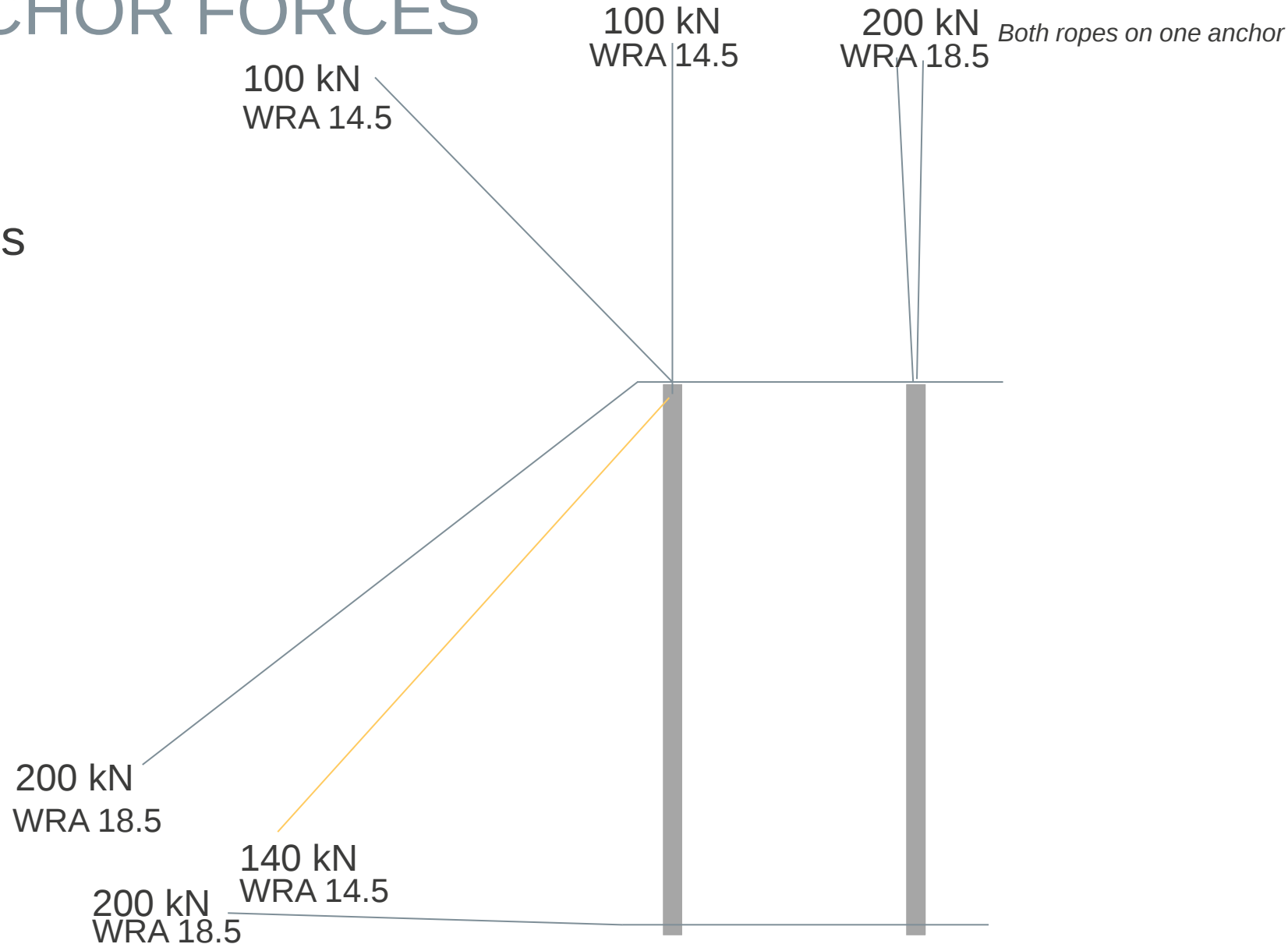


POSSIBLE FOUNDATION



ANCHOR FORCES

Ropes



ROCCO®

Rockfall Protection System

Energy Class 3 (500 kJ)

- **Proof of quality assurance / verification of conformity**
- **Installation manual**
- **System drawing / rope assembly drawing**
- **Test report**
- **ISO 9001 Quality Certificate**

Proof of energy absorption capacity of the system based on one-to-one field tests

Testing agency: Swiss Federal Institute for Forest, Snow and Landscape
Research (WSL) Birmensdorf, Switzerland

Certification agency: Office for the Environment (FOEN)
Bern, Switzerland

Edition: 112-N-FO / 12

Date: 03.01.2014

Purpose and organization of the manual

This product manual ensures that Geobrugg rockfall protection systems are manufactured free from defects in accordance with the latest technology and that the range of applications is clearly defined, the functional efficiency is given, and the installation of the system is professionally carried out and controlled.

The product manual is divided into the following sections:

- proof of quality assurance / verification of conformity
- installation manual
- system drawing / rope assembly drawing
- Test report
- ISO 9001 certificate

No claims are made that this document is complete. The manual describes standard applications and does not take into account project-specific parameters. Geobrugg cannot be held liable for any extra costs that may be incurred for special cases. In case of uncertainties, please contact the manufacturer. The General Sales Conditions of Geobrugg AG are applicable.

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Romanshorn, 03.01.2014


Geobrugg AG
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Switzerland

(stamp / authorized signatures)

I Range of application

The design of rockfall protection systems is based on detailed investigations by specialized engineering firms, particularly taking into account the following geotechnical aspects to define the range of possible applications:

- previous rockfall events
- condition of the rockfall breakout zone
- stability assessment of the entire rockfall zone
- rockfall frequency
- size of the blocks to be intercepted
- trajectories and bounce heights of stones
- calculation of kinetic energies
- positioning of the barrier (consideration of the local topography)
- anchorage conditions

II Quality of the system components

GeobruGG AG, the former GeobruGG Protection Systems Division of Fatzer AG, Romanshorn has been certified since August 22nd 1995 under the registration no. 34372 in accordance with the Quality Management Systems Requirements (ISO 9001, 2008, revised 2010). The certifying body is the Swiss Association for Quality and Management Systems (SQS), which belongs to **EQ-Net 9000**. The quality manual completely specifies how to test the system components (raw material, commercial and end products) comprehensively in order to exclude deficiencies in quality. The relevant certificates are attached as appendices.

III Functional efficiency of the barrier systems

The functional efficiency of the system is based on one-to-one rockfall tests, carried out and tested in accordance with the guidelines for approval of rockfall protection nets in Walenstadt, Switzerland. The one-to-one rockfall tests are carried out by dropping a block vertically into the middle field of a three-field barrier. The distance between posts is 10 m, and an impact velocity of 25 m/s is reached. These approval tests are carried out jointly by the Swiss Federal Expert Commission on Avalanches and Rockfall (FECAR) and the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL).

IV Quality control for installation

This product manual describes in detail the different steps for installation of the barriers. These steps must be faithfully followed by local building contractors.

V Product liability

Rockfall, landslides, debris flows or avalanches are sporadic and unpredictable. Causes can be e.g. human (construction, etc.) or environmental (weather, earthquakes, etc.). Due to the multiplicity of factors affecting such events it is not and cannot be an exact science that guarantees the safety of individuals and property.

However, by the application of sound engineering principles to a predictable range of parameters and by the implementation of correctly designed protection measures in identified risk areas the risks of injury and loss of property can be reduced substantially.

Inspection and maintenance of such systems are an absolute requirement to ensure the desired protection level. The system safety can also be impaired by events such as natural disasters, inadequate dimensioning parameters or failure to use the prescribed standard components, systems and original parts; and/or corrosion (caused by pollution of the environment or other man-made factors as well as other external influences).

In contrast to the one-to-one rockfall tests, which indeed test an extreme load case but still only demonstrate a standardized situation, in the field the layout and design of a protection system can vary greatly because of the topography. The influence of such alterations and adaptations cannot always be determined exactly. Critical points are, for example, post spacing, changes in direction, placement angle of the rope anchor, and the direction and velocity of impact.

Geobrugg can assist with estimating the influence of larger deviations and special situations, and can offer recommendations for feasible solutions. Geobrugg cannot, however, guarantee the same behavior as in the one-to-one rockfall tests. In critical cases, it is advisable to reinforce particular components as compared with the standard barrier.

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Appendices

- A System drawing / Rope guide drawing
- B Test report
- C ISO 9001 certificate

1 Introduction

1.1 Validity of the installation instructions

These installation instructions are valid for RXI systems with an energy absorption capacity of up to 500 kJ (RXI-050). For systems with energy absorption capacities greater than 500 kJ please refer to the applicable system manuals.

Type	Rated energy	Post spacing	Total height
Geobrugg RXI-050	500 kJ	6 - 12 m	2 - 4.5 m

In an event the energy is absorbed by the net itself on one hand, and on the other hand by the brake rings. The remaining energy is transmitted through the posts and the ropes into the ground. The OPTUS® dimensioning procedure is used to calculate the dimensions for a system that is suited to the local conditions.

1.2 Construction

The RXI-050 rockfall protection system (also see the "Rockfall Protection Barrier RXI-050" GS-1054 e system drawing) consists of the following components:

- **Nets made of 7/3/300 ROCCO® rings**



The Rocco ring net is the main element of the system and consists of high-tensile wire with a tensile strength of 1770 N/mm² and a diameter of 3 mm. Ring nets with 7 windings are built into the RXI-050 system. Because of its design, the net itself can absorb energy through plastic deformation. The Rocco ring net can be easily adapted to the terrain and is resistant against multiple impacts and falling trees.

- **Mesh**



Wire mesh is attached to the Rocco ring net in order to ensure that no small stones can pass through the rings or under the structure's bottom support rope.

- **Hinged posts**



The function of the posts is to guide the ropes on which the net is suspended. HEB type steel posts are used. The rope guides at the post head are finished without sharp edges to protect the ropes. The posts are held in position with the help of retaining ropes. The order in which the ropes are arranged on the post head corresponds to the installation sequence. There are two types of RXI posts, border posts and middle posts (see section 4.1).

- **Base plates**



The base plates are the base for the posts and are either set on a concrete foundation or are equipped with an inclined tie rod. The posts are hinged on the plate. All elements that come in contact with the ropes are finished without sharp edges to avoid rope damage. The hinge tube between the posts and the base plate is designed as a predetermined breaking point to protect the base plate and anchors in case of a post hit.

- **Support and retaining ropes**



The job of the support ropes is to transmit the forces occurring in the net over the posts to the anchors. The retaining ropes hold the posts in position. Rope construction is in accordance with EN 12385-4 (DIN 3060/3064). The ropes are available in galvanized or Geobrug Supercoating quality.

- **Spiral rope anchor**



The support and retaining ropes are anchored in the soil or rock by means of Geobrug spiral rope anchors. The spiral rope anchors are equipped with a flexible head, which ensures that forces not working directly in the pulling direction can also be transmitted. Two galvanized tubes over the anchor head, plus the galvanized spiral rope, provide double corrosion protection.

- **Brake rings**



The task of the built-in Geobrug brake elements (brake rings) is to dissipate energy via plastic deformation and friction, and to protect the support rope from overload. They are built into the support ropes laterally in such a way as to permit easy replacement. The steel tubes also protect the rope from corrosion and mechanical damage.

- **RUNTOP rope**



The RUNTOP ropes are mounted on the support ropes with wire rope clips (double clips are used for support rope separation with intermediate anchor rope). They bypass the post heads and base plates for suspending the net. As a result, in an event the net is not blocked by the neighboring post heads and base plates, and no concentration of forces occurs. Furthermore, more net surface is active in an impact, and the capacity is increased.

- **Shackles**



The connections between the ring net and the ropes are made with shackles. They guarantee that the net can slide on the rope without damaging it. The nets are also connected vertically with shackles. In general, the shackle is designed to produce a stronger connection than the net itself. The shackles can be bonded with adhesive (e.g., with Loctite) if they are required to be theft-proof.

- **Wire rope clips**



The ropes are supplied with pressed loops wherever possible. After tensioning, the free end of the rope is fastened with wire rope clips in accordance with EN 13411-5 (DIN 1142). It is very important to use the right number of wire rope clips with the required torque values. The wire rope clips can be bonded with adhesive (e.g., with Loctite) if they are required to be theft-proof.

- **Double clip**



The double clip consists of two clamp devices that can apply two different torques. The double clip is only used in the System RXI-050 with support rope separation on the upper support rope. The double clip guarantees the optimal functioning of the RUNTOP technology.

- **Border system drawing**

The supporting ropes are guided over the post heads or base plates to the anchors. The brake elements are fitted at the ends of the corresponding support ropes. The lateral anchor rope braces the structure downslope, stabilizes the border posts in an event and also makes installation easier. The vertical rope forms the border termination of the net. The RUNTOP ropes are mounted on the support ropes in the area of the post heads and the base plates.

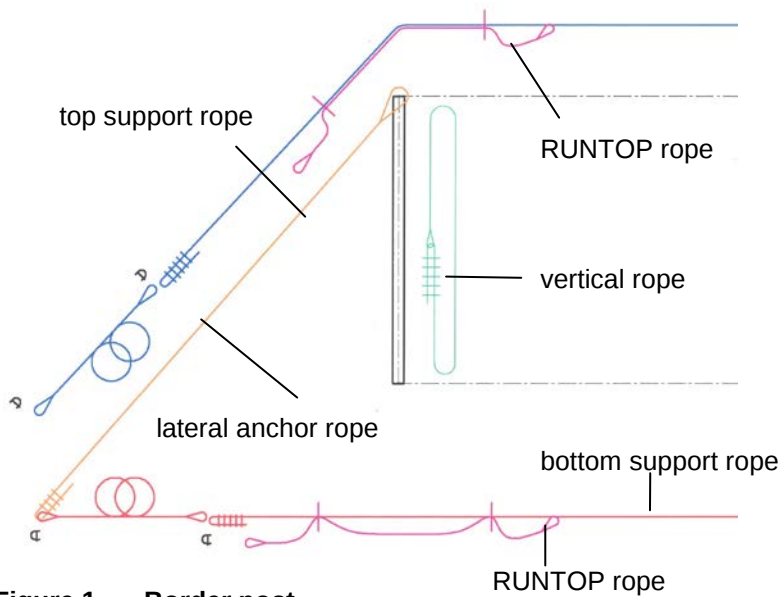


Figure 1 Border post

- **System drawing: support rope separation (with intermediate anchor rope)**

The support ropes must be separated at least every 60 m in accordance with the drawing below, if there is no need to do so more frequently because of topographic constraints.

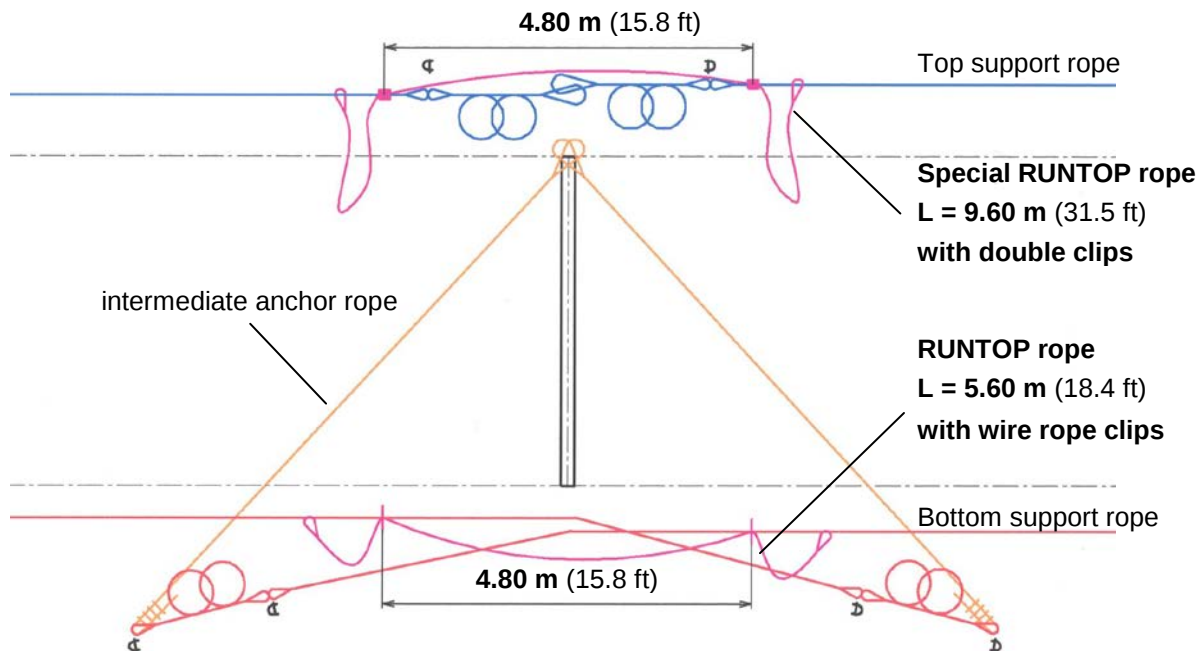


Figure 2 Support rope separation (with intermediate anchor rope)

1.3 Anchor forces

The forces occurring during a rockfall event can be very great. For this reason, underground and civil engineering work and installation must be carried out very carefully. The anchor lengths for anchor ropes depend on the forces measured in the connecting ropes in the one-to-one experiments and upon the type and quality of the soil.

2 Installation

2.1 Installation steps

The installation sequence is described briefly here. The individual steps are described in detail in subsequent sections.

Preparation

section 3

- Preparing the terrain
- Marking off the anchor and base plate positions

Installation of the understructure

section 3

- Drilling the anchor holes and grouting the anchors with mortar
- Installing the concrete foundation
- Installing and tightening the base plates

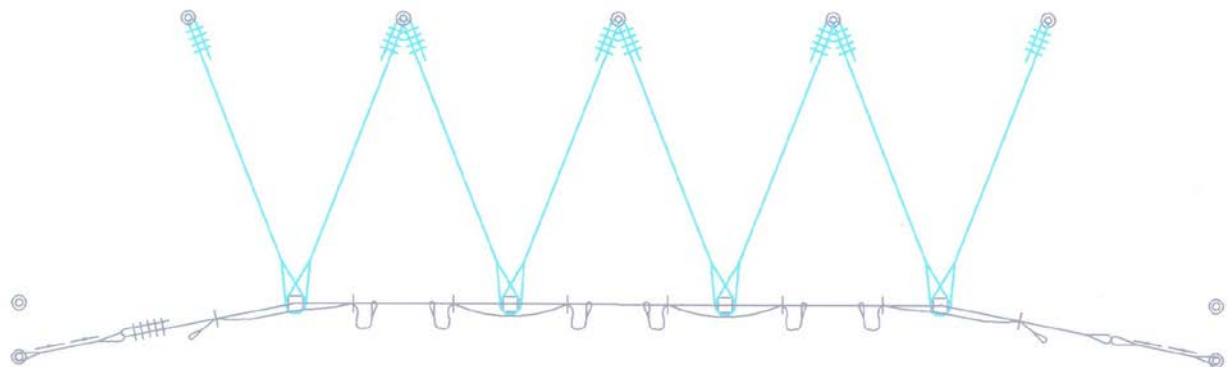
Installation of the barrier

sections 4 and 5

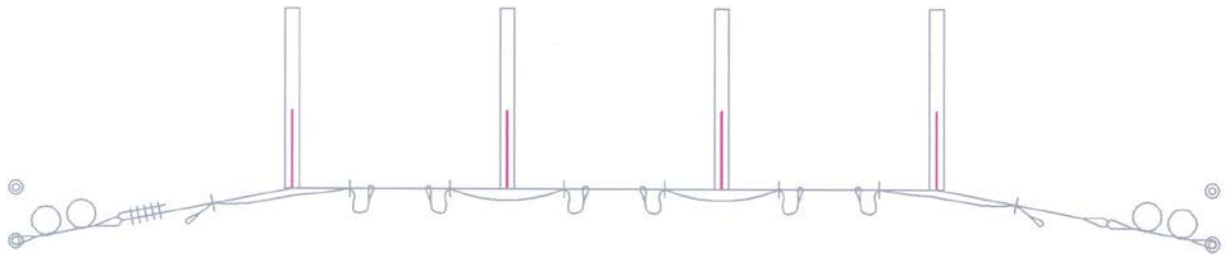
- Inserting the bottom support rope into the base plates and installing the rope slings with brake rings. Then inserting the rope guiding tubes into the base plates and tensioning the bottom support rope. Then installing the RUNTOP ropes with wire rope clips.



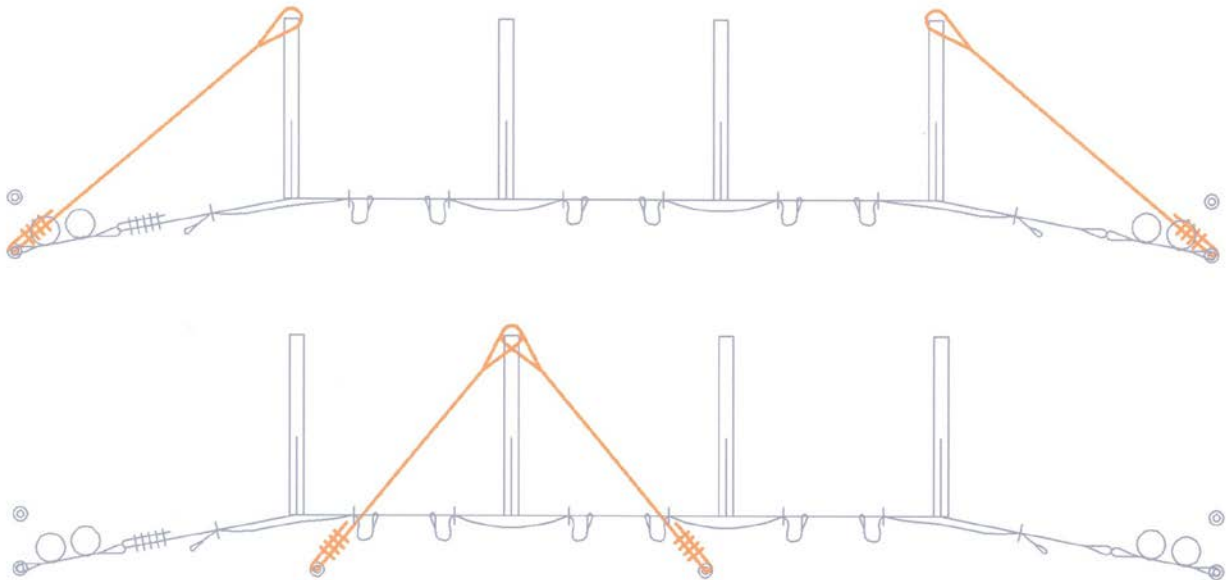
- Installation of the posts and the retaining rope (by hand, with crane or helicopter)



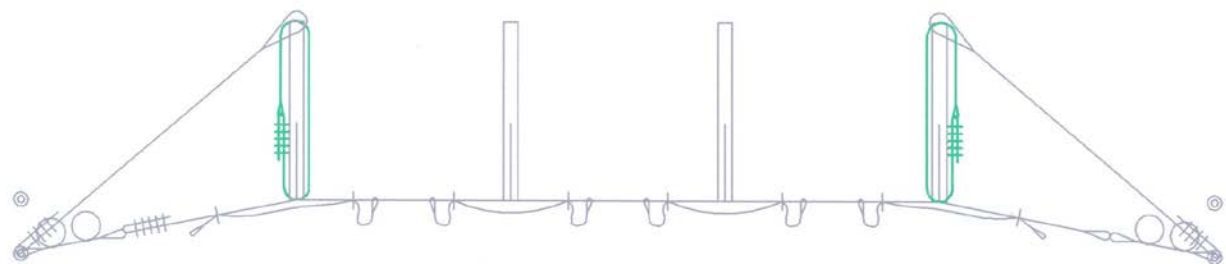
- Install the overturn securing ropes (immediately after installing posts!)



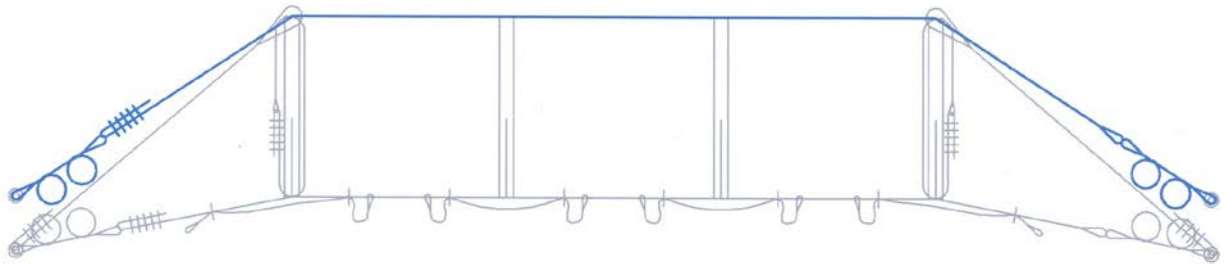
- Install lateral and intermediate anchor ropes (the applicable posts must be border posts!)



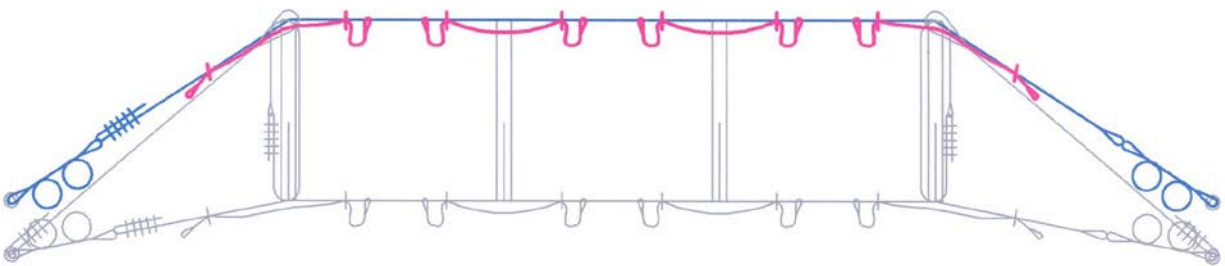
- Installation of the vertical ropes on both outside posts



- Installation of the rope slings with brake rings for the top support rope on the anchors. Insertion of the top support rope into the post heads and tensioning the top support rope.



- Installation of the ring nets and RUNTOP ropes on the top support rope (using tension belts between the posts).



- Installation of the shackles on the RUNTOP ropes after ring net installation
- Applying the wire mesh

Final inspection and acceptance

section 6

2.2 Recommended installation tools

The following tools are recommended for marking and installation:

Marking	• tape measure 30 to 50m (98.4 to 164 ft) • 2 meter folding rule • 5 red and white surveyor's pegs • inclinometer • spray paint • small wooden or iron pegs (min. 3 pegs per field) • hammer • product manual
Installation	• fork or ring wrench SW 22 and 24 • socket wrench with ratchet • torque wrench SW 22 and 24, range 50-120 Nm (required torque) • fork wrench for anchor nuts: GEWI 25 --> SW 41 • wire rope cutters Felco C16 or C112 or equivalent; cutting capacity 12 mm • motor disc cutter or hammer wire rope cutter; cutting capacity 28 mm • pincers, flat nose pliers • galvanized stranded wire binding cord 2 mm or wire • angle spirit level (water-level) • roll of adhesive tape • draw tongs, small 8-16 mm / large 14-26 mm (at least 2) • at least 2 tension belts / straps • come-along/pulley, e.g., type LUGAL • chain hoist or Habegger, at least 1.5 metric tons (15 kN) • auxiliary ropes

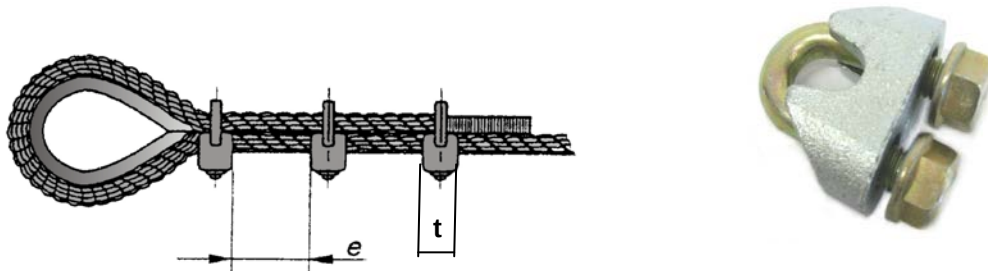
Table 1 Installation tools

2.3 Use of wire rope clips

The first wire rope clip is attached close to the thimble or the loop. The wire rope clips must be spaced so that the distance between them e is a multiple of from 1.5 to 3 times the width t of the wire rope clip.

The clip stirrups ("u-bolts") are always applied on the unstressed rope end, the jaws ("saddle") always on the stressed rope ("Never saddle a dead horse").

Extract from EN 13411-5 (DIN 1142)



Nominal size [mm]	Required torque (1) [N * m]	Required number of wire rope clips	Wrench width [mm]
16	55.0	4	22
19	75.0	4	22
22	120.0	5	24

Table 2 Torque values and number of wire rope clips

The torque values given apply to greased screw-nut connections.

During installation and before starting operation, tighten the hexagonal nuts to the required torque.

After installation of the barrier, the torque of the rope connections on the lateral and upslope anchors must be rechecked or readjusted.

(1) The torque values given are 10 % higher than those recommended in the standard. This is based on the deviation in common torque wrenches.

3 Anchorages

3.1 Marking off the anchorage locations

The line followed by the barrier should be planned so as to be as straight and horizontal as possible. Larger irregularities in the terrain must be bypassed or evened out as needed (fill up holes, flatten bumps or mark off along the contour line).

The base line is marked off and divided into the prescribed distances between posts (x) (measure parallel to the slope). The positions of the posts are then marked. In cases of deviations of more than 10° out of the horizontal, rhomboidal nets (B) must be used instead of rectangular nets (A). Here the elevation difference (n) of the posts must be measured and communicated to Geoblogg in an appropriate form.

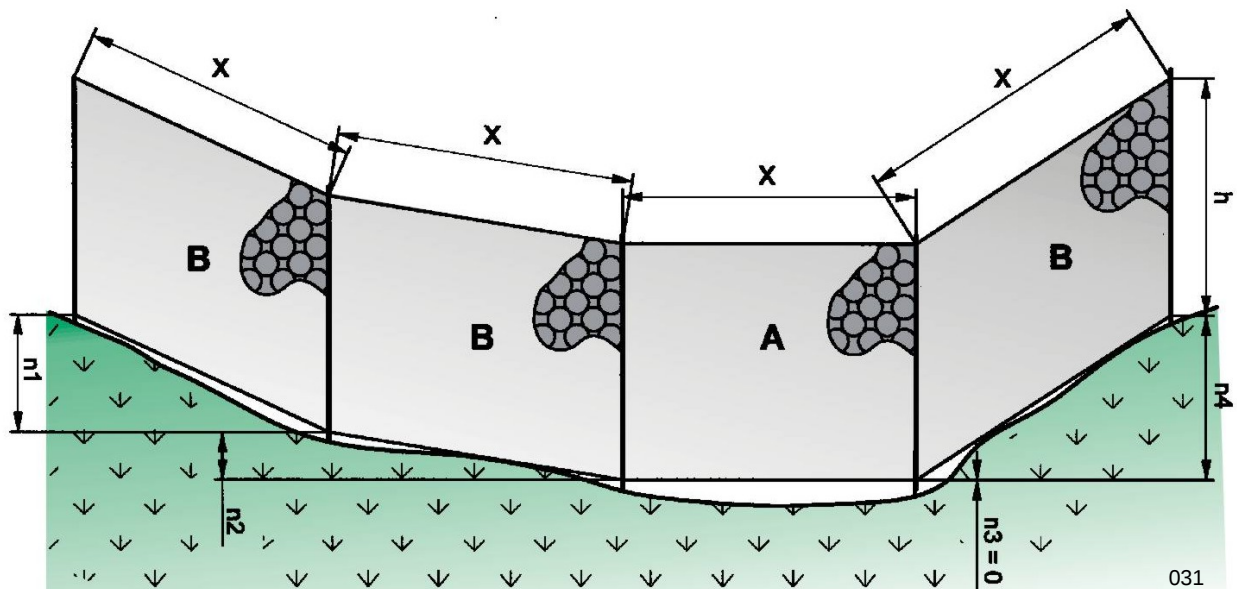


Figure 3 Rocco ring nets

- x : post spacing measured parallel to the slope, tolerance ± 5 cm
- $n1$ - $n4$ elevation differences
- h : net height = barrier height
- A: rectangular net
- B: rhomboidal net

3.2 Rope anchors for retaining ropes

The rope anchors are positioned in the middle behind both posts (at a distance of $x/2$ from a line perpendicular to the base line). The distance between rope anchor and base line in a regular terrain is given by d (see Table 3). The distance can vary in irregular topography.

In the layout, a deviation from the prescribed retaining rope line may not exceed $\pm 10^\circ$ (see Figure 4). In the case of a solid rock wall (distance between barrier and rock wall too small), each retaining rope must be anchored individually. In this case, two anchors instead of one per field will be needed.

The angle between retaining rope and posts must be **between 60° and 85°** in all cases (see Figure 13).

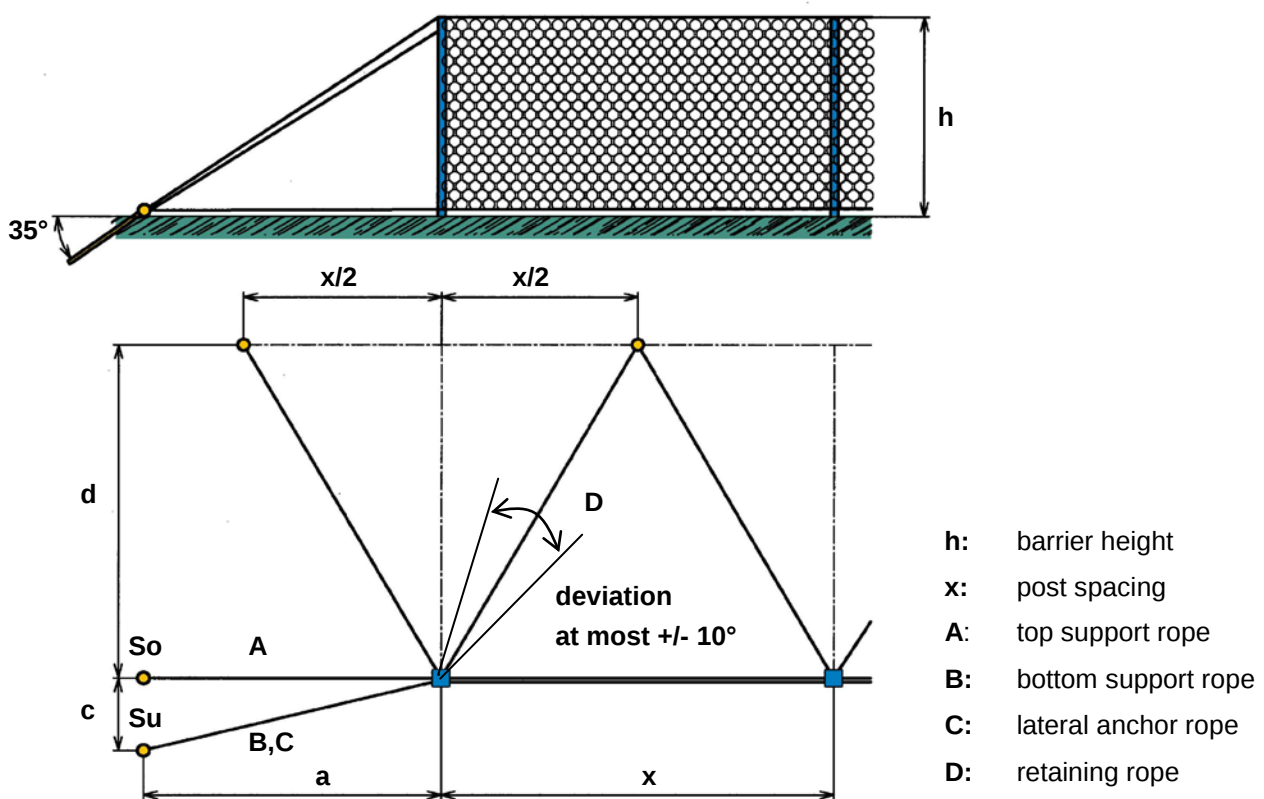


Figure 4 Upslope and lateral anchor points

h	a	c	d	e
2.00 m (6.6 ft)	6.00 m (19.7 ft)	0.65 m (2.1 ft)	3.50 m (11.5 ft)	1.00 m (3.3 ft)
2.50 m (8.2 ft)	6.00 m (19.7 ft)	0.80 m (2.6 ft)	4.30 m (14.1 ft)	1.25 m (4.1 ft)
3.00 m (9.8 ft)	6.00 m (19.7 ft)	1.00 m (3.3 ft)	5.10 m (16.7 ft)	1.50 m (4.9 ft)
3.50 m (11.5 ft)	6.00 m (19.7 ft)	1.15 m (3.8 ft)	6.00 m (19.7 ft)	1.75 m (5.7 ft)
4.00 m (13.1 ft)	6.00 m (19.7 ft)	1.30 m (4.3 ft)	6.80 m (22.0 ft)	2.00 m (6.6 ft)
4.50 m (14.8 ft)	6.75 m (22.2 ft)	1.50 m (4.9 ft)	7.60 m (25.0 ft)	2.25 m (7.4 ft)

Table 3 Distances

3.3 Rope anchors for support ropes and lateral anchor ropes

The rope anchors for the support ropes and the lateral anchor rope are located a distance **a** away from the last base plate. The anchor for the top support rope is in line with the barrier, while that for the bottom support rope and the lateral anchor rope lies farther downslope by a distance **c**. Care must be taken that the upper anchor lies in line with the barrier or slightly in front, but not behind the barrier line.

3.4 Rope anchors for intermediate anchor rope

An intermediate anchor rope requires two anchors that are located **a** and **c** away from the respective posts. Both the intermediate anchor rope and (in case of a simultaneous support rope separation) the bottom support rope are guided to these anchors.

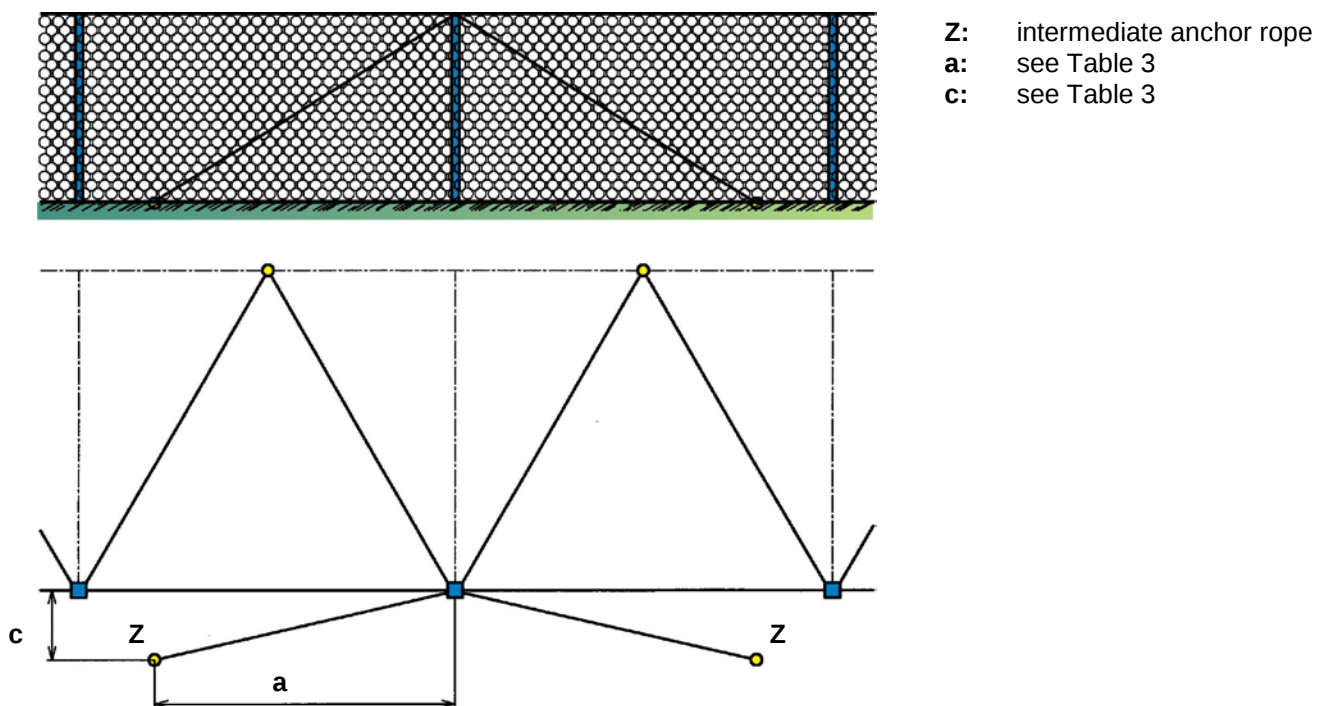


Figure 5 Anchor locations for an intermediate anchor rope

3.5 Upslope change in direction

An additional downslope anchor rope (T) is required if the barrier changes its direction by an angle of 5° - 15° upslope. The rope anchor is located downslope at a distance of **e** from the post (see Table 3).

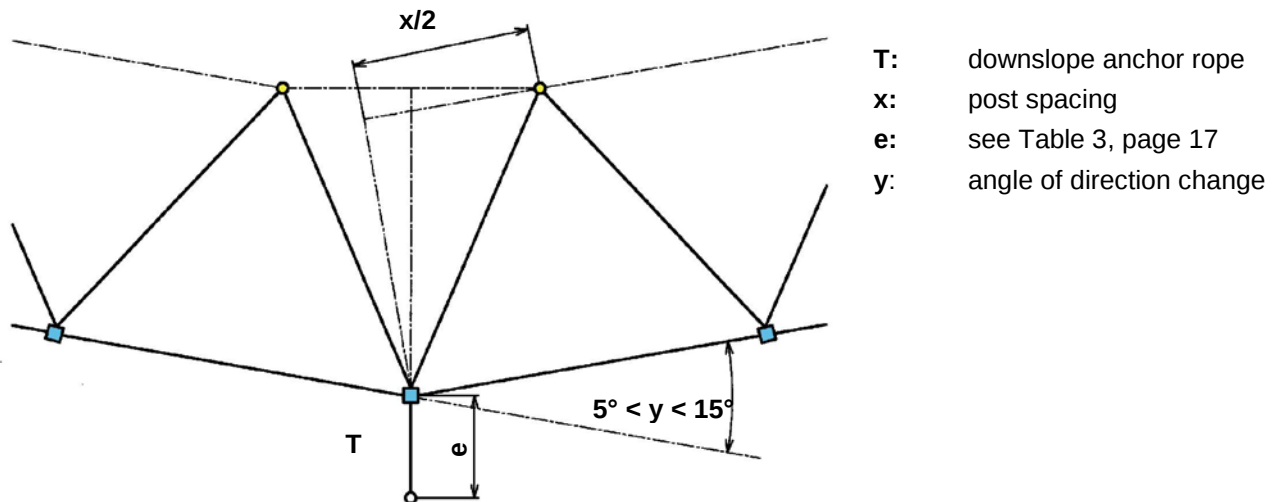


Figure 6 Anchor location for a downslope anchor rope

If the barrier line changes upslope more than 15° , then an intermediate anchor rope in accordance with section 3.4 is required, in which case the downslope anchor rope is no longer necessary.

3.6 Downslope change in direction

For a downslope change in direction of over 30° an additional retaining rope D is installed on the post (three retaining ropes instead of two, see Figure 7). The maximum downslope change in direction is 40° .

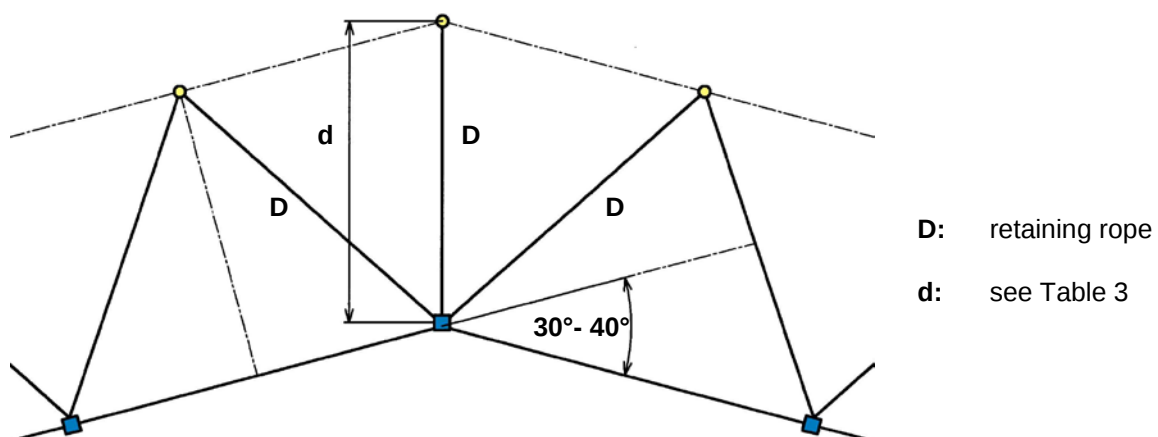


Figure 7 Downslope change in direction

3.7 Anchorage of the base plates

The same post base plate can be used on a concrete foundation with two parallel anchors as with a tie rod inclined 45°.

In case of a change in direction, the base plate should be positioned in the bisecting line of the angle that is formed by the two immediately neighboring net fields (∂ , μ , π , Ω).

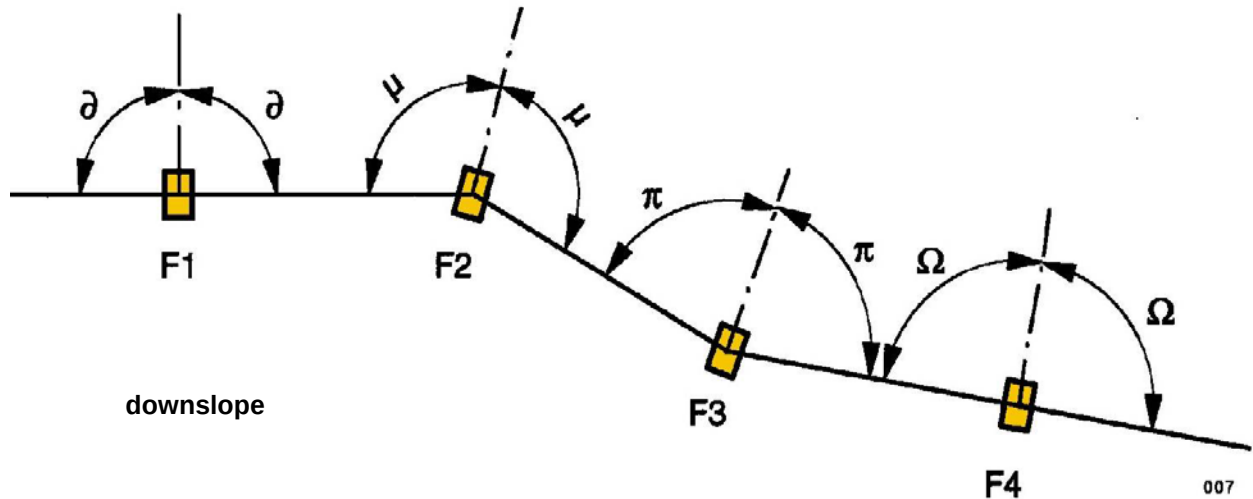


Figure 8 Position of foundations / base plate

F1 – F4 = sequential foundations

δ , μ , π , Ω = bisecting angles

3.7.1 Unconsolidated soil and weathered rock

The following instructions are only valid if the base plate is inclined $0 - 30^\circ$ from the horizontal and a maximum of 30° less than the inclination of the slope. Should cases occur in which these boundary conditions cannot be adhered to, please contact the manufacturer.

- Bevel the terrain in the base plate area to from 0° to max. 30° from the horizontal (slant of the base plate max. 30° less than the slope inclination).
- Drill the hole for the tie-rod (2) with an angle less than 45° to the base plate and with the prescribed length.
- Drill the hole for the second rod anchor (1) perpendicular to the base plate (caution: drill axis offset).
- Grout the rod anchor (1) with stabilization tube (3) and the tie-rod (2).
- Set and orient the base plate in the grout layer.

The fastening nuts may not be tightened until the **frost and salt resistant** grout has cured completely.

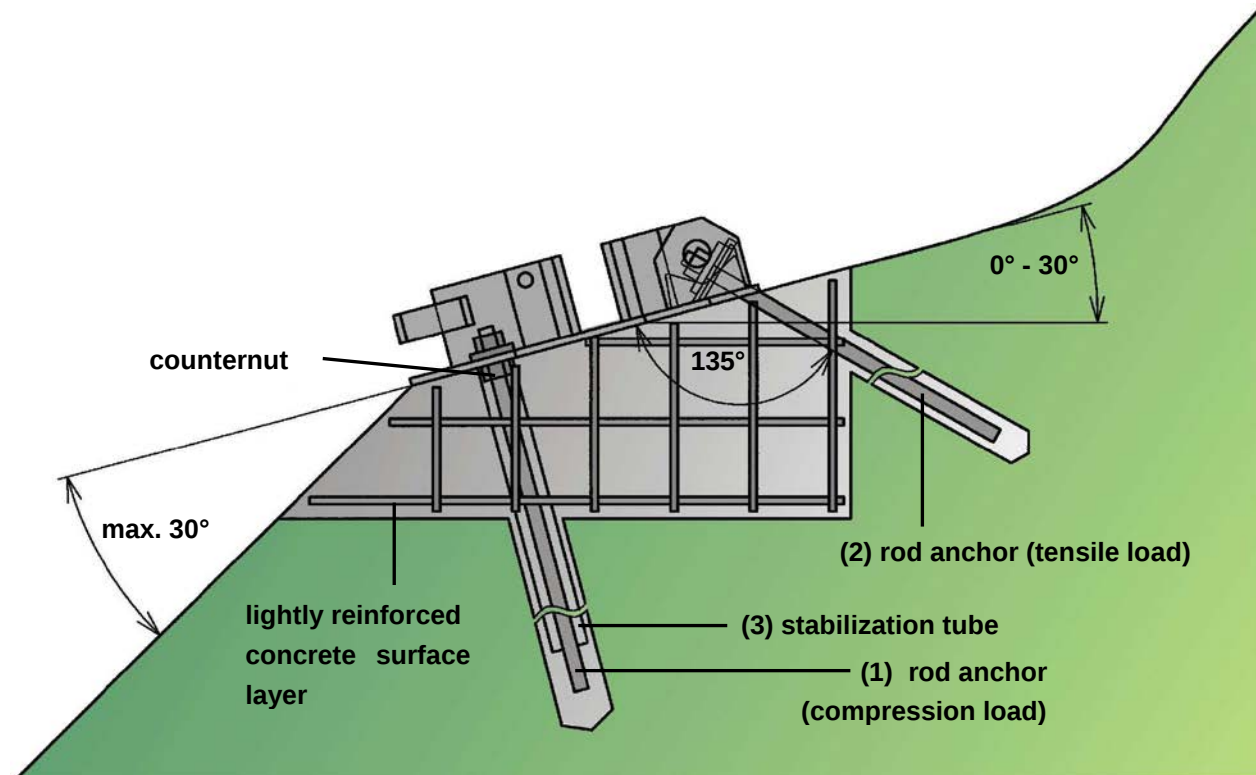


Figure 9 Variant composite anchor in unconsolidated soil

Base plate inclination 0-30°. At most 30° less than the slope inclination.



In order to avoid damage to the grout layer, it is recommended to install a lightly reinforced concrete surface layer (as shown in Figure 9).

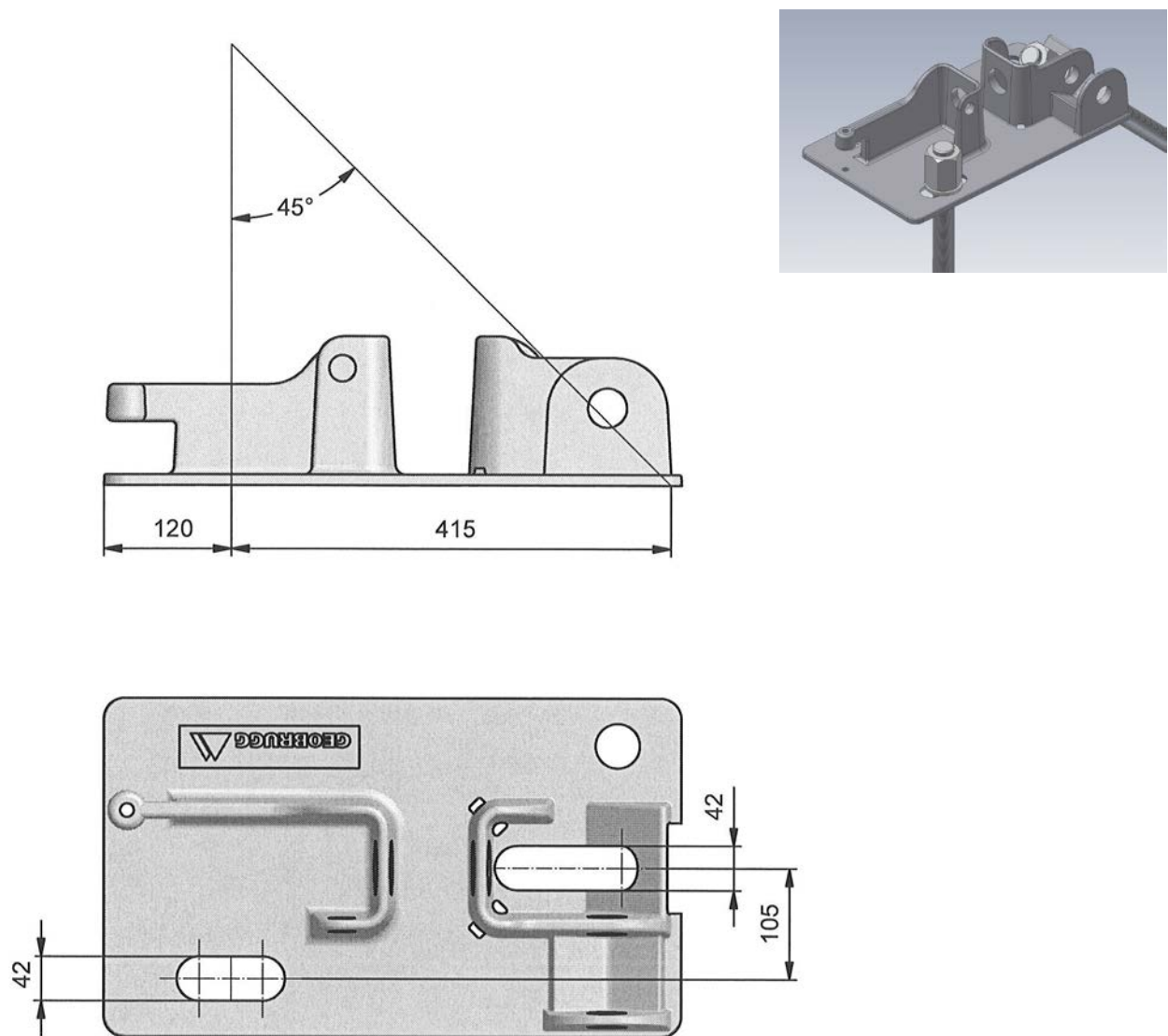


Figure 10 Arrangement of the rod anchors (soil)

3.7.2 Rock

The two anchor bolts are to be positioned so that the base plate lies cleanly on the rock with the aid of a thin intermediate layer of grout.

- Bevel the ground in the area of the base plate to from 0° to max. 30° from horizontal (slant of the base plate max. 30° less than the slope inclination).
- Drill the two holes for the anchor rods perpendicular to the base plate.
- Grout in the anchor rods.
- Set and orient the base plate in the grout layer.
- The fastening nuts may not be tightened until after the **frost and salt resistant** grout has cured completely.

3.7.3 Concrete foundation for all ground types

The dimensions and reinforcement of the concrete foundation are to follow the specifications of the project engineers.

- Excavate foundation pit.
- Install reinforcement.
- Insert the two anchor rods for fastening the base plate (as a precaution use the base plate as a template).
- Pour the concrete foundation.

The foundation can be laid horizontally for slope inclinations up to 30°. The anchor rods are then concreted in vertically. If the slope inclination is greater than 30°, the surface of the foundation must be inclined 15° downslope. The anchor rods must always be positioned at a right angle to the foundation surface and base plate respectively.

IMPORTANT: The top surface of the foundation should be as nearly as possible on the same level as the terrain. The bottom support rope should traverse as low as possible. In steep terrain: lay the foundation so low that its front edge projects only slightly above the terrain.

It is important to make the width of the foundation as narrow as possible on the surface. This is especially important if there is a big elevation difference between neighboring posts, because the bottom support rope should not run laterally across an edge of the foundation, where it could develop a kink.

The fastening nuts may not be tightened until the concrete has cured completely.

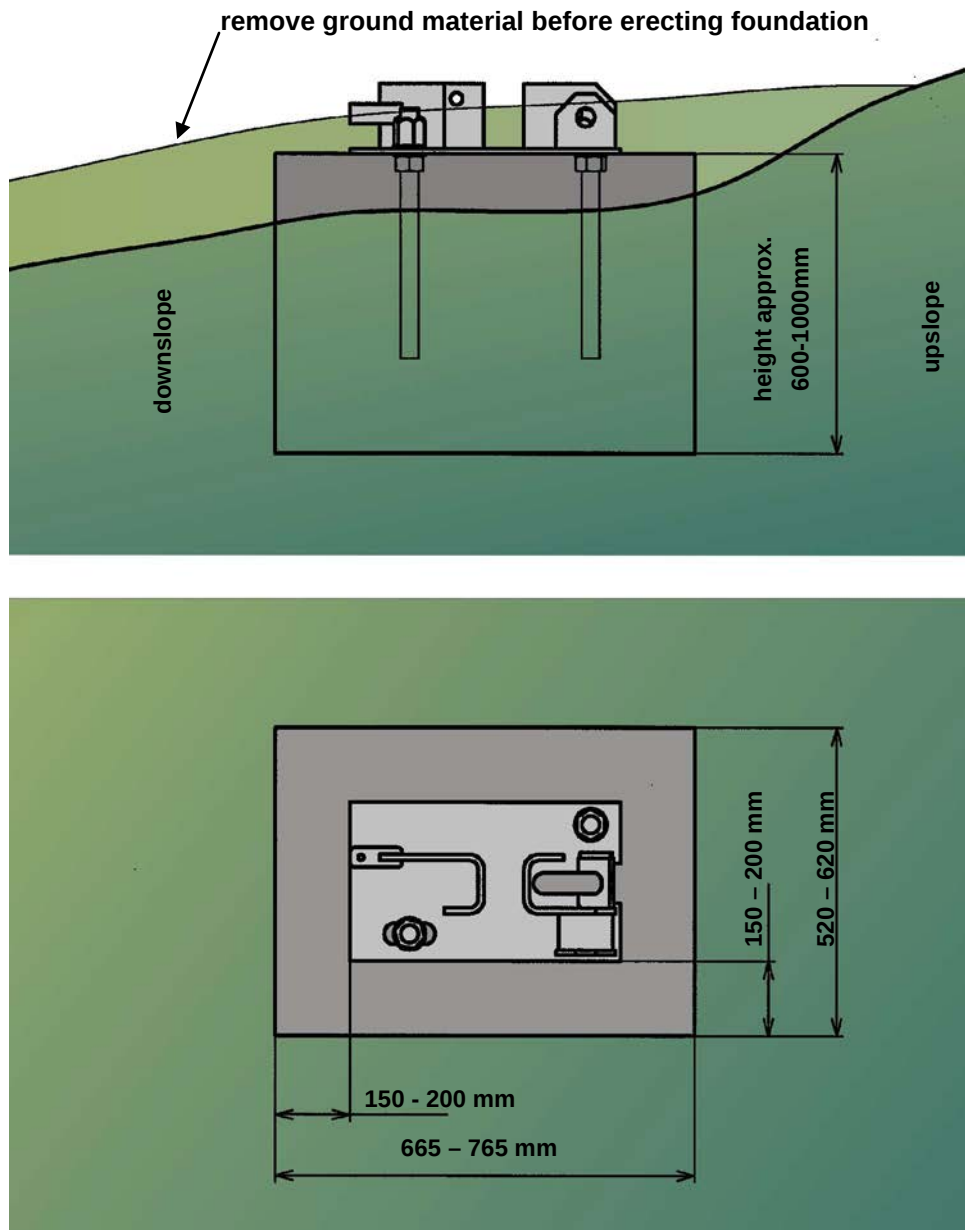


Figure 11 Concrete foundation should not rise above the terrain line.

Foundation surface is horizontal for slope inclination up to 30°.

Foundation surface should incline 15°downslope for slope inclination > 30°.

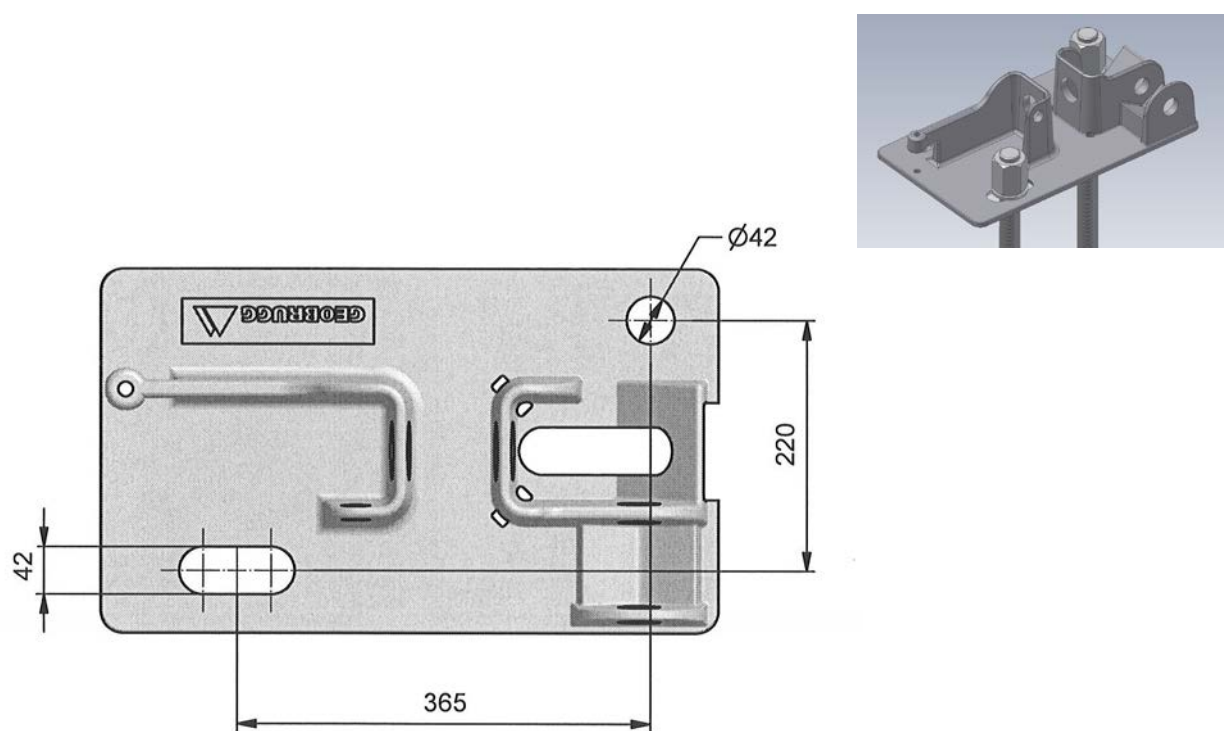


Figure 12 Arrangement of the rod anchors (concrete foundation / rock)

3.8 Anchorage of the retaining ropes

The anchor holes are drilled in the pulling direction with a minimum inclination of 15° to the horizontal. When grouting the anchors must be inserted into the hole to the orange marking (approximately center of the anchor head casing). **Make sure to insert the anchor correctly into the borehole: the spiral ropes of the anchor lie beneath, not on top of each other (see Figure 13).**

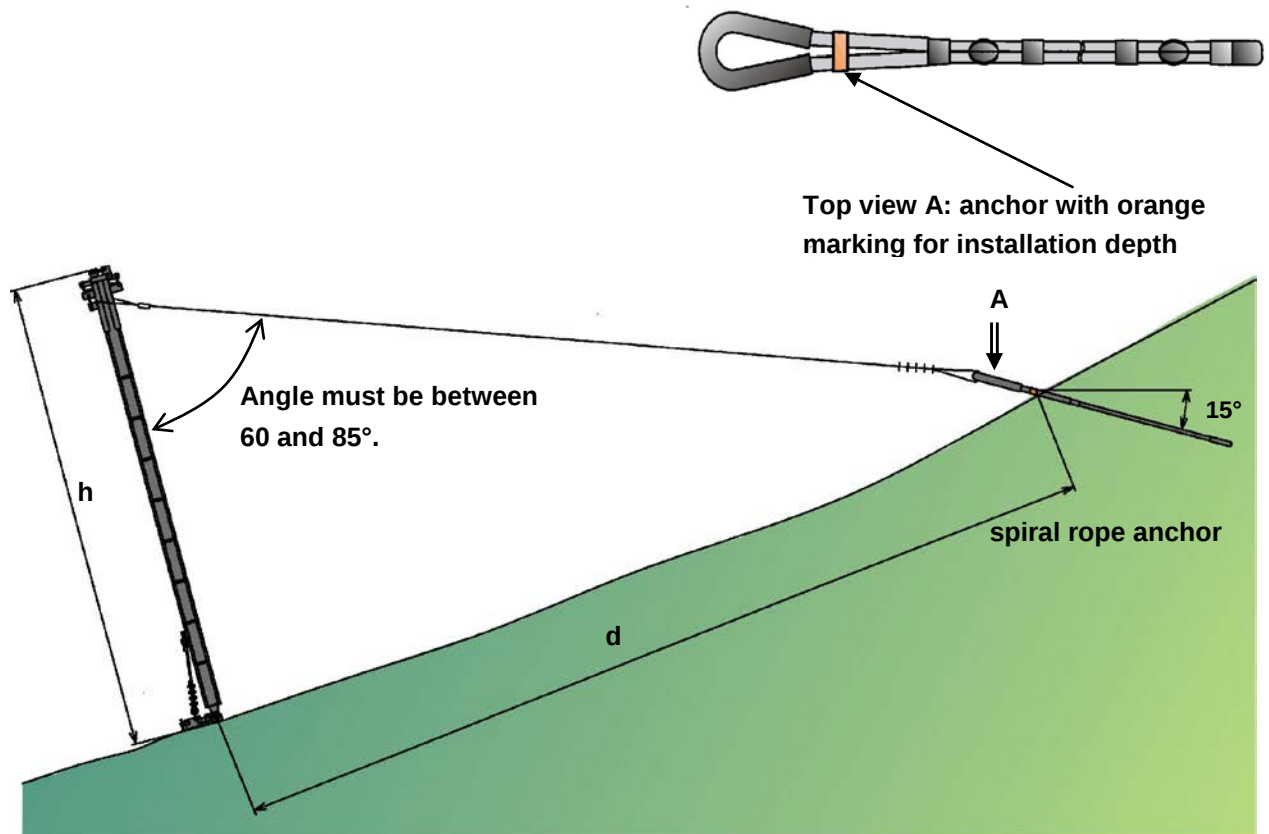


Figure 13 Anchorage of the retaining ropes

h	d
2.00 m (6.6 ft)	3.50 m (11.5 ft)
2.50 m (8.2 ft)	4.30 m (14.1 ft)
3.00 m (9.8 ft)	5.10 m (16.7 ft)
3.50 m (11.5 ft)	6.00 m (19.7 ft)
4.00 m (13.1 ft)	6.80 m (22.0 ft)
4.50 m (14.8 ft)	7.60 m (25.0 ft)

3.9 Anchorage of the lateral anchor ropes

The anchor Su (see Figure 4) for the lateral anchor rope and the bottom support rope should be installed as flat as possible in the pulling direction of the bottom support rope (but with an angle of at least 35° with the ground surface). The distances to the base plate depend on the height of the barrier and can be seen in Table 3.

3.10 Anchorage of the support ropes

The bottom support rope is also fastened to anchor Su. For the anchorage of the top support rope, a separate anchor So is installed near anchor Su and in the continuation of the line of the barrier. The distance is to be taken from Table 3.

3.11 Anchorage of downslope and intermediate anchor ropes

If there is a change in direction upslope or over a crest, an additional **downslope lateral anchor rope (T)** is necessary. Here the drill hole for the anchor should be placed as nearly as possible in the pulling direction of the anchor rope. Care must be taken that the terrain affords enough covering (i.e., at least 35° steeper than the slope inclination, see Figure 22).

If this change in direction is greater than 15°, **intermediate anchor ropes (Z)** are installed instead of the downslope anchor rope (T), (in this case, it is again important that the terrain affords enough covering, i.e., at least 35° steeper than the surface of the ground).

4 Installation of the base plates, the posts and the ropes

4.1 Post sets

The post sets consist of the posts, base plates, securing elements and the overturn securing rope. There are two types of RXI posts, border and middle posts.

Base plate and overturn securing rope

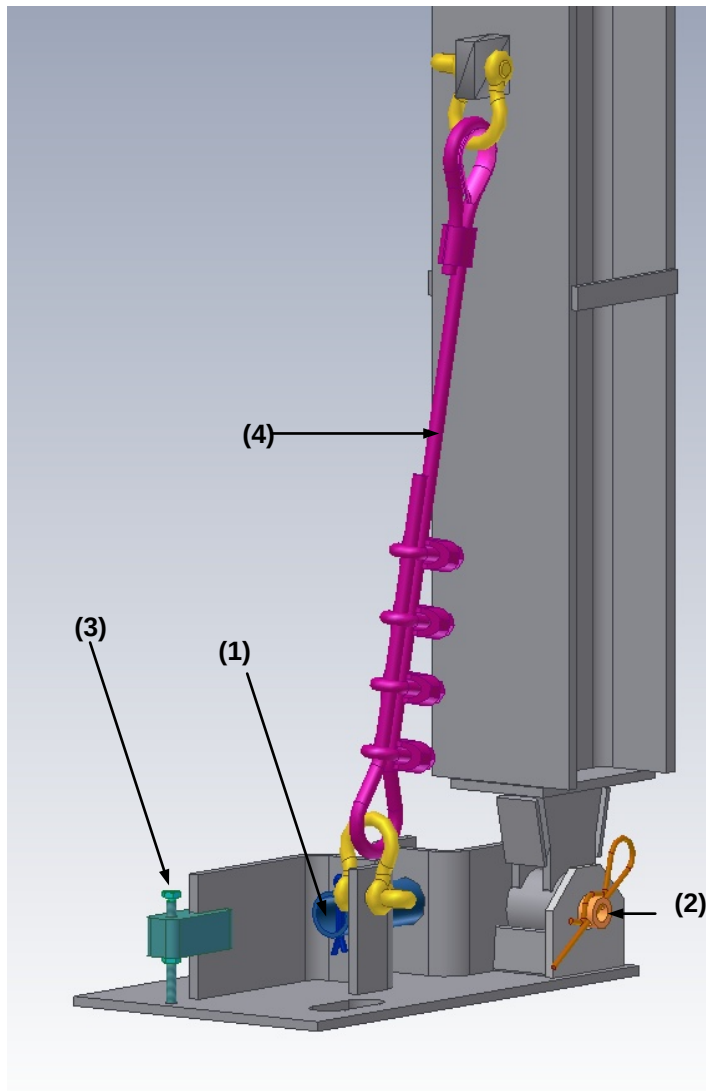


Figure 14 Base plate and overturn securing rope

The base plate and overturn securing rope require the following parts:

The rope guiding tube (1) is secured with two cotter pins of length 63 mm. The hinge tube (2) connects base plate and post and is secured with two large spring cotters. An M10 screw with a nut serves as a predetermined breaking point (3). The overturn securing rope (4) consists of a 14 mm wire rope, 2 5/8" shackles and 4 NG 16 wire rope clips.

Posts



Post height

The posts are ca. 500 mm higher than the defined useful height of the system, in order to guarantee that the useful height is also achieved in the center of the field. This factor must be considered if clearance is restricted above the barrier.

Border posts

Description: Border posts have five rope guiding tubes on the heads, three in front and two behind.

Installation area: The border posts occur in all positions where lateral anchor ropes as well as vertical ropes are attached. For this reason each barrier has a border post on both borders as well as on the positions of the support rope separations and/or intermediate anchor ropes.

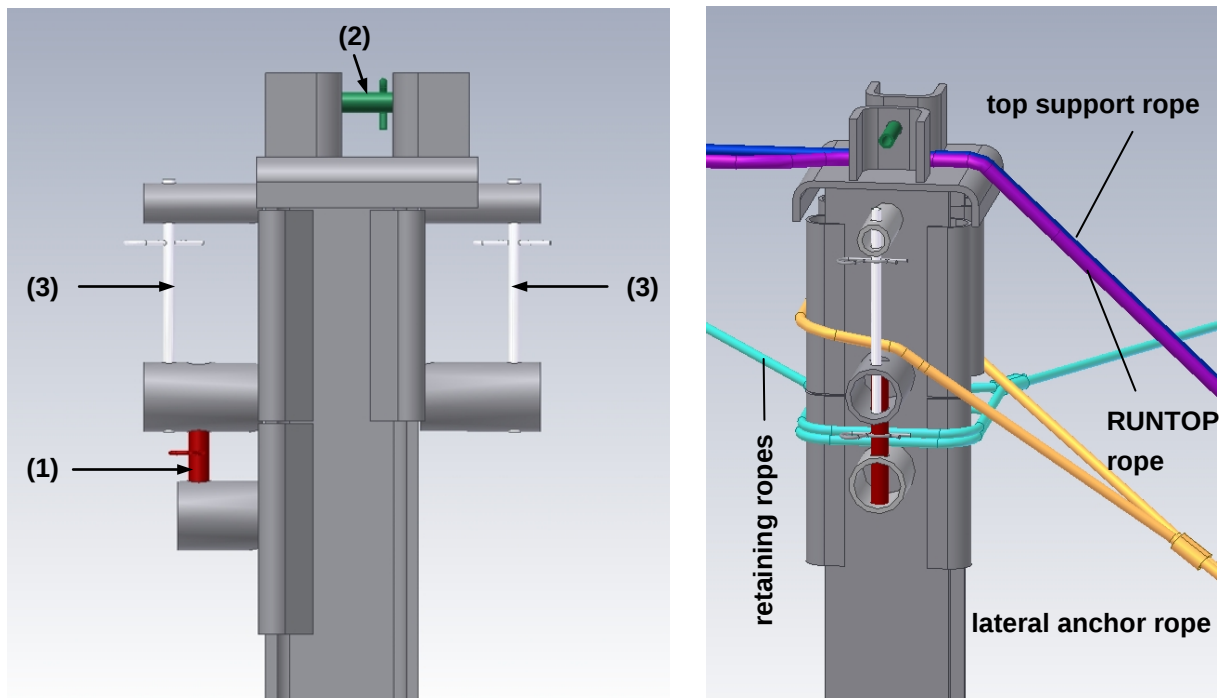


Figure 15 Border posts and their ropes

The border posts require the following securing elements:

The retaining ropes are held with a securing rod, which is secured with a small spring cotter (1). The support ropes are held by an identical securing rod, which however is secured with a 40 mm long cotter pin (this securing device must be able to turn with the securing rod without breaking off) (2). Both RUNTOP securing rods (3) are secured with small spring cotters.

Middle posts

Description: Middle posts have two rope guiding tubes on the head in front. The upslope side has no rope guiding tubes!

Installation area: all other posts

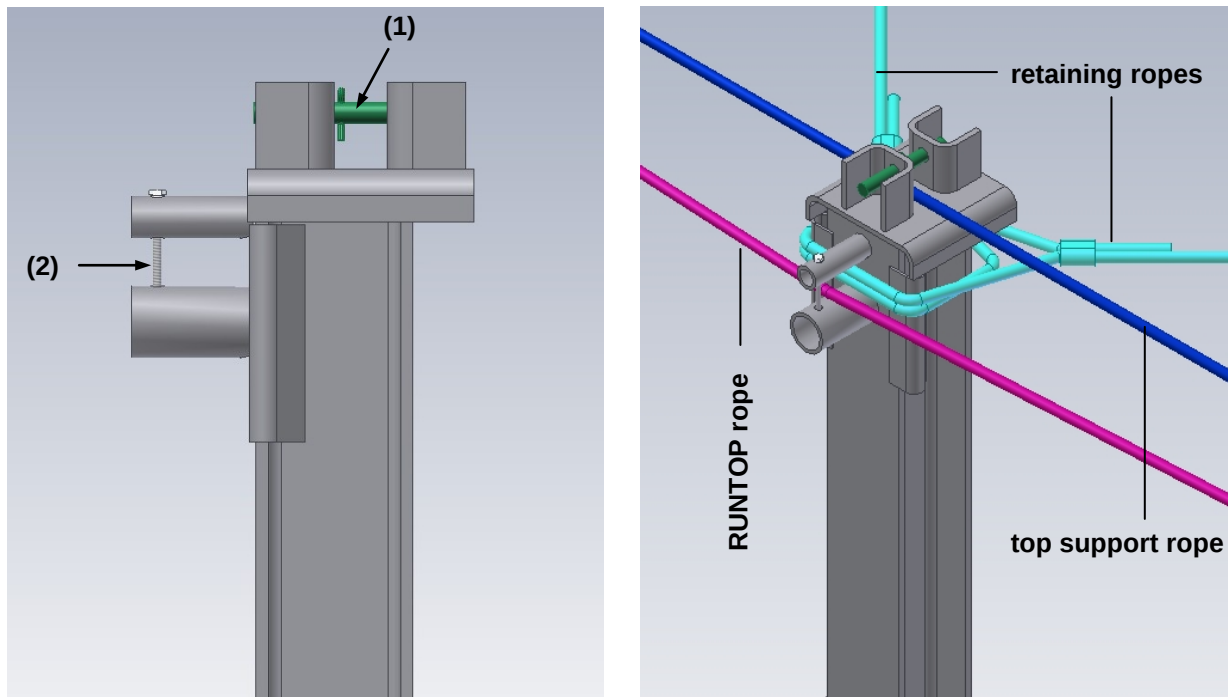


Figure 16 Middle posts and their ropes

The middle posts require the following securing elements:

The support ropes are held with a securing rod, which is secured with a 40 mm long cotter pin (this securing device must be able to turn with the securing rod, without breaking off) (1). The RUNTOP securing rope rod (2) is secured with a M10 hexagonal head screw (2) with a nut.

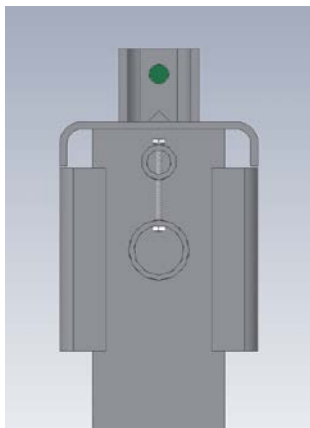


Figure 17 M10 hexagonal head screw with nut

4.2 Installation of the base plates

Mount the base plates on the anchor rods with the slotted hole **downslope**. Then tighten the nuts, but only after the grout or concrete is cured.

4.2.1 Bottom support rope and bottom RUNTOP ropes

- The bottom support rope is inserted into the base plates. Then the rope guiding tubes are introduced and secured with 63 mm long cotter pins.
- On each end install two rope slings with brake rings GS-8002 on the anchors Su, and install the bottom support rope on one side on a rope sling with brake rings (connect with 7/8" shackle).
- Tension the bottom support rope and fix with five wire rope clips (connect to rope sling with brake rings with inserted thimble and 7/8" shackle).
- Install RUNTOP ropes on the support rope (see section 4.8). Only install wire rope clips here.
- Guide the RUNTOP ropes in front of the base plate and install a shear pin (M10 screw with nut).



Figure 18 Installation of the bottom support rope and the bottom RUNTOP ropes

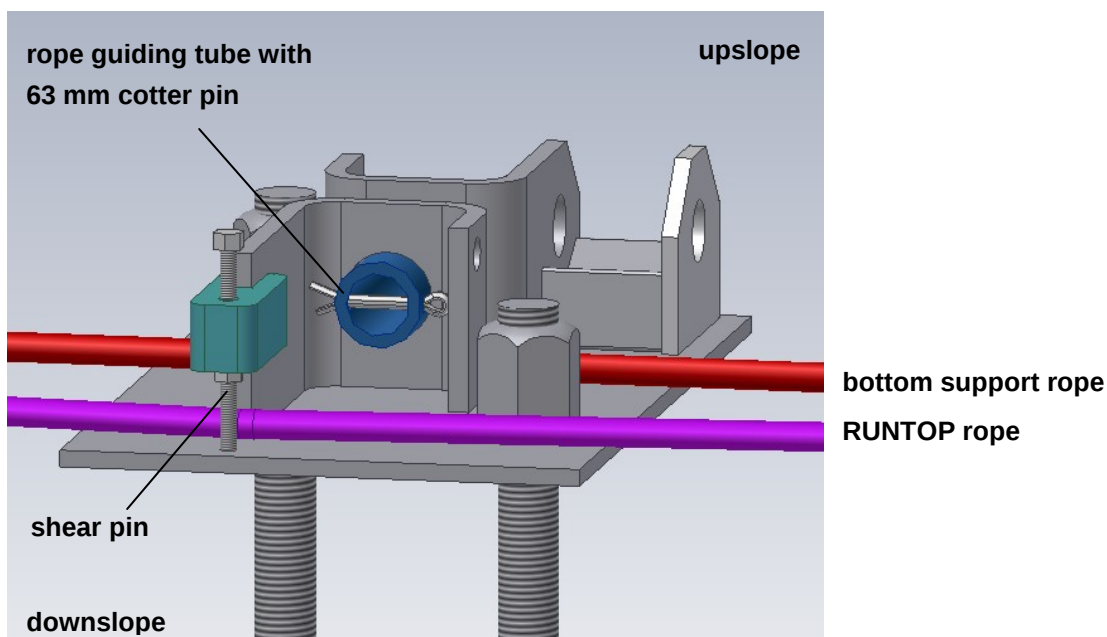


Figure 19 Bottom support rope with RUNTOP rope inserted into base plate

4.3 Installation of the posts

4.3.1 Installation of posts without helicopter or crane

- a) The post is deposited on the upslope side of the base plate. The eyelet for the overturn securing rope must be turned away from the ground. Put the joint on the foot of the post onto the supporting block. Push the hinge tube through the eyelets of the base plate and through the joint, and secure with two large spring cotters.

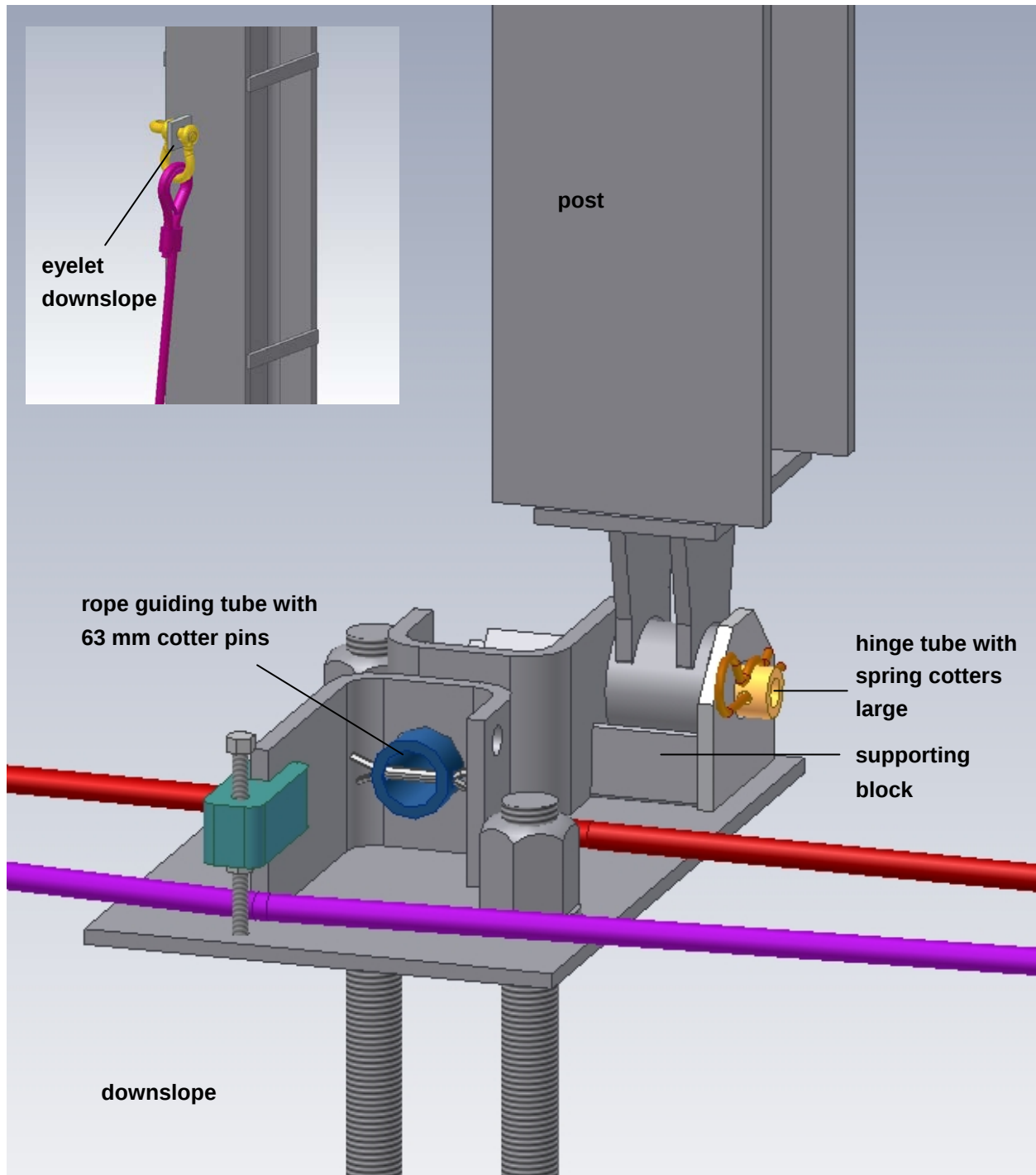


Figure 20 Connection of post to base plate

- b) Lay the retaining rope with the loop around the post head. Thread the free end through the loop of the anchor. Figure 33 and Figure 34 show the position of the retaining ropes on the post head.

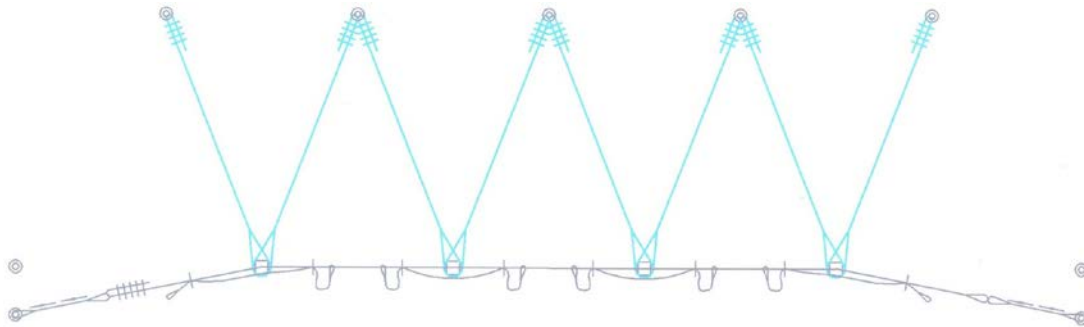


Figure 21 Retaining ropes

- c) Stand post upright and install overturn securing rope (make sure that the eyelet for the overturn securing rope is facing downslope):
- if the slope of the terrain is up to 30° ($0^\circ < \beta \leq 30^\circ$), the post must be inclined 15° out of the perpendicular downslope.
 - if the terrain is steeper, ($30^\circ < \beta \leq 45^\circ$) place the post at an angle of ca. 75° to the direction of the slope (however, at most 30° to the vertical).
 - if the slope of the terrain is more than 100 % ($\beta > 45^\circ$), the manufacturer should be contacted.

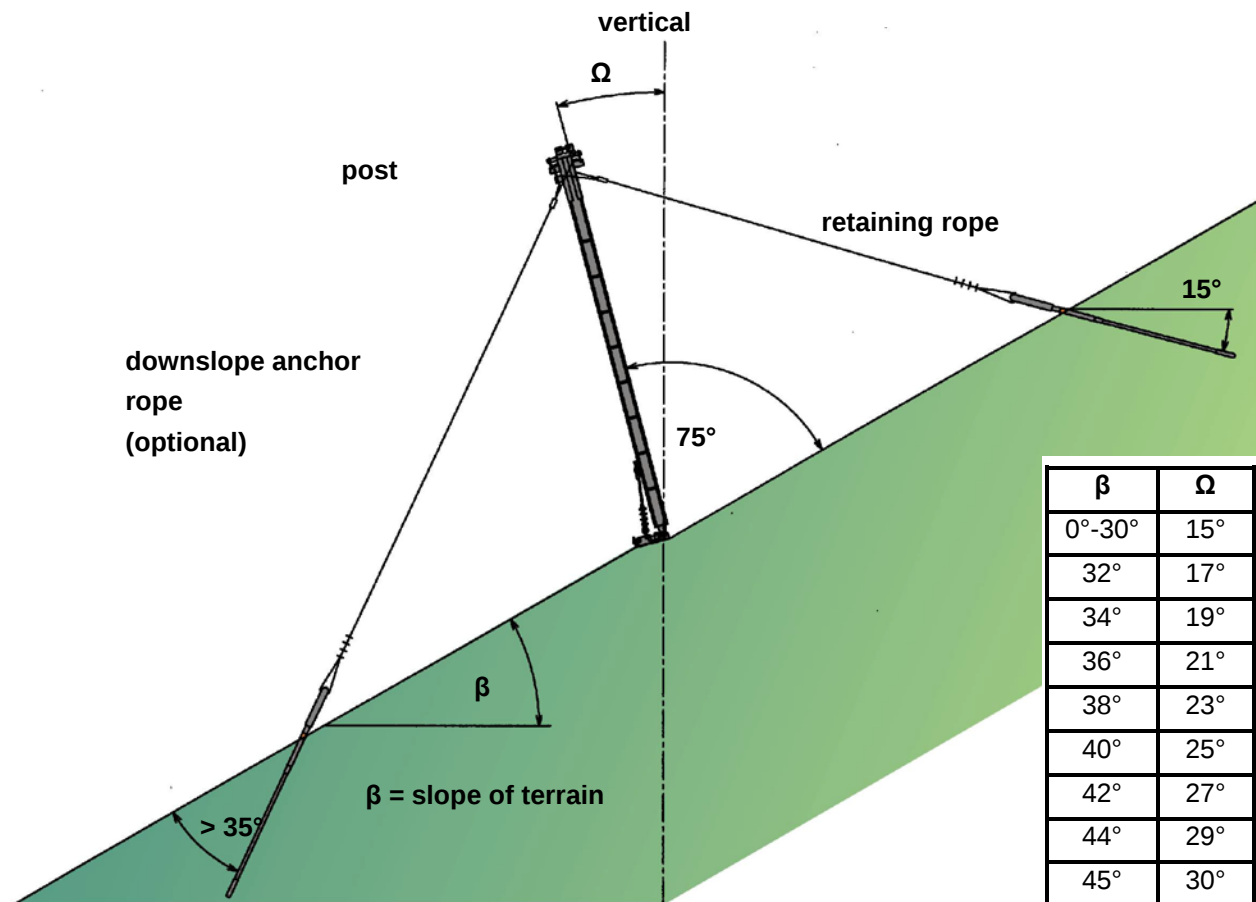


Figure 22 Alignment of posts

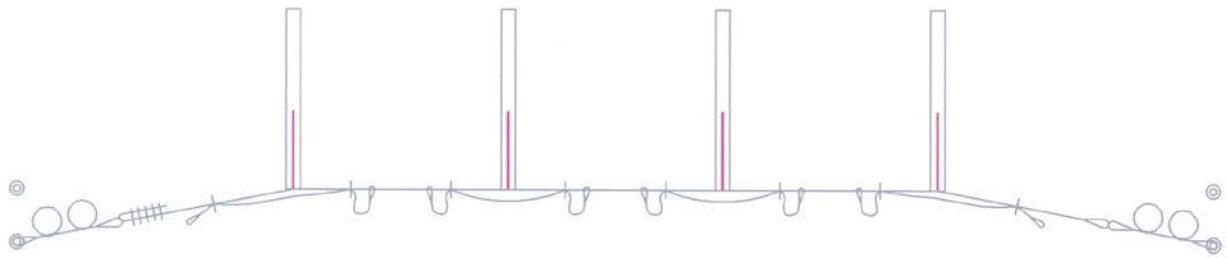


Figure 23 Overturn securing rope

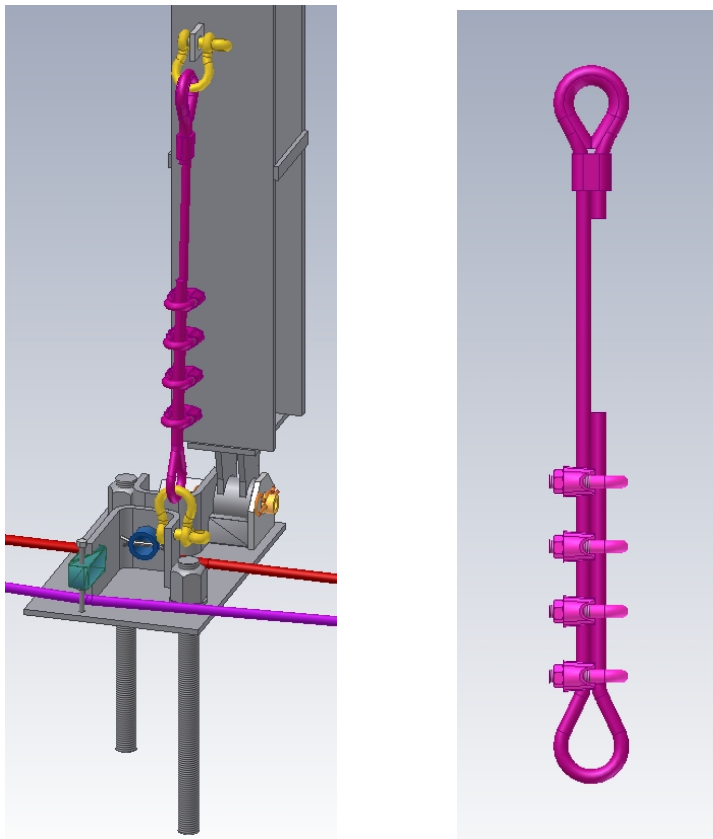


Figure 24 Overturn securing rope

- d) While aligning the post, let both retaining ropes slip while still keeping them under control. In the final position, secure immediately with two wire rope clips EN 13411-5 (DIN 1142) each.
- e) Tension retaining ropes and tighten wire rope clips in final position in accordance with EN 13411-5 (DIN 1142) (also see section 2.3).
- f) Optional with a crest or an upslope change of direction $< 15^\circ$: Fasten the pressed loop of the downslope anchor rope on the front u-shell of the post head cap and on the downslope anchor in accordance with EN 13411-5 (DIN 1142).

4.3.2 Installation with helicopter or hoisting crane



Caution for installation using a helicopter:

The rungs that are welded laterally into the post profile are only there to facilitate climbing. They may not be used as "towing hooks" for purposes of transportation.

- a) Before flying, hang both upslope retaining ropes with the pressed loop on the post head and secure with the securing rod.
- b) Fly the post or hoist with crane.
- c) While lowering the post, set the joint on the supporting block, insert the hinge tube and secure with large spring cotter.
- d) Tilt the post downslope before releasing it, temporarily fasten both retaining ropes to the upslope rope anchors with two wire rope clips EN 13411-5 (DIN 1142) each, and install the overturn securing rope.
- e) Align the post as described in the previous section.
- f) Fasten the retaining ropes to the rope anchors with 4 wire rope clips EN 13411-5 (DIN 1142) each.

4.4 Installation of the lateral anchor ropes and intermediate anchor ropes

Hang the end with the pressed loop around the border post between the top two rope guiding tubes (see Figure 34). Pull the other end through the loop of the lower of the two border anchors (Su) or the anchor for the intermediate anchor rope, tension and fasten with wire rope clips in accordance with EN 13411-5 (DIN 1142).

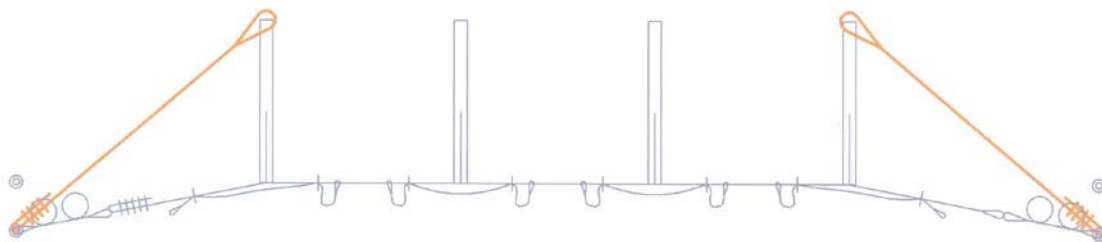


Figure 25 Lateral anchor rope

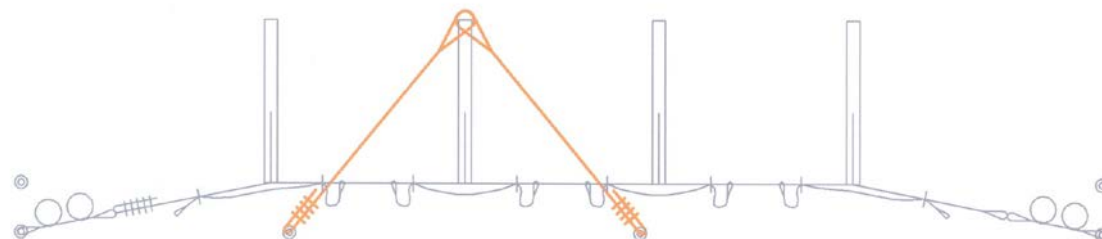


Figure 26 Intermediate anchor rope

4.5 Vertical rope at border posts

The vertical rope terminates the border of the net and forms an endless loop. On the post head, guide it around the bottom upslope rope guiding tube and through the loops of the retaining ropes. On the base plate below, it runs through under the rope guiding tube. Bring the ends of the vertical rope to lie on the side of the lateral anchor rope and fasten with five wire rope clips EN 13411-5 (DIN 1142) as per Figure 30.

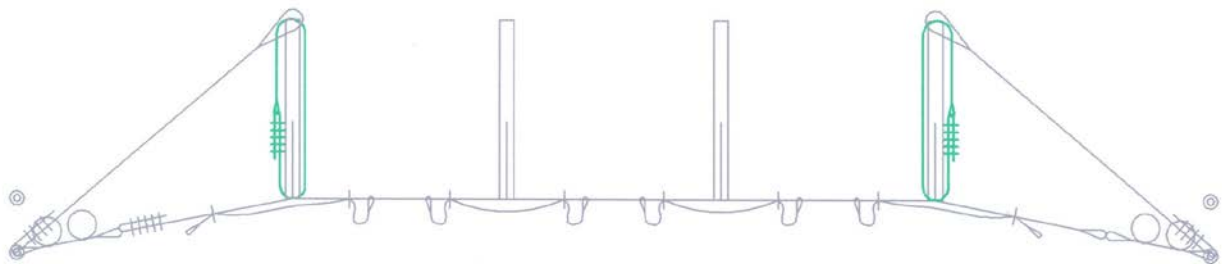


Figure 27 Vertical ropes

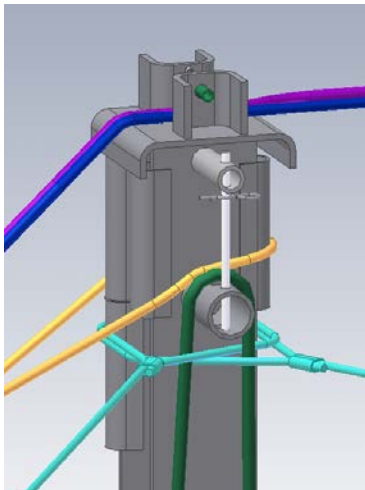


Figure 28 Vertical rope above and behind

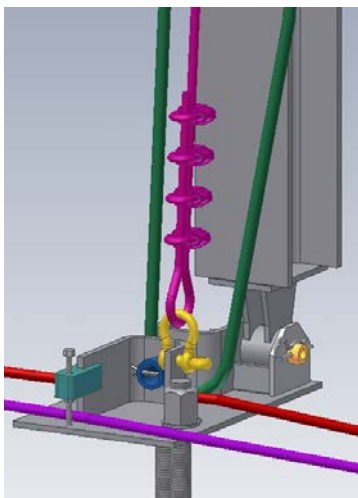


Figure 29 Vertical rope in front and below

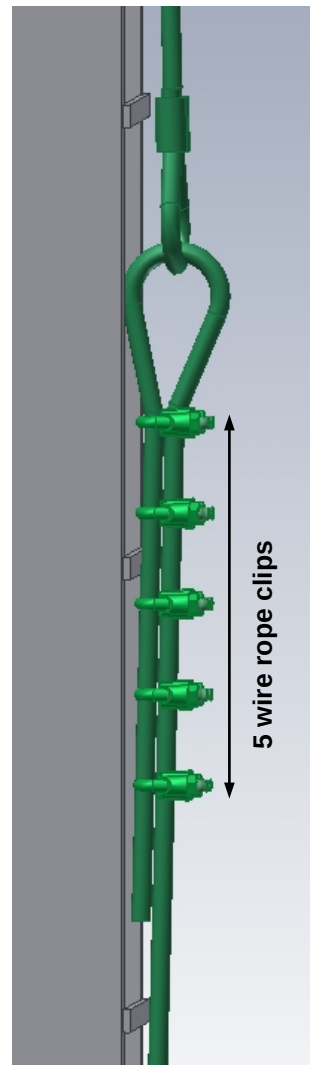


Figure 30 Vertical rope with 5 wire rope clips

4.6 Top support rope and top RUNTOP ropes

- a) Guide the top support rope over the post head (see Figure 33 and Figure 34) and secure with securing rods and 40 mm long cotter pins.

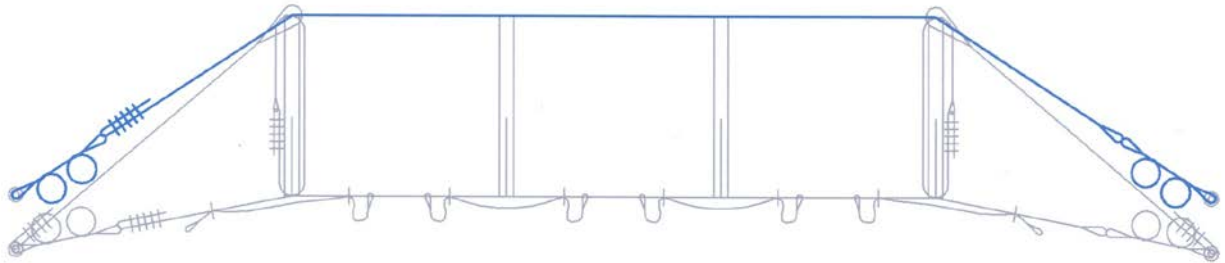


Figure 31 Installation of the top support rope

- b) On both ends a rope strap with two brake rings GS-8002 is installed on the anchors So (connect with 7/8" shackle). One of them is connected to one end of the support rope.
- c) Tension the top support rope and fix with five wire rope clips (use inserted thimbles and 7/8" shackle).
- d) Install RUNTOP ropes together with the nets (using tension belts between the posts). Guide RUNTOP ropes downslope of the post, under the uppermost rope guiding tube, and install the RUNTOP securing rods. For both border posts, guide the RUNTOP ropes over the post head (see section 4.8).

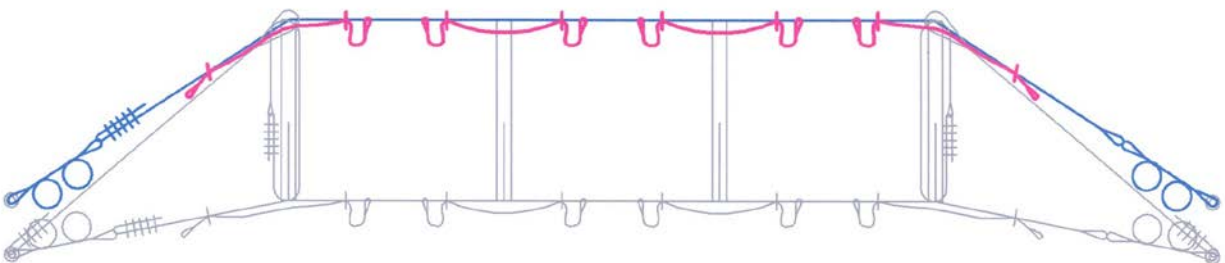


Figure 32 Installation of the top RUNTOP ropes

The recommended value for slack in the top support ropes with a suspended net is not more than 3% of the distance between posts.

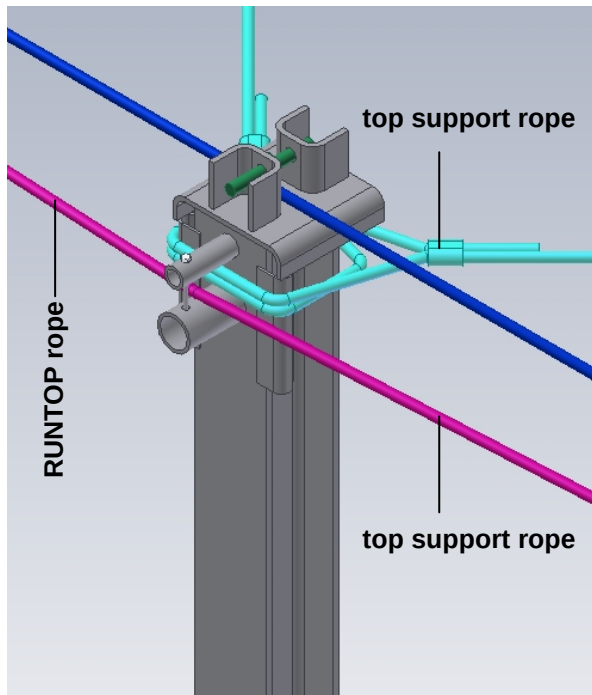


Figure 33 Middle post head

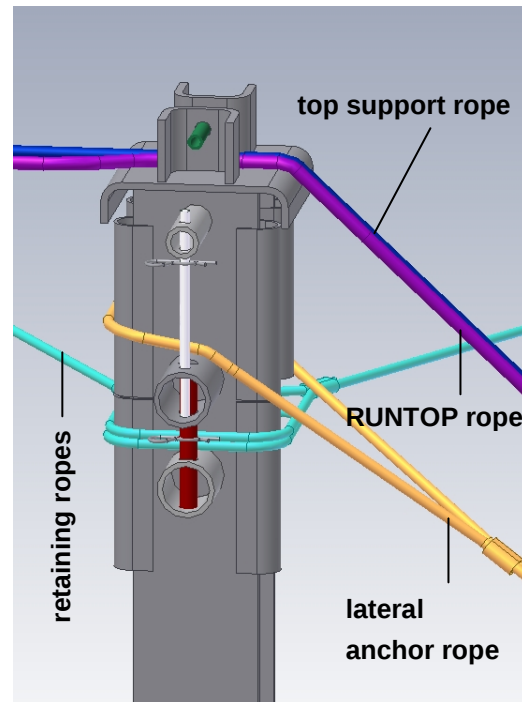


Figure 34 Border post head

4.7 RUNTOP ropes

The RUNTOP ropes run downslope of the post and are fastened on the ends with thimble/loop and 7/8" shackles to the top or bottom support rope. They are centered with respect to the post, stretched **hand taut** and fastened on both sides in front of the loop with a wire rope clip EN 13411-5 (DIN 1142) (placing the u-bolt on the RUNTOP rope and the clip on the support rope).

The distance between post and wire rope clip is ca. 2.40 m (7.9 ft).

Torque for wire rope clip RUNTOP rope = 50 Nm

Use the formula 4-3-1 (4 rings on the RUNTOP rope, 3 rings on the support rope and 1 ring on the support rope between wire rope clip and 7/8" shackle) per post side for fastening the net.

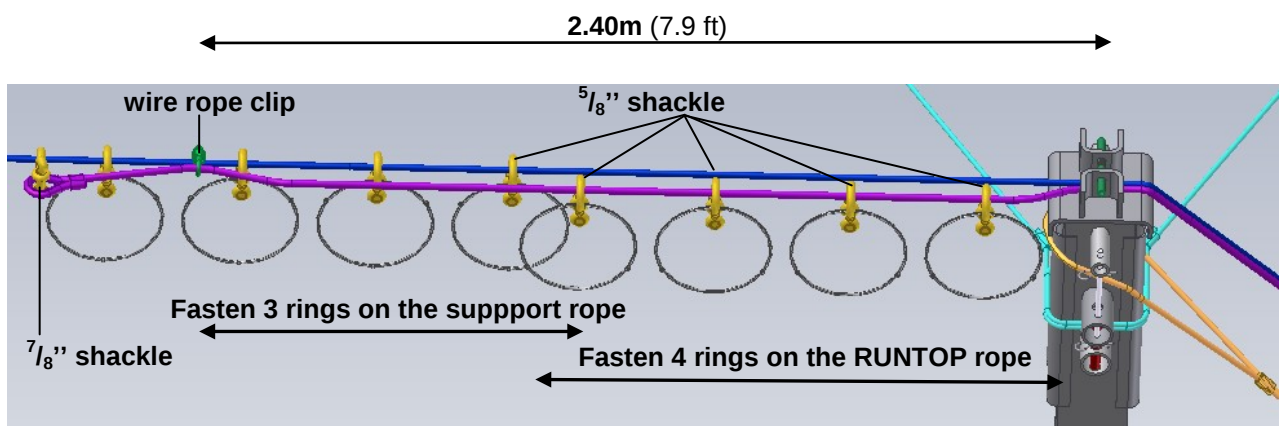


Figure 35 RUNTOP rope (on top support rope)

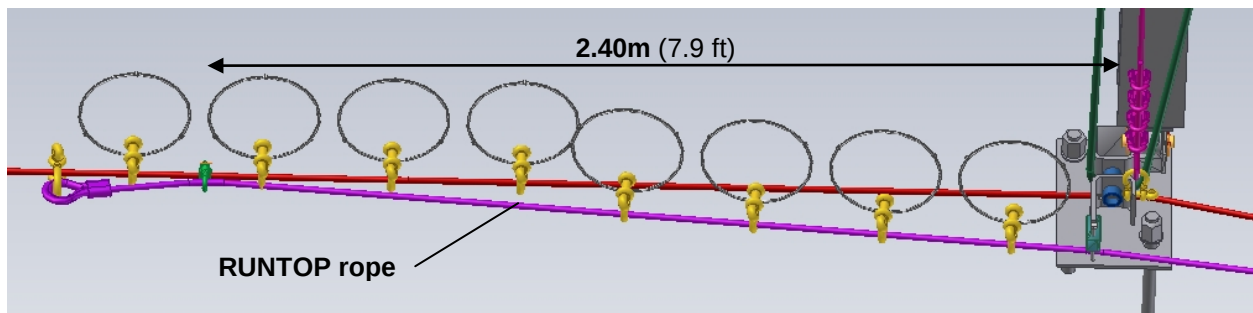


Figure 36 RUNTOP rope (on bottom support rope)

4.8 Support rope separation (with intermediate anchor rope)

With a support rope separation and/or intermediate anchor rope, a border type post must be installed. The top support rope is guided onto a rope sling with brake rings that has a loop with thimble on one side and on the other side a loop with a length of 700 mm. Lay this around the post head (border type post) as shown in Figure 37.

With a support rope separation, a special RUNTOP rope $L=9.60\text{ m}$ (31.5 ft) must be installed on the top support rope. Instead of the wire rope clips, special double clips are used here (see Figure 39). The different torques indicated in Figure 39 must be respected. The distance between the double clips and post head remains, however, 2.40 m (7.9 ft). Here all of the rings of the net are mounted on the RUNTOP rope, since brake rings are applied on the support ropes (formula 7-1).

Below on the base plate a standard RUNTOP rope $L = 5.60\text{ m}$ (18.4 ft) with wire rope clips can be used. There the rings of the ring net are mounted according to the formula 4-3-1.

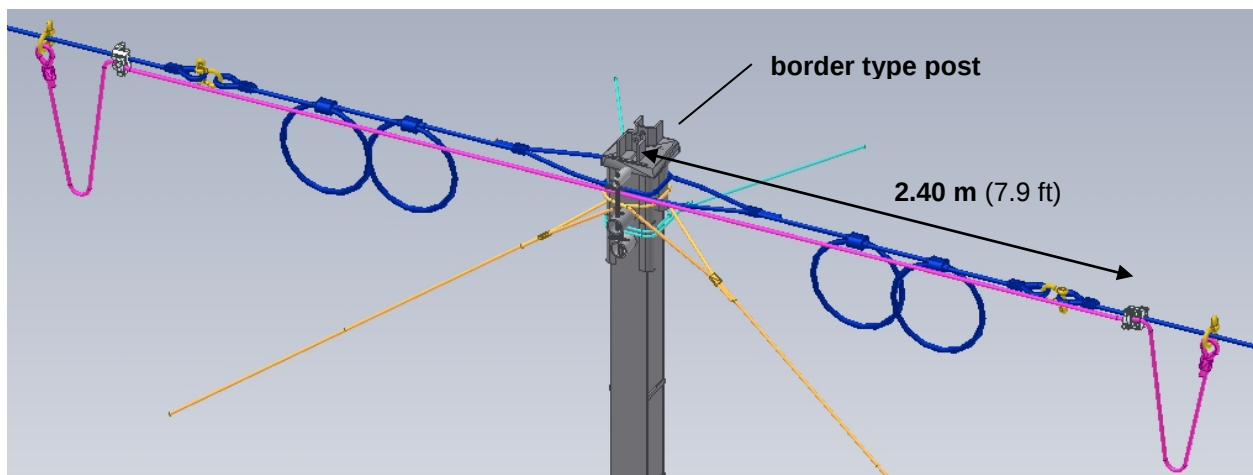


Figure 37 Support rope separation

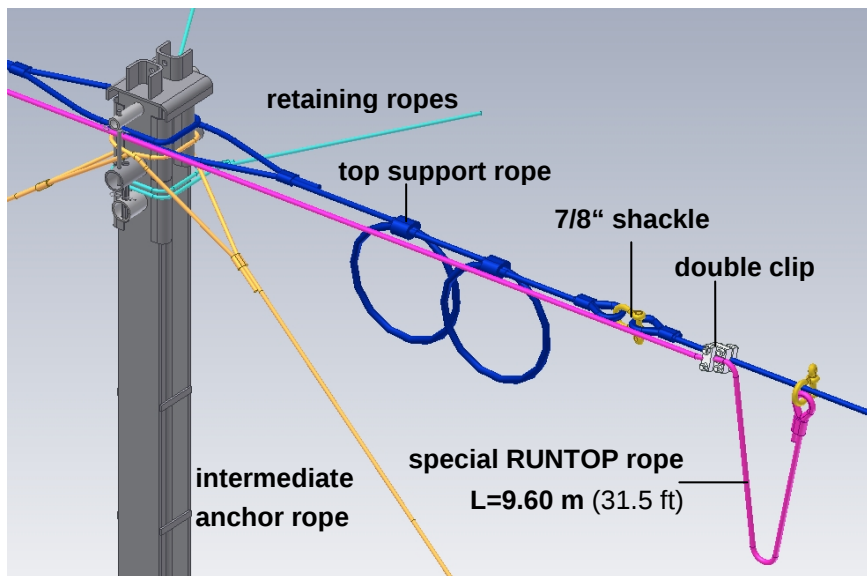


Figure 38 Support rope separation (right side)

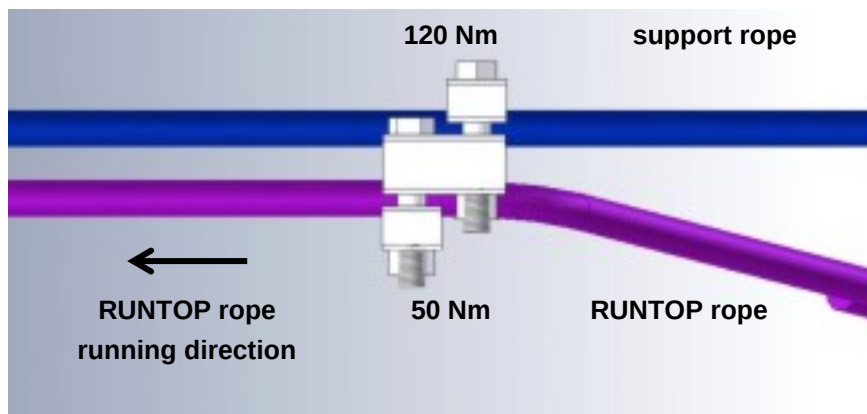


Figure 39 Double clip

Torque for double clip on support rope = 120 Nm
Torque for double clip on RUNTOP rope = 50 Nm
Important: Pay attention to the arrangement of the double clips!

5 Installation of the ring nets and the wire mesh

5.1 Hint for easier installation

Wrap tension belts or a synthetic rope around the post and suspend in the rungs of the post profile between two posts, then tension it to produce a catwalk.

Alternatively, a long suspension rope can be spanned between the border posts using a chain hoist or a Habegger. On the middle posts, the suspension rope is fastened with shackles on the rungs.



Catwalk with long suspension rope

On the border posts, the suspension rope may not be fastened on the rungs!



Figure 40 Tension belts between the posts for installing RUNTOP ropes and nets

5.2 Installation of the ring nets - fastening with shackles

- a) Place the net in the middle of the field, preferably beginning at a border field. Insert an auxiliary installation rope through the second highest ring row (upper ring row is marked with paint).
- b) This auxiliary rope is suspended on the top of a post head of the neighboring post and laid between the uppermost rope guiding tube of both of the posts adjacent to the field. Use a come-along (pulley) to tension the auxiliary installation rope, during which operation the ring net will be lifted to the height of the top support rope. The packaging cords may be cut during the hoisting but not before (see Figure 41).
- c) Open the net apart like a curtain and fasten to the vertical rope on the outer side with 5/8" shackle and directly onto the adjacent net with 7/16" shackle.

- d) Suspend the net on the top support rope with 5/8" shackles. On both sides of the post, fasten four ROCCO rings to the RUNTOP rope with 5/8" shackles; all other ROCCO rings are connected to the support rope (see Figure 35).
- e) Pull the other net border to the opposite side with a come-along (pulley).
- f) Afterwards remove the auxiliary installation rope and prepare for the next ring net in the same manner. Similarly hoist the neighboring ring net and fasten to the top support rope.
- g) Repeat this procedure until all nets are suspended on the top support rope.
- h) Now the nets can be adjusted laterally if necessary.
- i) Fasten the rings of the bottom net border to the bottom support rope with 5/8" shackles. Again fasten four ROCCO rings with shackles to the RUNTOP rope on both sides of the base plate (see Figure 36).

Installation with a helicopter or hoisting crane:

Instead of the auxiliary installation rope, a steel bar suspended from a helicopter or crane is inserted into the second highest ring row and used to bring the net into position for attachment.

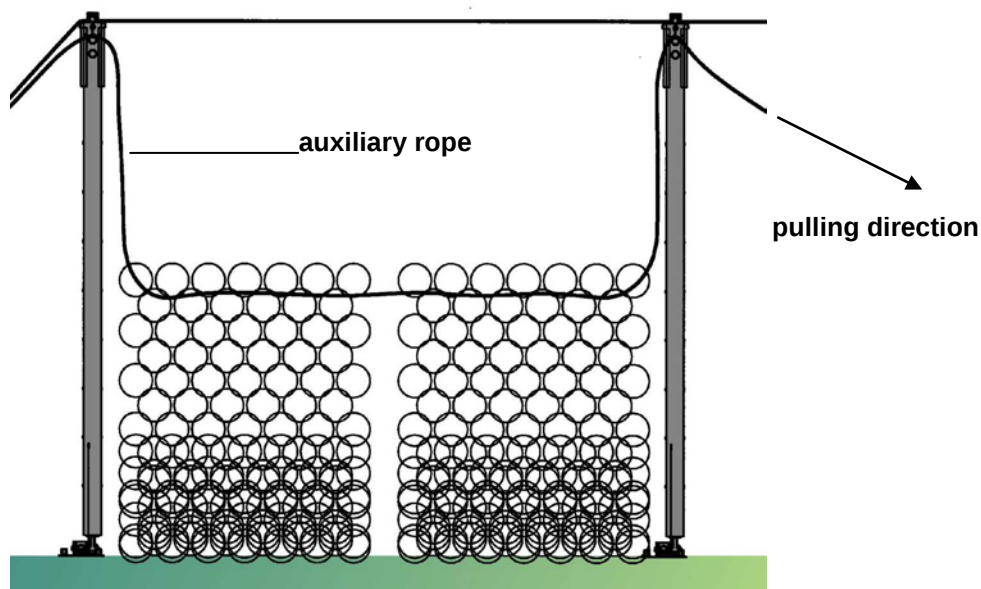


Figure 41 Installation of the ring net with auxiliary rope

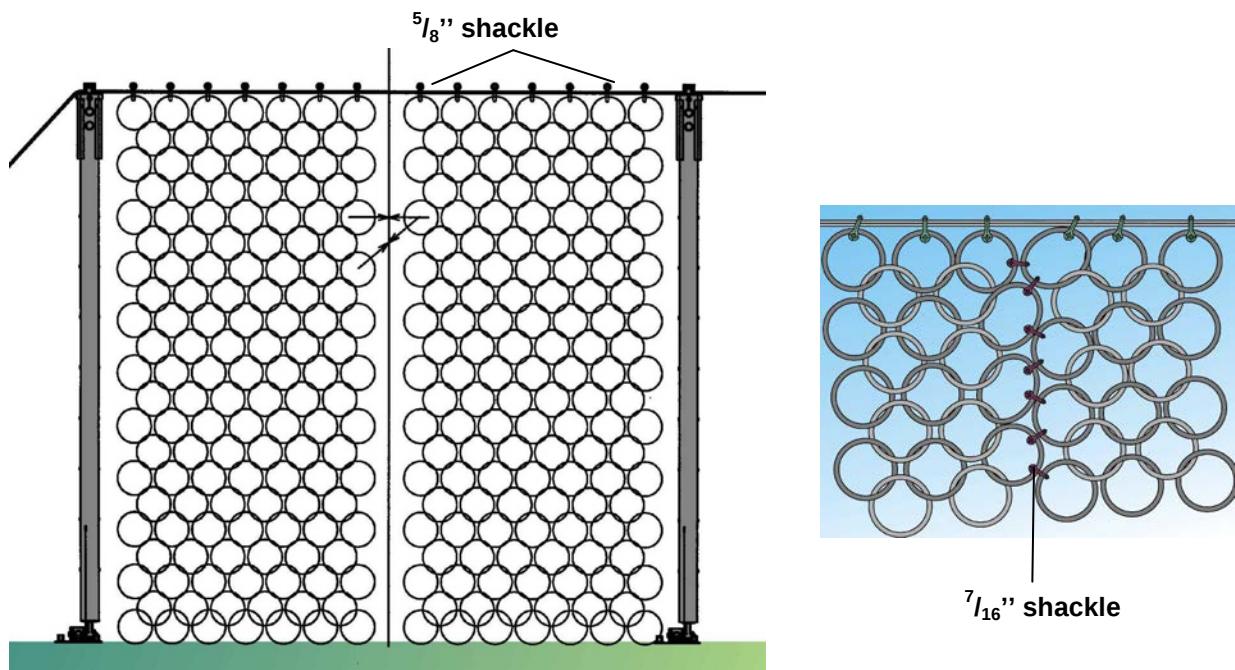


Figure 42 Installation of the ring net with shackles

In the region of the post head of the border post, make sure that the rings are only fastened to the RUNTOP ropes and to the vertical rope. An exception to this rule is the corner ring (see Figure 43).



Ringnet installation in the corner area

The corner ring is fastened on the upper RUNTOP rope and the RUNTOP securing rod in front of the border post (downslope). The rings in the border section must be fastened as shown in Figure 43.



Figure 43 Border area

5.2 Installation of the wire mesh

- a) The wire mesh is laid onto the net vertically in lengths or strips of the supplied width, from top to bottom on the upslope side.
- b) At the top, the beginning of the strip should be laid over the support rope, overlapping by at least 15 cm, and fixed with double baling wire or stranded wire. At the bottom, the wire mesh is extended at least 50 cm upslope and then cut. This bottom border of the strip is weighted onto the ground with soil nails (e.g., reinforcing bars) or by laying stones on it, so that no boulders can slip through under the net.
- c) The strips should be installed overlapping each other at least 10 cm.
- d) Then the wire mesh is fastened to the net with double baling wire or stranded wire. Fasten in at least 9 places per square meter of net surface.

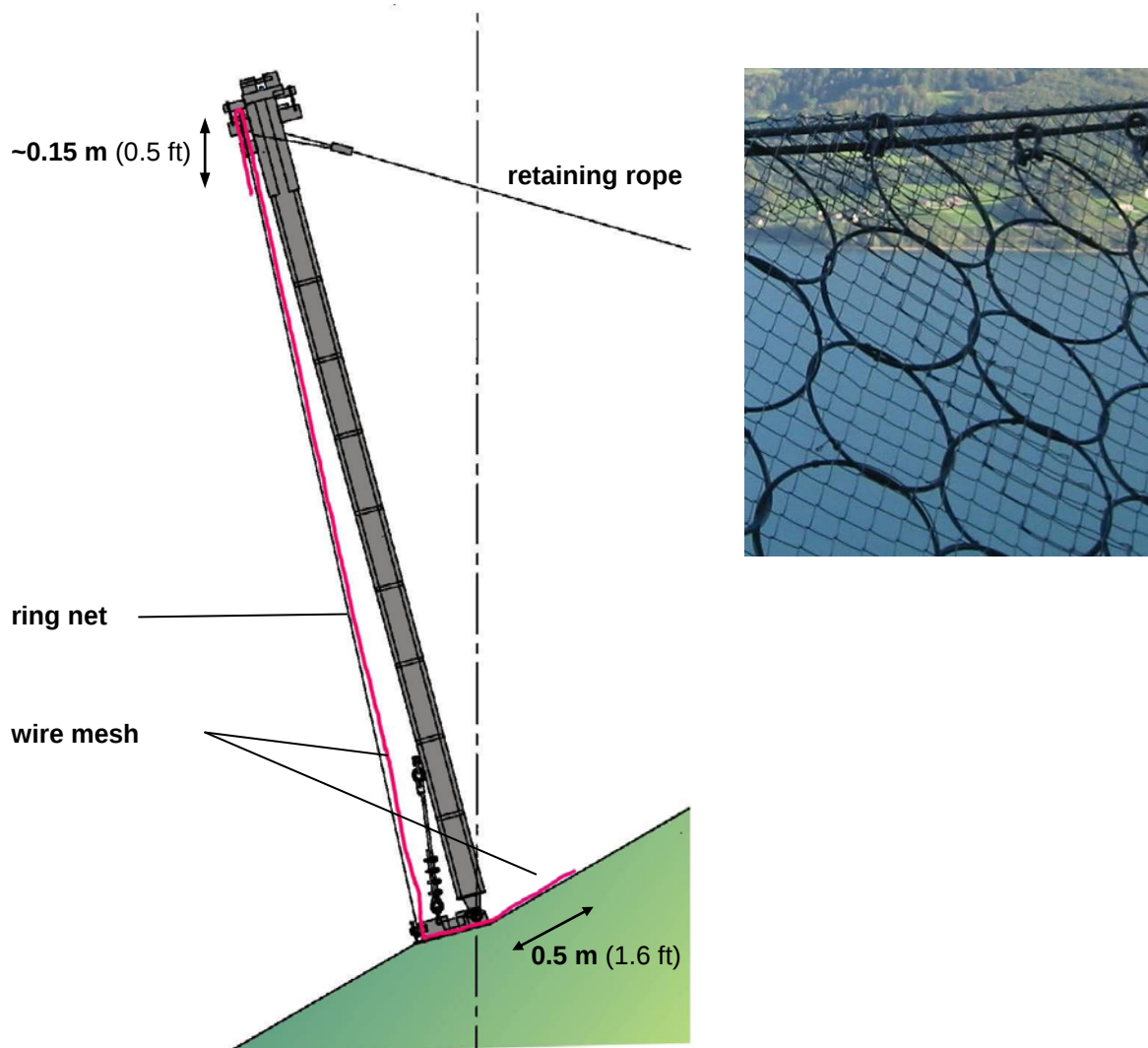


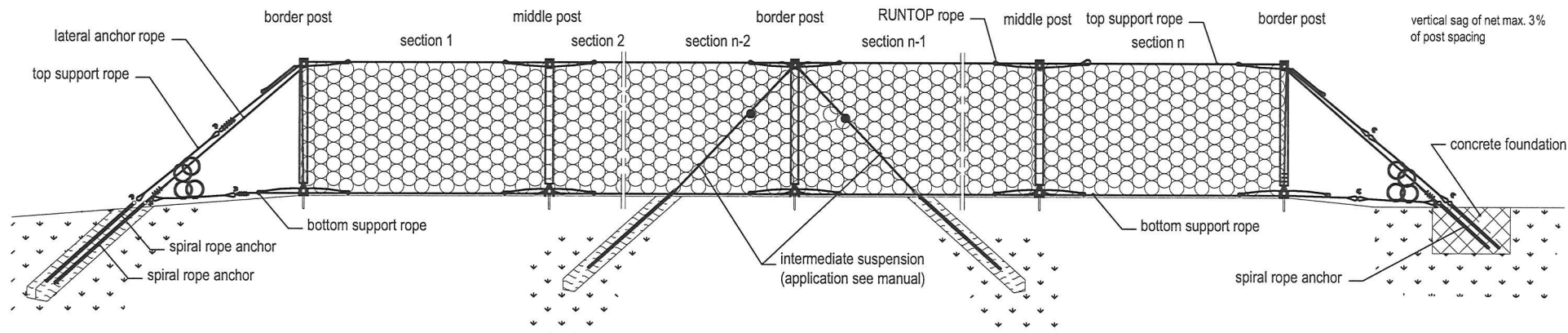
Figure 44 Installation of the wire mesh

6 Final inspection

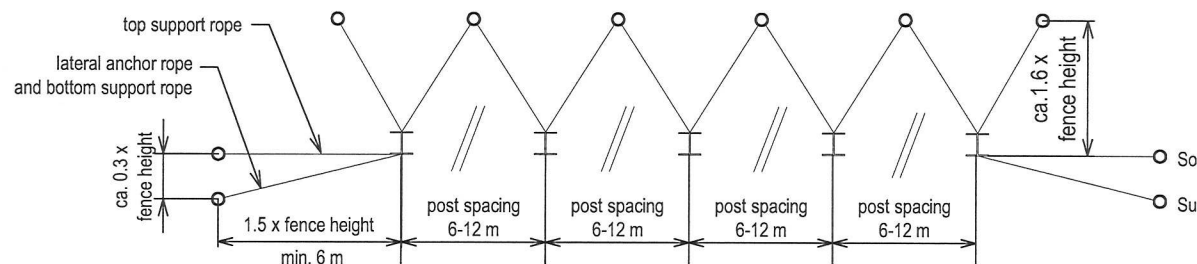
After completion of the barrier the site engineer must complete a detailed final inspection.

Above all, the following points must be checked:

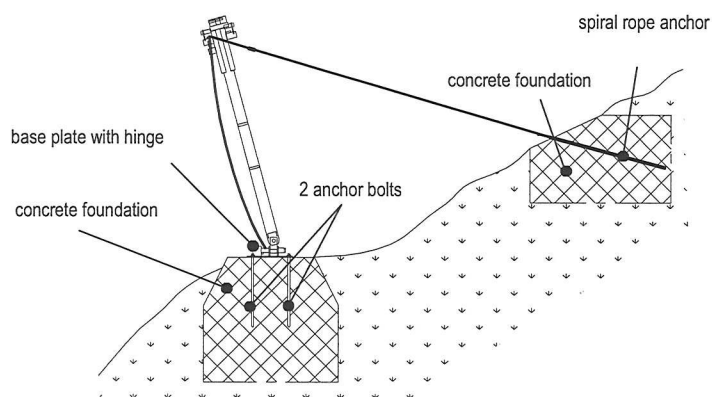
- a) Are the spiral rope anchors grouted in up to the orange markings?
- b) Are the support ropes and lateral anchor ropes connected to the correct anchors?
- c) Is the ring net correctly connected to the support rope and the RUNTOP ropes?
- d) Are the ropes guided correctly on the post head and foot?
- e) Were the double clips installed correctly on the RUNTOP rope for the support rope separation?
- f) For the support rope separation, do the bottom support ropes go to the appropriate anchors and not to the base plates?
- g) Has the right number of wire rope clips been used at the end connections of the ropes? Are the wire rope clips correctly placed?
- h) Check the torque on the wire rope clips on the end connections.
- i) Are the nets connected to each other correctly?
- j) Are the border nets connected to the vertical ropes correctly?
- k) Is the sag of the top support rope less than 3% of the post spacing?



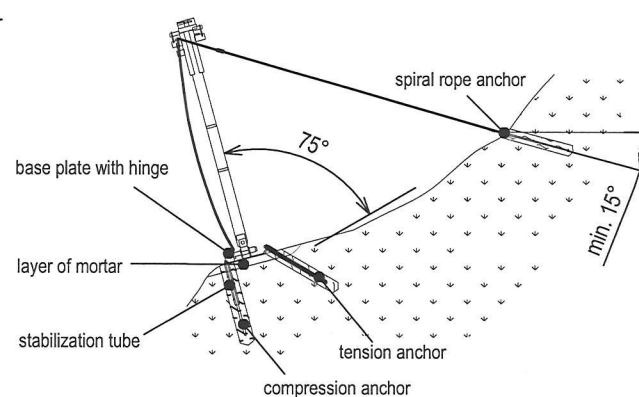
layout of anchor points
details in
product manual RXI-050



anchoring concrete foundation:
for all types of soil



anchoring in loose soil: with tension and compression anchor
anchoring in bedrock: with rock anchors

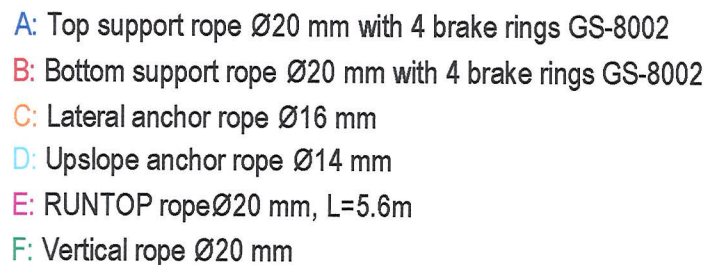


NOTE:
Rockfall, landslides, debris flows or avalanches are sporadic and unpredictable. Causes can be e.g. human (construction, etc.) or environmental (weather, earthquakes, etc.). Due to the multiplicity of factors affecting such events it is not and cannot be an exact science that guarantees the safety of individuals and property. However, by the application of sound engineering principles to a predictable range of parameters and by the implementation of correctly designed protection measures in identified risk areas the risks of injury and loss of property can be reduced substantially. Inspection and maintenance of such systems are an absolute requirement to ensure the desired protection level. The system safety can also be impaired by events such as natural disasters, inadequate dimensioning parameters or failure to use the prescribed standard components, systems and original parts; and/or corrosion (caused by pollution of the environment or other man-made factors as well as other external influences).

modification:	M:%	substitute for: GS-1054e ed. 26.01.04		
-		replaced by:		
Rockfall protection barrier RXI-050 system Energy class 3 (500 kJ)		drawn	10.01.08	ol
		checked	10.01.08	ze
		approved	10.01.08	ze
GEOBRUGG AG CH-8590 Romanshorn		GS-1054 e		

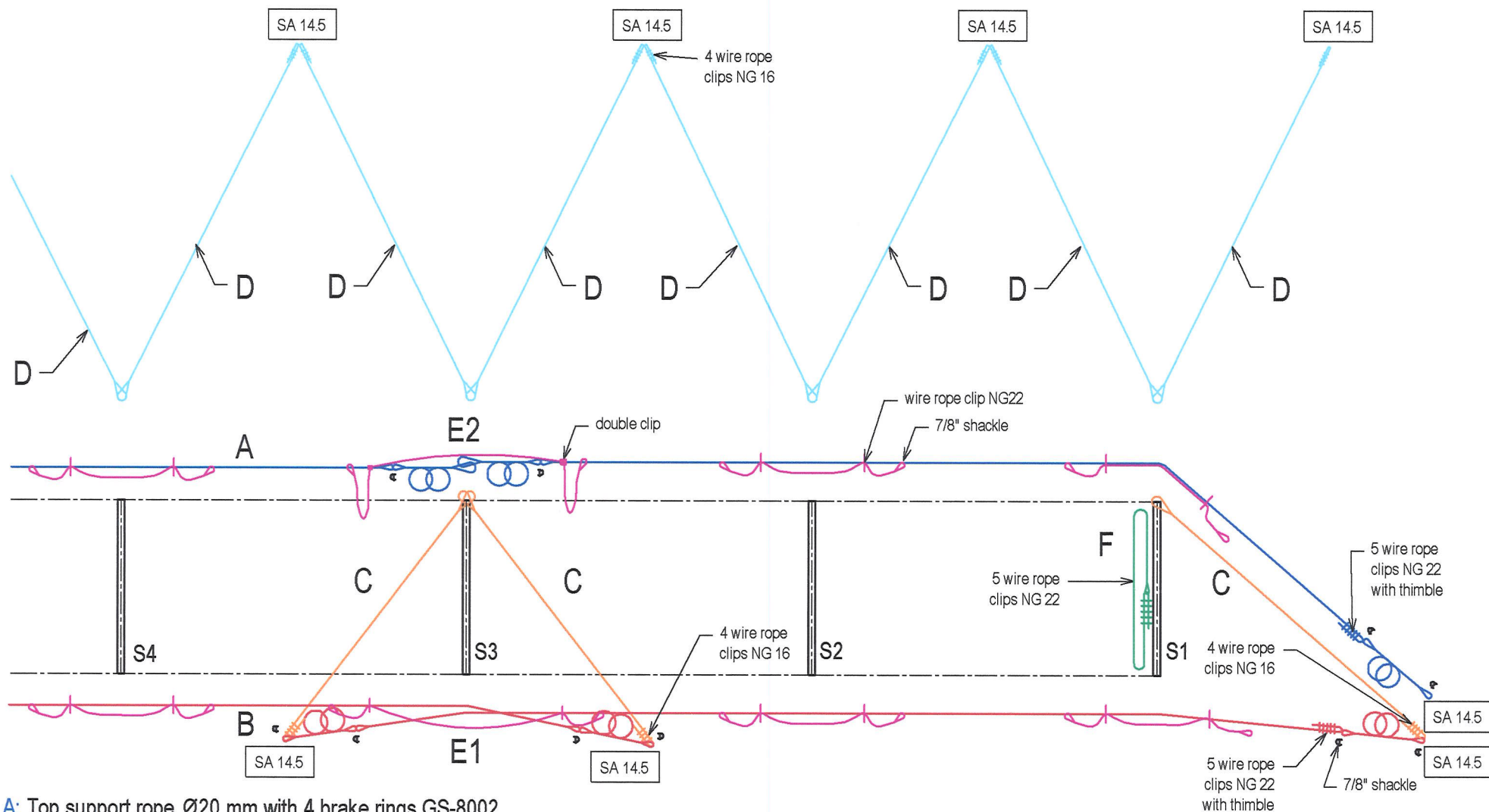
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GS-1055 e



A: Top support rope Ø20 mm with 4 brake rings GS-8002

B: Bottom support rope Ø20 mm with 4 brake rings GS-8002

C: Lateral anchor rope Ø16 mm

D: Upslope anchor rope Ø14 mm

E1: RUNTOP rope Ø20 mm L=5.6m / **E2:** RUNTOP rope Ø20 mm L=9.6m

F: Vertical rope Ø20 mm

C: Intermediate anchor rope Ø16 mm

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modification:	M: %	substitute for: GS-1056e ed. 19.04.05		
-		replaced by:		
RXI-050 Support rope separation Energy class 3 (500 kJ)		drawn	10.01.08	ol
		checked	10.01.08	ze
		edition	10.01.08	DF
GEOBRUGG AG CH-8590 Romanshorn		GS-1056 e		

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Birmensdorf, 28. November 2003

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Rockfall Tests Walenstadt Geobruigg RXI-050

We hereby confirm that the company Fatzer AG, Geobruigg Protection Systems executed the following tests at the test site Walenstadt. The tests 15.1 to 15.3 were done by the WSL as certification tests under the supervision of the Swiss Expert Commission of Rockfalls and Avalanches (EKLS), meanwhile the tests 15.4 and 15.5 were executed by Geobruigg. The WSL was responsible for the instrumentation and measurements at all tests.

System Type: Geobruigg RXI-050 (500 kJ)
 System height: 3 m
 Post spacing: 10 m

EKLS-test a) Test 15.1: 05.09.2003
 Energy: $E = 3,8 / 18 / 94$ kJ
 Mass: $m = 12 / 59 / 290$ kg
 Impact velocity: $v = 25$ m/s
 Damages: none
 Maintenance for test 15.2: none

EKLS-test b) Test 15.2: 05.09.2003
 Energy: $E = 250$ kJ
 Mass: $m = 800$ kg
 Impact velocity: $v = 25$ m/s
 Damages: none
 Maintenance for test 15.3: 3 brake elements replaced, net and ropes not changed, support and runtop ropes retensioned

EKLS-main test c) Test 15.3: 10.09.2003

Energy: $E = 500 \text{ kJ}$

Mass: $m = 1600 \text{ kg}$

Impact velocity: $v = 25 \text{ m/s}$

Damages: none

Maintenance for test 15.4: 8 brake elements replaced, net and ropes not changed, support and runtop ropes retensioned

Test into center section Test 15.4: 15.09.2003

Energy: $E = 500 \text{ kJ}$

Mass: $m = 1600 \text{ kg}$

Impact velocity: $v = 25 \text{ m/s}$

Damages: none

Maintenance for test 15.5: 8 brake elements replaced, net and ropes not changed, support and runtop ropes retensioned

Test into border section Test 15.5: 15.09.2003

Energy: $E = 500 \text{ kJ}$

Mass: $m = 1600 \text{ kg}$

Impact velocity: $v = 25 \text{ m/s}$

Damages: none

Maintenance: End of test series. System dismantled.

For further information please do not hesitate to contact us.

Best regards



Dr. Walter Ammann

Head of department





Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the standard specified below.



Geobrugg AG
8590 Romanshorn
Switzerland

Certified area

GEOBRUGG Geohazard Solutions
GEOBRUGG Security Engineering

Field of activity

Protection Technology and Protection Systems
Security Mesh Applications and Security Systems

Standard

ISO 9001:2008 **Quality Management System**

Swiss Association for Quality and
Management Systems SQS
Bernstrasse 103, CH-3052 Zollikofen
Issue date: August 4, 2013

This SQS Certificate is valid up to
and including August 3, 2016
Scope number 17
Registration number 34372



Trusted Cert

X. Edelmann, President SQS



SCESm 001

R. Glauser, CEO SQS



Swiss Made

Partner of
IONet



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and SQS
hereby certify that the organisation

Geobrugg AG
8590 Romanshorn
Switzerland

Certified area

GEOBRUGG Geohazard Solutions
GEOBRUGG Security Engineering

Field of activity

Protection Technology and Protection Systems
Security Mesh Applications and Security Systems

has implemented and maintains a
Management System
which fulfills the requirements of the following standard(s)

ISO 9001:2008

Scope No(s): 17
Issued on: 2013-08-04
Validity date: 2016-08-03
Registration Number: **CH-34372**



Michael Drechsel
President of IQNet

Roland Glauser
CEO SQS



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