GENERAL STRUCTURAL NOTES

A. GENERAL:

1. ALL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF "NEPAL NATIONAL BUILDING CODE" (NBC: 105: 2020), ANY PERTINENT LAWS & REGULATIONS, AND INDUSTRY STANDARDS.

2. DETAILS SHOWN ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR SITUATIONS EXCEPT WHERE SHOWN DIFFERENTLY ELSEWHERE.

3. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AT SITE. THOROUGHLY REVIEW ALL DRAWINGS, DETAILS AND SPECIFICATIONS BEFORE PLANNING THE WORK. BRING ALL INCONSISTENCIES, OMISSIONS OR CONFLICTS TO THE ATTENTION OF OWNER AND ENGINEER BEFORE PROCEEDING WITH THE WORK. ALL DIMENSIONS SHOWN ARE APPROXIMATE. DO NOT SCALE DRAWINGS. VERIFY EXISTING UTILITIES. CONFLICTS: NOTES AND DETAILS ON THE DRAWINGS TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS IN CASE OF CONFLICT.

4. THE STRUCTURAL DRAWINGS SHOW STRUCTURAL FEATURES ONLY & SHOW THE FINAL PRODUCT. MEANS OF CONSTRUCTION IS TO BE DETERMINED BY THE CONTRACTOR.

5. PIPES, DUCTS, SLEEVES, CHASES, ETC.: SHALL NOT BE PLACED IN SLABS, BEAMS, OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR PIPES, DUCTS, ETC., UNLESS SPECIFICALLY SHOWN. OBTAIN PRIOR WRITTEN APPROVAL FOR INSTALLATION OF ANY ADDITIONAL PIPES, DUCTS, ETC.

6. SUBSTITUTIONS: PROVIDE A LIST OF ALL PROPOSED SUBSTITUTIONS TO ENGINEER FOR REVIEW AND APPROVAL BEFORE FABRICATION AND INSTALLATION.

7. CONSTRUCTION METHODS AND PROJECT SAFETY: THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE METHODS, PROCEDURES OR SEQUENCE OF CONSTRUCTION. TAKE NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE DURING CONSTRUCTION. NEITHER THE OWNER NOR ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND BRACING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS. THE CONTRACTOR SHALL FOLLOW ALL INSTRUCTIONS, RECOMMENDATIONS AND SAFETY PRECAUTIONS PROVIDED BY THE MANUFACTURER OR SUPPLIER OF ANY MATERIAL OR PRODUCT NOTED IN GENERAL NOTES OR DRAWINGS.

8. EXCAVATIONS: LOCATE AND PROTECT UNDERGROUND OR CONCEALED CONDUIT, PLUMBING OR OTHER UTILITIES WHERE NEW WORK IS BEING PERFORMED. GRADES SHOWN ON STRUCTURAL DRAWINGS ARE APPROXIMATE AND FOR GENERAL REFERENCE ONLY.

9. CONSTRUCTION LOADS: MATERIALS SHALL BE EVENLY DISTRIBUTED IF PLACED ON FRAMED FLOORS OR ROOFS. LOADS SHALL NOT EXCEED THE ALLOWABLE LOADING FOR THE SUPPORTING MEMBERS AND THEIR CONNECTIONS.

10. CHANGES TO THE DRAWINGS: OBTAIN APPROVAL FROM ENGINEER PRIOR TO STARTING WORK.

11. COLD-WEATHER REQUIREMENTS FOR ALL MATERIAL: DO NOT USE FROZEN MATERIALS OR MATERIALS MIXED OR COATED WITH ICE OR FROST. DO NOT BUILD ON FROZEN SUBGRADE OR SETTING BEDS. REMOVE AND REPLACE ASSEMBLIES DAMAGED BY FROST OR FREEZING CONDITIONS

B. DESIGN LOADS (THESE PLANS & CALCULATIONS NOT VALID FOR HEAVIER OR GREATER LOADS)

GOVERNING BUILDING CODE: NBC: 105: 2020

DEAD LOADS (IN PLACE WEIGHT NOT TO EXCEED THE FOLLOWING):
ROOF DL = 5 psf (TIN ROOF);
STONE WALL DL = 150 psf (WITH CEMENT MORTAR)

LIVE LOADS:
ROOF LL= 20 psf
FLOOR LL= 50 psf

SEISMIC (GEOTECHNICAL REPORT NOT AVAILABLE):
SEISMIC STRUCTURAL SYSTEM = STONE MASONRY SYSTEM w/ NOMINAL REINFORCEMENT
DUCTILITY FACTOR, Rmu = 2.0 (Conservative from Table 5-2)
OVER-STRENGTH FACTOR, OMEGAu = 1.2
OVER-STRENGTH FACTOR, OMEGAs = 1.1
SEISMIC ZONING FACTOR (Z) = 0.25 (NBC Figure 4-3)
IMPORTANCE CLASS = II (SCHOOL); IMPORTANCE FACTOR = 1.25
SOIL TYPE = B (MEDIUM SOIL SITE, NBC 4.1.3) - ASSUMED
HOR BASE SHEAR (ULTIMATE LIMIT STATE) = C(T1)/Rmu/OMEGAu * SEISMIC WEIGHT (NBC 6.2)
WHERE, C(T) = Ch(T)*Z*I (NBC 4.1.1)

WIND LOAD: PER NBC

SNOW LOAD: HIGH HIMALAYA REGION PER NBC

OTHER LOADS: PER NBC

C. FOUNDATIONS:

1. GEOTECHNICAL REPORT FOR THIS PROJECT IS NOT AVAILABLE. FOUNDATION DESIGN IS BASED ON PROVISIONS OF CBC CHAPTER 18. BASIC ALLOWABLE SOIL PRESSURE = 1500 PSF

2. FOOTINGS SHALL BEAR ON UNDISTURBED SOIL. IF OVER-EXCAVATED, FILL VOID WITH LEAN CONCRETE.

3. REVIEW PLANS, ELEVATIONS & SECTIONS TO DETERMINE CONCRETE FLOOR ELEVATION, DROPS, STEPS, PENETRATIONS, BLOCK-OUTS, ETC.

4. SHORE EXISTING STRUCTURE AS NECESSARY WHILE WORKING ON OR NEAR EXISTING FOUNDATION.

5. ROOF AND AREA DRAINAGE SHALL BE DIRECTED AWAY FROM FOUNDATIONS.

D. CONCRETE:

1. CONCRETE SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 2500 PSI MIN. SUBMIT MIX DESIGN.

2. REINFORCEMENT: ASTM A615 WITH MINIMUM YIELD STRENGTH OF 60,000 PSI; LAP: 40 BAR DIAMETER MIN. EXCEPT OTHERWISE SHOWN ON PLAN & DETAILS.

3. CLEAR COVER TO REINFORCEMENT: 3" WHEN CAST AGAINST EARTH, 2" WHEN FORMED SURFACES TO BE BACKFILLED WITH EARTH; 1-1/2 IN ELSEWHERE.

4. VERIFY LOCATIONS FOR OPENINGS OR PENETRATIONS THROUGH CONCRETE, CONCRETE CURBS, FLOOR DEPRESSIONS, FLOOR SLOPES AND DRAINS, INSERTS, ETC.

5. DETAILING, FABRICATION AND PLACING OF REBARS SHALL CONFORM TO ACI 315 AND ACI 318 IF NOT SHOWN ON THESE DRAWINGS>

6. REINFORCEMENT, ANCHOR BOLTS, PIPE SLEEVES, AND OTHER INSERTS: POSITIVELY SECURED IN PLACE BEFORE CONCRETE IS POURED

7. VIBRATION: ALL CONCRETE SHALL BE CONSOLIDATED WITH MECHANICAL VIBRATORS.

8. PROVIDE CONSTRUCTION JOINT (COLD JOINTS) WHERE POURING IS TO BE DISCONTINUED FOR MORE THAN 15 MINUTES. REBARS SHALL BE CONTINUOUS THRU CONSTRUCTION JOINTS. USE THE CONSTRUCTION JOINT DETAIL PROVIDED HEREIN.

E. STRUCTURAL STEEL:

1. SHAPES & PLATES: ASTM A36; BOLTS: ASTM A307, EXCEPT USE ASTM A325 FOR BOLTS NOTED AS HIGH STRENGTH BOLTS: ANCHOR BOLTS: ASTM A307 WITH 7 DIA HOOK MINIMUM UNLESS PLATE WASHERS & NUTS SPECIFIED AT EMBEDDED ENDS ; PIPE COLUMN: ASTM A501, Fy = 36 KSI; STEEL TUBE: ASTM A500, GRADE B, Fy = 46 KSI.

2. ITEMS INDICATED TO BE GALVANIZED AND ALL METAL EXPOSED TO EXTERIOR WEATHER SHALL BE HOT DIP GALVANIZED AFTER FABRICATION PER ASTM A153 .

3. STEEL EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.

F. WOOD FRAMING:

1. FRAMING LUMBER: HARD WOOD MADE OF SAL WOOD, OR SIMILAR SPECIES AS APPROVED BY THE ENGINEER.

2. POSTS BEARING ON CONCRETE OR SIMILAR BASE SHALL BE SECURED DIRECTLY WITH a METAL POST BASE (SIMPSON CBQ OR EQUIVALENT) AS INDICATED ON THE PLANS.

3. ALL BLOCKING, BRIDGING, DOUBLING OF JOISTS UNDER PARALLEL PARTITIONS, FIRE-STOPPING, ETC NOT INDICATED SHALL BE AS REQUIRED BY NBC & ACCORDING TO GOOD BUILDING PRACTICE.

4. NAILS SHALL BE COMMON NAILS OR APPROVED EQUAL, UNLESS NOTED OTHERWISE. SEE "NAILS" SECTION BELOW FOR SIZES OF COMMON NAILS. FOR METAL HANGERS AND CONNECTORS, NAIL SUBSTATION MAY BE ALLOWED PROVIDED LOAD CAPACITIES ARE REDUCED & APPROVED BY ENGINEER.

5. PROVIDE MALLEABLE IRON OR STEEL PLATE WASHER UNDER HEAD AND NUT OF BOLT WHERE BEARING IS AGAINST WOOD (INCLUDING SILL PLATE AND HOLDOWN BOLTS). WASHER WILL NOT BE REQUIRED UNDER HEAD OF CARRIAGE BOLTS, UNLESS OTHERWISE NOTED.
MINIMUM STEEL PLATE WASHER (PLW) SHALL BE AS FOLLOWS:

BOLT DIA (IN)	THICKNESS (IN)	SIZE (IN)
1/2	3/16	2 X 2
5/8	1/4	2 1/2 X 2 1/2
3/4	5/16	2 3/4 X 2 3/4

6. WOOD EXPOSED TO WEATHER, WITHIN 6" OF SOIL, OR IN CONTACT WITH CONCRETE OR STONE MASONRY SHALL BE PRESERVATIVE TREATED AS DIRECTED BY ENGINEER. CONTACT ENGINEER.

7. NAILS AND METAL HARDWARE EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.

G. STONE MASONRY:

1. GENERAL: NOMINALLY REINFORCED COURSED ROUGHLY DRESSED RUBBLE STONE MASONRY (NRM) WITH CEMENT MORTAR IS SPECIFIED FOR THIS PROJECT.

2. STONE: THE STONES SHALL HAVE MINIMUM SPECIFIC GRAVITY OF 2.4 , SOURCED FROM BOULDERS OR ROCK QUARRYING OF GRANITE, QUARTZITE, LIMESTONE, SANDSTONE, OR SIMILAR MATERIALS AS APPROVED BY THE ENGINEER. THE COMPRESSION STRENGTH SHALL NOT BE LESS THAN 400 kg/cm2, UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE STONE SHALL BE HARD, SOUND, COMPACT AND DURABLE, CLEAN, FREE FROM FAULTS, CLEAVAGE, CRACKS, CAVITIES, DECAY AND WEATHERING. STONE MASONRY SHALL BE ROUGHLY DRESSED TO THE SIZE AND SHAPE AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY THE ENGINEER TO FIT THE SIZE OF THE WALL IN THE CONFIGURATION AS SHOWN ON THE DRAWINGS.

3. DO NOT USE ROUND RIVER BOULDERS, UNLESS DRESSED.

4. DO NOT USE FROZEN MATERIALS OR MATERIALS MIXED OR COATED WITH ICE OR FROST. DO NOT BUILD ON FROZEN SUBGRADE OR SETTING BEDS. REMOVE AND REPLACE STONE ASSEMBLIES DAMAGED BY FROST OR FREEZING CONDITIONS

5. MORTAR: MORTAR TO BE USED AS BINDING MATERIAL FOR STONE MASONRY SHALL CONSIST OF ONE PART PORTLAND CEMENT AND THREE PARTS OF DAMP LOOSE MORTAR SAND, BY VOLUME AND SUFFICIENT WATER TO PRODUCE THE PROPER CONSISTENCY FOR THE INTENDED USE, EXCEPT WHERE OTHERWISE DIRECTED BY THE ENGINEER. MORTAR SHALL BE PROPERLY MIXED AS DIRECTED BY THE ENGINEER. MORTAR SHALL BE MIXED ONLY IN QUANTITIES SUFFICIENT FOR IMMEDIATE USE, AND ALL MORTAR NOT USED WITHIN 30 MINUTES AFTER ADDING WATER TO THE MIX SHALL BE DISCARDED. RE-TEMPERING OF MORTAR IS NOT ALLOWED. MIXING TROUGHS AND PANS ARE THOROUGHLY CLEANED AND WASHED AT THE END OF EACH DAY'S WORK. MORTAR JOINT THICKNESS AT ANY POINT SHALL BE APPROXIMATELY 1/2".

6. PLACING OF STONE MASONRY: EVERY COURSE OF STONE SHALL BE ROUGHLY DRESSED AND LAID HORIZONTALLY. VERTICAL JOINT AND FACES SHALL BE TRULY VERTICAL. THROUGH STONES (ALSO CALLED BONDING STONES/TIE STONES) THAT EXTEND THROUGH THE FULL WIDTH OF WALL SHALL BE USED ON EVERY THIRD COURSE. STONE SHALL NOT BE PLACED DURING RAINS SUFFICIENTLY HEAVY OR PROLONGED TO WASH THE MORTAR FROM THE MASONRY. MORTAR ALREADY SPREAD WHICH BECOMES DILUTED BY RAIN SHALL BE REMOVED AND REPLACED BEFORE CONTINUING WITH THE WORK. LOADS ARE NOT ALLOWED ON THE STONE BEFORE IT IS FULLY SET. STONE SHALL BE MOISTENED WITH WATER FROM THREE TO FOUR HOURS BEFORE THEY ARE USED, OR BY A METHOD WHICH SHOULD ENSURE THAT EACH STONE IS THOROUGHLY AND UNIFORMLY WETTED AS DIRECTED BY THE ENGINEER.

7. STONE MASONRY SHALL BE PLACED ON PROPERLY PREPARED AND FIRM FOUNDATIONS AND IN ACCORDANCE WITH THE DRAWINGS OR AS DIRECTED OF THE ENGINEER. FOUNDATIONS SHALL BE APPROVED BY THE ENGINEER BEFORE PLACING THE MASONRY.

8. IF AFTER COMPLETION, ANY STONE MASONRY IS OUT OF ALIGNMENT OR NOT LEVEL OR DOES NOT CONFORM TO LINES AND GRADES SHOWN ON THE DRAWINGS, IT SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE.

9. WHERE VERTICAL OR HORIZONTAL REINFORCING BARS ARE PRESENT WITHIN THE MASONRY, THERE SHALL BE MINIMUM GAP OF 2" RADIUS AROUND THE BARS (4" DIAMETER SPACE). MORTAR SHALL BE PLACED AND COMPACTED IN THE GAP AS DIRECTED BY THE ENGINEER.

10. REINFORCING BARS: SEE ABOVE FOR CONCRETE

11. CURING: THE MASONRY SHALL BE KEPT MOIST ON ALL THE FACES FOR AT LEAST 7 DAYS AS DIRECTED BY THE ENGINEER.

12. POINTING OF STONE MASONRY: AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL POINT MASONRY SURFACES. MORTAR FOR POINTING, EXCEPT AS OTHERWISE DIRECTED, SHALL BE OF THE SAME COMPOSITION AS USED FOR PLACING THE MASONRY. IN PREPARATION OF THE POINTING WORK, THE JOINTS AT THE EXPOSED SURFACE OF STONE MASONRY IS RAKED OUT (BEFORE THE MORTAR IS SET) OR CHISELED OUT. THE SURFACE IS CLEANED BY WIRE BRUSH AND IS MOISTENED. AFTER RAKING THE JOINTS SHALL BE COMPRESSED WITH A PRINTING TOOL. ALL TOOLING OF JOINTS SHOULD BE DONE AFTER THE MORTAR HAS PARTIALLY SET BUT IS STILL SUFFICIENTLY PLASTIC TO BOND. STONES WITH MORTAR VOIDS VISIBLE BEYOND THE DEPTH OF THE RAKING SHALL BE REMOVED AND RE-LAID WITH FRESH MORTAR UNLESS SUCH VOIDS CAN BE COMPLETELY FILLED BY OTHER METHODS AS APPROVED BY THE ENGINEER. THE FOLLOWING TYPE OF POINTING SHALL BE CARRIED OUT AS DIRECTED BY THE ENGINEER: INSIDE POINTING SHALL CONSIST OF A FILLING OF JOINTS TO ABOUT 1 CM AVERAGE DEPTH FROM THE FACE OF THE STONE. FLAT POINTING SHALL CONSIST OF JOINTS TO ABOUT 1 CM DEPTH AND HEIGHT FLUSH WITH THE FACE OF THE STONE. RAISED POINTING SHALL CONSIST OF FILLING OF JOINTS TO ABOUT 1 CM DEPTH AND HEIGHT NOT LESS THAN 1 CM ABOVE THE FACE OF THE STONE.

13. DRILLING HOLES: DRILLING OF HOLES FOR INSTALLATION OF ANCHOR BOLTS, ETC. SHALL BE DONE IN SUCH A MANNER AS NOT TO SPLIT OR DAMAGE THE STONES BY BEING TOO CLOSE TO THE EDGE OF STONES. MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED FOR HOLE DIAMETER, DEPTH, CLEANING AND BONDING USED FOR THE ANCHOR BOLTS.

H. NAILS:

1. ALL NAILS SHALL BE COMMON WIRE NAILS, U.N.O., OF FOLLOWING SPECIFICATIONS:

SIZE PENNY	LENGTH INCHES	DIAMETER INCHES	PENETRATION INCHES
8d	2.5"	0.131	1-1/2
10d	3"	0.148	1-5/8
16d	3.5"	0.162	1-3/4
20d	4"	0.192	2-1/8
30d	4.5"	0.207	2-1/4

PENETRATION IS MEASURED INTO THE PIECE RECEIVING THE NAIL POINT. WHERE THE NAIL PENETRATION WILL BE LESS THAN SPECIFIED, INCREASE NAIL LENGTH (SIZE) TO OBTAIN THE PENETRATION REQUIRED FOR THE NAIL SPECIFIED.

I. PLYWOOD:

1. USE APA TRADEMARKED PLYWOOD CONFORMING TO NATIONAL EVALUATION SERVICE COMMITTEE REPORT NO. NER-108 WITH EXTERIOR GLUE, GRADE AND THICKNESS AS SPECIFIED, OR AS DIRECTED BY THE ENGINEER. CENTER PLYWOOD JOINTS ON FRAMING MEMBER OR BLOCKING. PROVIDE 1/2" SPACE BETWEEN UNTREATED PLYWOOD AND CONCRETE.

J. STRUCTURAL OBSERVATION BY ENGINEER:

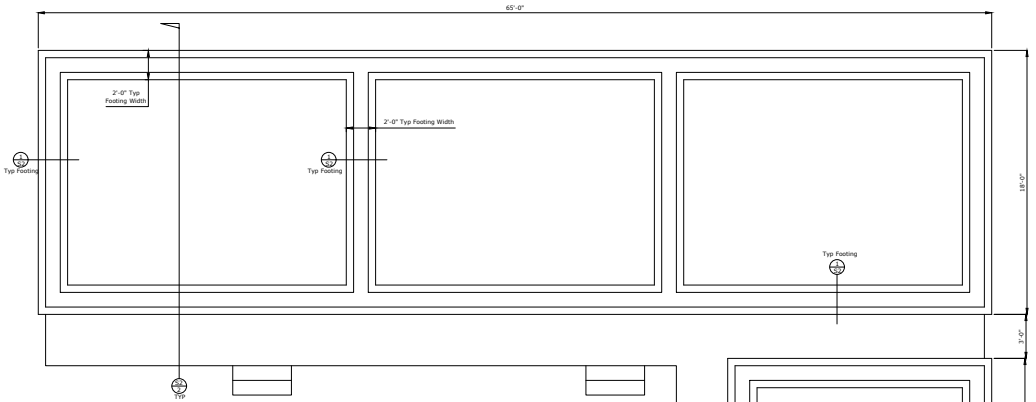
NOTIFY ENGINEER OR ENGINEER'S REPRESENTATIVE AT LEAST 15 DAYS AHEAD:
(a) BEFORE POURING CONCRETE FOR INSPECTION OF REBARS, FOUNDATION SIZES, EMBEDDED ANCHOR BOLTS & METAL.
(b) BEFORE STARTING WALL CONSTRUCTION
(c) BEFORE STARTING ROOF TRUSS FABRICATION, AND BEFORE INSTALLATION
(d) BEFORE STARTING INSTALLATION OF ROOFING

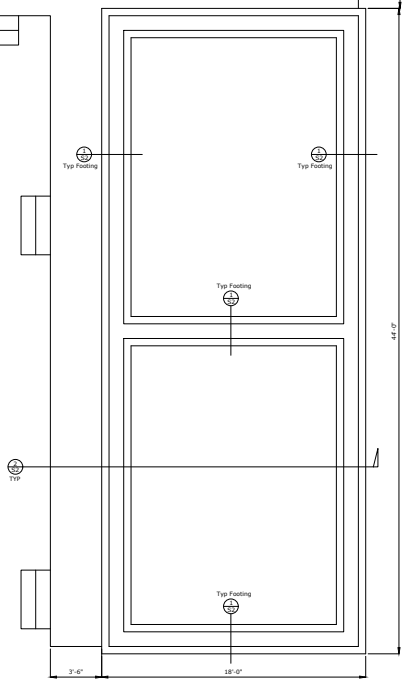
K. EPOXY EMBEDDED ANCHOR BOLTS:

1. IF USED, THE PRODUCT SHALL BE APPROVED BY THE ENGINEER (SIMPSON XP, HILTI HIT RE 500 SD, OR APPROVED EQUIVALENT). DRILL HOLES AND BLOW OUT DUST FROM THE HOLES USING AIR SPRAY & CLEAN THE HOLES USING VINYL BRUSH UNTIL NO DUST PRESENT. FOLLOW MANUFACTURER'S INSTRUCTIONS.

PROJECT ADDRESS:

TRIPITAK BASIC (ELEMENTARY) SCHOOL
Shey Phoksundo Rural Mucipality, Ward No.1
LHURI VILLAGE, UPPER DOLPA, NEPAL (Near Saldang)
Approx Latitude and Longitude: 29.492690 N, 83.055451 E





Preliminary

1/S1 FOUNDATION PLAN
1/4"=1'-0"

REVISIONS
DATE

PROJECT:
New School Building For
TRIPITAK PRIMARY SCHOOL
(Elementary School)
Lhuri, Upper Dolpa, Nepal (Near Saldang)

FOUNDATION PLAN
&
GENERAL STRUCTURAL NOTES

DRAWN BY: SA
CHECKED:
DATE: 03-30-2021
SCALE: AS SHOWN
JOB NO.
SHEET
S1
OF
OF 3 SHEETS

Drawn Size: A1
If this drawing is not 24 inches x 36 inches, it has been reduced or enlarged. The reader should not use the scale.

PRODUCED BY AN AUTODESK STUDENT VERSION
PRODUCED BY AN AUTODESK STUDENT VERSION