PHOTOGRAPHS BY

JOHN VAVRUSKA

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On April 25 and again on May 12, 2015, the central region of Nepal experienced 7.8- and 7.3-magnitude earthquakes, respectively. The village of Chupar in Nuwakot district, located between the two earthquake epicenters, lost six of its one thousand people, all of its 200 houses, and its school. Donations from many caring people here at home made possible food and temporary shelters. The village agreed that a school was the first priority. Funds from more than 300 donors allowed rebuilding to begin in February 2016. Along with Budu Rai, whose parents and extended family live in Chupar, and her husband Uttam, both now American citizens, five American volunteers went to Nepal to help begin the rebuilding process. In a ten week period from February 10 to April 21, 2016, a six-room school was built along with a dedicated gravity flow water system and composting latrine for the school. A house was also built for Budu’s family in the village. The project was completed with volunteer labor by the Chupar villagers. It would not have been possible without the donations from so many kind people in the U.S. and the efforts of many volunteers in Chupar and in the U.S. The contributions by all have given the villagers hope—they are deeply grateful.
Subject: Permission to rebuild

To,
Shree Dhaneshwori Primary School
Rautbeshi-5, Nuwakot

Due to the earthquake on 25th of April, 2015, Dhaneshwori Primary School building which includes classrooms and main office room was severely damaged. Per application put forward by Mrs. Budu Rai and Mr. Uttam Rai expressing their interest in rebuilding earthquake safe school building with necessary furniture is permitted. We would like the effort to be coordinated with the school. Please submit the progress report of the project periodically.

We thank you for your cooperation.

Yours sincerely,

Sukadev Nepal
For DEO

CC:
1. Shree DDRC, Nuwakot
2. Mrs Budhû Rai and Mr Uttam Rai

Website: www.deonuwakot.gov.np, Email: deonuwakot25@gmail.com
A typical hardware store in Kathmandu.
This one--Alert Enterprise--in Teku--offers geogrid for sale. See next slide.
LOCATION OF: Alert Enterprises in Teku—where geogrids can be acquired.
A hardware store in Jorpati, Kathmandu. We lost track of how many of these we visited to find what was needed.
Loading the jeeps (actually, Mahindra Boleros) for the 6-hour ride to Chupar, February 18.
Piles of logs at a lumber yard in Kathmandu; dried dimensional lumber was not available in Nepal at the time of the project.
Piles of lumber in Kathmandu lumber yard.
Band saw in Kathmandu cutting wet pine log to make lumber for house in Chupar
Loading freshly cut wet lumber onto the 4-ton 4WD truck in Kathmandu that will take it to Chupar, a 6-hour ride over incredibly rough roads.
Karbu Tamang's carpentry shop in Kathmandu where the school windows, doors, and their frames were built
Piles of steel angle and square tubing in Banepa. The school roof trusses and purlins were fabricated from 1 1/2" square tubing seen here in right distance.
To CHUPAR
View of the Jugal Himal range from the road to Chupar; the highest peak is Dorje Lakpa at 22,854 ft.
View down the valley to the west from the Chupar school site
Ruins of nearby village, Gul Bhanjyang, a former village with trekking teahouses. May 17, 2015
CHUPAR

Chupar Village,
Rautbesi VDC,
Nuwakot District, Nepal

All 215 houses and the school were destroyed.
Most walls that survived have large vertical cracks at the corners of the long sections just before the gable ends. In this wall many smaller stones were used with lots of mud mortar, not a good combination for earthquake resistance. Apr 16, 2016
Some tall walls did survive the earthquake, at least visually intact. A wall like this that survived 7.8 and 7.3 magnitude earthquakes along with 450 aftershocks of greater than 4.0 magnitude is cause for optimism that our school, with gabion bands and use of large flat stones, will survive future quakes. Feb 20, 2016
The earthquake brought most houses down in Chupar, leaving partially standing rock walls and piles of rubble. Photo taken nearly one year after the earthquake on April 9, 2016.
Man and his house, too dangerous to enter.
May 13, 2015
View of the old Chupar school in November 2011, during a trek to raise money to build latrines in the village. The trekkers' camp was set up in front of the old school.
Destroyed Chupar school and site of future school in the foreground. Photo taken on May 15, 2015, three weeks after the earthquake.
The old Chupar school two weeks after the earthquake of April 25, 2015
A classroom of the old Chupar school full of rubble, two weeks after the earthquake.
Classroom and blackboard of Chupar school after the quake
Chupar school after earthquake.
May 15, 2015
Damaged wall of Chupar school
May 15, 2015
Woman whose husband, Prem Tamang was buried in rubble for 2 1/2 hours, but saved. May 15, 2015
Harvesting winter wheat in terraces of Chupar
May 15, 2015
Sifting the harvested winter wheat, Chupar, May 17, 2015
Drying the winter wheat harvest, in Chupar May 13, 2015
Budu and John holding banner for the Chupar Rebuilding Project on April 17, 2016. The banner was designed, printed and donated by Deepak Maharjan in Kathmandu.
A 7.8 magnitude earthquake struck this region of Nepal on April 25, 2015. All 215 houses and the school were destroyed in the village of Chupar.

The Chupar Rebuilding Project is a cooperation of support from the villagers of Chupar, volunteers and non-profit organizations, and more than 300 generous individual donors from the United States of America.

On this site will be built a 9-room school and a composting latrine and clean drinking water system for students. The project will also include the construction of several homes and a residence for teachers.

While preserving traditional architecture and using locally skilled craftsmen, this project will incorporate innovative gabion banding technology to enhance earthquake resistance.

WE THANK THE VILLAGERS OF CHUPAR AND THE FOLLOWING INDIVIDUALS AND ORGANIZATIONS FOR THEIR SUPPORT:

Randolph Langenbach, Conservation Architect (राण्डलफ ल्यांगेनब्क, सरक्षण विशेषज्ञ)

TEAM MEMBERS, 2016 (संयुक्त २०१६)

Uttam Rai, Budu Rai, John Vavruska, Laura Holt, Thad Stewart, Martha Stewart, Neil McKay, David English, Ralph Koening, Annette Vigili, Israel Serr, and Earl Kessler

ORGANIZATIONS (संगठन संस्थानहरू)

PLENTY INTERNATIONAL
www.plenty.org

WATERLINES
www.waterlines.org

HIMALAYA STOVE PROJECT
www.himalayastoveproject.org

HANUMAN FOUNDATION
www.hanumanfoundation.org
The remains of the old demolished school when we arrived in Chupar in February 2016: metal roofing, ruined furniture, and a huge pile of rocks. The larger, flatter rocks were re-used in the new school's walls and the smaller rocks were broken into gravel for concrete and for the French drain.
View down to the school site on the flat, cleared area on the ridge about 3/4 mile from Chupar village, where the picture is taken.
This backhoe was on-site several days before school building began. The large flat area will eventually have grass and vegetation and be used for soccer, volleyball, etc. The earthquake enlarged the landslide in the background.
The backhoe was also used to excavate the school foundation trenches, saving a tremendous amount of hand digging.
Laying out the school footprint on February 25
Nima inspecting foundation trenches
The first loads of stone from the source up in the forest three miles away arrive at the school site.
Before starting the masonry on the schools, Mingma and Mingma from the village of Patale in eastern Nepal construct a small prototype gabion band with polyester geogrid.
The stone "quarry" in the jungle three miles from the school site, where as many as 20 villagers worked to gather and break stone for the school
Loading rock into the truck for transport to the school site. More than 60 loads of stone went into the school, composting latrine, and water system.
Several truck loads of stone ready for starting the foundations
The first stone gets laid into the foundation trench to form the 20-inch wide x 8-inch high bottom gabion band, Feb. 27.
Mixing mud for the first stones laid into the foundation
The school site with geogrid laid into the foundation trenches, Feb. 27
The school site from above, Feb. 27. There will be two school buildings to meet the earthquake guideline of not exceeding a length-to-width ratio of 3:1 for any single building. Each building is 41'-4" (12.6 m) long and 17'-8" (5.4 m) wide.
Laying the first stones with mud masonry to create a 20-inch wide foundation wrapped in geogrid
Budu and her younger brother Dawa cooking lunch for the school work crew. More than a couple of thousand lunches were served during the course of the project!
Completing the laying of stone for the bottom gabion band on Feb. 28
Chupar school children in temporary outdoor class session
Closeup of the tough polyester geogrid out of Kolkata, India
The school walls keep rising, Feb. 29
A beehive of activity on the northern school building
Woman with infant on her back hauling mud to the masons. Would you see this in the USA?
The door frames are up and held in place with bamboo supports (March 2).
The school on March 2
A single layer of geogrid, the width of the wall, is laid in at a level half way between the gabion bands at the bottom and sill-levels (March 4).
Cutting the polyester geogrid into 65-inch widths to form gabion bands in the school walls
Chupar ladies tying the gabion bands at the window sill level; the walls are 16-inch wide and the gabion band is 8-inch high.
Village blacksmith on left and assistant turning the hand-crank air blower. They are hand making chisels used to break large stones at the rock quarry up in the forest.
Thad Stewart demonstrating how to tie geogrid together with zip ties and polypropylene twine to form the gabion bands
Tying the window-sill level gabion band, March 5
The school with the window-sill level gabion band on top of all walls (March 5)
Work break on rolls of geogrid
The school on March 6; the window frames are now installed.
The walls continue upward (March 9).
A roll of geogrid doubles as playground furniture.
The "engineering office" at Chupar school site. That's Sandy McKay on the left, David English, both from Oregon, and Umesh Tamang, welder from Ilam, eastern Nepal.
David English's on-site design of the roof trusses with "W" shaped cross bracing
From left: Umesh Tamang (welder), David English, Uttam Rai, Neil (Sandy) McKay, Deepak Maajhi (welder), and Surendra Paudel (welder)
Welding the first of eight trusses for the school roof, using a 2 kilowatt diesel generator and simple welding coil (on right) brought from Kathmandu (March 26)
The welding crew with their generator: from left, Surendra Paudel, Deepak Maajhi, and Umesh Tamang
The walls of the school are complete except for the top gabion band which will be laid in after the roof is installed.
The first roof trusses with plywood attached are ready to be hoisted up onto the school (March 30).
David English cutting and installing plywood on roof trusses. The electric power for the saw is from the welders' generator.
The school on March 30
Sandy and Dave cutting the school porch beams
Poking holes in ABS plastic pipe with hot re-bar. The pipe will be laid into a French drain trench on the back side of the school.
Interior of a classroom with freshly poured concrete floor. The bamboo scaffolding will be removed and the walls will be cement plastered (March 30).
The gable end trusses are now temporarily in position
Chupar youth playing volleyball with geogrid as a volleyball net. Note that the steel roof trusses and purlins are in place on the school in the background.
View of the completed roof truss and purlin arrangement before the metal roofing is installed. The geogrid lies under the trusses and will form the top gabion band on all walls, which will help hold the roof down. The band is already completed on the back walls in view.
Dave English adjusting a steel cable and turnbuckle at the back corner of one school building. These will hold the roof down in a high wind.
Dave and Sandy installing a turnbuckle and cable that loops through the bottom of the wall and up and over the bottom horizontal member (bottom chord) of the roof truss.
Drilling holes in T-shaped anchors that will be embedded in concrete piers and will support the porch posts
Beginning installation of the corrugated metal roofing on the school. The French drain pipe is visible in the trench, which will be filled with gravel.
Surendra gives a thumbs up
Front view of the school with porch beams in place (April 3). Posts and corbels will be installed next. The beams are attached to the roof trusses with "hurricane clips" brought from the U.S.
Interior of a classroom after the roof is installed showing the mid-level and top gabion bands. The walls will be cement plastered and painted white. Plywood was later attached to the roof trusses to provide some sound separation between classrooms (April 6).
Making a corbel for the school's porch posts and beams
Installing the posts and corbels under the porch beam on the southern school building. Concrete will be poured in the post piers and on the floor of the porch.
Posts and anchors ready for installation on the school porch
Sizing a school bench: how many children fit comfortably on a bench? We concluded that four children are a good fit. This is an old bench that survived the earthquake. Thirty new benches were fabricated which will provide a capacity of about 120 children in 5 classrooms. Mar 27, 2016
Forms for various concrete lids in foreground and new school bench frames behind. Apr 14, 2016
The roof is completed on the north school building; note the clear panels in each classroom which provide plenty of light.
Sandy McKay installing a corbel under the porch beam
The roof is finished and the porch floor is being prepared for concrete
Another view of the school porch floor being poured (April 17, 2016)
View under the porch. Two of the three gabion bands are visible; the third is below grade. Apr 17, 2016
Pouring concrete floor for the school porch
The new Chupar school on April 17, 2016.
Interior of a classroom---the walls will be painted white.
David English, Neil (Sandy) McKay, and John Vavruska—"The Three Musketeers“ on April 12, 2016
Nepal Trip 2017: Chupar

Feb 16–Apr 25
The New School

We arrived in Chupar this year thinking that only the gabion bands would get plastered to protect them from the sun’s ultraviolet (UV) rays. Most people liked the look of the exposed stone and mortar joints of the walls. However, practicality won out over aesthetics and it was decided to protect the walls from many future seasons of monsoon rains by cement plastering them in their entirety.
Note the monsoon rains’ erosion through the excavated earth down to the original solid ground. The slope on the left is the north side of the school "mesa".
The new Chupar school one year after its construction. Note the window sill level gabion band has just been plastered.
Plastering the window sill-level gabion band to protect it from the sun's UV rays
The school's gabion bands (visible on right) get plastered. Later, it was decided to plaster the entire surface of the exterior walls to protect the mortar joints from monsoon rain.
The Chupar school with gabion bands plastered and before the school's exterior walls were plastered on the 2017 trip.
Plastering the exterior walls of the school
Back side of school after grading for drainage. Note the fresh snow up on the ridge at 8,500 ft (early March 2017).
Kids in the new Chupar school
Assembly of school kids in front of the school.
The Americans (including the Nepalese-Americans) wear katas (Buddhist silk scarves) presented by villagers on the morning we left Chupar, April 18, 2016.
From the villagers of Chupar, Nuwakot, Nepal to Plenty International and the caring people of the United States who donated to save our village after all our homes were destroyed by the earthquake of April 25, 2015, we thank each and every one of you from the bottom of our hearts.

Namaste

ध्यापार गाउँ नुवाकोट जिल्लामा बैशाख १२ गते गएको महामूकपमा परि हाम्रो गाउँघर पूरै भक्तको र प्लेन्टी इन्टरनेशनल संयुक्त राज्य अमेरिकाका जनताहरूले हामीहरुलाई अकलपनिय अनुदाय सहयोग गरिदिनुभएको भएको ध्यापार गाउँबासीबाट हदयादेखि नै धन्यवाद गर्दछौ।

नमस्ते
I thank John for his great photography shown in this collection, and for his adoption of the Gabion Band technology.

Randolph Langenbach, 2017