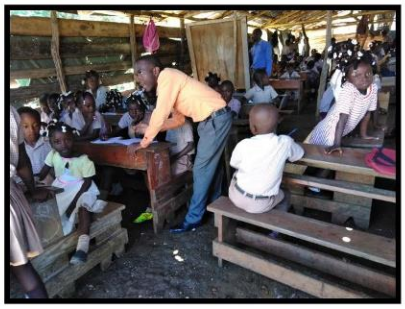
Minimum School Facility Design Guidelines

The Model School Network - Haiti

May 2019









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Schools for the Children of the World

Introduction

The Model School Network (MSN), in conjunction with a grant from the W. K. Kellogg Foundation (WKKF), engaged Schools for the Children of the World (SCW) to complete a review of all MSN schools in the central plateau of Haiti. The grant identified the following Primary Goal: "to improve education and educational opportunities by providing quality learning environments/school facilities." To accomplish this goal, a school facility infrastructure plan which includes school infrastructure design guidelines is needed to provide clear direction for future infrastructure projects. This plan should be based on hard data (enrollments, facility conditions, educational programs) and soft data (input and objectives identified by the Model School Network).

It was clear that the goal of "improving education and educational opportunities" for those served by the MSN is dependent on adequate educational facilities to be successfully implemented. It is with that in mind that new educational facility design guidelines were established to facilitate the implementation of the Goals of the WKKF grant and the objectives of the MSN.

We wish to thank all participants in multiple planning workshops who made the many recommendations toward the improvement of future school facilities in the MSN. Each and every suggestion influenced these final *MSN Minimum Schools Facility Design Guidelines*.

These *MSN Minimum School Facility Design Guidelines* have been prepared to establish ***minimum*** planning and design standards for all new school facility construction within the Model School Network. All educational communities within the Model School Network and communities throughout Haiti are encouraged to use these guidelines, whether interested in improving their existing school facilities and/or planning, designing, and constructing new facilities.

On behalf of the Model School Network in Haiti and Schools for the Children of the World, we welcome your efforts to improve school facilities and educational opportunities throughout Haiti, and encourage your use of these *MSN Minimum School Facility Design Guidelines*.

Charles R. Newman, AIA, REFP
Architect
President and Co-Founder
Schools for the Children of the World

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FORWARD

The Model School Network (MSN) aims establish a scientific and holistic understanding of the key elements that contribute to quality education for the benefit of Haitian students. In this spirit, an action-research approach was adopted in school networks of Haiti's Central Department, based on internationally recognized best practices, and in accordance with government standards. In order to ensure the optimal efficacy of interventions, it was also determined that solutions should address the critical challenges that are specific to the local context, including the need for school infrastructure appropriateness. With this aim, the MSN partnered with Schools for the Children of the World (SCW) for its international expertise and great local experience, to conduct a thorough evaluation of the physical environment of all MSN schools.

Since the beginning of their collaboration in September 2018, SCW has served as a catalyst for lessons, commitments and hopes for the MSN regarding the possible ways to address the countless challenges of the school environment in Haiti. Armed with a systematic and effective methodology, SCW was able to carry out the following main activities through 10 months of tireless work: Trained 12 Haitians including many engineering students for the evaluation of existing schools; evaluated 191 school facilities in the Central Plateau of Haiti; developed a comprehensive database of the existing conditions at each of the MSN schools; led 2 standard-setting workshops at the regional level; conducted continuous consultation with government entities and partners such as the IDB; developed these MSN Minimum School Facility Design Guidelines 2019; and proposed a list of projects to be submitted to potential donors for Phase One of the MSN's school improvement program.

The result is an extensive regional-wide understanding of the challenges and opportunities of Haiti's Central department school infrastructure situation, which encompasses the views of all education partners, and benefited from the special support of the Ministry of Education and Vocational Training, through the DDE-Center and DAEPP. The recommendations of the MSN Minimum School Facility Design Guidelines 2019 presented here are therefore an invitation to move the lines in the design of quality school infrastructure. Thanks to their systemic import and adaptability to a rich range of educational contexts, it is the sincere wish of the MSN that the findings of this report may serve as a reference for any future reflection and initiative on school infrastructure planning in Haiti.

The MSN leadership is convinced that though positive confrontation between the pursuit of excellence and the field's workable challenges, the spectrum of possibilities for quality education will continue to broaden and leverage partners' synergistic collaboration. Thanks to the dedicated support of the W.K. Kellogg Foundation and the powerful delivery of Schools for the Children of the World, the Model School Network Coalition is proud to carry this important initiative for the successful development of children through education.



Cassandre Regnier,
MSN Board President



Pierre Tessono Péralt,
MSN Board Vice President



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Site Considerations

Site Selection

Site selection is a very important part of planning for a new school. Sites must be selected to support the student population that is expected over the next 20-40 years. Sites that merely support the current enrollment will likely become inadequate as the student population increases. If that happens, facilities that are otherwise in good condition may be abandoned in favor of relocating the students to a larger school at a site able to support the total student population. A single site will avoid the additional administrative staff required by two sites, which translates into significant savings to the school and school system.

The school site must be able to accommodate school buildings, future additions due to student population growth and added educational programs, support facilities, and play areas. Some schools may also want to include agricultural fields or similar spaces to support local vocational programs. Some communities may also want to include community gathering spaces. Community centered spaces should strongly be considered to encourage future support for the schools by the community.

While planning for multiple shifts may reduce school facility requirements, student achievement will likely be compromised by schools operating in multiple shifts. We strongly recommend that sites be planned for all educational facilities needed to support educational programs operating on a single shift.

While **Table 1** can be used as a general guideline, each community's requirements will vary based on expected growth and additional space(s) needed to support the curriculum or desired by the local community. In addition, urban school site size will be affected by the available open land within the community being served.

While multi-level school buildings can reduce the total area of the site required, consideration should be given to facility accessibility by students, staff and parents with physical challenges. Consideration should also be given to the safety of staff and students while exiting the building during emergencies such as earthquakes, fires, etc. Students in the first grade and under should never be located more than one floor above or below the nearest ground level exit.

Haiti has a rich history of the appreciation of the arts. Site selection and design should consider providing space for landscaped areas, outdoor amphitheaters for performances, etc. (Also provide waste containers throughout the site to make it easier for staff and students to keep the school site free of trash.)

Table 1 - Recommended Site Size (m^2)

Number of Students	Urban	Rural
<100	5,000	8,000
100-200	7,500	11,000
200-300	10,000	14,000
300-400	12,500	17,000
400-500	15,000	20,000
Over 500	15,000 + 25m^2/ student	20,000 + 30m^2/ student

The minimum site size recommended is based on useable square meters. If the site is not flat or if it includes other geographical obstacles, it may need to be increased.

Consideration must also be given to the space needed for areas to park the cars of staff and visitors to the school. While these requirements may not be great today, they can be expected to grow as more and more teachers and staff drive to work. In addition, drives and delivery areas for trucks and waste collection vehicles should be located away from student walks and circulation areas for student and pedestrian safety.

Location

Site location is a very important consideration when selecting a site.

- **Maximum Travel Distance:** Sites should be selected within population centers to minimize the distance children must walk to school. This is not only needed for student safety, but will allow more students to participate in after school activities. Where possible, the following guidelines should be followed:

  Pre-K – 6th Grade: 2.0 kilometers
  7th Grade – 12th Grade: 4.5 kilometers

  While the Ministry of Education recommends a maximum travel distance of 300 meters for early childhood students, this should be considered a strong recommendation, but will likely not always be possible, particularly in rural areas.

- **Best Location:** The best locations for schools are near residential areas, along quiet streets with low traffic volume. Avoid locations that are close to busy highways or railroads in consideration of student safety and noise.

- **Avoid Hazardous Environmental Conditions, such as:**
  - Areas subject to flooding, mudslides or other natural hazards,
  - Areas subject to distracting sights, smells or noises, including landfills or animal farms,
  - Areas near stagnant water ponds,
  - Areas near heavy traffic or other unsafe areas, particularly near schools for younger children,
  - Areas near tectonic faults, and
  - Avoid Areas under high voltage electrical lines. (The World Health Organization cautions that those who live within a mile of a high voltage transformer could develop neurological disorders. Exposure to electromagnetic field waves, even weak ones, can impair the brain's chemical balance and ability of the immune system to fight diseases. While most scientific studies have been inconclusive, it is best to avoid any possible health risks.)

- **Beneficial Site Conditions** that should be considered:
  - Areas where potable water is available from either a public water supply or a well,
  - Areas having access to a public utility providing electrical service,
  - Areas exposed to full sunlight throughout the day for classroom illumination with natural light,
  - Areas open to prevailing winds for natural classroom ventilation,
  - Shaded/Landscaped outdoor study areas for outdoor classroom activities (These can be used even on the hottest days),
  - Areas that are flat enough to support playfields, and
  - Areas that can be made fully accessible to people with physical challenges, including all buildings and fields on the school site. Where sloped walks are needed to achieve this, they should not have a slope exceeding 1:12 with flat landings of 1.5 meters long every 9 meters. Slopes between 1:16 and 1:20 are preferred. Slopes less than 1:20 do not require flat landings.

Natural Light and Ventilation

While natural light and ventilation are listed above under beneficial site conditions, they are key components of quality learning environments, particularly in areas without dependable electricity that can provide artificial light and ventilation.

Many of the MSN schools were found to have very poor lighting levels. As a result, students near the back of the classroom find it very difficult to see what the teacher is writing on the chalkboard or marker board. The impact on student learning is significant. We found that many schools used concrete block with open cores as windows to allow light in, but the holes were too small and not effective at letting in light or air circulation. The concrete block with much larger holes were much more effective. If possible, jalousie windows seem to be the best at allowing maximum light and fresh air into the classroom, while protecting interior spaces from wind driven rain.

Poor air circulation allows the classroom to become overly stuffy and smelly, and significantly impacts the ability of the students to concentrate on their work. Good air circulation helps to keep the classrooms much more comfortable, even on hotter days.

Water and Sanitation

Clean water and proper sanitation practices are very important for preserving the health of the entire school community. Poor sanitary practices are a major cause of the spread of communicable diseases.

Where possible, sites should be selected in areas that have access to potable water, either from a public source or a water well. Water from a water well should be tested to assure the safety of the water for human consumption. If tests fail, a filtration system should be installed and maintained to assure potable water is always available for students and staff when the buildings are occupied. Where this is not possible, water harvesting and/or collection systems should be installed along with an approved filtration system that is maintained to assure safe drinking water is available for staff and students.

Where practical, flushable toilets should be installed and maintained for clean and odor free toilet facilities. Where flushable toilets are not practical, approved composting toilets should be installed and routinely cleaned and serviced to minimize objectional odors and maintain best possible sanitation practices.

Sanitary waste systems must be used that safely treat and dispose of sanitary waste products. Septic systems and seepage pits must be located a safe distance from water wells. Unless local requirements are more restrictive, a water well should be located a minimum of 15 meters from a septic tank and 30 meters from a septic field or seepage pit. Waste collection tanks should be located away from student and public areas and near an accessible road to allow equipment to gain access to pump out the tanks as part of the routine maintenance of the system.

Whether flushable toilets are used or composting toilets are used, hand washing facilities must be located immediately adjacent to toilet facilities. A maintenance program must be implemented to assure that toilets and hand washing facilities are properly maintained and in good working order at all times the facilities are occupied.

Programs must also be developed to train staff, students and community members on proper sanitation practices. This is an important public health issue that school systems can play a key role in improving public health.

Ecology, Landscaping, Natural Light for Classrooms, Play Areas

The following items should also be considered during site selection and development:

- **Surrounding Ecology and Wildlife** must be respected when planning for new school locations.

- **Tree Removal** should be avoided or minimized where possible.
  - Use new and existing trees to shade buildings from direct sunlight and minimize over-heating.
  - Trees can be used to block wind and noise from adjacent areas.

- Trees can provide shade for outdoor study and play areas.

- Plan the **Location and Building Orientation** to take advantage of natural ventilation and natural sunlight to illuminate classrooms. Maximize natural illumination by considering the location of the sun throughout the day.
  - Sunlight bouncing off the concrete walkway in front of a classroom can provide an excellent source of natural illumination for the entire classroom without adding excessive heat to the classroom.
  - Translucent roof panels selected to minimize heat radiation into the classroom can provide a natural source of illumination without overheating students.

- The **Site Profile** must be flat enough and large enough for athletic fields (soccer fields) to be located a safe distance away from the buildings.
  - Provide separate play areas for younger children.
  - Consider a fenced-in play area adjacent to Pre-Kindergarten and Kindergarten classrooms to minimize staffing requirements.

- The **Site Size** should also include space for agricultural plots and any related trade workshops and training areas desired by the school to support vocational education programs. Consideration should be given to locating workshops that generate noise away from classroom areas.

- **Waste Storage and Disposal** facilities must be provided. Waste receptacles must be located throughout the school site to help staff and students respect their environment and properly dispose of waste materials. A program should be developed to assure that the grounds are kept clear of trash.

Classroom Size

The MSN has established a minimum classroom size of 72m² for all grade levels. For grades 1-13, this will serve a maximum of 36 students, or 2m² per student. In grades Pre-Kindergarten to Kindergarten, this will serve a maximum of 25 students, or 2.88m² per student.

The 72m² standard classroom size was established to recognize that schools are constantly changing. As populations change, a small school serving primary grade levels may need to move to a larger school on a much larger site. The existing school may be converted to a early childhood or secondary grade center. Any classroom can be converted to serve any grade level. The intent is to minimize the changes needed to reconfigure schools as needed for shifts in area populations.

The key component of this standard is 2 m² per student which was chosen to support a project-based curriculum and related appropriate furniture desired by the MSN. Existing classrooms can achieve this guideline by limiting the number of students in existing smaller classrooms to 2m² per student. For instance, a 48m² existing classroom should be limited to 24 students. It is understood that this standard will require additional classrooms and more teachers. While this requirement is not intended to displace existing students in overcrowded classrooms, future student enrollment at existing schools and future renovations, improvements, and additions to existing schools should be designed to achieve this minimum guideline.

Table 2

Size of Classrooms (m^2)	
Grade Level	**Recommended**
Pre-K - K	$72m^2$
Grades 1-6	$72m^2$
Grades 7-12	$72m^2$

Table 3

Size of Classrooms (students)	
Grade Level	**Recommended**
Pre-K - K	25
Grades 1-6	35
Grades 7-12	35

A classroom of this size allows students to work in a variety of arrangements, supporting the new curriculum adopted by the MSN. The arrangements shown the right and below are based on the new classroom furniture standards adopted by the MSN. Updated project-based curricula are expected to include pre-school, primary, and secondary educational programs which will be taught system-wide. The content of these programs is intended to assist students to meet performance standards in the arts, mathematics, natural science, social science, literacy, language arts, communication skills, and technology at each grade level. The new classroom is designed to support these activities.

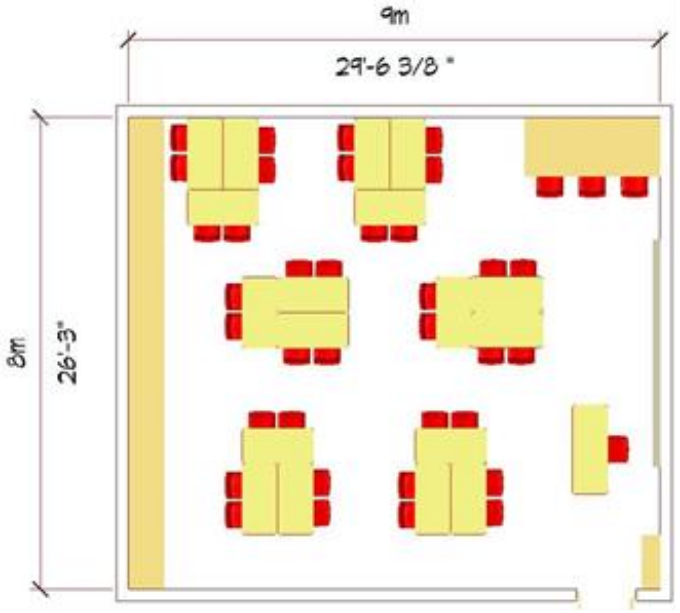


Figure i - Typical Classroom Floor Plan

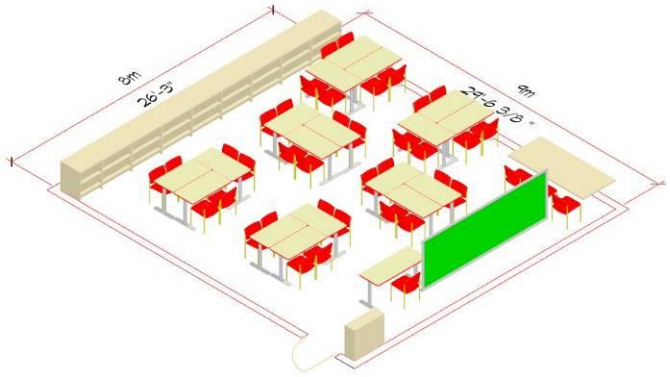


Figure ii - Group Configuration

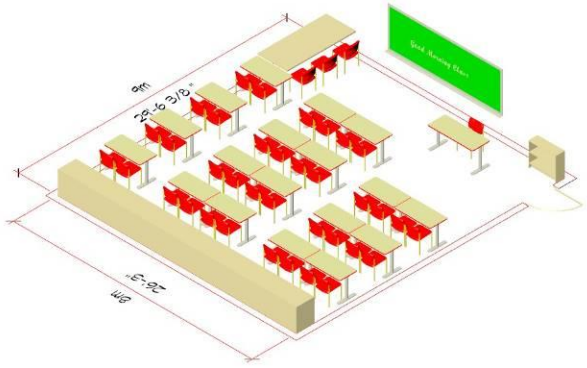


Figure iii - Lecture Configuration



Figure 4 – Example of Classroom Furniture

Support Space Considerations

Educational and Support Space Descriptions

Classrooms

The classroom is a teaching/learning space that must support the curriculum adopted by the MSN. A classroom's design should be flexible enough to accommodate a variety of furniture configurations in support of a full range of classroom activities as well as potential changes in curriculum and grade level. The classroom should be comfortable for both students and staff, while taking advantage of both natural light and ventilation. Storage of classroom supplies and student projects should be included in the selection of classroom furniture/casework. Additional storage rooms should be considered for the secure storage and charging of computers and electronic equipment, spare furniture, etc.

Opportunities for multiple classroom activities should also be considered when configuring several adjacent classrooms.

Learning Resource Center (LRC)

The LRC should include an instructional space for teaching a full classroom of students in how to use the library's resources. Space should also be included for quiet study areas and computer areas with internet access for research for students and staff. Consideration may also be provided to allow community to access to the LRC. In this case, student security must be assured in the design of the space.

Laboratories

Laboratories are areas where students can learn through instruction, observation and experimentation. In general, these areas need to be large enough and flexible enough to support both general instruction (such as within a normal classroom) and student experimentation. When utilities such as electricity and water are needed to support the experiential activities, they can often be made available around the perimeter of the classroom. Appropriately designed tables and chairs/stools within the room can be moved to these perimeter workstations during periods of experimentation. Laboratories must also be designed with adequate enclosed storage space. Usually an adjacent storage room is needed to store classroom supplies, student experiments, and permanent teaching materials and equipment. With proper planning, a single laboratory space can accommodate all science subjects (such as biology, physics, chemistry and environment science) with adequate supporting storage space and utilities. Consideration should also be given to using properly designed laboratory spaces as normal classroom spaces when not scheduled as laboratory space, making them useable during most of the school day.

Technology

A school's educational programs must be supported by adequate technology, including computers, audio-visual equipment, and the associated support infrastructure.

- Each school must develop its own plan for making computers available to students and staff and provide the necessary facilities to support that plan.
- Each school should have access to the internet to facilitate staff training, research, and distance learning activities.
- Every school must include space for the safe storage, servicing, and charging of computers and all other audio-visual equipment needed to support educational activities.

Using tablet and laptop computers, any classroom can be used to teach students how to operate a computer and use computer applications. Based on this approach, the Ministry of Education has agreed to provide support for an Information Technology curriculum in MSN schools even though they do not plan to have a "dedicated computer lab". For this reason, a "dedicated computer lab" has not been included in the *MSN Minimum School Facility Design Guidelines*.

Workshops

Workshops provide students space for learning trade related skills, including home economics, electronics, industrial trades, construction trades, or equipment or automotive repairs and maintenance. The area must provide adequate space for the full range of student activities and secure storage space for training aides, student projects, past student projects as examples, tool storage and raw materials.

Storage

General storage areas are needed for general school instructional supplies and school facility maintenance supplies. Storage space is also needed for furniture and equipment storage for multi-purpose spaces including those spaces shared with community or other school partners at the school.

Cafeteria / Multi-Purpose Room

The Cafeteria / Multi-Purpose Room can serve a range of functions including:

1. A space for students to eat meals,
2. A meeting space for multiple classes or groups to assemble or perform,
3. An instrumental and /or vocal music instruction classroom / performance space,
4. A Public meeting area. (Public spaces should be located near the school's public entry so that public areas can be secured from the rest of the school whenever they are used by the public - both during school hours and after school hours.)

Adequate storage space must be provided to store the range of furniture and equipment needed to support the activities programmed for this space.

Kitchen

The kitchen should include space for cooking equipment, food preparation and storage of food supplies. It can serve both student and community activities. It should be located adjacent to the student cafeteria, outdoor eating areas and the community's multi-purpose room if they are separate facilities.

Toilet Facilities

Toilet facilities must be sanitary and comfortable. A minimum of one accessible toilet room (useable by people with physical challenges complying with US ADA guidelines) must be provided within a maximum of one floor level of all public spaces on a school campus. A toilet room with a sink should be provided within each early childhood (K-2, K-1 and K) classroom so that teachers can assist younger children without leaving the classroom. (Teachers must be able to clean young students in a private non-public area.) They should also be located in close proximity to Basic One (grades 1-3) classrooms. Toilet facilities should be designed for ease of regular cleaning and maintenance to avoid water borne and insect borne diseases. Wastewater from sinks and toilets must be connected to either a public sanitary sewer or an approved onsite wastewater treatment or septic system. Composting toilets may only be used in areas with a limited water supply. Handwashing sinks must be in immediate proximity to all toilet facilities. Instruction in proper sanitation techniques should be included as part of the basic curriculum at all schools.

Teacher Workrooms

Teacher workrooms provide an area for teaching staff collaboration and teacher lesson planning. The space must be adequate for small group meetings as well as individual teacher lesson preparation. It should include normal equipment and supplies that can be shared by teachers to help them prepare for classroom activities, including space for a future copier if electricity is not currently available.

Administrative Offices

Depending on school size, this area may include any or all of the following spaces:

- **Reception:** This space provides a welcoming area and space for secretarial staff.
- **Director/Principal's Office:** This office provides space for the director/principal to work and meet with 1-4 students, parents, teachers, staff or visitors.
- **Medical Office:** This space is typically immediately adjacent to the Administration Office. It is a space where students can go for help when they are sick or injured, and where parents can pick up their children if they are too ill to stay in school. It may also serve as a place where visiting doctors, dentists, etc. can offer services to students or the community. This space should provide an area for a nurse or medical practitioner's desk, at lest one cot for ill students and direct access to a toilet room that includes at minimum an accessible toilet and a sink. The MSN has determined that all schools with an office must also include a medical office.
- **Record Storage:** A Secure Fire-Protected Storage area is needed to store student records and private school organizational records.
- **Accounting/Bookkeeping:** This space serves as the financial management and accounting office for the school.
- **Conference Room:** Provides space for staff or parent conferences or meetings.
- **Counselors Office:** Provides space for counselors who assist students with career exploration, educational options for students, social guidance, etc.

Play Areas

Outside activity/play areas should be provided at all MSN schools. While physical activity is healthy for the students, it also helps to create groups of new friends and collaboration between students. Play areas do not have to be expensive. Be creative in using available resources to provide fun play areas with the students and volunteer labor.



Figure 5 – An Example Play Area using Recycled Materials and Volunteer Labor

Mechanical Equipment Space

Additional space may be needed to house mechanical equipment such as:

- A water well and pump,
- Electric generator,
- Air conditioning equipment,
- Wind and/or solar equipment and battery storage,
- Maintenance workshop.

Consideration should be given to the use of **Renewable Energy Resources** whenever possible.

Optional Spaces

Cafeteria

A cafeteria is a covered area used to serve meals to students outside of their classrooms. It can also serve as a multi-purpose space for a range of school activities and can also serve as a community meeting space. A securable storage space should be provided to store tables and chairs and other supplies and equipment needed to support the full range of activities anticipated in the cafeteria.

The MSN does not require a cafeteria at all schools. However, a cafeteria can serve an important role in keeping food and food waste materials out of the classrooms. Hand washing sinks should be included in or immediately adjacent to the cafeteria and toilet facilities should be located in close proximity to the cafeteria.

Community Meeting Space

This a multi-purpose space for community meetings and activities. An adjacent storage space should be provided for the storage of supplies and furniture needed for the full range of activities expected in this space.

Teacher Residence

In rural areas, a residence for a teacher may be needed.

Guard House

Some schools might desire a Guard House near the school entrance to secure the school site during school hours.

Gymnasium

A gymnasium is typically a covered space designated for physical education and physical fitness activities. The MSN encourages including gymnasiums at secondary schools. It may also serve as a competitive gymnasium for sports competitions between schools. Competitive gymnasiums normally include space for bleachers (spectator seating). Shared use with the community should be planned for and encouraged.

Space Requirements

Figure 6 below lists some General MSN School Design Principles that should be followed for all future MSN school facility improvements.

1. All future MSN school campuses should provide a minimum of 1 toilet per classroom and at least one hand washing sink for every two toilets. It is preferred that toilets are flushable.	
	a. One toilet room should be located within each Early Childhood (K-2, K-1, K) classroom and should include a sink within the toilet room. An additional sink should be provided in each classroom outside the toilet room to support classroom activities.
	b. A dedicated fenced in safe play area accessible directly from the Early Childhood classrooms should be provided for a safe and secure outside activity area.
2. All future school campuses in the MSN will make every effort to be accessible to people with physical challenges. That includes walkways from the main parking area, to the main entry, to all campus buildings, to all levels of all buildings, and into all rooms. Only maintenance rooms may be excluded.	
3. At least one toilet room must meet ADA standards for accessibility. If the campus is tiered with multiple levels, an accessible toilet facility must be available from every other level. (Maximum travel distance to the nearest accessible toilet room is a maximum of one level up or down.)	
4. Provide a minimum of two electrical outlets per classroom.	
5. Provide a minimum of one 12 foot wide marker board per classroom.	
6. Provide infrastructure in construction for future light fixtures throughout the school and covered walkway. Where electrical is available provide energy efficient light fixtures.	
7. Provide classroom furniture that includes tables and chairs, with two students per table.	

Figure 6

The Minimum Space Requirements noted in the following tables (Figures 7-11) identify the **minimum** Programmable Area (interior space) required for each identified space within an MSN educational facility.

When planning for new schools or school renovations, **an additional 25% of the *Programmable Area*** should be added as an allowance for circulation space and toilet facilities.

The following tables identify the minimum ***Programmable Area*** requirements for each grade level. The areas noted for toilets are not included in the Net m^2 noted in the table but are factored into the Total Construction Cost. Toilet numbers are provided as a guide for planning for the minimum acceptable number of toilets for a school.

Minimum Space Requirements (M^2)
Grades Pre-K - Kindergarten

Number of Students / Classroom:	**25**
Classroom Size:	**72 SqM**

	Total Number of Students							
	1 - 25	26 - 50	51 - 75	76 - 100	101 - 125	126 - 150	151 - 300	300+
# Classrooms	1	2	3	4	5	6	7- 12	13+
Classrooms	72.00	144.00	216.00	288.00	360.00	432.00	2.88 SqM/Student	2.88 SqM/Student
Administration Office + Nurse	-	-	*	*	*	*	-	-
Teachers	-	-	-	-	-	-	-	-
Storage	-	18.00	18.00	18.00	36.00	36.00	0.24 SqM/Student	0.24 SqM/Student
Kitchen + Food Storage	-	-	-	-	-	-	-	-
Cafeteria	-	-	-	*	*	*	-	-
Library	-	-	-	-	-	*	-	-
Computer Lab	-	-	-	-	-	-	-	-
Science Lab	-	-	-	-	-	-	-	-
Workshop	-	-	-	-	-	-	-	-
Gymnasium/Multi-Purpose	-	-	-	-	-	-	-	-
Net M^2	**72**	**162**	**234**	**306**	**396**	**468**		
Net M^2 / Student	**2.88**	**3.24**	**3.12**	**3.06**	**3.17**	**3.12**	**3.12**	**3.12**
Toilets (M^2)	6	12	18	24	30	36	0.24 SqM/Student	
(1 Toilet / Classroom at 6.0 m^2 each)								

One toilet room should be located within each Pre-K – K classroom and should include a sink within the toilet room. An additional sink should be provided in each classroom outside the toilet room to support classroom activities.
A dedicated fenced in safe play area accessible directly from the classrooms should be provided for pre-K K classrooms.

Figure 7

Minimum Space Requirements (M^2)
Grades 1-6

Number of Students / Classroom:	**36**
Classroom Size:	**72 SqM**

	Total Number of Students							
	1 - 36	37 - 72	73 - 108	109 - 144	145 - 180	181 - 216	217 - 432	432+
# Classrooms	1	2	3	4	5	6	7- 12	13+
Classrooms	72.00	144.00	216.00	288.00	360.00	432.00	2.00 SqM/Student	2.00 SqM/Student
Administration Office + Nurse	*	*	36.00	36.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Teachers	-	-	-	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Storage	-	-	18.00	18.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Kitchen + Food Storage	-	-	36.00	36.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Cafeteria	-	-	*	*	*	*	-	-
Library	-	-	-	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Computer Lab	-	-	-	-	-	-	-	-
Science Lab	-	-	-	-	-	-	-	-
Workshop	-	-	-	-	-	-	-	-
Gymnasium/Multi-Purpose	-	-	-	-	-	-	-	-
Net M^2	**72**	**144**	**306**	**414**	**504**	**576**		
Net M^2 / Student	**2.00**	**2.00**	**2.83**	**2.88**	**2.80**	**2.67**	**2.67**	**2.67**
Toilets (M^2)	6	12	18	24	30	36	0.17 SqM/Student	
(Minimum 1 Toilet / Classroom at 6.0 M^2 each) * = Desireable Option								

Figure 8

Minimum Space Requirements (M^2) Grades 7-9								
Number of Students / Classroom:	**36**							
Classroom Size:	**72 SqM**							
	Total Number of Students							
	1 - 36	37 - 72	73 - 108	109 - 144	145 - 180	181 - 216	217 - 432	432+
# Classrooms	1	2	3	4	5	6	7- 12	13+
Classrooms	72.00	144.00	216.00	288.00	360.00	432.00	2.00 SqM/Student	2.00 SqM/Student
Administration Office + Nurse	-	-	*	*	*	*	*	*
Teachers	-	-	-	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Storage	-	-	-	18.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Kitchen + Food Storage	-	-	*	*	*	*	*	*
Cafeteria	-	-	*	*	*	*	*	*
Library	-	*	*	36.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Computer Lab	-	-	-	-	-	-	-	-
Science Lab Storage	-	-	*	*	*	*	*	*
Workshop	-	-	-	-	-	-	-	-
Gymnasium/Multi-Purpose	-	-	-	-	-	-	*	*
Net M^2	**72**	**144**	**216**	**360**	**450**	**522**		
Net M^2 / Student	**2.00**	**2.00**	**2.00**	**2.50**	**2.50**	**2.42**	**2.42**	**2.42**
Toilets (M^2)	6	12	18	24	30	36	0.17 SqM/Student	
(Minimum 1 Toilet / Classroom at 6.0 M^2 each) * = Desireable Option								

Figure 9

Minimum Space Requirements (M^2) Grades 10-13								
Number of Students / Classroom:	**36**							
Classroom Size:	**72 SqM**							
	Total Number of Students							
	1 - 36	37 - 72	73 - 108	109 - 144	145 - 180	181 - 216	217 - 432	432+
# Classrooms	1	2	3	4	5	6	7- 12	13+
Classrooms	72.00	144.00	216.00	288.00	360.00	432.00	2.00 SqM/Student	2.00 SqM/Student
Administration Office + Nurse	-	-	18.00	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Teachers	-	-	-	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Storage	-	-	-	18.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Kitchen + Food Storage	-	-	36.00	36.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Cafeteria	-	-	-	*	*	*	-	-
Library	-	*	*	36.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Computer Lab	-	-	-	-	-	-	-	-
Science Lab Storage	**	36.00	36.00	72.00	72.00	72.00	0.33 SqM/Student	0.33 SqM/Student
Vocational Classrooms / Lab	-	-	72.00	72.00	72.00	72.00	0.33 SqM/Student	0.33 SqM/Student
Agriculture / Ecology / Field	-	-	-	-	72.00	72.00	0.33 SqM/Student	0.33 SqM/Student
Gymnasium/Multi-Purpose	-	-	-	-	*	*	*	*
Net M^2	**72**	**180**	**378**	**558**	**720**	**792**		
Net M^2 / Student	**2.00**	**2.50**	**3.50**	**3.88**	**4.00**	**3.67**	**3.67**	**3.67**
Toilets (M^2)	6	12	18	24	30	36	0.17 SqM/Student	
(Minimum 1 Toilet / Classroom at 6.0 M^2 each) * = Desireable Option								

Figure 10

Minimum Space Requirements (M^2) Vocational	
Number of Students / Classroom:	**36**
Classroom Size:	**72 SqM**

	Total Number of Students							
	1 - 36	37 - 72	73 - 108	109 - 144	145 - 180	181 - 216	217 - 432	432+
# Classrooms	1	2	3	4	5	6	7- 12	13+
Classrooms	72.00	144.00	216.00	288.00	360.00	432.00	2.00 SqM/Student	2.00 SqM/Student
Administration Office + Nurse	-	-	18.00	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Teachers	-	-	-	18.00	18.00	18.00	0.08 SqM/Student	0.08 SqM/Student
Storage	-	-	-	18.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Kitchen + Food Storage	-	-	*	*	*	*	*	*
Cafeteria	-	-	*	*	*	*	*	*
Library	-	-	18.00	18.00	36.00	36.00	0.17 SqM/Student	0.17 SqM/Student
Computer Lab	-	-	-	-	-	-	-	-
Science Lab Storage	*	*	*	*	*	*	-	-
Vocational Classrooms / Lab	*	*	108.00	108.00	216.00	216.00	1.00 SqM/Student	1.00 SqM/Student
Agriculture / Ecology / Field	-	-	-	-	-	-	*	*
Gymnasium/Multi-Purpose	-	-	-	-	-	*	*	*
Net M^2	**72**	**144**	**360**	**468**	**684**	**756**		
Net M^2 / Student	**2.00**	**2.00**	**3.33**	**3.25**	**3.80**	**3.50**	**3.50**	**3.50**
Toilets (M^2)	6	12	18	24	30	36	0.17 SqM/Student	
(Minimum 1 Toilet / Classroom at 6.0 M^2 each) * = Desireable Option								

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Figure 11

Building Layout Considerations

School Size

The following maximum school student enrollment guidelines are suggested based on unique issues associated with demographics and the lack of transportation in many areas of the MSN.

K-1 through K-3 Schools	**25 – 150 students**
Rural Schools (Grades 1-9)	**25 – 324 students**
Urban Elementary Schools (Grades 1-9)	**324 - 628 students**
Urban Secondary Schools	**288 - 1,152 students**

It is suggested that rural schools have at least 25 students to justify the cost of constructing a school. For communities with fewer than 25 students, an alternative location may be considered, such as within available church facilities or a residence.

Schools with grade levels of Basic 1 through Basic 3 (Grades 1-9) should be limited to 324 students (one section per grade level), plus students in K-1 through K-3 (pre-kindergarten through kindergarten). At these schools, early childhood education (K-2 through K) may have as many as 100 additional students in 4 classrooms preparing to enter primary school. Whenever possible, it is better to have more schools located near where students live rather than have larger schools having more than 324 students. Similarly, in grades 10-13, secondary

schools should be limited to 576 students (4 sections per grade level). In high density urban areas, secondary schools should not exceed 1,152 students or 8 sections per grade level.

Urban schools with grades 1-9 with more than 648 students may result in excessive travel distances for some students. Secondary Schools (Grades 10 and higher) may support enrollments of up to 1,152 students where longer travel distances are acceptable.

Building Organization

Schools should be planned and designed to offer inviting and safe environments for students, staff, and community members. Public areas of the school (those shared with the community) should be separated from student occupied areas of the school for improved student safety and school security. Those separations should use lockable doors or gates for a more controlled separation.

Consideration must always be given to provide safe exit from all areas in case of emergencies such as earthquakes, fire, etc.

The following recommendations should be considered to enhance student safety and improve building control:

- Control access to the school site by installing aesthetically pleasing fencing around the site's perimeter.
- Public areas (such as multi-purpose rooms/auditoriums, etc.) should be close to the main entry for public access yet separable from student occupied areas. When possible, public areas should be able to be physically isolated (locked off) from the rest of the building.
- Administrative offices should be designed to have good visual contact of major circulation areas (i.e. entries, corridors, parking, etc) for both public areas and student areas of the school.
- Toilets should be located near classrooms. In larger schools, several toilets may be joined together in larger "gang" type toilet rooms. Dedicated accessible toilets must be made available to students and staff with physical challenges throughout the school campus. It should never be necessary to travel up or down more than one level to access an accessible toilet facility.
- Avoid blind spots, alcoves, or other areas that are difficult to observe. Avoid spaces that would feel unsafe to building occupants.
- Athletic fields should be located far enough away from the school building to protect students in school from noise and the building itself from physical damage.

Accessibility

Accessible Facilities are facilities that are accessible by people with physical challenges without special assistance.

Program Accessibility is the process by which programs are made available to people with physical challenges in a manner that is equal to those services offered to able bodied people.

The MSN is committed to providing equal access to all educational opportunities for all people with physical challenges. Therefore:

- **School facilities must be arranged so that all students with physical challenges have equal access to all desired programs and services**. This means that all special programs may need to be located on the ground floor level of schools that do not have ramps or elevators for people with physical challenges. Physically carrying a person to an upper or lower floor level is not an acceptable means of achieving equal

access. Special consideration should be given to include the following areas on the accessible ground floor level:

- Administration Office
- Library
- Laboratories
- Workshops
- Cafeteria
- Assembly Spaces
- Classrooms at the grade level of students with special needs

- **Accessible Toilets** must be made available to students and staff with physical challenges throughout the school campus. **Accessible Family Toilet** facilities should be considered in public areas. Family toilet facilities provide enough space in the toilet room for a family member to provided assistance to a family member needing help.

Vehicular and Pedestrian Traffic Considerations

The design should avoid conflicts between pedestrians and vehicles to the extent possible:

- Locate the school to minimize the number of students that must cross busy streets,
- Separate parking areas from student entrance and activity areas,
- Minimize pedestrian walkways that cross vehicular roadways,
- Locate delivery access away from pedestrian walkways to the extent possible,
- Provide access to equipment requiring service, such as water storage tanks, septic tanks, trash collection equipment, etc., isolated from pedestrian walkways to the extent possible.

Building Design and Construction Considerations

The MSN must insist on the use of **Quality Materials and Construction Methods** to assure the safety of students and occupants during earthquakes and other emergencies such as fires. A secondary benefit is the reduction of future maintenance costs while maximizing the life expectancy of the building. Designs using standardized details may simplify construction and offer cost savings while maintaining overall school facility design creativity.

When planning and designing schools, the following must be considered:

- All materials, including donated materials, must meet the high-quality standards needed to maximize occupant safety, minimize future maintenance expenses, and maximize the facility life expectancy.
- Wall surface materials must be durable, easy to clean, and easy to repair if defaced by graffiti.
- Exposed to view materials should be readily available so that they can easily be repaired or matched during future renovations or additions. They should also have a high resistance to impact and perform well under local weather conditions.
- Construction techniques used should be able to be duplicated by the local community so that the local community can make needed repairs or modifications without detracting from the existing construction.
- Buildings must be oriented to take advantage of the natural attributes of the site. Use natural light and ventilation for student comfort. Consider wind direction and the direction and strength of rainfall when orienting the buildings and designing roof overhangs.

- Consideration must also be given to other conditions that might affect a site such as the potential for mudslides, availability of potable water, adjacent hills that shade the site from sunlight, higher or planned future buildings adjacent to the school site, etc.
- In all cases, schools must be designed for flexibility. The one thing everyone can be sure of is change.
- The Ministry of Education requires that all school buildings be equipped with lightning protection.

Earthquake and Hurricane Resistant Designs

The Planning and Design of **Earthquake Resistant School Buildings cannot be over emphasized**. The earthquake in 2010 took place at 4:45 pm and killed over 300,000 people. If that earthquake had occurred at 9:30 am when the schools were fully occupied, there is no question that that number would have been far greater. SCW reviewed many of the school buildings that were destroyed by the earthquake and found that the vast majority of the damage was caused by the use of substandard construction materials, poor construction practices, and buildings that were not designed to be earthquake resistant. Ever within just a few years after the earthquake, we have seen new school buildings in Haiti that have not been designed and built to be earthquake resistant. This cannot be allowed to happen to an MSN school.

Similarly, hurricanes strike Haiti every year. School facilities should be designed to not only withstand hurricane force winds and rain, but when possible, they can also serve as a safe place of refuge for community members to gather during a hurricane. Several schools SCW designed have served as safe havens for community members during several recent hurricanes in Haiti. During each of those storms, the school facilities experienced little or no damage and protected the community members that stayed there.

A project oversight system must be put in place to insure that none of those poor practices seen after the 2010 earthquake are allowed during the construction of an MSN facility. SCW suggests that:

- Architects and Engineers must be interviewed and approved before they are allowed to design an MSN facility. They must also participate in a training program established by the MSN before designing an MSN facility,
- Architects and Engineers that are allowed to design MSN facilities must personally accept responsibility for the planning and design of an MSN facility. (This is the case in the US and most developed countries.),
- General Contractors must be interviewed and approved before they are allowed to construct an MSN facility. They must also participate in a training program established by the MSN before they are allowed to begin construction on an MSN facility,
- General Contractors must accept the responsibility of overseeing the work of their subcontractors, and accept responsibility for and replace any substandard work at their expense,
- Material suppliers must be vetted and agree to maintain minimum material standards adopted by the MSN, and agree to not supply any materials that do not meet those minimum standards,
- Project Managers must be interviewed and approved before they are allowed to manage MSN projects. They must also participate in a training program established by the MSN before managing any MSN facility projects.

In addition, SCW recommends that a 3rd party structural engineer be engaged on each project to:

- Review and approve all structural designs before construction is allowed to begin,
- Review the work at critical points in construction, to assure that the work is correct before a contractor can proceed to cover up the work.

New designs, materials, and construction techniques should be explored as long as they meet the objectives outlined by these and future educational facility design guidelines. The most important criteria when considering alternatives are:

- Student safety,
- The ability of the facility to withstand earthquake and hurricane forces,
- The ability of the facility to meet educational objectives adopted by the MSN, and
- The ability of the community to maintain facilities without excessive effort or cost.

Community Centered Schools

The local school should be a major focal point within the community. The design of the school should reflect the character of the local community. Design elements that reflect unique characteristics of the community should be incorporated into each school design.

Sacred Space

Catholic schools must include dedicated sacred space either within the school or at an adjacent facility. Other system MSN schools may include similar types of spaces as they feel would be helpful to their staff or student population. This space may either be a chapel or prayer room for regular use by individuals or classes. The arts should be employed to make the space beautiful and peaceful.

MSN Minimum School Facility Design Guidelines Adherence

The MSN must establish a policy that requires all MSN members to strictly adhere to these *MSN Minimum School Facility Design Guidelines*. We suggest that the MSN engage a 3rd party Design team to review all MSN member designs and completed construction documents before they are approved to proceed with construction.

The 3rd party Design team must include a structural engineer who is responsible for reviewing the structural design to verify compliance of the completed construction documents with current seismic and wind uplift design requirements for the region. It must also include a qualified School Facility Planner who reviews the design for compliance with the design and planning guidelines outlined in the *MSN Minimum School Facility Design Guidelines*.

It is important that this policy be established to prevent MSN members from allowing construction that is promised to be less expensive but "just as good". If the MSN allows one instance of a project to proceed without compliance, it will become impossible to enforce compliance on future projects. Without MSN Design Guideline adherence, the effort to establish the MSN as a leader in quality education in Haiti will become compromised and its ability to attract donors will likely be diminished.



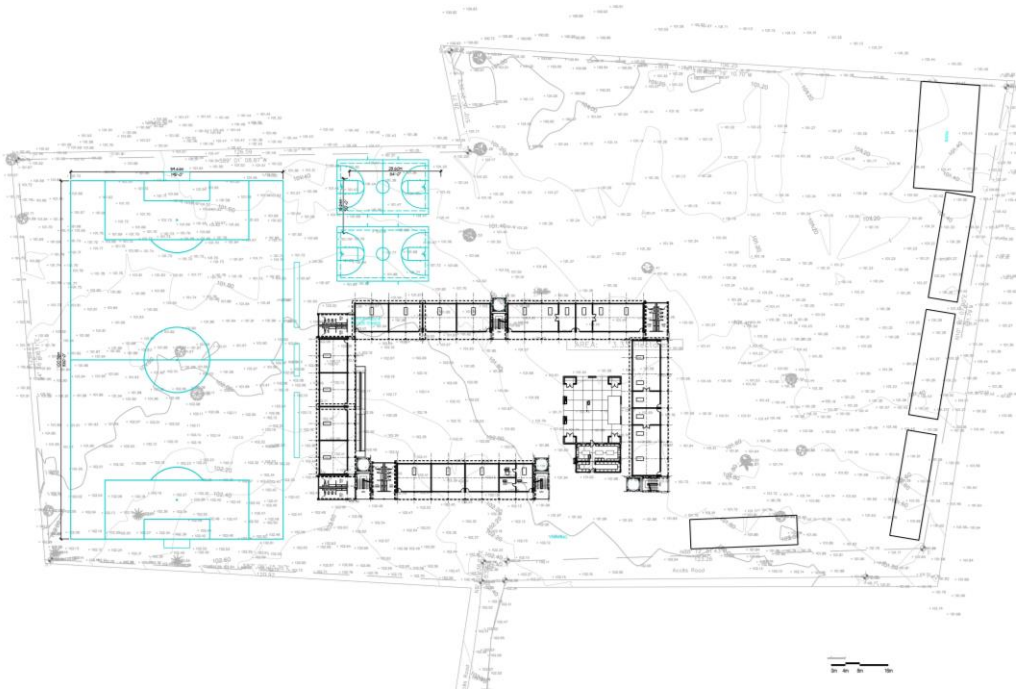
Figure 12 – Ti Plas Kazo Community School, Port au Prince



Figure 13 – Basile Moreau Secondary School, Carrefour



Figure 14 – Lycée Anacaona Secondary School, Léogâne



Notes