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ABSTRACT

This document presents procedures and checklists for the development of educational specifications for all phases of a school building program. Areas include--(1) program of the proposed school, (2) the community to be served, (3) the site, (4) the nature of the school project, (5) the architect, (6) relationships of areas of the building, (7) electrical systems, (8) mechanical systems, (9) maintenance and custodial facilities, and (10) instructional and non-instructional areas. (JZ)

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CHECKLIST OF EDUCATIONAL SPECIFICATIONS

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THIS DOCUMENT IS PRESENTED
TO EACH
SUPERINTENDENT OF PUBLIC SCHOOLS
IN THE
STATE OF NEW MEXICO
IN THE INTEREST OF IMPROVING
THE
SCHOOL PLANT PLANNING PROGRAM

* * * * *

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William O. Wilson and Louis E. Saavedra

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The purpose of school buildings is adequately clear. Their only purpose is the creation of an environment in which learning can occur. To this end, educators have devised various formulas as new developments made necessary the modification of school buildings.

As the school concept developed from the one-teacher, one-room school to the concept of separation by age and grade placement, different facilities were required. Greater numbers of students alone have been an important force in the development of a new kind of school facility.

Technological and scientific developments soon added their influence to school buildings. Better ways to light a classroom were devised. As facts about lighting were discovered, school buildings began to depart from the traditional "school brown"

surfaces to more reflective finishes and artificial lighting control was increased. Better ways of heating a school building made possible greater flexibility in the arrangement of classrooms. No longer was it necessary to situate the desks around the one stove. It was a much longer time before even ventilation was achieved-- indeed, many older schools still depend on radiators which heat adjacent areas extremely well and the other side of the room somewhat less well.

The great revolution in school buildings, however, was one of ideas. When a teacher decided that children could participate actively in their own education and departed from the lock-step process typical of earlier classrooms, it signaled the end of the bolted- or nailed-down desk. When educators proved that some things could be learned better in large groups and some things learned better in small groups, it led to the concept of flexible spaces and multipurpose areas. Illustrations in books were the embryonic forerunners of modern educational media. These efforts to awaken the imagination of students and to stimulate their intellectual processes has developed into a great compilation of teaching and learning aids. These new media have and are modifying the traditional concepts of the composition of a classroom and of the school plant.

Ideas imprisoned by forms and shapes not created to accommodate the ideas are

indeed futile ideas. A creative teacher will implement his ideas regardless of the difficulties--but who can say what great potential has been lost because of the shackles of a confined teaching-learning environment.

As the techniques of teaching are refined and improved, school facilities must also be refined and improved.

Construction of a school building has often been relegated almost entirely to the architect and the builder. In earlier times, it was perhaps only the builder who was concerned with the actual construction. The breadth and purpose of a school building was limited to the scope of the builder or architect's vision.

In any other field, such a procedure would be unthinkable. Envision a manufacturer who would tell an architect to build him a new factory without first explaining the purposes of the factory, the activities which would take place in it, the machinery which would be housed in the plant, and the interrelationships of the persons who would work in it. Can educators do otherwise?

Architects, even though they may be very familiar with educational processes, cannot be expected to know details of enrollments, students' backgrounds, what is to be taught, how it is going to be taught, what techniques are to be used, what media or instructional aids are to be used, and what community use will be made of the school plant.

The architect's job is to design the school facilities after educators have told him what they want to do in it, how they are going to do it, and what equipment and media they will use to do the job. This is the task which is accomplished by compilation of educational specifications.

Educational specifications should define clearly all the tasks which educators hope to accomplish in the school. The educational specifications begin with a statement of the philosophy of education of the persons who will run the school. It is imperative that such a statement be formulated as it will color the many decisions which will be made in the creation of the school.

While the philosophy of the school is a starting point, the specifications will be valuable only if the educational program and its demands upon space are detailed in a concrete and meaningful fashion. The broader goals which educators envision must be translated into situations in which children can achieve these goals and ideals.

The production of a comprehensive document as is called for in the formulation of educational specifications cannot be a one-man job. Each school system should call upon staff members expert in a particular field to contribute to such a document. If the school plant is also to serve the community in other than its

basic role, the citizen groups may be involved to ascertain the best design for full utilization of the school plant in its different roles.

As the educational specifications are formulated, a systematic method of analyzing the document should be devised so that the document can anticipate all requirements of the architect. All functions of the school should be reflected. This Checklist of Educational Specifications is designed to provide such a systematic method. The Checklist suggests the many areas which may be considered. It should be used as a guide and the areas it covers should be included or excluded on the basis of unique requirements of the school to be built. The use of the Checklist is valuable if it enables the school planners to anticipate a need before, rather than after, the walls go up. Paper can be torn apart far more swiftly than concrete; ideas can be lent wings as cheaply as they can be imprisoned if only educators would foresee their future needs.

PROGRAM OF THE PROPOSED SCHOOL

Check if you have included the following:

- A statement of the educational philosophy of the school district.
- A statement of the educational philosophy of the individual school.
- What the program at this school will be like,
 - its goals
 - its resources
 - its activities
- An outline of the educational offerings--both present and future.
- An analysis of the emerging adult education program.
- Contemplated recreational use of the plant.
- Community use of the plant.
- Consideration of the number and type of new buildings and additions which will be necessary.
- An analysis of receipts and expenditures for the long-range capital outlay program.
- Have you checked your plans with city and county planners and have you consulted with state highway planning directors?

THE COMMUNITY TO BE SERVED

Check if you have included the following:

An analysis of community growth.

An analysis of county growth.

A consideration of state patterns of growth.

Community cultural and recreational facilities available in the school service area.

An economic analysis of the community.

A sociological analysis of the community.

Maps showing the area to be served.

An analysis of mobility of the population.

SITE

- Does the usable site area meet with normal recommendations for site size?
- Have you checked the vehicular traffic pattern in the area?
- Is parking space adequate for staff, pupils, and visitors?
- Have you checked the drainage of the site?

NATURE OF THE SCHOOL PROJECT

Check if you have included the following:

- Enrollment expected the first year the school opens.
- Enrollment expected the second year.
- Optimum enrollment expected.
- Maximum enrollment expected.
- Whether the school will be built to its maximum size the first year.
 - If not, do you desire a master plan?
 - Have you indicated what should be included in Phase I?
 - Have you indicated what should be included in future phases?
- Which grade levels will be served?
- Time completion schedule required.
 - Will you assess liquidated damages?
- Who will review the architect's preliminary and final plans?

THE ARCHITECT

- Does the architect use an A.I.A. standard contract?
- Have you discussed with the architect the services he will perform for his standard fee?
- Do you want the architect to do the following:
 - Study and appraise the implications of the educational specifications?
 - Prepare preliminary sketches of the following:
 - Proposed site?
 - Interrelationships of building's space requirements?
 - Orientation of the building?
 - Location of the building utilities and services?
 - Access to transportation?
 - Drainage?
 - Surrounding property?
 - Elevations?
 - Total master plan?
 - Outline specifications upon which costs might be estimated?
 - Present a reasonable estimated cost?

Do you want the architect to do the following:

- Anticipate statutory and building code provisions?
- Prepare advertisements for construction bids?
- Assist in reviewing bids?
- Furnish all appropriate forms required by the contractor?
- Act as moderator between the board and the contractor on points of dispute?
- Approve and certify payments to contractors?
- Be responsible for supervision and inspection of construction as it progresses?
- Inspect the building at its completion?
- Does the architect know the resources you have for the building?
- If the building will be built in phases, have funds available for Phase I been indicated?
- Do you want the architect to require financial statements from the bidders?
- Have you provided or do you want the architect to obtain aerial photos of the site, topographic and geologic surveys, boundary surveys, and reports of subsurface soil exploration and test borings?
- Do you want the architect to require the contractor to submit compaction tests of soil if fill is required as the work progresses?
- Does the architect know how many stories the building(s) should have? If multi-story, do you want elevators?
- Is there a particular type of roof structure desired?

RELATIONSHIPS OF AREAS OF THE BUILDING

Check if you have included the following:

Proposed development of the site.

Location of the following:

Administrative unit.

Library.

Academic units.

Industrial Education units.

Performing and Fine Arts units.

Health and Physical Education units.

Assembly spaces.

Dining spaces.

Service areas.

Safety factors involved.

Aesthetic qualities desired.

Cooling and heating conditions required. (If not included now, will you want to add air conditioning later?)

Sonic factors within and without (acoustical treatment needed).

Student circulation patterns desirable.

Visual factors (quality and quantity of light, decoration, etc.)

KITCHEN
(Supplementary List)

Check if you have included the following:

- Circulation pattern of the food in and out of the kitchen area.
- Receiving dock requirements.
- Adequate dry storage area in the kitchen area.
- Cooler area (refrigerators) in the kitchen area.
- Frozen food area (freezers) in the kitchen area.
- Restrooms for students, for teachers, and for employees.
- Food services manager's office.
- Plumbing requirements.
- Lighting requirements.
- Electrical requirements (volts, phases specified?)
- Provision for baffles; provision for semi-privacy or relief from mass crowding.
- Special ventilation requirements.
- Garbage disposal in the circulation area.
- Equipment storage areas.
- Refuse and garbage area for the kitchen.

KITCHEN
(Supplementary List Continued)

Check if you have included the following:

A sub-check list of equipment.

- | | | |
|--|---|--|
| <input type="checkbox"/> Soiled dish table. | <input type="checkbox"/> Garbage disposal | <input type="checkbox"/> Sink assembly |
| <input type="checkbox"/> Dishwasher with booster heater. | <input type="checkbox"/> Dish carts. | <input type="checkbox"/> Ice machine. |
| <input type="checkbox"/> Salad refrigerator. | <input type="checkbox"/> Salad table. | <input type="checkbox"/> Ice cream cabinet. |
| <input type="checkbox"/> Refrigerator, pass through. | <input type="checkbox"/> Refrigerator, roll-in. | <input type="checkbox"/> Walk-in refrigerator. |
| <input type="checkbox"/> Pot sink. | <input type="checkbox"/> Food cutter. | <input type="checkbox"/> Work tables. |
| <input type="checkbox"/> Sink sections. | <input type="checkbox"/> Hood. | <input type="checkbox"/> Steamer. |
| <input type="checkbox"/> Kettles. | <input type="checkbox"/> Roll warmer. | <input type="checkbox"/> Coffee urns. |
| <input type="checkbox"/> Roast oven. | <input type="checkbox"/> Convection oven. | <input type="checkbox"/> Fryer. |
| <input type="checkbox"/> Griddle top range. | <input type="checkbox"/> Hot-top range. | <input type="checkbox"/> Food warmers. |
| <input type="checkbox"/> Tray and silver carts. | <input type="checkbox"/> Guard rails. | <input type="checkbox"/> Toasters. |
| <input type="checkbox"/> Milk dispensers. | <input type="checkbox"/> Counters. | <input type="checkbox"/> Pot rack. |
| <input type="checkbox"/> Walk-in cooler. | <input type="checkbox"/> Walk-in freezer. | |

AUDITORIUM

Check if you have included the following:

- The approximate number of persons to be housed in this area.
- The approximate total square footage of this area.
- The desirable shape of this area.
- The location of this area relative to other areas of the school plant.
- A description of the activities which will take place in the area.
- A list of equipment to be placed in the area.
- Specifications for equipment (make, length, height, width, utilities needed, etc.)
- Exits required.
- Lighting system or minimums desired. Is lighting adequate for taking lecture notes?
- Stand-by emergency lighting equipment.
- Sonic requirements and acoustical treatment.
- Student circulation patterns for this area.
- Seating arrangement desired.
- Type of seats desired.
- Stage requirements.
- Dressing room requirements.
- Stage lighting systems.
- Dimming equipment for main seating area.

AUDITORIUM (Continued)

Check if you have included the following:

- Flexibility of functions.
- Diagram of the layout of the proposed auditorium.
- Public address system.
- Projection booth.
- Air conditioning.
- Lobby specifications.
- Drinking fountains.
- Restrooms.
- Ticket windows (booths).
- Seating signal.
- Intercommunications system (projection booth to stage and dressing rooms).
- Dressing rooms.
- Wings.
- Apron.
- Curtains and tract.
- Central sound and lighting controls.
- Stagecraft room.
- Storage rooms.

AUDITORIUM (Continued)

Check if you have included the following:

- That the loft is to be twice the height of the proscenium.
- That the rear of the stage floor is soft wood (front may be hardwood).
- A request that an acoustical engineer check for acoustical treatment on ceiling, walls, floors, and heating and cooling systems.
- A request that all ceilings, walls, and floors be non-parallel.
- Whether you want a sloping or flat floor in auditorium.

PLAYGROUNDS

Check if you have included the following:

Improved playground areas needed.

Grass.

Hard surface.

Special playground areas needed.

Football.

Baseball.

Tennis.

Playground equipment needed.

Utilities needed (water, gas, electricity).

If upper and lower elementary playground areas are to be separated and in what manner.

ELECTRICAL SYSTEMS

- Are exits adequately identified with lighted exit signs? Do signs and their source of supply conform to the recommendations of the National Fire Protective Association Building Exits Code?
- Has a fire alarm system been provided?
- Is the electrical wiring in accordance with the provisions of the National and State (also city, where applicable) Electrical Codes?
- Has an electrical 120 volt convenience outlet been provided on each classroom and office wall, or a minimum of 4 per room?
- Has an electrical 120/240 volt convenience outlet been provided for each 60 feet of corridor length?
- If electrical service is aerial, can the pole or poles be kept out of the play area? If not, can it or they be fenced in?
- Has underground electrical service been considered?
- If the building is an addition to an existing building, will the service be combined to allow only one meter and hence the lowest electric rate?
- Has provision been made for radio system rough-in?
- Has provision been made for television system rough-in?
- Has a clock and/or program system been provided?
- Have electrical panels been located so as to be easily accessible?
- Have the ceiling, wall and floor materials been selected to provide the reflectances recommended in the American Standard Guide for School Lighting (issued jointly by A.I.A., I.E.S., and N.C.S.C.)?
- Are lighting fixtures and layouts as recommended in the above guide?

ELECTRICAL SYSTEMS (Continued)

Have you specified the following minimum lighting levels which are recommended as in-service desk top foot candle (FC) values?

- Classrooms 50 FC
- Offices. 50 FC
- Corridors and stairways. 15 FC
- Restrooms. 15 FC
- Auditorium 10 FC
- Auditorium when used as classroom. 50 FC*
- Multipurpose room. 25 FC
- Multipurpose room when used as a classroom 50 FC*
- Drafting, sewing, typewriting, and sight-saving classrooms 100 FC

*Provide switching to cut level to alternate amount on a uniformly distributed basis.

MECHANICAL SYSTEMS

Check if you have included the following:

- If it is clear there is to be no pressure lines under slab.
- If the tunnels or overhead areas are to be provided for plumbing and and electric line passageways.
- If pipe chases are at least 28 inches wide and are to be provided behind the fixtures in each restroom area.
- If access doors are to be provided to all mechanical and electrical areas.
- If an outside entrance only is to be provided to the boiler room.
- If one wall of the boiler room will be removable in case boiler or other equipment replacement may be necessary.
- If the sewage disposal system is adequate. Is a tile field to be provided?
- If city water is provided or if a pump and storage tank of sufficient size is included.
- If individual heaters are requested, is it made clear to the architect?
- If a certain type of fuel is to be used for heating, is the architect aware of this? Has total energy been considered?
- If fire extinguishers or fire hoses are to be installed.
- If each restroom is to be mechanically ventilated.
- If the school is to be partially or completely air conditioned.

ACADEMIC SUITE
(Elementary School)

The approximate number of persons to be housed in this area.	CLASSROOM FOR GRADES 1-3	CLASSROOM FOR GRADES 4-6	KINDERGARTEN CLASSROOM												
The approximate total square footage of this area.															
The desirable shape of this area.															
The location of this area relative to other areas of the school plant.															
A description of the activities which will take place in the area.															
A list of equipment to be placed in the area.															
Specifications for equipment (make, length, height, width, utilities needed, etc.)															
Special materials or color treatment desired in this area. Is carpet desired?															
Doorways required. Are recessed doorways requested?															
Type of fenestration desired. Is it compatible with lighting of the area? Are any areas to be windowless?															
Lighting system and minimum lighting desired.															
Sonic requirements.															
Student circulation patterns for this area.															
Restroom and lavatory facilities needed.															
Sink and fountain facilities needed.															

PHYSICAL EDUCATION SUITE

The approximate number of persons to be housed in this area.	The approximate total square footage of this area.	The location of this area relative to other areas of the school plant.	A description of the activities which will take place in the area.	A list of equipment to be placed in the area.	Specifications for equipment (make, length, height, width, utilities needed, etc.)	Special materials or color treatment desired in this area. Is carpet desired?	Doorways required. Are recessed doorways requested?	Lighting system and minimum lighting desired.	What type of fenestration is desired? Is it compatible with lighting of the area? Are any areas to be windowless?	Sonic requirements.	Student circulation patterns for this area.	The desirable shape of this area.
			PHYSICAL EDUCATION CLASSROOMS									
			MAIN GYMNASIUM									
			GIRLS' AUXILIARY GYM									
			BOYS' DRESSING & SHOWER ROOMS									
			GIRLS' DRESSING & SHOWER ROOMS									
			BOYS' LOCKER AND BASKET ROOMS									
			GIRLS' LOCKER AND BASKET ROOMS									
			PHYSICAL EDUCATION STORAGE ROOMS									
			OFFICE SPACE FOR PHYSICAL EDUCATION TEACHER									
			LOBBY OF PHYSICAL EDUCATION SUITE									
			EXAMINATION AND TRAINING ROOM									
			CORRECTIVE ROOM									
			LAUNDRY ROOM									
			MUD ROOMS									
			SWIMMING POOL									

PHYSICAL EDUCATION SUITE
Supplementary Checklist

MAIN GYMNASIUM

- Markings of the playing floor.
- Seating arrangement--How much and what kind?
- Ventilation requirements.
- Public address system.
- Press box.

AUXILIARY GYMNASIUM

- Markings of the playing floor.
- Seating arrangements if any.
- Ventilation requirements.

DRESSING AND SHOWER ROOMS FOR BOYS AND GIRLS

- Toweling or drying rooms between showers and dressing rooms.
- Restrooms adjoining the dressing rooms.
- Shower master control valve.
- Timed individual shower controls.

PHYSICAL EDUCATION SUITE
Supplementary Checklist

STORAGE ROOMS

- Storage for equipment used outdoors (ready access to playing fields).
- Storage for equipment used indoors (ready access to playing floor).
- Storage for varsity equipment.
- Preference for a large storage area with a checkout system.

OFFICE SPACE FOR PHYSICAL EDUCATION TEACHERS

- Showers included.
- Restrooms included.

LOBBY OF THE PHYSICAL EDUCATION SUITE

- Ticket offices.
- Trophy and display cases.
- Public restrooms.
- Concession area, public telephone booths, drinking fountains.

SWIMMING POOL

- Have you stated whether it is to be an indoor or outdoor pool?
- Seating arrangements.
- Outside entrances.
- Showers and dressing rooms apart from the physical education suite facility.

PHYSICAL EDUCATION SUITE
(Continued)

SWIMMING POOL

- Have you included the type of filter desired?
- Specifications for the diving area (one meter or three meter board, or both).
- If you desire an olympic size pool or a pool for instruction only.

ARTS AND CRAFTS SUITE

The approximate number of persons to be housed in this area.	The approximate total square footage of this area.	The desirable shape of this area.	The location of this area relative to other areas of the school plant.	A description of the activities which will take place in the area.	A list of equipment to be placed in the area.	Specifications for equipment (make, length, height, width, utilities needed, etc.)	Special materials or color treatment desired in this area.	Doorways required. Are recessed doorways requested?	Lighting system and minimum lighting desired.	What type of fenestration is desired? Is it compatible with lighting of the area? Are any areas to be windowless?	Sonic requirements.	Student circulation patterns for this area.	Number needed.	ALL units that are to be taught have been considered.



BUSINESS EDUCATION SUITE

The approximate number of persons to be housed in this area.	The approximate total square footage of this area.	The location of this area relative to other areas of the school plant.	A description of the activities which will take place in the area.	A list of equipment to be placed in the area.	Specifications for equipment (make, length, height, width, utilities needed, etc.)	Special materials or color treatment desired in this area. Is carpet desired?	Doorways required. Are recessed doorways requested?	Lighting system and minimum lighting desired.	What type of fenestration is desired? Is it compatible with lighting of the area?	Are any areas to be windowless?	Sonic requirements.	Student circulation patterns for this area.	Number needed.	The desirable shape of this area.
			GENERAL BUSINESS CLASSROOM											
			TYPEWRITING CLASSROOM											
			BOOKKEEPING CLASSROOM											
			OFFICE PRACTICE CLASSROOM											
			SHORTHAND CLASSROOM											
			STORAGE SPACE											
			WORKROOM											
			DISTRIBUTIVE EDUCATION CLASSROOM											

HOME ECONOMICS SUITE

The approximate number of persons to be housed in this area.	The approximate total square footage of this area.	The desirable shape of this area.	The location of this area relative to other areas of the school plant.	A description of the activities which will take place in the area.	A list of equipment to be placed in the area.	Specifications for equipment (make, length, height, width, utilities needed, etc.)	Special materials or color treatment desired in this area. Is carpet desired in any area?	Doorways required. Are recessed doorways requested?	What type of fenestration is desired? Is it compatible with lighting of the area? Are any areas to be windowless?	Lighting system and minimum lighting desired.	Sonic requirements.	Student circulation patterns for this area.	Number needed.

STUDENT PERSONAL SERVICES

Check if you have included the following:

- At least one restroom for boys and one for girls in each complex, building, floor, or wing.
- Fixtures necessary. Are there any city, county, or state codes regulating this?
- Adequate drinking fountains in each area.
- Individual lockers for each student readily accessible from the academic classrooms.
- Adequate hallway clearance. It is recommended that there be at least ten feet in the clear in major connecting corridors and eight feet in secondary halls.
- Traffic patterns of student flow.
- A student commons area.
- A student workroom area.