Study of locker room suites in selected class C high schools of Montana

Helge Eugene Carlson

The University of Montana

Follow this and additional works at: https://scholarworks.umt.edu/etd

Let us know how access to this document benefits you.

Recommended Citation
Carlson, Helge Eugene, "Study of locker room suites in selected class C high schools of Montana" (1954). Graduate Student Theses, Dissertations, & Professional Papers. 3720.
https://scholarworks.umt.edu/etd/3720

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.
A STUDY OF LOCKER ROOM SUITES IN
SELECTED CLASS C HIGH SCHOOLS
OF MONTANA

by

Helge E. Carlson
B. A. Dickinson State Teachers College, 1943

Presented in partial fulfillment of the requirements for the degree of
Master of Arts

MONTANA STATE UNIVERSITY
1954

Approved by:

Charles F. Keith
Chairman, Board of Examiners

Ladd B. Castle
Dean, Graduate School

Aug 14, 1954
Date
ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Mr. Charles Hertler and Mrs. Jane Dew of the Health and Physical Education Department, for their guidance and suggestions in aiding the completion of this study.

Gratitude is also expressed to the superintendents and physical education instructors of the selected Class C high schools of Montana for their fine cooperation in this survey.
In recent years, the author, in the capacity of athletic coach, has visited various high schools in Montana during athletic competitions, and noted that in many schools much was left to be desired with respect to the adequacy of the locker room and shower facilities. This observation aroused a desire on the part of the author to make a study of the conditions that exist.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. THE PROBLEM AND DEFINITIONS OF TERMS USED</td>
<td>1</td>
</tr>
<tr>
<td>The Problem</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the problem</td>
<td>1</td>
</tr>
<tr>
<td>Importance of the study</td>
<td>2</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>4</td>
</tr>
<tr>
<td>Definitions of Terms Used</td>
<td>4</td>
</tr>
<tr>
<td>Locker room suite</td>
<td>4</td>
</tr>
<tr>
<td>Class C Senior High Schools</td>
<td>5</td>
</tr>
<tr>
<td>Criterion</td>
<td>5</td>
</tr>
<tr>
<td>Standard</td>
<td>5</td>
</tr>
<tr>
<td>Organization of Remainder of the Thesis</td>
<td>5</td>
</tr>
<tr>
<td>Division of the remainder of the thesis</td>
<td>5</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>7</td>
</tr>
<tr>
<td>Locker room Suite</td>
<td>7</td>
</tr>
<tr>
<td>Locker Rooms</td>
<td>8</td>
</tr>
<tr>
<td>Location</td>
<td>9</td>
</tr>
<tr>
<td>Construction</td>
<td>9</td>
</tr>
<tr>
<td>Size</td>
<td>10</td>
</tr>
<tr>
<td>Heating, lighting and ventilation</td>
<td>10</td>
</tr>
<tr>
<td>Lockers</td>
<td>11</td>
</tr>
<tr>
<td>Fixtures</td>
<td>13</td>
</tr>
<tr>
<td>Standards for shower room</td>
<td>13</td>
</tr>
<tr>
<td>Location</td>
<td>14</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Construction</td>
<td>14</td>
</tr>
<tr>
<td>Size</td>
<td>14</td>
</tr>
<tr>
<td>Heating, lighting and ventilation</td>
<td>15</td>
</tr>
<tr>
<td>Fixtures</td>
<td>16</td>
</tr>
<tr>
<td>Toilet and Washroom</td>
<td>18</td>
</tr>
<tr>
<td>Location</td>
<td>18</td>
</tr>
<tr>
<td>Construction</td>
<td>18</td>
</tr>
<tr>
<td>Size</td>
<td>19</td>
</tr>
<tr>
<td>Number</td>
<td>19</td>
</tr>
<tr>
<td>Fixtures</td>
<td>19</td>
</tr>
<tr>
<td>Heating, lighting and ventilation</td>
<td>20</td>
</tr>
<tr>
<td>Drying Room</td>
<td>20</td>
</tr>
<tr>
<td>Construction</td>
<td>20</td>
</tr>
<tr>
<td>Size</td>
<td>21</td>
</tr>
<tr>
<td>Towel and storage room</td>
<td>21</td>
</tr>
<tr>
<td>III. PROCEDURE IN THE STUDY</td>
<td>22</td>
</tr>
<tr>
<td>Construction of the score card</td>
<td>22</td>
</tr>
<tr>
<td>Letters of inquiry</td>
<td>23</td>
</tr>
<tr>
<td>Personal visitation</td>
<td>24</td>
</tr>
<tr>
<td>Tabulation of the results</td>
<td>24</td>
</tr>
<tr>
<td>IV. THE STATUS OF LOCKER ROOM SUITES IN SELECTED HIGH SCHOOLS</td>
<td>26</td>
</tr>
<tr>
<td>Locker room</td>
<td>27</td>
</tr>
<tr>
<td>Location</td>
<td>27</td>
</tr>
<tr>
<td>Floor</td>
<td>32</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Walls</td>
<td>33</td>
</tr>
<tr>
<td>Ceiling</td>
<td>33</td>
</tr>
<tr>
<td>Heating</td>
<td>33</td>
</tr>
<tr>
<td>Lighting</td>
<td>34</td>
</tr>
<tr>
<td>Ventilation</td>
<td>34</td>
</tr>
<tr>
<td>Size</td>
<td>34</td>
</tr>
<tr>
<td>Lockers</td>
<td>35</td>
</tr>
<tr>
<td>Number</td>
<td>35</td>
</tr>
<tr>
<td>Benches</td>
<td>35</td>
</tr>
<tr>
<td>Aisles</td>
<td>36</td>
</tr>
<tr>
<td>Drinking Fountains and Cuspidors</td>
<td>36</td>
</tr>
<tr>
<td>Mirrors</td>
<td>36</td>
</tr>
<tr>
<td>Hair Dryers</td>
<td>36</td>
</tr>
<tr>
<td>Shower Room</td>
<td>37</td>
</tr>
<tr>
<td>Location</td>
<td>37</td>
</tr>
<tr>
<td>Ceiling</td>
<td>37</td>
</tr>
<tr>
<td>Walls</td>
<td>42</td>
</tr>
<tr>
<td>Floors</td>
<td>42</td>
</tr>
<tr>
<td>Size</td>
<td>42</td>
</tr>
<tr>
<td>Heating</td>
<td>42</td>
</tr>
<tr>
<td>Lighting</td>
<td>43</td>
</tr>
<tr>
<td>Ventilation</td>
<td>43</td>
</tr>
<tr>
<td>Shower heads</td>
<td>43</td>
</tr>
<tr>
<td>Plumbing</td>
<td>44</td>
</tr>
<tr>
<td>Doors</td>
<td>44</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Soap</td>
<td>45</td>
</tr>
<tr>
<td>Toilet and washroom</td>
<td>45</td>
</tr>
<tr>
<td>Location</td>
<td>50</td>
</tr>
<tr>
<td>Floor</td>
<td>50</td>
</tr>
<tr>
<td>Ceiling</td>
<td>50</td>
</tr>
<tr>
<td>Walls</td>
<td>50</td>
</tr>
<tr>
<td>Size</td>
<td>50</td>
</tr>
<tr>
<td>Number</td>
<td>51</td>
</tr>
<tr>
<td>Heating</td>
<td>51</td>
</tr>
<tr>
<td>Lighting</td>
<td>51</td>
</tr>
<tr>
<td>Ventilation</td>
<td>52</td>
</tr>
<tr>
<td>Fixtures</td>
<td>52</td>
</tr>
<tr>
<td>Drying room</td>
<td>53</td>
</tr>
<tr>
<td>V. SUMMARY AND CONCLUSIONS</td>
<td>56</td>
</tr>
<tr>
<td>Summary</td>
<td>56</td>
</tr>
<tr>
<td>Conclusions</td>
<td>58</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>60</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>62</td>
</tr>
<tr>
<td>Appendix A: Letter to Superintendents</td>
<td>63</td>
</tr>
<tr>
<td>Appendix B: Postal Card for reply</td>
<td>64</td>
</tr>
<tr>
<td>Appendix C: List of Schools Surveyed</td>
<td>65</td>
</tr>
<tr>
<td>Appendix D: Score Card</td>
<td>66</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Ratings Assigned to Locker Room Facilities for Boys</td>
<td>30</td>
</tr>
<tr>
<td>II.</td>
<td>Ratings Assigned to Locker Room Facilities for Girls</td>
<td>31</td>
</tr>
<tr>
<td>III.</td>
<td>Ratings Assigned to Shower Room Facilities for Boys</td>
<td>40</td>
</tr>
<tr>
<td>IV.</td>
<td>Ratings Assigned to Shower Room Facilities for Girls</td>
<td>41</td>
</tr>
<tr>
<td>V.</td>
<td>Ratings Assigned to Toilet and Washroom for Boys</td>
<td>48</td>
</tr>
<tr>
<td>VI.</td>
<td>Ratings Assigned to Toilet and Washroom for Girls</td>
<td>49</td>
</tr>
<tr>
<td>FIGURE</td>
<td>PAGE</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>1. Average Percentage Score of Boys' Locker Room Suites in Selected Schools of Montana</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>2. Average Percentage Score of Girls' Locker Room Suites in Selected Schools of Montana</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>3. Average Percentage Score of Boys' Locker Room, Shower Rooms, and Toilet and Washroom in Selected Schools of Montana</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>4. Average Percentage Score of Girls' Locker Rooms, Shower Rooms, and Toilet and Washroom in Selected Schools of Montana</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>5. Percentage Score Assigned to Boys' Locker Rooms in the Selected Schools</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>6. Percentage Score Assigned to Girls' Locker Rooms in the Selected Schools</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>7. Percentage Score Assigned to Boys' Shower Rooms in the Selected Schools</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>8. Percentage Score Assigned to Girls' Shower Rooms in the Selected Schools</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>9. Percentage Score Assigned to Boys' Toilet and Washrooms in the Selected Schools</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>10. Percentage Score Assigned to Girls' Toilet and Washrooms in the Selected Schools</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Wise and efficient planning and construction of a physical education plant can eliminate many administrative, financial, and functional difficulties. As Williams and Brownell state,

Modern programs of health and physical education emphasize the importance of sanitary and well-equipped locker facilities and clean uniforms as well as adequate gymnasiums and playgrounds.¹

During visits to Montana high schools, the author felt that insufficient consideration had been given to the construction of locker room facilities. Architects and school authorities seemed to have placed emphasis on providing a large and attractive gymnasium, but often overlooked the importance of the locker, shower and dressing facilities.

THE PROBLEM

Statement of the problem. It was the purpose of this study (1) to set up a rating scale for facilities comprising the locker room suite by: (a) determining from related

literature standards for the locker room suite; (b) compiling a list of standards to be used in this study; (c) assigning a numerical value to each standard for the purpose of rating each item. (2) To survey and rate the facilities in the selected schools by personal observation and application of the devised rating scale. (3) To use this information to evaluate the adequacy of the locker room facilities in each school.

Importance of the study. The following reasons indicate the need for this study: (1) locker rooms should be constructed to provide necessary facilities for boys and girls. Lack of facilities contributes to the creation of unsportsmanlike spirit and thus may hinder the achievement of desirable outcomes of the physical education and athletic activities of the school.1 According to the American Association of School Administrators, "The greatest deficiency in physical-education plant planning has been the lack of adequate locker and shower facilities."2

Some of the common mistakes in the planning and construction of locker room suites were brought out in the National Facilities Conference:


Failure to provide usable or suitable office-dressing suites for physical education or recreation staff members; provisions of insufficient, inaccessible and poorly planned storage rooms and spaces; inadequate provision for lighting, shower, towel and dressing-locker rooms; failure to construct shower, towel and dressing-locker rooms with sufficient floor fall and drains; failure to provide moisture proof or water resistant coved base under locker in dressing-locker room.\(^1\)

(2) As stated by Voltmer and Esslinger:

There are very few principles of physical education administration that have been less adequately applied than have those that deal with the planning and construction of buildings to house the program. The large number of inadequate physical education buildings, even on university campuses, is material evidence of this fact. Several factors have contributed to this condition. One of the most significant has been the practice of copying a building in a neighboring city or state, mistakes and good points alike. This practice has been employed because it has proved to be temporarily less troublesome than making a survey of local conditions, a study of sound educational philosophy, before starting to build. Another factor has been a change in educational philosophy and a consequent shift in emphasis from a formal to a more natural activity program. The newer program demands more and different activity rooms, which tends to make the older type of plant obsolete. In some situations there has been an unwillingness on the part of those in authority to seek and utilize the advice of informed staff members, and in others physical education people have proved unable to advise judiciously when consulted.\(^2\)

(3) The author was unable to find a record of any previous survey of locker room suites in the schools used in this study.


In making visits to various Montana high schools, the author noted deficiencies in locker room suite facilities, and felt there was a need for an organized study of this type, Bartholomew states:

In my observation of locker and shower rooms, both old and new, many obvious mistakes in construction and equipment are noticeable. In many cases when a new unit is to be built, the architect merely looks over some facilities already built, and copies it along with all its faults. It is my opinion that the chief reason for these mistakes is the fact that the architect or administrator planning a new unit does not have a sufficiently complete set of scientific standards to refer to.¹

Limitations of the study. This study was limited to twelve Class C senior high schools in southwestern Montana. Only the physical aspects of the locker room shower room, drying room, toilet and washroom, and not the administration and supervision of these facilities were considered.

The 12 schools selected were within a radius of 75 miles. This limited selection was made to curtail cost and time in making personal visitations.

DEFINITIONS OF TERMS USED

Locker room suite. The term locker room suite as used in the study included the locker room, shower room, drying room and toilet and washroom.

A drying room consists of a room or separate area

where the students may dry themselves after taking a shower, to avoid tracking water into the locker room.

**Class C Senior High Schools.** A Class C senior high school is a school with an enrollment of 124 students or less. Senior high schools that have an enrollment of 125-149 are Class B, unless, by petition to the Montana State High School Association, they are granted permission to stay in Class C. One school of this type was included in the study.

**Criterion.** The word "criterion", as used in this study is a measure of worth of each facility and refers to a quality or characteristic of a facility which renders it more adequate for its specific purpose, namely, factors such as location, size, lighting, ventilation.

**Standard.** The word "standard" is used to signify the quality or quantity of each criterion, such as, kind of floors, number of shower heads, type of lighting and ventilation.

**Organization of remainder of the thesis**

**Division of the remainder of the thesis.** The remainder of the study is organized as follows:

---

Chapter II consists of a review of related literature.

Chapter III contains techniques and procedures, construction of the questionnaire, selection of schools, administration of the score card, and tabulation of the responses to the score card.

Chapter IV presents a comparison of the findings in the selected schools with the recommendations given in the literature on the topic.

Chapter V contains the summary of the findings of this study and conclusions drawn as a result of this study.
CHAPTER II

REVIEW OF THE LITERATURE

Locker room suite. In organizing a health and physical education program, emphasis has been placed upon the importance of sanitary and adequate locker room suite facilities.¹

Since appropriate dress and showers are necessary to participation in vigorous activity, provision of sufficient shower, toweling and dressing space is essential. Not less than one such suite for girls and one for boys must be provided in all schools which include gymnasiums.²

The results of a physical education program are dependent in part upon the type of facilities available.

As stated by Williams and Morrison:

From many points of view the locker room is the very center of the gymnasium. The comfort, pleasure, and value of the activities in physical education depend to a large extent upon the usefulness of the locker room. But, it is more than a place for changing of clothes. Within its walls many important games are "won" before they are played; it is the conference room for planning a victory and understanding a defeat; here hot tempers cool off; and timid ones and dispirited novices gain courage to try again. Due doubtless to the human


tendency to remember the pleasant and forget the unpleasant, the games played in the locker room may be far better than those on the gymnasium floor or athletic field.

In order to determine criteria and standards for an acceptable locker room suite, the author combined recommendations found in related literature in the field of physical education with items from a check list on facilities developed by graduate students at Indiana University in 1948 and 1949. The Indiana check list was compiled over a period of two years, with intensive research into authoritative resource material, by several groups of graduate students in the field of physical education. Although the check list was unpublished, the fact that it was developed by experienced men, professionally trained in the field, and that it was based upon authoritative materials, would indicate that some value can be placed on the check list as a tool for evaluating locker and shower room facilities. It would be the purpose of the author to point out any weaknesses which might be revealed in its application to the Montana Schools.

The remainder of this chapter will give a review of these recommendations.

LOCKER ROOMS

It is recommended that locker rooms be provided in

---

every school. Facilities are needed for those participating in physical education programs, so they may have hygienic care of themselves and of their clothes for gymnasium and street wear.\(^1\)

**Location.** Lockers and showers should not be regulated to basement areas but should be on the gymnasium floor level wherever possible. Friswold recommends the locker room be adjacent to and on the same floor level as the gymnasium, with convenient access to the school, playfields, classrooms and swimming pool. It is also recommended that the instructor's office should be located between the locker room and the gymnasium or pool.\(^2\) Williams and Brownell recommend that the instructor's office be accessible to the public, and that it be located for easy supervision of the gymnasium.\(^3\) It is recognized that difficulties might be encountered in planning a location which satisfies all these conditions.

Serious consideration should be given to proper arrangement of space provisions to eliminate cross-traffic and reduce pupil travel.\(^4\)

**Construction.** A ceramic tile floor costs more to

---

\(^1\)National Facilities Conference, *op. cit.*, p. 57.


\(^3\)Williams and Brownell, *op. cit.*, p. 267.

\(^4\)Friswold, *op. cit.*, p. 263.
install, but after a period of time, its appearance and ease of maintenance and sanitary care will balance the disadvantage of high initial cost. For economical reasons, concrete floors are most commonly used. All authorities recommend that the floors slope for drainage.

Smooth-faced bricks are preferable for all walls not covered by lockers. Areas which are not exposed may be constructed of common brick or cement. A coat of cream-colored paint on the walls will lighten the room. Cement, glazed brick or tile are recommended for the ceiling.

Size. The size and shape of locker rooms depend largely upon the number of students to be accommodated and the type of lockers to be used. Square locker rooms are preferred by some authorities, while others believe a rectangular area can be used to a greater advantage. There should be twelve square feet per pupil, based on peak loads.

Heating, Lighting and ventilation. Approximately seventy degrees Fahrenheit is a comfortable temperature for a locker room. The use of forced, mechanical hot air,
which is thermostatically controlled is considered the best type of heating. Lockers should be superheated at night by means of recirculated hot air in the locker room.¹

Locker rooms should be adequately lighted and ventilated with as much window area as possible, preferably on a sunny side. The windows should be six feet above the floor, and the lower half glazed to insure privacy.² The glass area should equal 20 to 25 per cent of the floor area. Artificial lights should be arranged in relation to the plan of the locker layout. If artificial lights are used, they should provide 15 footcandles power of light over the aisles.³ The lights should be operated by a two-way switch; one located in the instructor's office, and the other in the locker room.⁴

The ventilation should be mechanical, without drafts.⁵

Lockers. In regard to provision of lockers the American Association of School Administrators state:

Probably the most recent and satisfactory method is to provide enough street clothing lockers to accommodate the largest physical education class, and enough small gymnasium clothing storage lockers

¹Bartholomew, loc. cit.
²Williams and Brownell, op. cit., p. 268.
³Bartholomew, op. cit., p. 29.
⁴Williams and Brownell, op. cit. p. 269.
⁵Bartholomew, op. cit., p. 29.
to provide one for each child using the gymnasium.  

An additional ten per cent more lockers should be provided to allow for variation in the enrollment of the classes. The storage locker may be of two sizes; seven and one-half inches deep, twelve inches wide, and twenty-four inches high, or seven and one-half inches deep, twelve inches wide, and seventy-two inches high.  

Basket type lockers may be used for storage of gymnasium apparel. There are, however, objections to the basket type lockers.  

Basket type lockers do not allow for the hygienic care of dressing equipment; basket type lockers are not economical because they are constantly moved, and are then subject to hard wear, and because an attendant is essential for proper administration. If an attendant does not distribute the baskets, there is apt to be locker destruction and pilferage. Student attendants are not recommended.  

The storage lockers should be provided with a combination lock which can be opened with a master key. This lock should also be used for locking street clothes in large dressing lockers when changing into gymnasium apparel.  

The arrangement of the fixed lockers should be with the aisles at right angles to the windows in order to receive


3Ibid., p. 62.

4Friswold, op. cit., p. 263.
the greatest benefit from natural lighting.¹

**Fixtures.** Stationary benches, supported by cast iron braces, should be installed, should have a maple or birch top, six to ten inches wide, sixteen inches high, and should be so spaced to provide eighteen linear inches per student. The aisles between lockers should be approximately six feet in width.²

The drinking fountains and cuspidors should be recessed, self-flushing and a different color for each.³

One mirror should be placed at the end of each row of lockers at average height, or may be placed at the end of each alternate row of lockers.⁴

The girls’ locker room should be provided with hair dryers. If less than fifteen minutes is allotted for shower, dressing and hair drying, one hair dryer for every two girls is recommended.⁵

**Standards for shower room.**

Relatively few standards are available for the construction and maintenance of shower rooms. Recognized as an important factor in well-organized programs of physical education, the shower room represents one of the numerous instances where health education and physical education are closely

¹Friswold, loc. cit.
²National Facilities Conference, op. cit., p. 63.
³Voltmer and Esslinger, op. cit., p. 175.
⁴Williams and Brownell, op. cit., p. 274.
⁵Friswold, op. cit., p. 264.
associated. Properly constructed and wisely admin-
istered shower rooms provide one of the best laborato-ies for inculcating certain health practices of personal
cleanliness while youth enjoys the cleansing and
invigorating properties of the bath. By unanimous
agreement the shower bath after exercise constitutes
an integral part of the physical education period.¹

Location. It is recommended that the shower room be
located adjacent to the drying-room or dressing room.² The
shower room should receive natural light and ventilation
and be accessible to lavatories and gymnasium. It is desir-
able to have the showers and lockers located in separate
but adjacent rooms to eliminate wet floors and moisture
laden air in the locker rooms.

Construction. For the floor of the shower room, un-
glazed tile is highly recommended. The floor should slope
toward the walls with proper outlets for drainage. Authori-
ties recommend concrete, glazed brick or tile for the
ceiling. Light-colored, glazed tile proves to be satisfactory
for the walls. A copper covering to eliminate rust or
swelling is necessary for the doors and window sashes.³

Size. The size of the shower room is usually
determined by the number of shower heads and allotment of
time for showers.⁴

¹Williams and Brownell, op. cit., p. 279.
²Ibid., p. 274.
³Ibid., pp. 283-284.
⁴Friswold, op. cit., pp. 263-264.
Friswold states:

At present, it is encouraging to note that there is a marked trend in the direction of gang showers for girls as well as boys. Gang showers require less floor area, involve a smaller initial outlay, require less operating cost, and can be more effectively supervised, maintained, and kept cleaner than the same number of individual showers. It is highly desirable, however, when gang showers are provided for girls, that they should be supplemented by one or more individual shower and dressing cubicles.¹

Recommendations vary as to the number of square feet of floor space for each shower head. These recommendations range from 15 to 23 square feet of floor space. Friswold recommends 15 to 20 square feet of floor space per shower head.²

Heating, Lighting and Ventilation. Forced hot air, which is thermostatically controlled, is recommended as the most satisfactory type of heating.³

Lighting in a shower room should be of an indirect type, with provision for artificial lighting of approximately 15 foot-candle power intensity.⁴ The lighting fixtures should be moisture proof, with the switch and a plug outlet outside of the shower room.⁵ The window area should be equal to at least 20 per cent of the floor area.

¹Friswold, op. cit., p. 264.
²Loc. cit.
³National Facilities Conference, op. cit., p. 113.
⁴Voltmer and Esslinger, op. cit., p. 173.
⁵Williams and Brownell, op. cit., p. 173.
windows should be glazed for privacy.\textsuperscript{1}

Ventilation is adequate if the method used is satisfactory in removing the excessive heat and humidity in a shower room.\textsuperscript{2} A natural and mechanical ventilation system without draft is recommended by Bartholomew.\textsuperscript{3} Friswold states:

Ventilation can be accomplished by supplying tempered air from a central fan system or unit ventilators and venting it mechanically by means of an exhaust fan through independent vent ducts. Ideally, such vent ducts should be capped by an effective roof ventilator and equipped with back-draft and by-pass dampers or otherwise designed so that air may be vented positively even when the exhaust fan is not operated. Air to be vented can be routed to advantage from locker or dressing space through shower rooms, so that the same vent ducts can serve both bathing and dressing area.\textsuperscript{4}

**Fixtures.** The American Association of School Administrators states:

Gang and common shower rooms are recommended for boys, using one shower head for each three or four boys in the class. Girls are now provided with the same facilities; however, in most communities it is advisable to have some private showers and dressing stalls. Where gang-type showers are used, controlled by valves located outside of the shower area itself, these should be broken down into convenient size units so that only the number of shower heads that will be used will be turned on. The shower heads should be at shoulder height for the tallest pupils with individual control for each shower head. Protection against scalding water should be provided by means of controls or

\begin{itemize}
\item[^1] Bartholomew, \textit{op. cit.}, p. 31.
\item[^3] Bartholomew, \textit{op. cit.}, p. 31.
\item[^4] Friswold, \textit{op. cit.}, p. 266.
\end{itemize}
mixing chambers under the direct supervision of the physical-education director.\textsuperscript{1}

Plumbing in a shower room should be rustproof material, and should be enclosed, but readily accessible for repair. If not, the exposed plumbing should be tight to the wall and well secured.\textsuperscript{2}

Volterm and Esslinger recommend one shower head for six boys, and one shower head for five girls.\textsuperscript{3} The shower heads should be self-cleaning with mixing valves.\textsuperscript{4}

Shower heads should be installed at least four feet apart, should be a non-clogging type; and height of spray should be adjustable by use of a lock. If stationary heads are installed, these should be so placed that the top of the spray will be shoulder height (usually four feet, six inches to five feet).

One to three individual shower booths should be additionally provided for girls.\textsuperscript{5}

A central control unit is recommended for the shower room, and should be operated by the instructor or an attendant to control the temperature and supply of water. Where such units are installed, it is preferable to have one or two shower heads under individual control, so one or two pupils may shower without using all the outlets.\textsuperscript{6}

\textsuperscript{1}American Association of School Administrators, \textit{op. cit.}, p. 160.

\textsuperscript{2}National Facilities Conference, \textit{op. cit.}, p. 60.

\textsuperscript{3}Volterm and Esslinger, \textit{op. cit.}, p. 174.

\textsuperscript{4}Bartholomew, \textit{op. cit.}, p. 30.

\textsuperscript{5}National Facilities Conference, \textit{op. cit.}, pp. 59-60.

\textsuperscript{6}Friswold, \textit{op. cit.}, p. 264.
Other desirable fixtures are dispensers of liquid soap which should be supplied by gravity through pipe lines from a central storage tank with a valve to be placed between each two showers,\(^1\) approximately two feet lower than the shower heads.\(^2\)

**TOILET AND WASHROOM**

Toilet and washrooms should be designed with great care for light, ventilation and sanitation. Toilet facilities should be provided in conjunction with all dressing rooms.

**Location.** Some experts recommend the location of the toilet and washroom be adjacent to both the shower room and the locker room with an entrance to both. The toilet and washroom should also be accessible to the playground and gymnasium. A southern exposure is desirable.\(^3\)

**Construction.** The floor of the toilet room should be of waterproof material, such as tile or concrete of a non-slippery nature. The floor should be pitched toward the drain. The wall should be of a washable material and the ceiling of a waterproof plaster.\(^4\)

---


\(^2\)Friswold, *op. cit.*., p. 264.

\(^3\)Bartholomew, *op. cit.*., p. 33.

\(^4\)Ibid., p. 34.
Size. The size of the toilet room is based on the number of fixtures needed. One toilet seat should be provided for each 25 boys, and one urinal for each 15 to 20 boys and a minimum of three toilet seats for each 30 girls.\(^1\)

Number. Toilet rooms should be provided for pupils and for adults.

One such facility is required in conjunction with each dressing locker suite and one for men and one for women in conjunction with the foyer. The latter are to be used by those who attend games, demonstrations or social gatherings.\(^2\)

Fixtures. Lavatories should be of vitreous china and should have a spring faucet which may be operated by hand or foot. The faucet should be of non-corrosive material.\(^3\)

Vitreous china is recommended for the toilet bowls. The seat should have an open front and made of impervious material. The elongated or extended lip bowl is recommended with a concealed flush rim, syphon jet type of valve. If doors are added, experts recommend gravity hinges, so the doors swing into the compartment and will stand open when vacant.\(^4\)

Urinals should be of impervious material of the

---

\(^1\)National Facilities Conference, op. cit., p. 64.
\(^2\)Ibid., p. 57.
\(^3\)Ibid., p. 114-115.
\(^4\)Ibid., p. 115.
stall type and flushed by hand, foot or automatic control.\(^1\) The floor should be pitched to drain into the urinals.

**Heating, lighting and ventilation.** The heating and lighting of the toilet and washroom is the same as recommended for the shower room namely, forced hot air thermostatically controlled. Ventilation should be partly through the windows and partly through a special ventilating system, separate from all other systems.\(^2\)

**DRIYING ROOM**

A drying or toweling room is a room or separate area where students may dry themselves after taking a shower.

It is recommended that well-drained drying rooms be placed between the shower and locker rooms to prevent splashing and tracking water into the dressing area.\(^3\)

**Construction.** The ceiling should be acoustically treated, moisture proof, and light in color. Slate or glazed tile in a light color is recommended for the walls. The walls should be smooth, moisture proof, and extend from the floor to the ceiling. Cement is recommended for the floor of the drying room. A slippery surface is to be avoided. The floor should slope toward the drain.\(^4\)

---

\(^1\) National Facilities Conference, *loc. cit.*

\(^2\) Williams and Brownell, *op. cit.*, p. 77.

\(^3\) LaPorte, *op. cit.*, p. 44.

\(^4\) Bartholomew, *op. cit.*, p. 57.
Entances into the drying room from the shower room and locker room should be provided.¹

**Size.** The drying room should be the same in total square feet as the shower room.²

**Towel Supply and Storage Room**

A towel room is used as a supply and storage and sometimes an issue room for towels. The size of the towel room will depend upon the amount of storage space to be needed and the frequency of distribution of towels. Some authorities recommend the towel room should be within the locker room or adjacent to the locker room.³ Others recommend the towel room to be located on either side of the drying room. Provision should be made for serving windows that open inward. The window is used to issue clean towels to the pupils. When the pupils are through drying themselves, the towel may be disposed by dropping the towel in a chute, leading into a basket, or container in the towel room.⁴

---

³Ibid., p. 63.
⁴Bartholomew, *op. cit.*, p. 57.
CHAPTER III

PROCEDURE IN THE STUDY

In making a study of locker room suite facilities in selected high schools of Montana, the following procedures were used. (1) A list of the most essential features of the locker room, shower room, drying room, and toilet and washroom was compiled from literature on the topic. The facilities score card, devised at the Indiana University, was then studied item by item to establish a similar scoring plan to the list selected from the literature; (2) twelve Class C schools, located in southwestern Montana, were selected for this survey; (3) letters explaining the study and requesting cooperation were sent to the superintendents in the selected schools; (4) personal visitations were made to the selected schools to obtain necessary information on the score card; and (5) findings obtained in the survey were tabulated.

Construction of the score card. In devising the score card, criteria of the locker room, shower room, drying room, toilet and washroom were obtained from literature in the field. In some instances a criterion remained as an item in itself on the score card, such as location of the
room, size of the room. Standards, signifying varying qualities of the particular criterion, were established with a numerical score value assigned to each standard. In other instances, a criterion included several items such as lockers, mirrors, drinking fountains, benches, all of which were a part of the criterion of fixtures. Each of these sub-items had varying degrees of quality which were indicated by standards set up for the item. Each standard was assigned a numerical value which varied from the low of one to the high of 20 points depending upon its importance as an essential fixture. Only one standard could be scored under each item. If the item did not comply with any of the standards, credit was not granted.

The finished score card included 66 items to be rated. The total possible score was 404 points. The locker room had 25 items with a possible score of 134 points for the boys and 137 points for the girls. The hair dryer made the difference of the three points between the boys and girls locker room scoring. The shower room survey included 17 items with a possible score of 148 points. The toilet and washroom had 14 items with 65 as a possible score for the boys and 62 for the girls. The additional three points were given for the urinal bowl in the boy's toilet and washroom. A possible score of 57 was given to the 10 items in the drying room.

Letters of inquiry. A letter of inquiry was sent to
each superintendent of the 12 selected schools explaining the study and asking permission to make a survey of the boys' and girls' locker room suites. Also it requested an indication of date and time most acceptable for the visit. A postal card was enclosed for a reply. A copy of the letter and postal card is found in the appendix.

Ten schools replied to the letter of inquiry and granted permission to make a personal survey of their locker room suites. Two schools did not respond to the letter of inquiry.

**Personal visitation.** At the convenience of the school being visited, date and time were arranged for the personal visitation. It was made clear to the superintendents that in this study schools were not to be identified by name with the results of the survey. An alphabetical list of the schools is shown in the appendix.

**Tabulation of the results.** Scores assigned to the various items which comprised a facility were added to determine the total score for that facility. Dividing this total by the possible score showed the percentage of the total score obtained for each facility (locker room, shower room, dressing room, and toilet and washroom). With these scores it was possible to reveal graphically a comparison between schools as to the adequacy of any one item listed on the facilities score card. By adding the total scores
for each item and dividing this total by the possible sum total score, a percentage was obtained which would indicate the school's adequacy for the entire locker room suite.

Chapter V of this study presents a detailed discussion of the degree to which the selected schools complied with the established criteria and standards for the locker room suite.
CHAPTER IV

THE STATUS OF LOCKER ROOM SUITES
IN SELECTED HIGH SCHOOLS

The locker room suites in the selected schools were measured against the established standards in order to determine their status.

The graphs presented in this chapter reveal the degree to which the schools that participated in the survey complied with criteria of the locker room suites. Figures I and II, page 28, show the average percentage score given to the locker room suites for boys and locker room suites for girls, respectively, in the selected high schools of Montana. As shown in those Figures, the average percentage score attained in the boys' locker room suite was fifty-three and one-tenth per cent, and in the girls' locker room suite was fifty-two and seven-tenths per cent, a difference of four-tenths of one per cent. This would indicate that the boys' and girls' locker room suites were probably given the same consideration by the administration and architects in the planning and maintenance of these facilities.

Figure III, page 29, shows the percentage score assigned to each of the components of the boys' locker room
suites, namely, locker room, shower room, toilet, and washroom, of the schools surveyed, and Figure IV, page 29, shows the same findings for the girls' facilities. Figures III and IV will also show a comparison of the boys' and girls' locker rooms, shower rooms, and toilet and washrooms. The graphs indicate a close similarity between the boys' and girls' percentage ratings.

**LOCKER ROOM**

Table I, page 30, and Table II, page 31, shows the point values assigned to all items of locker rooms for boys and girls, respectively. Each criteria had from one to three standards, to each of which was assigned a numerical value, varying from one to twenty points. The possible total score for the boy's locker room was 134 points, and for the girl's, 137 points. The scores for the locker rooms in the selected schools ranged from 34 to 110 and for the girls' locker rooms the range was from 44 to 110.

**Location.** It is recommended that the locker room be located on the ground floor, contiguous to the gymnasium, shower room, and toilet and washroom with convenient access to the playgrounds, classrooms and swimming pool. Of the 10 schools surveyed, one boy's locker room was located contiguous to the gymnasium, shower room, and the toilet and washroom, with convenient access to the playgrounds. Two schools met all the standards of locker room location with the exception
FIGURE 1

AVERAGE PERCENTAGE SCORE OF BOYS' LOCKER ROOM SUITES IN SELECTED SCHOOLS OF MONTANA

FIGURE 2

AVERAGE PERCENTAGE SCORE OF GIRLS' LOCKER ROOM SUITES IN SELECTED SCHOOLS OF MONTANA
FIGURE 3

AVERAGE PERCENTAGE SCORE OF BOYS' LOCKER ROOMS, SHOWER ROOMS, TOILET AND WASHROOMS IN SELECTED SCHOOLS OF MONTANA

FIGURE 4

AVERAGE PERCENTAGE SCORE OF GIRLS' LOCKER ROOMS, SHOWER ROOMS, TOILET AND WASHROOMS IN SELECTED SCHOOLS OF MONTANA
# Table I

**Ratings Assigned to Locker Room Facilities for Boys**

<table>
<thead>
<tr>
<th>Criteria for locker rooms</th>
<th>Possible rating</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>1. Ceiling</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>2. Fixtures</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>3. Floors</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>4. Heating</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>5. Lighting</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>6. Location</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>7. Lockers</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>8. Locks</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>9. Number</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10. Size</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>11. Ventilation</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>12. Walls</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>13. Windows</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>134</td>
<td>46</td>
</tr>
</tbody>
</table>
### TABLE II
RATINGS ASSIGNED TO LOCKER ROOM FACILITIES FOR GIRLS

<table>
<thead>
<tr>
<th>Criteria for locker rooms</th>
<th>Possible rating</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ceiling</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2. Fixtures</td>
<td>14</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td>1</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3. Floors</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4. Heating</td>
<td>9</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>5. Lighting</td>
<td>8</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Location</td>
<td>20</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>20</td>
<td>14</td>
<td>14</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>7. Lockers</td>
<td>13</td>
<td>8</td>
<td>13</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>8. Locks</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9. Number</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10. Size</td>
<td>18</td>
<td>0</td>
<td>18</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>18</td>
<td>6</td>
<td>6</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>11. Ventilation</td>
<td>9</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>12. Walls</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>13. Windows</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>14. Hair Dryers</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>137</strong></td>
<td><strong>46</strong></td>
<td><strong>92</strong></td>
<td><strong>49</strong></td>
<td><strong>44</strong></td>
<td><strong>49</strong></td>
<td><strong>72</strong></td>
<td><strong>110</strong></td>
<td><strong>58</strong></td>
<td><strong>56</strong></td>
<td><strong>92</strong></td>
</tr>
</tbody>
</table>
of accessability to the playgrounds. The other seven
locker rooms were located adjacent to only the shower and
toilet and washroom. The girl's locker rooms were essentially
the same in scores as the boys' locker room. Seven schools
had the boys' and girls' locker rooms located below ground
level, which is not recommended.

Floor. The ideal material for a floor, as recommended,
is ceramic tile of a non-slippery nature. For economical
reasons, concrete floors are most commonly used. The floors
should slope toward the shower room or to a drain for proper
drainage. In the boys' locker rooms, one school had tile
for the floor, eight had concrete, and one did not comply
with any of the standards because the floor was constructed
of wood. In the girls' locker rooms, nine of the floors
were made of concrete and one did not comply with any of
the standards, because wood was used for the floor. A wooden
floor is not advisable because it absorbs moisture, is not
sanitary, and is difficult to keep in good condition.

The floors in three boys' and two girls' locker
rooms sloped toward the shower room, and in four boys' and
five girls' locker rooms, the floors sloped toward a drain
located in the locker room.

Proper drainage is necessary to eliminate slippery
floors and provides conditions that are more sanitary. No
provisions for drains were made in three boys' and three
girls' locker rooms.
Walls. In order of preference, smooth-faced brick, ceramic tile, concrete or plaster are recommended for the walls. Cream-colored paint on the walls lighten the room. All of the locker rooms had concrete walls which were painted a light color thus complying with the standards.

Ceiling. Glazed brick or tile is recommended for the locker room ceiling. None of the boys' or girls' locker rooms had brick or tile for the ceiling, but had ceilings of concrete or plaster. Paint, in a light color, was used for the ceiling.

Heating. The use of forced, mechanical hot air, which is thermostatically controlled, with lockers superheated at night by means of recirculated hot air is recommended. Three locker rooms were provided with forced, mechanical hot air heating systems, while the others had hot water or steam radiators.

Lighting. Both natural and artificial light are recommended in the locker rooms. Windows should be placed six feet above the floor, be glazed for privacy, and should be equal in area to between 20 and 25 per cent of the floor area. Artificial lights should be recessed and indirect, and have an intensity of approximately fifteen footcandles. One school complied with the recommended standards for artificial lighting, while the others had a direct type of lighting and varied as to intensities of light. All schools
provided windows in the locker room, but only one school had the recommended window area.

It is recommended that the lights be operated by a two-way switch; one located in the instructor's office, and the other in the locker room. Three schools provided two-way switches with one switch located in the locker room, but with the other switch located in a hallway or at the top of a stairway instead of in the instructor's office. Six schools had one-way switches in the locker room. One school had a one-way switch for the locker room conveniently located at the top of the stairway.

Ventilation. Ventilation should be both mechanical and natural. Three schools complied with the recommendations, while seven had only a natural type of ventilation.

Size. The size and shape of locker rooms depend largely upon the number of students to be accommodated and the type of lockers to be used. Square locker rooms are recommended by some authorities, while others recommend that a rectangular area can be used to greater advantage. It is recommended that there should be twelve square feet of floor space per pupil, based on peak loads. Three locker rooms were adequate in size, six locker rooms had approximately eight square feet of floor space per pupil and one school had less than eight square feet of floor space per pupil.
Lockers. Three types of lockers are suggested for use; multiple unit lockers, individual dressing and storage lockers, and wire basket or storage locker used in combination with a dressing locker. None of the schools used the multiple unit type. Three girls' locker rooms and five boys' locker rooms were provided with individual dressing-storage type lockers. One school did not provide any type of lockers for storing gymnasium apparel or street clothes. Where dressing type lockers were not provided, hooks were placed on the walls for the students to hang their street clothes. Four boys' and six girls' locker rooms had double tier storage type lockers, or had wire baskets for storage of gymnasium apparel.

Authorities recommend that locks should be of combination type with a master key attachment. Three of the boys' and three of the girls' lockers had no locks for the lockers; two boys' and two girls' had key locks. Combination locks with master keys were provided on one boys' and one girls' locker, and four locker rooms had combination locks with no master key but with a master list for the lockers.

Number. All of the schools were provided with separate locker rooms for boys and girls.

Benches. Stationary benches, supported by cast iron braces, with a maple or birch top, six to ten inches wide, sixteen inches high, and providing eighteen linear inches of space per student should be installed in the locker room. Seven schools provided stationary benches in the locker
room, while three schools had moveable type of benches.

**Aisles.** Three locker rooms had aisles between lockers six feet wide, which complied with the recommendations. The aisle in one locker room was four feet wide, and the other six had aisles too narrow to provide adequate dressing space.

**Drinking fountains and cuspidors.** Drinking fountains and cuspidors should be recessed, self-flushing, and each of a different color. Six schools had drinking fountains in the locker room, one of which was recessed in the all. Four schools did not provide drinking fountains in the locker room. Only two locker rooms were provided with cuspidors.

**Mirrors.** It is recommended that one mirror be placed at the end of each row of lockers. One school had one mirror placed at the end of each row of lockers, while all the others had mirrors but less than the number recommended.

**Hair Dryers.** The girl’s locker room should be provided with hair dryers. If less than fifteen minutes is allotted for shower, dressing and hair drying, one hair dryer for every two girls is recommended. However, none of the schools in this survey were equipped with hair dryers. It would seem that the importance of providing hair drying equipment should be stressed in order to eliminate the possibility of girls going outside without hair being properly dried.
Figure V, page 38, presents the percentage of adequacy of the boys' locker rooms in each of the schools included in this study and reveals a comparison of the locker rooms in the schools. Figure VI, page 39, shows the percentage of adequacy of the girls' locker rooms in each of the schools included in this study, and presents a comparison of the locker rooms in the schools.

SHOWER ROOM

Table III, page 40, and Table IV, page 41, shows the point values assigned to all items of the shower rooms for boys and girls, respectively. The total possible score for the boy's shower room was 148 points, and 148 points for the girl's shower room. In both the boys' and girls' shower rooms in the selected schools scores ranged from 63 to 111 points.

Location. Shower rooms should be located adjacent to the swimming pool, drying and dressing room, and on the ground floor rather than in the basement. The shower rooms in all of the schools were located adjacent to the locker rooms. None of the schools had swimming pools, nor did any of the schools provide drying rooms in the locker room suites.

Ceiling. Concrete, glazed brick, or tile is recommended for the ceiling in the shower room. Four schools had concrete ceilings in the shower rooms, five had plaster,
FIGURE 5

PERCENTAGE OF ADEQUACY SCORE OF BOYS' LOCKER ROOMS IN THE SELECTED SCHOOLS
Figure 6

Percentage of total score assigned to girls' locker rooms.
### TABLE III
RATINGS ASSIGNED TO SHOWER ROOM FACILITIES FOR BOYS

<table>
<thead>
<tr>
<th>Criteria for shower rooms</th>
<th>Possible rating</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ceiling</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2. Doors</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3. Fixtures</td>
<td>20</td>
<td>8</td>
<td>17</td>
<td>10</td>
<td>7</td>
<td>14</td>
<td>10</td>
<td>20</td>
<td>7</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>4. Floors</td>
<td>15</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>5. Heating</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Location</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>7. Lighting</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>8. Number</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>9. Plumbing</td>
<td>13</td>
<td>4</td>
<td>13</td>
<td>13</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>10. Size</td>
<td>14</td>
<td>7</td>
<td>14</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>7</td>
<td>14</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>11. Ventilation</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>12. Walls</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>13. Windows</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>14. Soap Dispenser</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>63</td>
<td>94</td>
<td>78</td>
<td>65</td>
<td>81</td>
<td>80</td>
<td>111</td>
<td>70</td>
<td>77</td>
<td>83</td>
</tr>
</tbody>
</table>
TABLE IV
RATINGS ASSIGNED TO SHOWER ROOM FACILITIES FOR GIRLS

<table>
<thead>
<tr>
<th>Criteria for shower room</th>
<th>Possible rating</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1. Ceiling</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>2. Doors</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>3. Fixtures</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>4. Floors</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>5. Heating</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>6. Location</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>7. Lighting</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>8. Number</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>9. Plumbing</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>10. Size</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>11. Ventilation</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>12. Walls</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>13. Windows</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>14. Soap Dispensers</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>63</td>
</tr>
</tbody>
</table>
and one had a wooden ceiling.

Walls. Light-colored, glazed tile is recommended for the walls in the shower room. All of the walls in the shower rooms were made of concrete.

Floors. A tile floor is recommended for the shower room with concrete as a second choice. The floors in all of the shower rooms were concrete.

Floors should slope toward the walls with proper outlets for drainage. In seven schools, the floors in the shower rooms sloped toward a drain, in the center of the floor. In three schools, the floors sloped toward the walls of the shower room where drains were located.

Size. The size of the shower room may be determined by the number of shower heads that are needed, and the number of square feet of floor space per shower head. There is a difference of opinions among authorities as to the number of square feet per shower head. Some recommend 15 to 20 square feet of floor space and others 16 to 23 square feet of floor space per shower head. Three schools provided adequate floor space in the shower room. Seven schools had less than 15 square feet of floor space per shower head.

Heating. An adequate heating system for a shower room is forced hot air that is thermostatically controlled. None of the schools provided the shower rooms with any type
of heating system. The shower rooms were dependent upon heat from the locker room.

**Lighting.** It is recommended that the artificial lighting in a shower room be indirect, with approximately 15 foot-candle intensity. The lighting fixtures should be recessed and moisture proof, with switch and outlet outside of the shower room. It is important from the standpoint of safety to have all electrical outlets placed outside of the shower room. One school had indirect artificial lighting which complied with the standards. Five boys' and six girls' shower rooms had less than 10 foot-candle intensity, and no provision for lighting was made in four boys' and three girls' shower rooms. The shower rooms that were not provided with artificial lighting depended upon the locker room for light. One school provided window area of approximately 20 per cent of the floor area in the shower room; five boys' and six girls' shower rooms had window area less than 20 per cent of the floor area, and no windows were provided in four boys' and three girls' shower rooms.

**Ventilation.** Three shower rooms were provided with both natural and mechanical ventilation as recommended by authorities. The other schools provided a natural type of ventilation only.

**Shower heads.** One shower head for each three pupils at peak load is recommended as an adequate number. Five
schools provided the number of shower heads recommended. Five schools did not provide an adequate number of shower heads for the number of pupils.

All schools furnished shower heads that were self-cleaning; which is the type recommended by authorities. Six schools provided mixing valves on showers. The others had individual control on hot and cold water pipes.

In recent years, there has been a trend to provide gang showers for girls instead of individual shower booths. One school made provision for shower booths and dressing cubicles for the girls and nine schools used the gang showers.

**Plumbing.** It is recommended that the plumbing should be of rustproof material. The plumbing should be enclosed in the wall, except for the valves and shower heads, and should be conveniently located for maintenance, and repair. If the plumbing is exposed in the shower rooms, the pipes and fittings should be tight to the walls and well secured. Five boys' and four girls' shower rooms had plumbing which was enclosed in the walls with exposed parts of rustproof material. Two boys' and four girls' shower rooms had plumbing which was exposed in the room and of rustproof material. Non-rustproof material was used in three boys' and two girls' shower rooms.

**Doors.** It is important to have doors on shower rooms to keep the water from splashing into the locker room and to
eliminate drafts. Because of the moisture, metal doors are recommended. One school had metal doors for the shower room. Four boys' and three girls' shower rooms were provided with wooden doors, and the remainder of the shower rooms had open archways between the locker and shower rooms.

Soap. Liquid soap dispensers are recommended in the shower room. One dispenser should be located between every two shower heads, and approximately two feet lower than the shower heads. None of the schools provided for liquid soap dispensers.

Figure VII, page 46, and Figure VIII, p. 47, present the percentage score assigned to the boys' and girls' shower rooms respectively in each of the schools included in this study and permit a comparison of the shower rooms between the schools.

TOILET AND WASHROOM

Table V, page 48, and Table VI, page 49, show the point scores assigned to all items of toilet and washrooms for boys and girls, respectively. The total possible score for the boy's toilet and washroom was 63 and the total possible score for the girl's toilet and washroom was 60. The boys' toilet and washroom in the selected schools ranged from 15 to 56 points. The girls' toilet and washroom ranged from 17 to 54 points.
FIGURE 7

PERCENTAGE OF TOTAL SCORE ASSIGNED TO BOYS' SHOWER ROOMS
Percent of Total Score Assigned to

Figure 8

Per Cent of Adequacy

0 10 20 30 40 50 60 70 80 90 100

J
I
H
G
F
E
D
C
B
A

Sectors
### TABLE V
RATINGS ASSIGNED TO TOILET AND WASHROOM FOR BOYS

<table>
<thead>
<tr>
<th>Criteria for Toilet and Washroom</th>
<th>Possible rating</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ceiling</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Entrances and Exits</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Fixtures</td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>4. Floors</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>5. Heating</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6. Lighting</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7. Location</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>8. Number</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>9. Size</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>10. Ventilation</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>11. Windows</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>12. Walls</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>31</td>
<td>50</td>
<td>30</td>
<td>15</td>
<td>34</td>
<td>40</td>
<td>56</td>
<td>42</td>
<td>33</td>
<td>35</td>
</tr>
</tbody>
</table>
### TABLE VI

RATINGS ASSIGNED TO TOILET AND WASHROOM FOR GIRLS

<table>
<thead>
<tr>
<th>Criteria for toilet and washroom</th>
<th>Possible rating</th>
<th>Schools A</th>
<th>Schools B</th>
<th>Schools C</th>
<th>Schools D</th>
<th>Schools E</th>
<th>Schools F</th>
<th>Schools G</th>
<th>Schools H</th>
<th>Schools I</th>
<th>Schools J</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ceiling</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Entrances and Exits</td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Fixtures</td>
<td></td>
<td>10</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4. Floors</td>
<td></td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Heating</td>
<td></td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Lighting</td>
<td></td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7. Location</td>
<td></td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>8. Number</td>
<td></td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>9. Size</td>
<td></td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10. Ventilation</td>
<td></td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. Windows</td>
<td></td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>12. Walls</td>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60</td>
<td>31</td>
<td>50</td>
<td>30</td>
<td>17</td>
<td>29</td>
<td>37</td>
<td>54</td>
<td>39</td>
<td>31</td>
</tr>
</tbody>
</table>
Location. The toilet and washroom should be located between the shower and locker room, accessible to the playgrounds and gymnasium and should have a southern exposure. One of the boys' and two of the girls' toilet and washrooms were located accessible to locker and shower rooms and playgrounds. Five of the boys' and girls' toilet and washrooms adjoined the locker and shower rooms but were not accessible to the playgrounds. Four of the boys' and three of the girls' toilet and washrooms were adjacent to the locker room only.

Floor. The type of material for the floor should be tile or concrete of a non-slippery nature and should slope toward the drain. All of the floors, with the exception of one which had a wooden floor were constructed of cement.

Ceiling. The ceilings should be of a waterproof material. Seven schools used a moisture proof material in a light color, and three schools had non-moisture proof material.

Walls. The walls should be of a washable material preferably with wainscoting of hard, non-absorbent, large white tile, six feet up the side of the wall. None of the schools complied with these standards, however, the walls in all the toilets and washrooms were concrete or plaster, and were painted in some light color.

Size. One of the schools had toilet and washrooms
with dimensions approximately 24 feet long, 12 feet wide and 9 ½ feet high, which is recommended. Eight schools provided toilets and washrooms which met the minimum standard of 16 by 8 by 9 feet. One school did not comply with the standards because the area was too small.

**Number.** Authorities recommend one toilet and washroom for boys and one for girls, with special public toilets for each sex. All of the locker room suites were provided with one toilet and washroom for boys and one for girls. Two of the schools had special public toilets for each sex but the other eight provided no public facilities.

**Heating.** Forced, hot air, which is thermostatically controlled, is recommended as the most satisfactory heating system. Five of the toilet and washrooms provided forced air heating. The others were heated by means of hot water or steam radiators.

**Lighting.** The lighting in a toilet and washroom should both be natural and artificial, and that the artificial light should be recessed. The window area should equal 20 per cent of the floor area and should be glazed for privacy. All of the boys' toilet and washrooms had artificial lighting. In only two were the lighting fixtures recessed. Nine of the girls' toilet and washrooms were provided with artificial lighting. One toilet and washroom did not have any lighting fixtures. One school provided window area approximately 20 per cent of the floor area and glazed for privacy.
Four schools had less than 20 per cent of the floor area for windows, and five schools did not provide any windows in the toilet and washrooms.

Ventilation. Ventilation should be partly through the windows, and partly through a mechanically controlled ventilating system, separate from all other systems. Three schools had mechanically controlled ventilation and the other seven had only natural ventilation.

Fixtures. The lavatories should be of vitreous china, supported on the wall. The faucets should be of spring type, with hot and cold running water connections. Seven of the ten schools had lavatories of vitreous china, five being wall supported and two supported by legs. Three schools used other types of materials for the lavatories.

It is recommended that urinals be of vitreous china, stall type, and pitched to the drain. One school did not have a urinal bowl for boys. One school had a boy’s type urinal in the girl’s toilet and washroom for visiting teams to use.

Toilet bowls should be of vitreous china. The seat should be of impervious material, open at the front, elongated or extended lip bowl, with a concealed flush rim and syphon jet type of valve. There should be stall doors which open inward with gravity hinges. Four schools complied with the recommendations. One school did not
provide a toilet bowl in the toilet and washroom, and the others met only some of the standards.

Figure IX, page 54, and Figure X, page 55, present the percentage score assigned to the boys' and girls' toilet and washroom facilities, respectively, in each of the schools included in this study and permit a comparison of the toilet and washrooms between the schools.

**DRYING ROOM**

None of the ten schools that were included in this survey had a drying room.
FIGURE 9

PERCENTAGE OF TOTAL SCORE ASSIGNED TO BOYS' TOILET AND WASHROOM
FIGURE 10

PERCENTAGE OF TOTAL SCORE ASSIGNED TO GIRLS' TOILET AND WASHROOM
CHAPTER V

SUMMARY AND CONCLUSIONS

SUMMARY

The purpose of this study was to determine the status of the facilities of the locker room suites in selected high schools in Montana as compared with accepted standards.

The instrument used to determine the adequacy of locker room suites was a score card composed of 66 items essential to the locker room, shower room, drying room, and toilet and washroom. The standards for these items were obtained from literature on the topic. Since none of the selected schools had a drying room, this portion of the evaluation was omitted from the survey.

Personal visitations were made to 10 selected high schools in Montana to secure necessary information for the score card.

For each facility, criteria such as size of room, materials in walls and floors, fixtures, location, etc., were set up. Each criteria had from one to three standards. These standards were assigned a numerical rating based on the quality of each standard. Numerical ratings given to
the locker room suite facilities were determined in terms of the degree to which the facilities met the standards. These numerical values were totaled to obtain the total score for the entire locker room suite. The total percentage score for each school was presented graphically to reveal the degree to which each school compared with accepted standards.

The findings of the survey indicated that none of the locker rooms, shower rooms, and toilet and washrooms complied with all of the highest standards, but neither did any of them fail completely in meeting some of the standards for certain items. Some of the items that most frequently met the standards in the locker room were the location, one locker room for each sex, and the type of heating. Those items which least frequently met the standards in the locker room were the size of the locker room, ventilation, and type and number of fixtures. The items in the shower room that complied most frequently with the standards were the type of floors, and one shower room for each sex. Some of the most obvious inadequacies were heating, ventilation, and size of the shower room. The location, lighting, number for each sex, and type of fixtures in the toilet and washrooms complied more often with the standards. The windows, ventilation, and type of material for walls in the toilet and washroom were items which complied least frequently with the standards.

Among the 10 schools that were surveyed, the average
percentage score for the boys' locker room suite was 53.1 per cent and 52.7 per cent for the girls. The highest percentage rating attained in a locker room suite was 82 per cent, and the lowest percentage score was 31 per cent. The majority of the locker room suites ranged in percentage score from 42 to 57 per cent.

Of the three facilities that were surveyed, the toilet and washrooms had the highest average percentage score of 59 per cent for the girls and 58 per cent for boys, while the locker room had the lowest average percentage score of 50 per cent for the boys and 49 per cent for the girls. The shower room had an average percentage score of 54 per cent for both the boys and girls. These percentage scores seemed to indicate in general, that locker room suites were not as adequate as is desirable.

CONCLUSIONS

It is concluded that the score card used in this survey was a satisfactory means of evaluating facilities in a locker room suite from the standpoint of ease and objectivity. However, it should be revised to conform to modern construction and engineering techniques, such as type of ventilation and natural lighting.

While the 10 schools that were surveyed did reveal a limited amount of information, a survey including a greater number of schools would provide more reliable data concerning
the status of locker room facilities in high schools.

School administration and architects should be more aware of and should utilize a set of established criteria for planning and building these facilities.

It was assumed at the beginning of this study that locker room suite facilities were inadequate. This survey, with its revealing average figure of 53.1 per cent of adequacy, indicates that the assumption was correct.

The results of the survey indicate that the items in the locker room suites were not entirely adequate. In order to achieve more fully the objectives of healthful school environment, the schools which do not have adequate facilities should make an effort to alleviate as many inadequacies as possible in the locker room suites.
BIBLIOGRAPHY

A. BOOKS


B. PÉRIODICAL ARTICLES


-61-
APPENDIX
Appendix A

Dear Superintendents:

In meeting the requirements for a Master of Arts Degree in Health and Physical Education from the Montana State University, I plan to make a survey of locker room suites (locker room, shower room, etc.) in a number of Class C High Schools in Montana.

This study will be carried on by comparing locker room suites in the various schools with standards established by authorities in the field. The schools participating in this survey will remain anonymous in tabulation of the findings.

Would it be possible for a personal visitation on (date__, at (time)__)? Enclosed please find a card for your reply.

I shall be glad to send you a summary of the results of this study when it is completed, if you so desire.

Yours very truly,

Helge E. Carlson
Physical Education Instructor
Appendix B

POSTAL CARD

Please fill in the blanks below and return at your earliest convenience.

Will it be possible to make a survey of the locker room suite in your school?

___Yes ___No

If you are interested, will ___(date)___, ___(time)___ be convenient for you?

___Yes ___No

If not, please indicate the most convenient time, ___(date)___ ___(time)___

Do you desire a summary of the results of this study?

___Yes ___No

Signed

Supt. or Principal
Appendix C

The schools participating in this survey were Belgrade, Boulder, Ennis, Harrison, Manhattan, Sheridan, Three Forks, Twin Bridges, Virginia City, and Whitehall.
APPENDIX D

SCORE CARD FOR LOCKER ROOM SUITE

A. Drying Room

1. Ceiling
   a. Acoustically treated, moisture proof, curved to shed water light color ... a. 3  a. 3
   b. Moisture proof, light color ... b. 2  b. 2

2. Entrances and Exits
   a. Opening into shower room, locker room or swimming pool ... a. 3  a. 3
   b. Less than above ... b. 2  b. 2

3. Floors
   a. Cement, sloped to drain, abrasive and non-absorbent ... a. 6  a. 6
   b. Cement, sloped to drain ... b. 4  b. 4
   c. Cement ... c. 2  c. 2

4. Heating
   a. Unit system, thermostatically controlled, 70°-75° ... a. 4  a. 4
   b. Unit system, forced hot air ... b. 3  b. 3

5. Lighting
   a. Natural and artificial, 10-15 ft. candles at floor level, recessed and protected ... a. 3  a. 3
   b. Natural and artificial, 10-15 ft. candles at floor level ... b. 2  b. 2

6. Location
   a. Between locker and shower rooms, accessible to all students ... a. 14  a. 14
   b. Area in shower room ... b. 9  b. 9
   c. Near the locker room ... c. 4  c. 4

7. Size
   a. 4 sq. ft. per pupil ... a. 13  a. 13
   b. 3 sq. ft. per pupil ... b. 9  b. 9
   c. Less than 3 sq. ft. per pupil ... c. 4  c. 4

8. Ventilation
   a. Forced recirculated and natural, exhaust fan for removal of excess heat and moisture ... a. 5  a. 5
   b. Forced and controlled ... b. 4  b. 4
   c. Natural ... c. 2  c. 2

-66-
### Drying Room

#### 9. Walls

a. Extended from floor to ceiling, slate or glazed tile, smooth surface, light color, moisture proof . . . . . . . . . . . . . . . a. 35 a. 35

b. Cement walls, moisture proof and light color . . . . . . . . b. 2 b. 2

#### 10. Windows

a. ½ floor area, metal frames and frosted glass, screened, hardware of brass or bronze . . . . a. 3 a. 3

b. ½ floor area, metal frames and frosted glass . . . . . . . . b. 2 b. 2

### Locker Rooms

#### 1. Ceiling

**Material**

| a. Glazed brick or accoustical tile | a. 4 a. 4 |
| b. Accoustical plaster or concrete | b. 2 b. 2 |
| c. Concrete or plaster | c. 1 c. 1 |

**Color**

| a. Unglazed cream | a. 3 a. 3 |
| b. Unglazed buff | b. 2 b. 2 |
| c. Others | c. 1 c. 1 |

#### 2. Fixtures

**Benches**

| a. Stationary, cast iron supports, maple or birch top, 6 to 10" wide, 16" high, 18" linear space | a. 2 a. 2 |
| b. Stationary, pine top, not as wide as above | b. 1 b. 1 |

**Aisles**

| a. 8' wide | a. 2 a. 2 |
| b. 4' wide | b. 1 b. 1 |

**Drinking Fountains**

| a. Recessed, self-flushing, different color from cuspidor | a. 2 a. 2 |
| b. Combination of two above | b. 1 b. 1 |

**Cuspidors**

| a. Recessed, different colors than drinking fountain, self-flushing | a. 2 a. 2 |
| b. Combination of two above | b. 1 b. 1 |

**Electrical switches**

| a. Two way double switches | a. 2 a. 2 |
| b. One way switches | b. 1 b. 1 |
**Locker Rooms**

<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
</table>

### Mirrors
- a. One at each end of each row of lockers at average height ... a. 2 a. 2
- b. Less than above number ... b. 1 b. 1

### Materials of metal
- a. Non-corrosive ... a. 2 a. 2

### Floors
#### Material
- a. Non-slip ceramic tile ... a. 5 a. 5
- b. Non-slip concrete or abrasive terrazzo ... b. 3 b. 3
- c. Cement ... c. 1 c. 1

#### Drainage
- a. Slope toward shower room, rounded corners for cleaning and safety a. 5 a. 5
- b. Well drained ... b. 2 b. 2

### Heating
- a. Forced mechanical, recirculated hot air, thermostatically controlled. 70°-75°. Lockers super-heated at night by means of recirculated hot air under the lockers or entire locker room ... a. 9 a. 9
- b. Hot water or steam radiators, recessed, pipes covered, centrally controlled ... b. 6 b. 6
- c. Hot water or steam radiators c. 3 c. 3

### Lighting
#### Intensity
- a. 15 foot-candles over aisles perpendicular to windows ... a. 4 a. 4
- b. 10-13 foot-candles ... b. 2 b. 2
- c. Less than 5-8 foot-candles c. 1 c. 1

#### Type
- a. Sunlight, diffused, recessed a. 4 a. 4
- b. Sunlight, and direct lighting b. 2 b. 2
- c. Direct lighting, no sunlight c. 1 c. 1

### Location
- a. On ground floor, contiguous to shower, toilet and swimming pool. Easily accessible to gym and pool. Easily supervised a. 20 a. 20
- b. Contiguous to shower, toilet, and gym and pool b. 14 b. 14
- c. Contiguous to shower and toilet. Not directly accessible to others c. 7 c. 7
Locker Rooms

7. Lockers
   a. Individual, metal (12x12x72) reinforced with heavy steel and built on concrete coved base. Number to meet peak load plus 10%. Wire basket (13-9x6") with removable combination locks to use on large lockers. Number to meet peak load plus 10% . . . . . . a. 13 a. 13
   b. Same as above except that dressing lockers are not located with regard for natural lighting . . b. 8 b. 8
   c. Small lockers or wire basket storage with no provision for lockers . . . . . . . . . . c. 4 c. 4

8. Locks
   a. Combination locks with a master key attachment . . . . . . . . . . a. 5 a. 5
   b. Combination lock with master list . . . . . . . . . . b. 4 b. 4
   c. Key lock . . . . . . . . . . . . . . . . c. 3 c. 3

9. Number
   a. Separate locker room for boys and girls . . . . . . . . . . . . . . a. 5 a. 5
   b. One room for both sexes, used at different times . . . . . . . . . . b. 2 b. 2

10. Size
    a. Small rooms should be rectangular and large rooms square. 12 sq. ft. per pupil based on peak load plus 10% . . . . . . . . . . a. 18 a. 18
    b. 10 sq. ft. per pupil based on peak load, plus 10% . . . . . . b. 12 b. 12
    c. 8 sq. ft. per pupil based on peak load . . . . . . . . . . c. 6 c. 6

11. Ventilation
    a. Mechanical and natural, unit controlled including lockers . . a. 9 a. 9
    b. Mechanical ventilation . . . . . . b. 6 b. 6
    c. Natural ventilation . . . . . . c. 3 c. 3

12. Walls
    Material
    a. Glazed brick . . . . . . . . . . a. 4 a. 4
    b. Ceramic tile . . . . . . . . . . . . b. 2 b. 2
    c. Concrete or plaster . . . . . . . . . . . . c. 1 c. 1
    Color
    a. Unglazed cream . . . . . . . . . . a. 2 a. 2
    b. Unglazed buff . . . . . . . . . . . . b. 1 b. 1
    Construction
    a. Coved at floors and ceiling . . a. 2 a. 2
Locker Rooms

Boys  Girls

13. Windows
   a. 20-20% of floor area, non-transparent in double hung windows.
      Sills 6' above the floor and
      head of windows near the ceiling  a. 8  a. 8
   b. Less than 20% but more than 15% of
      floor area. Ample provision
      for natural ventilation       b. 5  b. 5
   c. Window area less than 10% of
      floor area. No provision for
      natural ventilation       c. 2  c. 2

14. Hair Dryers (for girls)   a. 3

C. Shower Room

1. Ceiling
   a. Concrete .................. a. 4  a. 4
   b. Plaster (waterproof) ...... b. 2  b. 2

2. Doors
   a. Metal doors and frames .... a. 4  a. 4
   b. Metal frame, wooded doors .. b. 3  b. 3
   c. Wooden doors, wooden frame .. c. 1  c. 1

3. Fixtures
   Lights
   a. Moisture proof fixtures, recessed a. 8  a. 8
   b. Moisture proof fixtures, not
      recessed ........................ b. 5  b. 5
   c. Non-moisture proof fixtures  c. 2  c. 2

   Number of shower heads
   a. One for each three pupils   a. 6  a. 6
   b. One for each four pupils    b. 4  b. 4
   c. Less than one for each four
      pupils .......................... c. 2  c. 2

   Type of shower heads
   a. Self-cleaning with mixing
      valves .......................... a. 6  a. 6
   b. Self-cleaning without mixing
      valves .......................... b. 3  b. 3

4. Floor
   Material
   a. Tile, glazed brick, slate .... a. 8  a. 8
   b. Concrete ........................ b. 5  b. 5
   c. Terrazo .......................... c. 3  c. 3

   Drainage
   a. Sloped to side ................. a. 7  a. 7
   b. Center drain .................... b. 3  b. 3

5. Heating
   a. Forced hot air, thermostatically
      controlled ........................ a. 15  a. 15
<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit head, thermostatically controlled</td>
<td>b. 13  b. 13</td>
</tr>
<tr>
<td>Hot air, no thermostat</td>
<td>c. 9  c. 9</td>
</tr>
</tbody>
</table>

6. Location
- Adjacent to swimming pool and drying room or dressing room: a. 12  a. 12
- Adjacent to one and accessible to other of above: b. 8  b. 8
- Accessible to above: c. 5  c. 5

7. Lighting
- Natural and indirect, artificial 10 foot-candle intensity: a. 7  a. 7
- Natural and artificial light, 5-10 foot-candle intensity: b. 4  b. 4
- Natural and artificial light, less than 5 foot-candle intensity: c. 2  c. 2

8. Number
- One for each sex: a. 15  a. 15
- One only: b. 6  b. 6

9. Plumbing
- Rustproof equipment enclosed but readily accessible for maintenance and repair: a. 13  a. 13
- Rustproof equipment exposed in room: b. 7  b. 7
- Non-rustproof: c. 4  c. 4

10. Size
- 15 to 23 sq. ft. floor space for each shower head: a. 14  a. 14
- Less than 15 sq. ft. floor space for each shower head: c. 7  b. 7

11. Ventilation
- Natural and mechanical without draft: a. 8  a. 8
- Mechanical only: b. 5  b. 5
- Natural only: c. 2  c. 2

12. Walls
- Tile, marble, slate: a. 10  a. 10
- Glazed brick, terrazzo: b. 7  b. 7
- Concrete, smooth brick: c. 5  c. 5

13. Windows
- Glazed glass equivalent to 20-25% of floor space: a. 8  a. 8
- Glazed glass equivalent to less than 20% of floor space: b. 5  b. 5
- Clear glass: c. 3  c. 3

14. Soap
- Liquid dispenser between each two showers: a. 3  a. 3
**D. Toilet and Washroom**

<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
</table>

1. Ceiling
   a. Cement, light color, moisture-proof, acoustically treated. . . a. 3 a. 3
   b. Moisture-proof, light color . . b. 2 b. 2
   c. Non-moisture proof material . . c. 1 c. 1

2. Entrances and Exits
   a. Outer doors clearly marked for each sex, mastered keyed, equipped with door closures, push and kick plates; frosted wire glass, no handles on knobs; entrance inward and exit outward opening . . . a. 4 a. 4
   b. Outer doors clearly marked for each sex, push and kick plates, frosted wire glass . . . . . b. 3 b. 3

3. Fixtures

   **Lavatory**
   a. Vitreous china, wall supported bowl located between exits and toilets, faucets of spring type, with hot and cold running water connections; with one lavatory for each two toilet fixtures, one mirror above washbasin. . . a. 4 a. 4
   b. Vitreous china, leg-supported bowl arranged in battery in middle of room, meeting other requirements above . . . . . b. 3 b. 3
   c. Porcelain or stainless steel bowl in either arrangement above . . . . . . . . . . . c. 1 c. 1

   **Urinals**
   a. Stall type vitreous china, recessed and below level of floor, strongly pitched to drain. One for 25 boys a. 3 a. 3
   b. Porcelain, meeting other standards above . . . . . . . . . . . b. 2 b. 2
   c. Less than above . . . . . . . . . . . c. 1 c. 1

   **Water Closets**
   a. Stall doors open inward with gravity hinges, automatic, vitreous china bowl with genuine vulcanized hard rubber seat, open at front, elongated bowl, extended lip, flush rim syphon jet type; one toilet stool for each 25 boys in a peak load . . . a. 3 a. 3
   b. Flush valve, non-automatic porcelain bowl, and meets other requirements above . . . . . . b. 2 b. 2
   c. Flush valve, non-automatic porcelain bowl, does not meet requirements above . . . . . . c. 1 c. 1
### Toilet and Washroom

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4. Floors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Terrazzo or ceramic tile set in moisture proof cement, light color, easy to clean and sloped to trapped drain</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>b. Moistureproof cement sloped to drain</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>c. Cement floor</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>5. Heating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Unit system, thermostatically controlled, connected with gym temperature 68°-72°</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>b. Unit system, thermostatically controlled</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>c. Central system, temperature less than 68°</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>6. Lighting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Natural and artificial; 10 ft. candles, artificial light recessed</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>b. Natural and artificial; 10 ft. candles</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>7. Location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Accessible to lockers, showers, and playground, southern exposure preferred, girls and boys separated a minimum of 20'</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>b. Adjoins showers and lockers, not easily accessible to outside play area; girls and boys separated minimum of 20'</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>c. Adjoins dressing rooms only</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>8. Number</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. One room for boys (1-40, minimum 2 toilets), one room for girls (1-30 girls, minimum 3 toilets) special public toilets, for each sex</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>b. One room for boys, one for girls</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>9. Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 24' x 12' x 9'6&quot;</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>b. 16' x 8' x 9'6&quot;</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>10. Ventilation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Mechanically controlled, separate unit, fresh air outlet</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>b. Mechanically controlled, separate unit</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
Toilet and Washroom

11. Windows
   a. One to four of floor area, hardware bronze or brass; protected, frosted glass screened southern exposure preferred.
      a. 4  a. 4
   b. One to four of floor area.
      b. 3  b. 3

12. Walls
   a. Wainscoting of hard non-absorbent, large white tile 6' up side of wall and moistureproof.
      a. 3  a. 3