

STATE NORMAL SCHOOL

HARRISONBURG, VA.

July 15, 1916.

To the Building Committee of the
Virginia Normal School Board:

Gentlemen:

Acting under your instructions, I have secured estimates for the completion of certain portions of the Service Building, for the various plans proposed for the heating of Dormitory No. 3, and for the extras on the latter building. On this basis, I beg to submit the following recommendations:

RECOMMENDATIONS AS TO THE SERVICE BUILDING

I have secured the following estimates for work on the Service Building, and respectfully suggest that contract be awarded to Messrs. Wm. M. Bucher & Son for the said work.

Item 1: Finish the entire upper story of Service Building and connecting corridor and serving-room, in accordance with the original specifications, except as noted below. Remove the ceiling joists over the kitchen and support same on three trusses, using iron tie rods below ceiling; omit the plaster on ceiling and cover same with a plain metal ceiling, connecting ventilators now on roof to this metal ceiling; before the metal ceiling is put on, line the same with asbestos paper for a space of ten feet square directly over range.-----\$2,108.00

Item 2: Substitute Keene's Cement Plaster for ordinary plaster 4' 6" high in all rooms of top story.-----\$ 40.00

Item 3: The floor of the kitchen and dishwashing room to have the joists hacked and a sub-floor laid down between the joists and the whole covered with a terrazzo floor and base turned up six inches on side walls. In this floor to be embedded a light expanded metal mesh or woven wire fabric of sufficient strength to prevent cracks from expansion and contraction, floor to be laid in the best manner thruout and fully guaranteed against expansion cracks and leaks. A drain with brass trap shall be provided near center of kitchen and another in dishwashing room near the dishwasher for flushing out these two rooms. The remaining portion of the second floor, including servants' dining-room, office, serving-room, and halls and corridors, to be finished with wood floor as originally specified.---\$484.00

Item 4: Rough in for all plumbing shown on plans, but do not provide any plumbing fixtures. Connect with sewer and with water-supply at most convenient point.-----\$552.86

Item 5: Install radiators and connect same with heating plant in rooms which are to be finished in this contract. Leave all outlets in steam mains and pipes for future heat for rooms not to be finished under this contract.-----\$472.23

Item 6: Finish up the elevator shaft and stairway from top to bottom as originally specified, together with doors to the elevator.-----\$693.00

Item 7: Install complete a hand-power freight elevator of 1,000 lbs. capacity, which may be converted into a power elevator for electric power later.-----\$275.00

If these items be ordered the account will stand as follows:

Item 1---General, with changes in ceiling of kitchen-----	\$2,108.00
Item 2---Keene's Cement wainscoating-----	40.00
Item 3---Terrazzo floor in kitchen and dishwashing room-----	484.00
Item 4---Plumbing-----	552.86
Item 5---Heating-----	472.23
Item 6---Finishing elevator shaft and stairway-----	693.00
Item 7---Installing hand-power elevator-----	275.00
Total work to be done-----	<u>\$4,625.09</u>

Balance due for work already completed-----	5,450.00
Total-----	<u>\$10,075.09</u>

RECOMMENDATIONS FOR DORMITORY No. 3

Messrs. Bucher & Son estimate that the extra due on account of foundations will amount to \$765.00. This, together with the contracts already awarded and my estimate for equipment submitted some time ago, make this account stand as follows:

General Contract awarded - - - - -	-\$30,995.00
Contract awarded for Water Supply Line - - - - -	445.00
Architect's Fees - - - - -	1,700.00
Extra on account of Foundations- - - - -	756.00
Equipment- - - - -	<u>3,000.00</u>
	\$36,896.00
Balance available for Heating, Hot-	
Water Supply, etc.- - - - -	<u>3,104.00</u>
Total- - - - -	-\$40,000.00

I have secured estimates from the Thomas Plumbing and Heating Company for various plans of heating the building and supplying hot water for it, and also for adding heating capacity for our present plant. On account of the serious situation faced by us last winter, I consider it imperative that whatever plan for heating be adopted for the new building, provision be made for adding sufficient heat to make the present buildings comfortable in winter weather. Further, in view of the fact that we shall need high-pressure steam in our new kitchen, and also in view of the fact that when the heating apparatus is moved to its permanent location in the central heating-plant, a high-pressure boiler will be much more serviceable, I strongly urge the installation of a high-pressure boiler rather than of another low-pressure boiler when these additions are made. I present the several proposals as submitted to me, as follows:

Harrisonburg, Va., July 8, 1916

Prof. Julian A. Burruss,
President State Normal School,
Harrisonburg, Va.

Dear Sir:

We herewith submit specifications and proposals to furnish material and do the several lines of work as indicated in the following items:

PROPOSAL NO. 1--EXCAVATION AND CEMENT CONDUIT AND STEAM MAINS
IN PLACE FROM BOILER ROOM TO DORMITORY NO. 3.

Make excavation from front of Students' Building, at right angles with the front of this building and continue same to within 3 ft. of front line of Dormitory No. 3 and thence west to South East corner of Dormitory No. 3. This excavation to be made to a depth of approximately 13.25 ft. at the north end and opposite the front of the building, to be erected later and which will face the Students' Building. At the corner of Dormitory No. 3 the depth will be approximately 4.50 ft. No estimate is made for the removal of the surplus material from this excavation. This excavation is made to a proper depth to provide for the proper installation of the steam and return mains as referred to later in this specification.

Build in this excavation a cement conduit, 6 ft. wide and 6 ft. high, inside measurements. The bottom of conduit to be made of concrete 6 in. thick, the sides to be 7 inches thick and the top, slightly curved on the under side, with the top slightly graded to each side for proper drainage, to have an average thickness of approximately 9 inches. The top part of conduit to be reinforced with $\frac{1}{2}$ in. round bars placed 1 ft. apart and with the ends bent so as to extend 6 inches into the side walls.

The top surface to be finished in a proper manner and to serve as a walk between the two rows of buildings.

Three man holes to be placed at suitable intervals in the top of this conduit to allow for ready access to steam pipes, etc.

Across the top of the inside of the conduit, supports of two inch galvanized iron pipe are to be placed every ten feet. These supports are intended to carry the steam and return mains and the air line pipes.

Make connection with steam mains in present Boiler-room and put in place an 8 in. steam main and continue same to N. E. Corner of same and then parallel the steam main along the wall in front of Dormitory No. 2 and Students' Building to point of entrance to cement conduit above referred to and thence in conduit to northern end of same. From this point a 6 in. main to be continued to Dormitory No. 3.

The steam main along the wall to be supported on frames of $2\frac{1}{2}$ in. galvanized iron pipe set in concrete bases at the bottom and inserted in wall for top support. The main to be on a level with the present main and insulated in accordance with that provided for in said present main.

In the building and conduit, the steam and return mains to be supported on proper hangers. The return main between the conduit and Dormitory No. 2 to be placed in sewer pipe under the surface of the ground and insulated. One expansion joint to be placed in main along the wall and in the return main and three expansion joints to be placed in both the steam and return mains in the conduit. These expansion joints to be properly anchored. The Air line to follow the same course and conditions of the steam main, except it is not to be covered with insulating material.

All the steam mains in conduit and Dormitory No. 2 to be covered with 85% magnesia covering.

Proper connections to be made to take care of the condensation in Conduit.

We propose to do the excavating, build the conduit and put the steam, return and air line pipes in place with all the fittings and work, for the sum of Six Thousand Three Hundred and Forty One and 54/100 Dollars. \$6,341.54

PROPOSAL NO. 2 TEMPORARY HEATING LINE.

A temporary heating line, the main steam line to be made of 6 in. pipe and laid in sewer pipe and insulated with asbestos sectional covering and the return laid in sewer pipe, can be provided at an expense of One Thousand Eight Hundred and Seven and 50/100 Dollars. \$1807.50.

The steam main would follow the line of the conduit but the return main would have to be carried across the campus from Dormitory No. 3 to the Heating plant. With this arrangement the air line could not be used.

PROPOSAL NO. 3 NEW CAST IRON SECTION BOILER IN BOILER ROOM.

Place in boiler room of present Heating plant, One Cast iron Steam Boiler of 9,375 sq. ft. capacity and make connection with steam mains of the other boilers now in place, using the proper valves and fittings to make the new boiler both independent and cooperative with the other boilers.

Furnish and put in place a wrought iron stack on the outside of boiler room and extend same as high as the present chimney. This stack to be 21 in. in diameter and made of No. 16 gauge iron.

This outfit complete and in place as indicated, we propose to furnish for the sum of One Thousand Four Hundred and Thirty Five and 10/100 Dollars. \$1,435.10.

In case another boiler should be installed in the present central Heating plant, the column supporting the ceiling would have to be shifted. This would require an additional column with a short cross beam. We have not provided for this expense in our estimates.

PROPOSAL NO. 4. HIGH PRESSURE BOILER. RETURN TUBULAR.

We propose to furnish and install a Return Flue Tubular Boiler in Boiler Room of Present Central Heating Plant as follows: The boiler to be 18 ft. long and 66 inches in diameter with fifty-four 4-in. flues.

This boiler installed with brick work complete, including all the common brick and fire brick necessary for its setting with a smoke stack 30 inches in Diameter and extending to the height of the present chimney, with all the valves, pipes and fittings, providing it to be used in conjunction with the other boilers and also independent of them. The boiler to have a heating capacity of 9,500 sq. feet of radiating surface, at 10 lbs. pressure, and to be guaranteed for a safe working pressure of 100 lbs., if used for high pressure service.

We propose to furnish this boiler and install same complete and ready for use as a low pressure outfit for the Sum of Two Thousand and Three Hundred Dollars. \$2,300.00

PROPOSAL NO. 5 INTERNALLY FIRED OR MARINE BOILER.

This Boiler to consist of an Internally Fired Scotch Type Self Contained, Return flue boiler, on skids. No brickwork is required in setting this boiler. Installed complete with Valves, Pipes and fittings, so that it can be used in conjunction with the other boilers or independent, with the proper stack as indicated in the other proposals for an additional boiler, the cost will be Two Thousand Two Hundred and Thirteen and 40/100 Dollars. \$2,213.40.

Should either of the High pressure boilers be installed, it would be necessary to make an enlarged opening to admit same. We have not provided for

this expense.

It should be stated that the Internally Fired Scotch Type Boiler has a capacity of 9,500 sq. ft. of Steam radiation at 10 lbs. pressure and a safe working pressure of 100 lbs. for high pressure service. It is an economical boiler from the standpoint of fuel consumption and easily cared for. For your use and in view of the removal to another point, it is a desirable outfit.

PROPOSAL NO. 6 REMOVE ONE BOILER FROM PRESENT BOILER ROOM AND INSTALL SAME IN DORMITORY NO. 3 AND SET HIGH PRESSURE BOILER IN ITS PLACE.

To furnish and set up One Internally fired Boiler as specified under Proposal No. 5, and Alternate No. 2, in place of the boiler to be removed and placed in Dormitory No. 3. The expense will be One Thousand Nine Hundred and Twenty Nine and 40/100 Dollars. \$1,929.40.

The removal of the boiler and setting it up in Dormitory No. 3, will cost One Hundred and Forty Dollars. \$140.00

PROPOSAL NO. 7 HEATING-BOILER FOR DORMITORY NO. 3.

Furnish and install in Dormitory No. 3 - One S. 36 - 8 Steam Boiler with a rated capacity of 3675 ft. of steam radiation and properly connect same with heating mains put in place under separate contract.

Furnish smoke stack for flue in building. Cover boiler with 1½ inches thick Asbestos Cement. Make cement base to set heater on.

This boiler installed complete will cost Five Hundred and Thirty Five Dollars. \$535.00. Boilers have advanced since the former contract was made and hence somewhat higher than former price.

PROPOSAL NO. 8 SMOKE STACK etc. FOR PROPOSAL NO. 6, HIGH PRESSURE BOILER

If outside smoke stack is wanted for High Pressure Boiler, to take the place of one of the Low Pressure Boilers to be removed, add to the price named as per Proposal No. 6, the sum of One Hundred and Eighty-Four Dollars, making the total amount, $\$1929.40 + \$184.00 = \$2113.40$.

PROPOSAL NO. 9 TANK HEATER AND TANK etc., DORMITORY NO. 3.

To furnish and install in the basement of Dormitory No. 3, a 315 gallon galvanized iron Tank and a 350 gallon capacity Tank Heater with the proper pipe connections and cross connected with a coil in the Steam Heating Boiler, with cement foundation to set heater and tank on, the cost will be One Hundred and Ninety Five and 50/100 Dollars. \$195.50.

We trust that these things will cover the items desired. Should there be anything else on which you desire estimates, etc., we shall be pleased to submit them.

Very truly,

Thomas Plumbing & Heating Co.

By P. S. Thomas

In considering the above proposals I believe the committee will agree with me that Proposal No. 1 is what we would like to accept and what we will eventually have to follow; but the cost is prohibitive at present, as this amount is \$6,341.54 for the conduit and piping alone, and to this amount must be added the cost of an additional boiler and stack for the present heating-plant, which would run the total up to at least \$7,776.64.

Likewise it is my opinion that it is inadvisable to accept Proposal No. 2, for the cost of pipe lines and boiler would amount to at least \$3,242.60; and we should have only a temporary arrangement, which, if it did not give trouble itself, would have to be replaced later by the permanent lines, with the consequent loss on materials. Again, the above amount is for a low-pressure boiler, and this would not fill the requirements. A high-pressure boiler would increase the amount for this plan to \$4,020.90.

For reasons stated above I should strongly recommend the rejection of Proposal No. 3 in favor of a high-pressure boiler.

As between Proposals Nos. 4 and 5 I do not feel capable of deciding. Personally, with such information as I have had in the past, I have always thought that I should prefer a water-tube boiler. The firm submitting the proposals, however, recommend the internally fired, or marine boiler; and I am inclined to think their reasons are sufficient to justify me in recommending the adoption of Proposal No. 5 rather than No. 4. The cost is very slightly less for the marine boiler.

Proposal No. 6 seemed to me at first thought to be very desirable, but maturer consideration has convinced me that it would not meet the needs. The removal of one of the present boilers to Dormitory No. 3, the installation in its place in the present heating-plant of a high-pressure marine boiler, and the stack for same (see Proposal No. 8), would cost \$2,253.40. The boiler thus installed in Dormitory No. 3 would be much too large for the heating of that building; but the main objection to this plan is that the capacity of the present heating-plant would not be increased at all. We would have high-pressure steam, but we could not use it because it would rob the heating system too much and the situation would be worse than it is at present; whereas, even if the high pressure steam be not used for other than heating purposes, the amount of steam available for heating would be practically the same as at present and no provision would be made for the additional radiation required by the present buildings and the rooms soon to be finished in the Service Building. I should therefore recommend the rejection of Proposal No. 6.

Proposal No. 7 provides for the installation of a separate heating-plant in Dormitory No. 3. This would require that the flue omitted in the general contract be added as originally specified, and that a portion of the basement floor be finished for the boiler-room and fuel storage. Messrs. Bucher & Son estimate that the flue and floor would cost \$597.00. It should be added that the flue will be required anyway as it is necessary to provide a hot-water heater for the building.

Proposal No. 8 simply adds to Proposal No. 6 the cost of an outside metal stack to take care of the boiler to be newly-installed in the present heating-plant. An additional stack is necessary no matter what is done to the present heating-plant, as the present flue is overtaxed with the present boilers.

Proposal No. 9 provides for the hot-water supply for Dormitory No. 3. This is of course necessary; and I recommend its acceptance.

After mature consideration I have decided to recommend the following:

Proposal No. 5, adding a high-pressure marine boiler to the present heating-plant - - - - -	\$2,213.40
Proposal No. 7, installing a small low-pressure boiler in Dormitory No. 3 - - - - -	535.00
Proposal No. 9, installing hot-water heater and tank in Dormitory No. 3 - - - - -	195.50
Constructing flue and finishing a portion of the basement floor- - - - -	597.00
Total cost- - - - -	<u>\$3,540.90</u>

I should further recommend that the general contractor be finally notified of the rejection of all alternates left in abeyance at the time the general contract was awarded, except Alternate No. 4, which I recommend be accepted. This alternate provides for the substitution of a wood porch floor instead of a cement floor, and if adopted we will be saved \$360.00. This amount added to the available amount for heating, namely \$3,104.00, will leave us short only \$76.90, if these recommendations are adopted.

Respectfully submitted,


President.