

10

SPECIFICATIONS AND ESTIMATES

FOR

STATE CAPITOL,

ON THE

\$1,500,000.00 PLAN.

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JANUARY, 1870.

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DES MOINES:  
F. M. MILLS, STATE PRINTER.  
1870.

# SPECIFICATIONS AND ESTIMATES

## ERRATA.

Page 3, in 27th line, strike out the words: "the printed portion, as well as the written;" and in 28th line, strike out the words: "of the printed."

Page 6, insert after heading at top of page, the words: "Plan 264 by 177 feet, exclusive of steps. Height of dome, 200 feet."

Page 8, in 8th line, for "clewed," read "lewised."

Page 9, from 26th to 38th line inclusive, after the numbers at the commencement of the lines, read "feet."

Page 12, in 13th line, for "band," read "bond."

Page 14, in lines 32 and 37; and on page 18, in 18th line, for "purlieus," read "purlins."

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## SPECIFICATIONS

Of the materials and works necessary in building a new State-House for the State of Iowa, in the city of Des Moines, to cost \$1,500,000, according to the accompanying plans, elevations, sections, and detail drawings, as furnished by Wm. W. Boyington, architect, of Chicago, Illinois.

These plans, etc., referred to herein, consist of the following drawings, viz:

Plan of cellar and foundations.

Plan of basement.

Plan of principal story.

Plan of second story.

Plan of third story.

Plan of fourth story, of dome.

Plan of fifth story, of dome.

Plan of sixth story, of dome.

Attic and roof.

Elevation of principal front.

Elevation of end front.

Longitudinal section.

Transverse section.

Enlarged sections in detail.

The drawings and such writing, interlineations, figures and details as may be upon them are to be considered a part of and as illustrating these specifications. In the plans, blue designates stone; red, brick; yellow, wood; which is to be the standard guide for the different contractors to execute from.

Contractors are requested and expected to carefully examine the contents of these specifications, the printed portion as well as the written, as every word of the printed is to remain in full force unless it is erased.

### DUTIES OF CONTRACTORS.

He shall be held strictly to execute such work, and to use such materials as hereinafter described, and in all cases where the drawings are figured, the figures must be taken by him as the given dimensions, without reference to what they may measure according to the scale. He will be further held to submit, as to the character of the materials used and the work done, to the judgment of the superintendent, and to procure from him all necessary interpretation of the designs and plans, and all necessary certificates regarding his payments on the

contract; also for all additions or deductions which may result from change of designs or plans.

All payments made on work during its progress, on account of the contract or extra work, shall in no case be construed as an acceptance of the work executed; but the contractor shall be liable to all the conditions of the contract until the work is finished and completed. The contractor must have some competent person on the work to receive instructions and see when his particular work is required. Sub-contractors will not be recognized.

The contractor, his foreman or clerk being bound, in all cases, to remove all improper work or materials upon being directed to do so by the superintendent, at any time and at all times, within forty-eight hours after receiving written notice to that effect from the superintendent. But if the contractor, after having been directed as above to remove the same, should refuse or neglect so to do, he shall not only suffer a deduction from the contract price of the difference in value of proper and improper work and materials, but shall also be liable for all damages of whatever nature or kind that may result from such cause. The above provisions to apply in the same way to all materials or work used, made or fixed without the knowledge of the superintendent, and not approved by him. The commissioners under the direction of the superintendent, shall be at liberty, if in their judgment the case requires, to replace the same and make good every part at the cost and charge of the contractor.

In case of delay by the contractor in providing and delivering the requisite materials, or in the advancement of the buildings or works, or of a deficiency of workmen, or for misconduct, inattention or inability, the commissioners shall be at liberty (after the superintendent has given to or left for the contractor, with the foreman or clerk, three days' notice in writing) to provide at the expense of the contractor all such materials, and employ such number of workmen, at such wages as the superintendent shall think proper, and the cost and charges incurred shall be retained out of the contract amount and paid by a reservation from the estimates from time to time, or amounts thereof which may be due or recoverable as liquidated damages.

The commissioners reserve the right, by conferring with the architect, to alter or modify the design and to add to or diminish from the contract price, the architect to be at liberty to make any alteration in the plan form, construction, detail or execution, described by the drawings and specifications without invalidating or rendering void the contract; and in case of any difference in expense, an addition to or abatement from the said contract amount shall be made in the ratio or proportion such work may bear to the whole contract works agreed to be performed,

and the same to be determined as before mentioned. The commissioners being bound, in all cases, to recognize the acts of their superintendent, not only as regards extra work, but also as to the sufficiency of the design, materials and workmanship. Should any extra work or changes of the plan be required, whereby the cost may be increased or decreased, all such changes must be determined and agreed upon before the change is made, and amount, whether an increase or decrease in cost, must be indorsed upon the back of the contract.

#### SUPERINTENDENT AND HIS DUTIES.

Wm. W. Boyington, architect, is declared to be superintendent of the work for the commissioners; his duties will consist in giving, on demand, such interpretations, either in language, writing or drawing, as in his judgment the nature of the work may require, having particular care that any and all work done and material used for the work, be such as is hereinafter described. In giving, on demand, any certificates that the contractor may be entitled to, and in settling all deductions of or additions to the contract price, which may grow out of alterations of the designs or changes of plans after the same are under contract; also determining the amount of damages which may accrue from any cause, and particularly to decide upon the fitness of all material used and work done.

It is not incumbent upon the superintendent to notify the contractor to attend to and have in readiness his own work and the requisite materials, at such times as the progress of the buildings may require them. If the contractor does not attend to his part of the work and have his portion of the materials and work in readiness as it may be wanted to work into the building, he will be held accountable for all delays and damages in consequence of any such neglect.

All the designs, plans, details, elevations, and sections of each and every kind that the contractor may have received must be preserved and returned to the architect before the final certificate is given, and the commissioners or their successors in office must be notified by the contractor that he is ready to have a settlement, so that if the commissioners or parties in interest have any bills to file in, or statements to make, he or they can do so before the superintendent makes his final certificate or adjustment between the parties.

The superintendent's opinion, certificate, report and decision, approved by the commissioners, on all matters, to be binding and conclusive,

DIMENSIONS OF THE BUILDING AS REPRESENTED AND FIGURED  
ON THE DRAWINGS.

*Heights.*—Cellar story to be 8 feet 0 inches between finish. See sections.  
 Basement story to be 14 feet 0 inches between finish. See sections.  
 Principal story to be 20 feet 0 inches between finish. See sections.  
 Second story to be 20 feet 0 inches between finish. See sections.  
 Third story to be 20 feet 0 inches between finish. See sections.  
 Fourth story. See section of dome.

The heights here given, or as marked on sectional drawings for the heights of stories between finish must be strictly observed by the carpenter and mason. The carpenter must prepare a pole of the exact height for each story, between girders, for the mason to lay his wall by. The mason, in all cases, will be required to level his wall to a true line from one end to the other, even to the splitting of a brick if necessary, where a plate is bedded, so that the carpenter can place them directly on the wall without blocking up.

This building is to be erected permanent and fire-proof, and executed in the most thorough manner, and must be finished throughout as hereinafter described, and anything shown by the DRAWINGS and not hereinafter particularly reserved or described, which is necessary to complete the entire mechanical and artificers work of the building, is to be done at the cost of the contractor, notwithstanding such omission. Should the contractor or his representatives obtain any explanation or interpretation from any of the employees in the architect's office which does not strictly conform to the plans, drawings, and these specifications, either for guiding in estimating or for executing the work and furnishing materials after the contract is closed, such interpretation will be of no avail with the superintendent, no matter how definite the explanation may have been given. It is intended that the plans, drawings, and these specifications shall be the guide in executing the work and settling the contract.

MASONRY SPECIFICATIONS, AND ESTIMATES.

The mason will be required to excavate the earth from such grade point as may be determined upon after properly surveying and definitely locating the proposed building upon the site for the same. The earth to be removed or deposited away from the building site, but left on the lot. Such amount of earth as may be required immediately around the building to properly grade the same, will be left close at hand for that purpose.

There will be a cellar under the entire building, to finish eight (8) feet high. The bottom of this cellar will be flagged with stone four (4)

inches thick, roughly dressed, with good square joints. This stone flagging will be bedded in sand, and laid to a uniform surface.

The foundations for the dome will extend down deeper than the other walls. Should any soft places be found in the excavations, care must be taken to remove the same to a depth required to secure a uniform texture of clay bottom, before the walls are laid. For all such, if any should occur, an extra allowance will be made.

All the walls must be of the very best dimension stone. All stone work must be laid in hydraulic cement mortar, either Clark's or Louisville cement, or any of equal quality that may be first tested and made satisfactory to the architect and commissioners. The proportions of mixture must be three parts of clear river sand to one part of cement, accurately measured, which must be thoroughly mixed together in a dry state before any water is put to the mixture. The cement-mortar must not be mixed long before it is used. No cement-mortar to be used that has been left over night or longer than an hour mixed.

The brick work will commence at the top of the foundation. The brick must all be of the very best, selected, hard burned brick, and must be made of good clay. No soft brick to be allowed in any part of the walls. The mortar will all be quick lime mortar, and the best of live, quick lime, and clean, sharp sand, to be selected. Before commencing the brick work, the top of the foundation walls must be dressed over with a coating of asphaltum, or distilled hardened coal tar, to a uniform thickness of one-half inch. All the outside walls will be laid hollow, and all other walls solid.

In laying the brick walls, care must be taken to bed carefully, and slush up every second course, filling solidly all the interstices and spaces, except the hollow in the outside walls before mentioned. The outside face of the building will be laid up with cut stone of such forms and dimensions as are shown by the plans and enlarged details. The basement will be bush-hammered surface, with deep, square rustic joints. All the surface of stone work, above the basement, will be smooth-rubbed, and ornamental carved work as shown by the elevations and details.

The window and door trimmings will be carefully set and properly anchored. All the stone work must be set in fine mortar, prepared for the purpose.

The mason will be held responsible for any damage that may occur to any cut or carved stone work, from the time it is delivered ready to set, and he will be required to pay the stone contractor for re-cutting the same. All the stone must be anchored by the mason, to the brick walls; every stone to have one anchor, and large stone at least two



anchors. The anchors for the ashlar and other light stone, must be one-quarter by one and one-quarter inches; large stone, like columns, pilasters, capitals, cornices, etc., must have anchors three-eighths by one and one-half inches, and all long enough to extend into the walls at least twelve inches, and turned up one and one-half inches, and down into the stone at least one inch.

The contractor for the stone work will be required to deliver the stone at the place of building, all drilled for anchors, and clewed for setting. After the stone is set, the mason will be required to neatly clean down the same, and tuck point all the joints with white mortar, made of lime, putty and marble dust, or glass sand.

All the flues in the walls will be smoothly parquettèd. Those for hot air will be finished in a very smooth manner with plaster of Paris mortar. The plastering inside will be two thorough coats on the brick walls, and three coats on the wire and iron lath work. The first or brown coat, will be composed of clear, sharp sand and strained lime, mixed in proper proportions, with as much hair well whipped up, as can be properly worked. The finishing coat will be plaster of Paris hard finish, with a mixture of white glass sand. The surface will be thoroughly and evenly polished, forming very true and plumb angles and joints.

All ornamental cornices, as well as plain moulded cornices, must be executed with great care and skill. All the rooms, corridors and apartments above the basement or ground story, will have stucco cornices. Those in the State officers' and committee rooms, will be good proportioned, plain, moulded cornices, with ornamental centers and moulded panels. The Senate and Representative halls will have ornamental cornices and ceiling panel work. The pilasters and arch work on the walls will be plastered and moulded panels above the wainscoting.

The dome will also be paneled, with bold plain mouldings and ribs, and ornamental cornices, brackets and pedestals. In fact, all the inside of dome finish will be plastered, except the columns on the upper section, which will be galvanized iron.

The pilasters and paneled wainscoting in the corridors of the first, or main story, will be scagliola finish, in such proportion and quantity as hereinafter estimated in the masonry bill of items.

MASONRY, INCLUDING ALL THE CUT STONE WORK, SETTING,  
PLASTERING AND SCAGLIOLA WORK REQUIRED FOR  
THE PROPOSED STATE-HOUSE.

13,771	Cubic yards excavation at 40 cts. ....	\$ 5,508.40
120,435	Cubic feet dimension stone, laid at \$1.00. ....	120,435.00

15,976	Cubic feet block rubble, at 40 cts.....	\$ 6,390.40
6,646,312	Brick laid in walls, arches, and flues, at \$14.00.....	93,048.37
29,125	Yards of plastering at 40 cts.....	11,650.00
1,896	Lineal feet stucco cornice in corridors, at \$2.50.....	4,740.00
346	Lineal feet stucco cornice in Gov. Supt. and Court-rooms at \$6.00.....	2,076.00
512	Lineal feet stucco cornice in Senate and House, at \$3.00....	1,536.00
60	Panels in Senate and House ceilings, at \$75.00.....	4,500.00
668	Lineal feet cornice in galleries, at \$2.00.....	1,336.00
56	Brackets, cornice in galleries at \$15.00.....	840.00
488	Lineal feet cornice in Library at \$3.50.....	1,708.00
120	Lineal feet cornice in dome at \$4.00.....	480.00
120	Lineal feet panel moulding in dome at \$2.00.....	240.00
120	Lineal feet architrave moulding in dome at \$2.00.....	240.00
140	Lineal feet arch moulding in dome at \$2.00.....	280.00
120	Lineal feet Modillion and Dental cornices at \$3.50.....	420.00
840	Lineal feet dome panel moulding at 75 cts.....	630.00
24	Dome figure brackets at \$25.00.....	600.00
2,302	Lineal feet plain office cornices at \$1.50.....	3,453.00
108,000	Superficial feet concrete in floors at 12 cts....	12,960.00
12,650	Superficial feet stone setting in basement at 30 cts.....	3,795.00
16,074	Superficial feet stone setting, 1st, 2d and 3d stories, at 30 cts.	4,822.00
1,287	Lineal feet water table in basement, at 50 cts.....	643.50

Setting—

1,287	Lineal feet moulded base in 1st story, at 40 cts.....	514 80
112	Plain pedestal bases 1st story, at \$3.00.....	336.00
112	Plain columns 1st story at \$5.00.....	560.00
112	Plain capitals 1st story at \$2.00.....	224.00
64	Plain pilaster pedestals, 1st story, at \$1.00.....	64.00
64	Plain pilaster shafts, 1st story, at \$2.00.....	128.00
64	Plain pilaster caps 1st story, at 75 cts.....	48.00
112	Moulded panel pedestals and boxes 2d and 3d stories, at \$3.00	336.00
112	Composite and Corinthian columns, at \$5.00.....	560.00
112	Composite and Corinthian capitals, at \$5.00.....	560.00
116	Composite and Corinthian pilaster pedestals, at \$1.00.....	116.00
116	Composite and Corinthian pilaster shafts, at \$2.00.....	232.00
116	Composite and Corinthian pilaster capitals, at \$2.00.....	232.00
88	Moulded window panels, at \$1.50.....	132.00
1,096	Lineal feet cornice and entablature on 1st story, at \$1.50....	1,644.00
1,096	Do. composite 2d story, at \$2.00.....	2,192.00
1,096	Do. Corinthian 3d story, at \$3.00.....	3,288.00
4	Upper sections of towers, at \$300.00.....	1,200.00
4	Ornamental front pediments, at \$100.00.....	400.00
12	Plain tower pediments, at \$20.00.....	240.00

344	Rustic onoins 2 x 2 x 16 inches, at \$2.00.....	\$ 688.00
8	Chimney tops, at \$25.00.....	200.00
40	Windows, with pilasters, caps, etc., at \$25.00.....	1,000.00
16	Couplets with pilasters, caps, etc., at \$30.00.....	480.00
20	Single windows with architraves, at \$20.00.....	400.00
4	Front door pilasters and trimmings, at \$40.00.....	160.00
3984	Superficial feet vault stone, at 30 cts.....	1,195.20
3740	Lineal feet front steps, at 30 cts.....	1,122.00
8896	Superficial feet front platforms, at 30 cts.....	2,548.80
72	Moulded buttress panels, at \$1.50.....	108.00
Setting—		
240	Lineal feet area wall coping at 15 cts.....	36.00
8	Statue groups and pedestals at \$300.....	2,400.00
Making—		
84	Scagliola pilasters for corridors, including capitals complete at \$200.00.....	16,800.00
740	Lineal feet scagliola wainscoting in corridors and stairways at \$10.00.....	7,400.00
Laying—		
23,860	Superficial feet cellar flagging at 10 cts.....	2,386.00
		332,062.67
	Add ten per cent for contingencies.....	33,206.26
		\$365,268.93

**BILL OF ROUGH STONE AND SAWED ASHLARS REQUIRED FOR  
ALL CUTTING PURPOSES, DELIVERED ON THE CARS  
AT CLEVELAND, OHIO.**

12,650	Superficial feet 8 inch ashlar for basement, at 50 cts.....	\$6,325.00
16,074	Superficial feet 6 inch ashlar for 1st, 2nd and 3rd stories at 42 cts.....	6,751.08
2,192	Superficial 8 inch water table for basement at 50 cts....	1,096.00
1,096	Cubic feet water table for 1st story at 45 cts.....	493.20
6,671	Cubic feet for 1st story cornice at 45 cts.....	3,001.95
1,300	Superficial feet 6 inch for 1st story cornice at 42 cts....	546.00
8,062	Cubic feet for caps, bases and columns at 45 cts.....	3,627.90
1,920	Superficial feet for caps, bases and pilasters, 6 inch at 42 cts.	806.40
5,754	Cubic feet for cornice and entablature, 2d story, at 45 cts...	2,589.30
1,644	Superficial feet for cornice and entablature, 6 inch, at 42 cts	690.48
6,480	Cubic feet for columns, caps and pedestals at 45 cts.....	2,916.00
1,288	Superficial feet for pilasters, 2d story, 6 inch, at 42 cts..	540.96

672	Cubic feet for pedestals, caps and bases, at 45 cts.....	\$ 302.40
1,288	Superficial feet for pilasters, 6 inch, 3d story, at 42 cts.....	540.96
2,592	Cubic feet for columns, caps and pedestals, 3d story at 45 cts	1,166.40
672	Cubic feet for pedestals, caps and bases, at 45 cts.....	302.40
5,884	Cubic feet for cornice and entablature at 45 cts.....	2,646.00
1,370	Superficial feet for cornice and entablature, 6 inch, at 42 cts	575.40
616	Cubic feet for ornamental pediment, at 45 cts.....	277.20
216	Superficial feet for plain tower, 6 inch, 42 cts.....	90.00
1,216	Superficial feet for upper section tower, 4 inch at 30 cts.....	364.80
640	Superficial feet for upper section tower, 8 inch, at 50 cts ...	320.00
1,408	Superficial feet for upper section tower, 6 inch, at 42 cts ...	591.36
400	Cubic feet for pilasters, windows, arches, caps, bases and keys, at 45 cts.....	180.00
2,080	Superficial feet 6 inch pilaster, windows and arches at 42 cts	873.60
1,080	Superficial feet 8 inch pilaster, windows and arches, at 50 cts	540.00
654	Superficial feet 6 inch couplet, windows and arches at 42 cts	275.52
96	Cubic feet couplet, windows and arches at 45 cts.....	43.20
320	Superficial feet 8 inch architraves and arches at 50 cts.....	160.00
1,260	Superficial feet 8 inch architraves and arches at 50 cts.....	630.00
200	Superficial feet 4 inch architraves and arches at 30 cts.....	60.00
200	Superficial feet 6 inch architraves and arches at 42 cts.....	84.00
336	Cubic feet front door pilasters, arches, caps, keys and bases at 45 cts.....	151.20
736	Superficial feet of 6 inches. for same, at 42 cts.....	209.12
736	Cubic feet in chimney tops at 45 cts.....	331.20
384	Superficial feet 6 inch chimney tops at 42 cts.....	161.28
896	Superficial feet 4 inch chimney top at 30 cts.....	268.80
12,236	Superficial feet 8 inch front steps and platform at 50 cts.....	6,118.00
1,802	Feet moulded buttress panels, 6 inch, at 42 cts .....	756.00
3,984	Feet 8 inch vault-stone at 50 cts.....	1,992.00
		<hr/>
		49,396.83
	Add 10 per cent for waste and extra cutting stock.....	4,939.68
79,927	Cubic feet of stone, 140 lbs. per foot, 55 cts per 100 lbs. fr'ght	61,543.79
	Add 10 per cent for waste and extra cutting stock....	6,154.38
23,840	Superficial feet rough flagging cellar at 25 cts.....	5,965.00
		<hr/>
		\$127,999.68

The capitals, columns, and bases for the exterior of the first story which will be made of stone and formed in outline and proportion as shown on elevation.

The shaft of the column as well as those of all the other orders and stories, will be made of one single stone. All the columns will be worked to a smooth surface and perfectly round. The pilasters will

also be in one stone for all the stories. The stone entablature for the porticos must be heavy stone so as to work full thickness of soffit, and up on back side as high as the bed mould to cornice. The ceiling of the porticos will be stone with moulded panels. All of the stone work above the basement or ground story will be finished with a uniform rubbed surface, and all the stone must be very sound, free from defects of any kind which in the judgment of the superintendent may tend to injure the appearance of the building or its durability. Any stone rejected as unfit for the purpose intended must be taken away, no matter how much work may have been put upon it.

Cornice and entablature for the main story, the crown stone of which must be broad enough to band and balance in the wall.

All the projecting stone must be cut with a water drip on the under side for the purpose of carrying the water from the face of the walls. This must be observed to all the stories and all projecting stone where there can be a water drip formed.

The composite capitals, columns, bases and pedestals for the detached columns, also for the engaged columns and pilasters for the exterior of the second story to be each of single stone.

The composite entablature for the exterior of the second story will be of stone extending over the detached columns, as well as attached to the building.

The crowning stone for this cornice must be broad enough to balance itself on the wall. The Corinthian capitals for the detached columns, also for the engaged columns and pilasters for the exterior third story of building, as shown on elevation, to be made from one stone, each separate part. The Corinthian entablature for the exterior of third story, upon the top of which is to be secured the galvanized iron balustrade, the crowning stone for which must be broad enough to extend back so as to balance on the wall in which the main gutter will be formed.

The four front outside doors, from the porticos to the main floor, the moulded work and the ornamental figures must be cut with skill and great care.

The window finish for first and second stories, the moulded caps, bases and arch tops must be worked with care. The ballusters will be worked round, except the top and bottom square.

The window architraves and panel base for third story, which will be made of such form as represented by the elevation. The architraves on sides will be made in one stone from base to top break.

The diagram for the windows in first and second stories of tower which will be worked in pairs as shown on elevation, including panel and pedestal moulded work.

The chimneys on the Mansard roof, between the dormer windows, will be made of stone. The stone will be of the same quality as specified for the main body of the building. The stone for the shaft will be four inches thick, that for the bases and mouldings, caps, etc., will be of the requisite thickness to give the formations as shown on the elevations. The surface of the stone will be fine rubbed work with panels, and mouldings accurately cut and formed with perfectly preserved arrisses and miters. The chimney-tops must be thoroughly anchored to each other and to the inside brick linings.

CUT STONE WORK SEPARATE FROM THE MATERIAL REQUIRED FOR THE PROPOSED BUILDING.

1,287	Lineal feet basement water-table, at 75 cts.....	\$ 965.25
12,650	Superficial feet of 8 inch ashlar, cut rustic, at 60 cts.....	7,590.00
16,074	Superficial feet of 6 inch, 1st, 2d, and 3d stories, at 40 cts....	6,429.60
1,287	Lineal feet of moulded water table, 1st story, at 75 cts.....	965.25
64	Moulded pedestals and bases, 1st story, at \$20.00.....	1,280.00
112	Plain round columns, 1st story, at \$63.00.....	7,056.00
64	Plain moulded capitals, 1st story, at \$40.00 ....	2,560.00
64	Plain moulded pilaster capitals, 1st story, at \$13.00 .....	832.00
64	Plain pilaster bases, at \$10.00 .....	640.00
64	Plain pilaster shafts, at \$10.00 .....	640.00
1,096	Lineal feet of cornice and entablature, 1st story, at \$18.00 ..	19,729.00
48	Moulded bases on three sides, at \$16.00 .....	768.00
48	Moulded capitals on three sides, at \$30.00 .....	1,440.00
32	Moulded pedestals and bases, 2d story, at \$205.00 .....	6,560.00
48	Moulded pedestals on three sides, 2d story, at \$135.00.....	6,480.00
80	Plain round columns, 2d story, at \$50.00 .....	4,000.00
32	Composite capitals, 2d story, at \$300.00.....	9,600.00
48	Composite capitals, three sides, 2d story, at \$200.00 .....	9,600.00
56	Pilaster shafts, at \$10.00 .....	560.00
54	Pilaster pedestals, at \$45.00 .....	2,520.00
56	Pilaster capitals, at \$100.00 .....	5,600.00
1,096	Lineal feet cornice and entablature, at \$18.00 .....	19,728.00
32	Moulded pedestals and bases, 3d story, at \$205.00 .....	6,560.00
32	Plain rounded columns, 3d story, at \$50.00.....	1,600.00
32	Corinthian capitals, 3d story, at \$300.00 .....	9,600.00
56	Corinthian capitals, 3d story, at \$100.00 .....	5,600.00
56	Moulded pedestals and bases for pilasters, 3d story, at \$45.00.	2,520.00
56	Plain pilasters, 3d story, at \$10.00 .....	560.00
1,096	Lineal feet cornice and entablature with modillions, 3d story, at \$28.00.....	30,688.00
4	Large ornamental pediments, at \$700.00 .....	2,800.00
12	Tower, plain pediments, at \$50.00 .....	600.00

8	Upper sections of tower, at \$1,200.00 .....	\$ 9,600 00
40	Window frames pilasters and arches, at \$350.00.....	14,000.00
16	Window couplet, frames, pilasters and arches, at \$200.00 ...	3,200.00
20	Windows with architraves, at \$115.00 .....	2,300.00
4	Front door pilasters and arches, at \$400.00 .....	1,600.00
8	Stone panel chimney tops, at \$260.00 .....	2,080.00
3,740	Lineal feet front steps, at 65 cts.....	2,431.00
8,496	Superficial feet platform, at 30 cts.....	2,548.80
72	Moulded panel buttresses, at \$5.00.....	360.00
340	Lineal feet area wall coping, at 60 cts .....	204.00
4	Stone pedestals and statues, at \$2,000.....	8,000 00
3,286	Superficial feet cellar flagging, at 20 cts.....	4,772.00
		227,135.90
	Add 10 per cent for contingencies.....	22,713.59
		\$249,849.49
	In case limestone should be used add .....	213,039.26

#### SPECIFICATIONS AND ESTIMATES FOR THE CAST AND WROUGHT IRON WORK.

All the floors will be constructed with iron beams.

The ceiling over the basement will be corrugated iron left as a finish. All the other floors will be prepared to receive brick arches. All the floor beams will be thoroughly anchored transversely to the beams with  $\frac{1}{2}$  inch by  $1\frac{1}{2}$  inch hooked over the flanges on top and keyed up. Also, every other beam to be anchored to the walls with  $\frac{3}{4}$  inch round iron, at least 18 inches long, and cast iron plates under ends of all beams. Where girders are required to carry light brick partitions, or extra weights, they will be formed by bolting two or more together, in a thorough manner. The same will be the case around stairways and large openings.

The roofs will be constructed of iron, as shown on plans. The Mansard portion of the roofs and towers, will be fitted for slating upon angle iron purlieus, 10 inches from centers: size,  $1\frac{1}{2}$  inch angle secured to the principals.

All the decks and dome will be fitted up for boarding, which will be secured to wood purlieus, which will be placed and bolted between principal rafters, and dome ribs, every two feet from centers; these purlieus will be bolted to the principals with  $\frac{1}{2}$  inch bolts, at each end, furnished by the iron contractor.

The iron contractor must put up his own material and properly secure the same to other parts of the construction. In constructing the dome, it will be necessary to have built into the upper section of the walls  $1\frac{1}{4}$

inch round bolts, at least 18 or 20 feet long, for the purpose of first anchoring down the plates, to which are to be secured all the main ribs of the dome. The first section, or start, of the dome ribs, will be cast iron, from which will spring, wrought rolled, channeled iron, to such form as is shown by the section. All of the intersections will be bolted together in a thorough manner, and wrought channeled plate rings bolted to the ribs around both the well holes of inside and outside dome. The outside shell, or formation, of base-work, etc., for dome, will be made of wrought iron, which will take its support from iron girders or beams across from the dome wall to the four brick walls surrounding the dome.

There will be two large boiler iron water-tanks made and placed in the roof, say 12 by 20 feet, and four feet deep, made perfectly tight. There will be cast iron brackets to support the balcony around the second section of the interior of dome, or on a level with the second floor. These brackets will be thoroughly anchored to the dome walls.

There will be cast iron columns and bracket bearings for the support of each of the roof-trusses over Senate and House. The columns and bracket bearings will not be seen in the finish, but will be cased into the Mansard roofs. The bottom of these columns must rest on iron plates, say two inches thick, and eight inches by twelve. The bearing columns will be six inches by twelve, hollow, with one inch metal. All the truss work will be of such sizes as is shown on sectional drawings.

The balustrades on top of the towers will be made of cast and wrought iron.

All the stairways will be of cast and wrought iron except rails to main stairways, which will be marble.

**BILL OF ROLLED IRON FLOOR BEAMS, ANCHORS, PLATES, ETC.,  
TOGETHER WITH IRON FOR ROOF TRUSSES AND DOME  
CONSTRUCTION FOR THE PROPOSED BUILDING.**

230,520	Lbs. beams, 8 inch and 6 inch deep, at 6 $\frac{3}{8}$ cts .....	\$14,700.10
102,130	Lbs. beams, 10 inches deep, at 6 $\frac{3}{8}$ cts.....	6,510.78
70,458	Lbs. beams, 12 inches deep, at 6 $\frac{5}{8}$ cts.....	4,667.84
13,500	Lbs. beams, 15 inches deep, at 8 $\frac{1}{2}$ cts .....	1,147.50
12,562	Lbs. anchors for beams, at 7 cts .....	879.34
28,600	Lbs. cast plates for beams, at 4 cts.....	1,144.00
457,770	Lbs. freight on same, at 30 cts. per cwt.....	1,373.31
	Cost of handling and putting on.....	4,577.70
281,818	Lbs. iron in roof trusses, etc., put on complete, at 11c .....	30,999.98
275,181	Lbs. iron construction in dome, put up complete, at 11c....	30,269.91
28,336	Superficial feet, corrugated arches, put up at 52 $\frac{1}{2}$ cts .....	14,876.40
77,840	Superficial feet of wire ceiling, put up at 25cts .....	19,460.00



2	Flights grand stairways.....	\$5,426.00
2	Flights each side of dome.....	2,800.00
3	Flights circular in library.....	1,500.00
3	Flights plain stairs to basement.....	1,000.00
3	Flights plain stairs to cellar.....	530.00
4	Flights plain stairs to private offices.....	528.00
120	Lineal feet stairs to dome.....	1,200.00
	Freight, cartage and setting up.....	12,836.00
		<hr/>
		156,426.86
	Add 10 per cent. for contingencies.....	15,642.68
		<hr/>
		\$ 172,069.54

#### SPECIFICATIONS AND ESTIMATES FOR THE GALVANIZED IRON WORK.

The balustrades above the cornices of the building will be galvanized iron, the urns the same.

The trimmings to the roofs of the towers will be made of galvanized iron, including all the ornamental work except the balustrade and crest work on top, which will be cast and wrought iron.

All the entire shell of the dome, from the top of the roof to its look-out columns and all, will be made of galvanized iron, worked into such forms as is shown by the elevations and sections, all of which must be put together in the most thorough and workmanlike manner, so as to guard against all possibility of leaks.

The dormer windows to the Mansard roofs and towers will be galvanized iron. The top and sides will be covered with copper. The urns on the balustrade, and gable ornaments over pediments of towers will be galvanized iron.

I have secured competent and reliable estimates from responsible galvanized iron workers. I have proposals guaranteeing that the contemplated work before described can be constructed for the sum of \$60,000.00 Add ten per cent for contingencies, \$6,000.00, making a total of \$66,000.00.

The balustrade which surmounts the building on the four fronts will be made of galvanized iron, including ballusters and pedestals.

The urns shown on the elevations over the main cornice will be made of galvanized iron, with an accurate form and outline. Care must be taken to secure the urns to the pedestals by anchors and rivets.

Roofs, cornices and balustrade for the four corner towers will be made of galvanized iron, except the balustrade and crest work, which will be made of cast and wrought iron.

The skeleton frame of these roofs will be made of wrought iron. The

ornamental and moulded portion of the outside work must be formed with great care and accurate outline; all of which must be thoroughly secured to the iron frame work before mentioned, and flashed and counter-flashed with the slating. The decks of the tower roofs will be covered with sheet copper.

The ornaments for the finish of the small gables of the towers, at the corners of the building will be galvanized iron.

The sixteen dormer windows in the roofs of the corner towers will be made of galvanized iron. The ornamental and moulded portion of the windows will be stamped and pressed work. All the miters and other joints, must be thoroughly secured with braces, riveted and soldered. The roofs of these dormers, will be covered with galvanized iron with flashings and counter-flashings for the slate joinings.

Twelve dormer windows to be placed on each of the east and west fronts; three each side of the main center portion of the building, will be made of galvanized iron, including the balustrade on which they rest. The window frames will be made with the same care and skill as those for the towers, and the roofs and flashings in the same way.

The Urns represented on the four corners of the center portion of the building will be of galvanized iron. The urns represented on the balustrade over the front porticos will be made of galvanized iron.

The eagle brackets, designed for finish over pilasters in the interior of Senate and House of Representatives, will be made of stamped iron, or papier-mache. All the ornamental galvanized iron work must be formed with artistic skill and put up in a secure and permanent manner, both for external and internal finish.

I have secured competent and reliable estimates from responsible galvanized iron workers; I have proposals guaranteeing that the contemplated work before described can be constructed for the sum of..... \$60,000.00

Add 10 per cent for contingencies ..... 6,000.00

Total ..... \$66,000.00

#### CARPENTER AND JOINER SPECIFICATIONS AND ESTIMATES.

The carpenter will be required to prepare all the various and necessary wood centers for turning brick arches between the iron girders or beams, on the various floors, as well as for all arched openings in outside or inside walls.

All the door and window frames will be of wood; the portion exposed outside, except jambs, will be made of white pine. All other portions will be hard wood. All inside finish and doors will be hard wood, intermingled with black walnut, oak, ash and butternut. The

Supreme Court-room and Governor's public room will be wainscoted with hard wood; also the corridors on the second and third floors, together with Senate and Representative Halls, will be hard wood. The Speaker's desk, railing, etc., and the Lieutenant-Governor's desk, railing, etc., will be hard wood. The finish of arch-work and casings forming canopy and work around the recessed alcove in rear of Speaker's and Lieutenant-Governor's desks will be made of hard wood.

The desks for Representatives and Senators will be made of walnut. The chairs will not be included in the building contract. The seats in the galleries will be made in the form of church pews with hard wood for all except seats, which will be pine.

The gallery front will be of hard wood, plain on the back side, paneled and corniced in front, as shown by the transverse section.

The floors throughout, except in the corridors, will be pine, one and three-quarter inches by four, planed and matched, clear stuff.

The roofs for all, except the Mansard portion, will be boarded with one and one-quarter inch planed and matched flooring. This boarding will be nailed to purlieus cut in between the iron truss work and bolted thereto, every two feet from centers. The bolts to be furnished by the iron contractor. The construction of the roof will be of iron.

The dome will be boarded in the same way upon the iron construction.

The wood floors will be nailed to strips every twenty inches from centers which will be about one and three-fourth inches square, bedded in concrete by the mason. All the hard wood finish must be highly finished. The surfaces must be rubbed down with pumice-stone, so as to take all the plane marks out, leaving a perfect uniform surface for polishing. The water-closets and wash bowls above the cellar will be finished with narrow two-inch planed and matched walnut and ash in alternate strips.

The post-office and cloak-room will be finished off into pigeon-holes sufficient in number to accommodate the members of the House and Senate.

The library will be finished in cases, with movable shelves, and arranged as shown on the plans; all to be hard wood finish.

All the stairways will be iron. The sash, both outside and inside, will be hardwood, and hung with cord, and evenly balanced with cast weights, and locked with the most approved sash locks.

All the door trimmings to be of the new patent bronze patterns. The locks to be made to order for the various places. (For particulars of trimmings, see detailed estimate.)

The Mansard roof will be covered with the best Pennsylvania black slate put on in ornamental figures. The slate will be secured with

copper wire to the iron rods in a thorough manner, and thoroughly parquetted underneath. The other portions of the roof will be sixteen ounce copper put upon boards. The seams will be cleated, nailed, and brazed. Gutters lined with the same, in the most thorough manner. conductors also of copper.

CARPENTER AND JOINER-WORK AND MATERIAL INCLUDED ON  
FIRST, OR GROUND FLOOR AND CELLAR.

22,250	Feet 1¾ by 4 inch flooring laid, at 50 cts.....	\$1,112.50
60	Window frames, sash and casings, at \$60.00 .....	3,600.00
14	Windows inside, frames, sash and casings, at \$50.00.....	700.00
36	Doors and casings, hung and trimmed, at \$50.00.....	1,800.00
48	Cellar windows, complete, at \$20.00.....	960.00
5	Cellar doors, complete, at \$12.00.....	60.00
2,300	Feet base and moulding, basement, at 18 cts.....	414.00
2,900	Feet for flooring strips, at 25cts.....	725.00
500	Feet for center for arches, at \$1.00 .....	500.00
36	Door locks, bolts, and butts, at \$8.00.....	288.00
72	Window trimmings, at \$1.00.....	72.00
50	Kegs nails, at \$5.00.....	500.00
3,840	Pounds window weights, at 4cts.....	153.00
31	Water closets in cellar, at \$20.00.....	620.00
30	Urinals in cellar, at \$10.00.....	300.00
7	Urinals in basement, at \$25.00.....	175.00
9	Wash-bowls in basement, at \$10.00.....	90.00
	Total (carried forward).....	\$ 11,819.50

ROOFING AND CONDUCTOR ESTIMATE.

48	S'g's slating, at 22 cts.....	\$ 1,056.00
270	S'g's copper roofing, at 48 cts.....	12,960.00
800	Lineal feet copper conductor, at \$1.75.....	1,400.00
	Total (carried forward).....	\$15,416.00

CARPENTER AND JOINERS' WORK AND MATERIAL INCLUDED ON  
FIRST STORY.

22,250	Feet, 1¾ by 4 inch floor, laid at 50 cts .....	\$1,112.50
8	Entrance doors, complete, at \$200.00.....	1,600.00
16	Inside double doors, complete, at \$100.00 .....	1,600.00
34	Inside single doors, complete, at \$65.00.....	2,210.00

60	Outside-windows, complete, at \$75.00 .....	\$4,500.00
11	Inside-windows, complete, at \$60.00.....	660.00
10	Water-closets, cased complete, at \$30.00 .....	300.00
11	Wash-bowls, cased complete, at \$12.00.....	132.00
2,700	Lineal feet base mouldings, at 18 cts. ....	486.00
29,000	Lineal feet strips for flooring, at 25 cts.....	725.00
500	Lineal feet centers for arches, at \$1.00.....	500.00
50	Inside door locks, butts and bolts, at \$10.00 .....	500.00
8	Front door locks, butts and bolts, at \$25.00.....	200.00
71	Window trimmings, at \$1.00.....	71.00
5,600	Lbs. sash weights, at 4 cts .....	224.00
50	Kegs nails, brads, etc., at \$5.00 .....	250.00
	Railing, platform and desk in Supreme Court-Room.....	500.00
204	Feet of hard wood wainscoting in principal rooms, Supreme Court and Governor's room, at \$2.50 .....	865.00
		16,425.50
	Extra work on 16 double doors, not included in above at \$50.00	800.00
	Total (carried forward) .....	\$17,225.50

CARPENTER AND JOINERS' WORK AND MATERIAL INCLUDING SEATS, DESKS, ETC., IN SENATE AND HOUSE, ON SECOND FLOOR.

65,320	Feet, 1½ by 4 inch flooring, laid at 50 cts.....	\$ 3,216.00
68	Window frames and casings, complete, at \$75.00.....	5,100.00
16	Window frames and casings, complete, at \$1.00.....	1,600.00
13	Double doors, frames, and casings, at \$150.00.....	1,950.00
32	Single doors, frames, and casings, at \$75.00.....	2,430.00
10	Wash bowls, frames and casings, at \$12.00 .....	120.00
10	Water-closets, cased complete, at \$30.00.....	300.00
	Fitting up wash-closet .....	50.00
2,400	Lineal feet of base and moulding, at 20 cts.....	480.00
29,000	Lineal feet of flooring strips, at \$25.00.....	725.00
500	Lineal feet of centers and arches, at \$1.00.....	500.00
200	Seats and desks in House, at \$75.00 .....	15,000.00
100	Seats and desks in Senate, at \$100.00 .....	10,000.00
45	Door locks, butts and bolts, at \$10.00 .....	450.00
84	Window trimmings, at \$1.00 .....	84.00
50	Kegs, nails, brads, etc., at \$5.00 .....	250.00
5,920	Lbs. window weights, 4 cts... ..	236.80
504	Lineal feet hard wood wainscoting in corridors, at \$5.00 ...	2,520.00
	Making Speaker's desk, etc... ..	1,200.00
	Making Lieutenant-Governor's desk, etc.....	1,500.00
250	Lineal feet wainscoting in Senate, at \$5.00 .....	1,250.00
	Total .....	\$48,961.80

CARPENTER AND JOINER-WORK AND MATERIAL INCLUDED  
FOR THIRD FLOOR AND GALLERIES, AND ROOF AND  
DOME CONSTRUCTION.

58,150	Feet 1¾ by 4 inch flooring laid at 50 cts.....	\$ 2,907.50
36	Windows, frames and casings at \$75.00.....	2,700.00
24	Dormer frames and casings at \$60.00.....	1,440.00
6	Single doors, cased complete, at \$50.00.....	300.00
11	Double doors, cased complete, at \$75.00.....	825.00
344	Lineal feet gallery front at \$5.00.....	1,720.00
320	Lineal feet gallery seats at \$1.00.....	320.00
1,600	Lineal feet case moulding at 20 cts.....	320.00
10,000	Superficial feet floor strips at \$25.00.....	250.00
300	Lineal feet centers for arches at \$1.00.....	300.00
225	Lineal feet book cases for library at \$30.00.....	6,750.00
17	Door locks, butts and bolts at \$8.00.....	136.00
60	Window trimmings, at 80 cts.....	48.00
100	Kegs nails, brads, etc., at \$5.00.....	500.00
5,440	Lbs. sash weights at \$4.00.....	217.60
850	Lineal feet hard wood wainscoting in corridors and lobbies at \$4.00.....	3,400.00
	Work and material on Mansard roof.....	750.00
	Work and material on dome.....	2,500.00
		<hr/>
		25,384.10
	Brought forward from page —.....	11,819.50
		<hr/>
	Brought forward from page —.....	17,225.50
	Brought forward from page —.....	48,961.80
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	Total carpenter and joiner work.....	103,390.00
	Roofing and conductors.....	15,416.00
		<hr/>
		118,806.90
	Add 10 per cent for contingencies.....	11,880.69
		<hr/>
	Total.....	\$130,687.59

SPECIFICATIONS AND ESTIMATES FOR THE MARBLE WORK,  
TILING, ETC.

All the corridor floors will be tiled with light and dark marble, laid in alternate courses, in diamond form, and thoroughly bedded in cement-mortar.

All the fire grates will have good marble mantels, of such patterns as can be secured for the accompanying estimates.

The stair railings to the grand stairway, and the two side stairways on either side of the dome, will have Tennessee marble.

Stair railing, complete.....	\$4,500.00
Stair ballusters.....	14,550.00
Newels.....	1,200.00
28,994 S'g's marble tile.....	28,994.00
32 marble mantels and grates, at \$150.00.....	4,800.00
60 marble wainscoting on the grand stairway, at \$100.....	6,000.00
	<hr/>
	\$60,044.00
Add 10 per cent for contingencies.....	6,004.40
	<hr/>
Total.....	66,048.40

#### PLUMBING AND SEWERING.

It will be necessary to prepare two extensive boiler-plate iron reservoirs, to be placed in the roof, say 12 by 20 feet and 4 feet deep, for the purpose of giving head and supply of water for the use of the building.

It will be necessary to supply these reservoirs by a force pump which will be driven by a steam engine in the cellar. The pumps will be connected with the rain-water cisterns, which will be built for the purpose of holding all the roof-water from the building. These cisterns will be placed in the cellar where shown on plans. It will be necessary to provide some other means for water supply in case the cisterns give out. This matter, however, will be determined by the commissioners for building the State House.

The plumbing will be applied where shown on the plans. All the water closets must be pan valves except the public closets which are located in the cellar where shown on plans. These last named closets will be self-acting valves and brass trimmings. All the urinals must be earthen, with high backs and sides which will operate by spring platforms.

All wash-basins will be 14 inch plain marble patterns, with counter-sunk Italian marble tops.

All the basins, water closets, and urinals to be supplied through strong, heavy lead pipe, three-quarter inches in diameter, and not more than four closets and four basins to be supplied from one three-quarter inch pipe. All supply pipes to lead from the iron tank before mentioned.

All water-closets above the basement, including basins and urinals, must be lined with four pound sheet lead, six pounds to the foot, with overflow and waste. All wash-basins to have a trap before entering the soil pipe.

Every requisite that may be necessary to put the plumbing in perfect working order must be attached, furnished, and applied.

The sewerage will be through the twelve inch earthen pipes, with six branches which will extend under the cellar floor to all the places requiring waste.

These sewer pipes will be carried out to some general receptacle cess-pool, at a proper distance from the building.

#### ESTIMATE FOR PLUMBING AND SEWERING.

14,345	Pounds Lead pipe, at 11½ cts.....	\$ 1,649.67
25	Pan valve closets, at \$50.00.....	1,250.00
31	Enameled hoppers, at \$30.00.....	930.00
30	Bedford urinals, at \$30.00.....	900.00
27	Wash stands, at \$35.00.....	945.00
600	Lineal feet of twelve inch sewer, at \$1.00.....	600.00
300	Lineal feet of six inch sewer, at 50 cts.....	150.00
	Total.....	\$ 6,424.67
	Add ten per cent for contingencies.....	642.46
	Total.....	\$ 7,067.13

The foregoing estimate was computed by actual measurements, and by a competent plumbing contractor, who stands ready to take the contract.

#### SPECIFICATIONS FOR PAINTING, GLAZING, POLISHING AND FRESCOING.

The exterior wood work will be painted four thorough coats and sanded, to imitate the stone work of the building.

The galvanized iron-work for balustrades, urns, and ornaments, dormer windows, Mansard roof trimmings, and all the dome surfaces will have three thorough coats of color to match the stone work. All the inside wood work will be hard wood finish, and must have a preparation of wax and oil, filling the pores and thoroughly rubbing in, so as to bring the surface to a good polish, not of the highest degree of lustre, except the Speaker and Lieutenant-Governor's desks, which will have a high polish. The stairways, being of iron, will require a bronze finish. The rails and ballusters to be marble. For particulars as to extent of hard wood finish, reference may be had to the carpenter's specifications.



All the corridors, Supreme Court Room, Governor's Reception Room, the House and Senate chambers and dome, will all be frescoed ; or, in other words, tinted in colors to harmonize with the wood and scagliola finish. All the walls must be executed in oil colors. The ceilings will be water colors, all of which must be done artistically and permanently.

**BILL OF GLASS FOR OUTSIDE AND INSIDE WINDOWS.**

176	Lights 22 by 56 inch	} All English double thick in the various windows outside and inside.
176	Lights 22 by 44 inch	
344	Lights 28 by 60 inch	
272	Lights 22 by 60 inch	
40	Lights 22 by 58 inch	
72	Lights 30 by 38 inch	
8	Lights 34 by 44 inch	
Total.....		\$ 3,492.00
1,208	Lights, setting same at 50 cts.....	604.00
7,500	Yards outside and inside painting and polishing, complete, at \$4.00.....	30,000.00
	Frescoing and tinting work.....	20,000.00
Total.....		\$ 54,096.00
	Add ten per cent for contingencies.....	5,409.60
Total.....		\$ 59,505.60

**HEATING AND VENTILATION.**

The apparatus for, which will all be placed in the cellar end rooms set apart for the same. For heating, it will require at least three first-class tubular boilers, or others of equal capacity and quality, and of ample capacity for heating the building by indirect radiation, a surface sufficient to warm all the rooms and apartments in the building, excepting the corridors and rotunda, in which last named places there shall be standing direct radiators placed to partially warm the same for the convenience of outsiders and lobbyists.

All the rooms and apartments must be heated to seventy degrees Fahrenheit, in the coldest weather. The direct radiators in corridor and rotunda, will be covered with fancy screens and marble tops.

The indirect radiators will supply heat through air ducts to be built in the walls as shown on plans, and through fancy registers placed in the side of the wall, except in the Assembly rooms, which will be placed in the floor. These registers will be made to open and close at pleasure

All ventilating flues will be finished with registers placed in the walls close to the floor, the flues from which will be gathered into the main ventilating shafts around the dome-walls, where shown on plans. The ventilation will be made to operate by the introduction of a fan, to force the warm air into the various apartments, and exhaust the impure air out through the foul air ducts. There will be an engine placed in the cellar, of sufficient power to drive the fan, and also the force pump, which will be required to raise the water to the reservoirs as before mentioned; all of which must be put in, in the most thorough manner in all its various parts.

Cold air ducts will be built under the cellar floor, running to the various coils of radiators, and made of brick; and the radiating air chambers will be built up of brick.

All the brick work to be included in the mason work.

The contract for heating and ventilating will include the cost of the boilers, fan, engine and setting the same: together with setting all the radiators, and registers, screens and marble tops, at an estimated cost of.....

	\$ 35,000.00
Add 10 per cent for contingencies.....	3,500.00
	\$ 38,500.00

The foregoing estimate is supported by a proposal from a heating firm in the city of Chicago, who are ready to take the contract.

No subject is more agitated at the present time than this. It is a subject upon which a great diversity of opinion exists. Volumes have been written upon the subject, and yet I must say the subject is not perfected. Several professors claim that their systems are the only ones that should be used. Lewis W. Leeds, Esq., has given the subject of ventilation a large amount of his valuable time, for several years past, and has proved, cleared up, and exposed several erroneous theories, and instituted many very important principles for which the whole country is much indebted. His theories, in the main, I indorse. I have also studied, with great interest, the system applied by Dr. D. B. Reid, in warming and ventilating St. George's Hall and the New Assize Courts, Liverpool, which is, undoubtedly, the most thoroughly heated and ventilated building in Europe. A full and complete set of diagrams, plans and sections, showing every form of air heating coils fans, etc., together with a full treatise, prepared at great expense, upon the subject, setting forth the satisfactory working of the system I have purchased. I have had the pleasure of applying the system to one of the largest halls in this country the past season. I have the satisfaction of knowing that it is the best heated and ventilated auditorum in the

United States. The heating is by indirect radiation, from coils in the basement, warmed with hot salt water, and forced into the various departments by the use of a fan. By this system the air can positively and thoroughly be changed every twenty minutes; so that it is impossible to get any foul or vitiated air into the room, or various apartments, no matter how densely the rooms may be occupied. By this system the means for regulating the ingress, and controlling its temperature and discharge according to the ever-varying circumstances under which the hall and rooms are occupied.

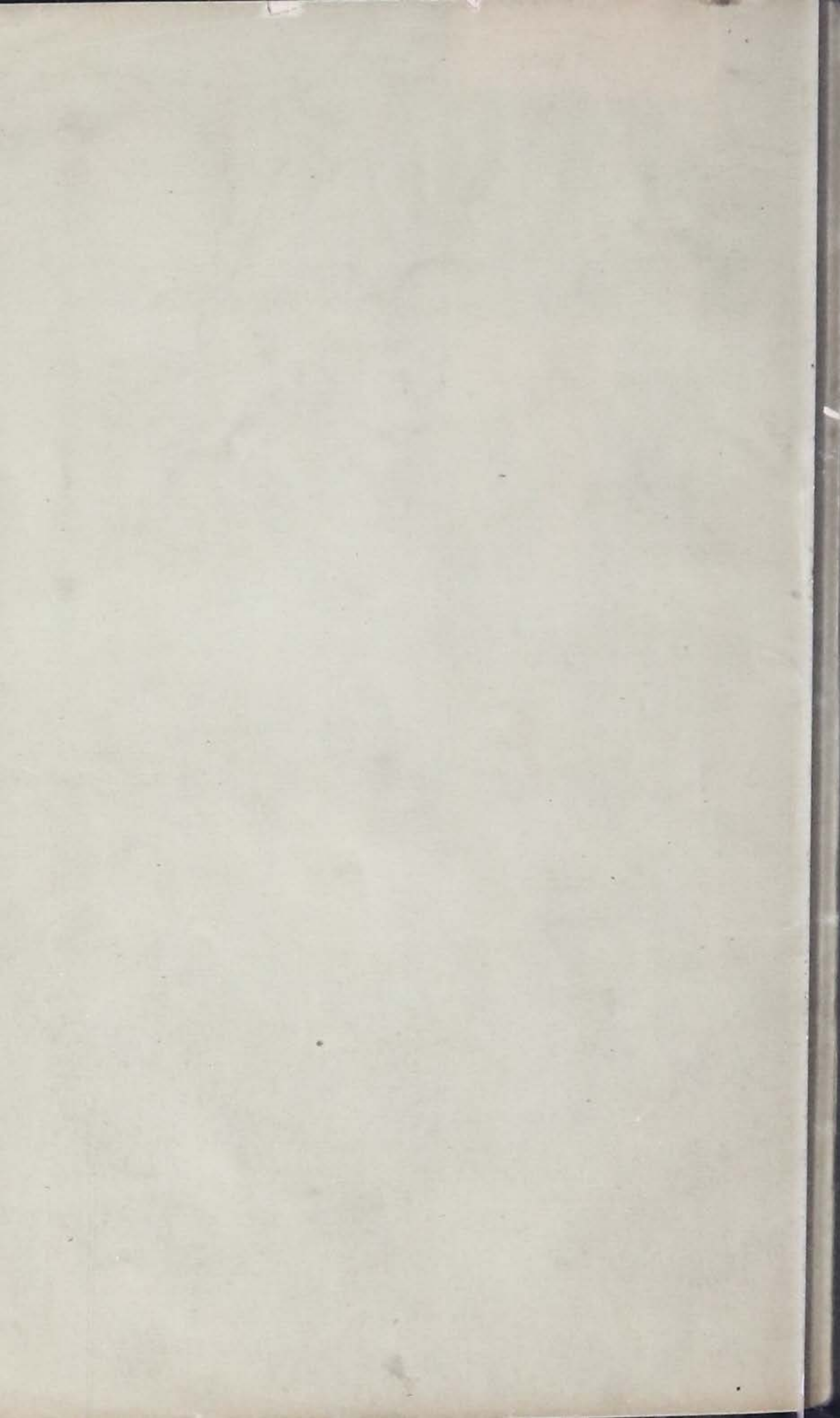
Nothing will be more satisfactory for such a building as is proposed for your State-House, than to be able to inject air or remove it from any special part of the building, or to reduce its action to any required temperature, by the closing or opening the valves; or quickening or slackening the fan, so as to have a gentle circulation or a rapid one. It is a matter of great importance in forming a correct judgment upon the best means for securing the proper warming and ventilating such a building. I have, therefore, come to the conclusion, after a long practice and experience in the various systems and modes, to recommend the application of indirect radiation by hot salt water heating-apparatus and the use of a fan. This will require an engine, to which I would recommend the application of a force pump, for the purpose of supplying the reservoirs with water, that will be necessary to be erected in the various parts of the building, in order to perfect the plumbing arrangements, as shown on the plans. I have shown, on the ground plan, the fresh air ducts, which I propose to have made of brick, below the basement floor, with side-branches leading the various coils for heating. These air ducts, with the coils filled with salt water, will be the means of cooling the temperature of the air, several degrees lower than the natural atmosphere in very warm weather. This will secure both heat and cooling more perfectly than any other system I am acquainted with. It will be borne in mind that the quality of heat by hot water pipes is the least objectionable, for the reason it does not injure its quality or change its natural ingredients. I have shown, on the plans, a large number of flues which will be used for conducting warm air from the coils to the various departments. These foul air ducts will be gathered into main vitiated air ducts in the roof, which will be carried to the top of the domes for a discharge.

I have also arranged open fire-grates for all the principal and minor offices; so that, in moderate weather, a little fire can be made to take the chill from the rooms, also to give ventilation when the fan may not be in use.

Much more might be said in favor of the system I propose, but as this specification is intended to describe in general terms, without bearing to minutiae, I think I shall be understood by what I have set forth.

RECAPITULATION OF THE VARIOUS KINDS OF WORK.

Masonry and stone setting.....	\$ 365,286.93
Rough stone and freight.....	127,999.68
Sand stone cutting.....	249,849.49
If limestone, add.....	213,039.26
Cast and wrought iron.....	172,069.54
Galvanized iron.....	66,000.00
Carpenter and joiner work and roofing.....	130,687.59
Marble work, tile and mantels.....	66,048.40
Plumbing and sewerage.....	7,067.13
Painting and frescoing.....	59,505.60
Extra painting on dome.....	6,000.00
Heating and ventilation.....	38,500.00
Gas piping.....	1,000.00
Total highest estimate.....	<u>1,563,035.62</u>
In case suitable stone could be found in the State, within reasonable distance, a saving of say.....	67,698.17
If sand stone should be adopted a saving could be made of.....	213,039.26
Total saving.....	<u>\$280,737.43</u>



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