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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W.D. DEPARTMENT

G.O. No.	589 - au	Press.
B.P. No.		Mis.
Dated	10 - 3 - 1880	197

R.R. (Chandrasekaran)
Not to be folded or roughly handled

589
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

10th March 1880, No. 589 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 57. From E. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, (Buildings and Roads,) dated Madras, 2nd March 1880, No. 62 W.

I HAVE the honor to submit the following report of the progress on these works during the past month of February, and I am pleased to be able to state that on the whole the return of work is greater than in any previous month since the work commenced.

2. NORTH PIER, SUPERSTRUCTURE.—The work of setting blocks at the north pier was carried on steadily during February, and was only interrupted by the breaking of some of the Titan's travelling gear on the morning of the 11th. This mishap was put right in two days and block setting resumed on the 13th. There were 256 blocks set in the pier during the past month, advancing the work by a length of $145\frac{3}{4}$ feet and making the total distance from the commencement 2,621 feet. More than half of the curved work is now successfully built, and if we meet with no mishap in May the whole of the curve will be finished early in June.

3. The difficulty now of advancing the north pier rapidly is much increased by the large amount of settlement that goes on in the laterite bank, which necessitates setting each row of blocks much higher than the actual level required, and therefore involves working the Titan up a perpetual incline. This adds greatly to the risk to which the Titan is exposed, as it is impossible to predict which row of blocks will settle most. Extreme caution is therefore necessary until the blocks have settled to their permanent position which is not until the Titan has passed over them.

4. This settlement increases as the depth of bank increases and, as I have once before had occasion to remark, is followed by cracking of the top edges of the blocks. To prevent this I have, in December last, altered in some degree the proportions of the concrete, so as to get a hard block in a shorter time than formerly, and for the same reason have resolved not to use any but the best English cement for the blocks in the remainder of the piers.

5. On these matters I am constantly in correspondence with Mr. Parkes, and he expresses himself quite satisfied with the behaviour of laterite in a deep bank notwithstanding my reports of the great settlement during construction. He approves however of the course I am now adopting of spreading a layer of the hard Pallavaram stone on the surface of the laterite base previous to the blocks being set upon it.

6. NORTH PIER, RUBBLE BASE.—The work of depositing rubble base has been carried on at a greater rate than in any previous month, both steamers and cargo boats having been hard at work. A total amount of 24,526 tons were tipped during

the twenty-four working days of February, of which quantity 20,045 tons of laterite were brought by the steam hoppers, and the remainder by cargo boats. Some of these latter brought 260 tons of Pallavaram stone from the south pier for finishing off the top of the rubble base. I hope during March to use one steamer for this purpose.

7. The north pier base now extends about 570 feet ahead of the blockwork, and is fairly made up for three-quarters of that distance. The amount of submerged rubble in advance of the work is roughly speaking 51,000 tons.

8. I would here remark that beyond the red conical buoys used by the Harbour Works staff for marking the limits of the base during construction there are no conspicuous beacons to warn ships off this artificial reef. On February 16th the S.S. *Himalaya* crossed over the rubble base within our red buoys and very near to a spot where there was only 16 feet of water at low water.

9. CONCRETE BLOCKMAKING.—Once more I have to report very unsatisfactory progress in block manufacture owing to want of cement. The local supply of cement from General Morgan I have now finally abandoned so far as blockmaking is concerned, so I am entirely dependent upon the rate of supply from England which in January and February has been but slow. During February while 568 were set in the piers only 138 blocks were made, and of these 68 were made at the south pier by hand labour. I fear therefore that some delay, as mentioned in paragraph 7 of my January report, must be regarded as certain, but I trust that instead of three weeks it need only be of ten days' duration, as since February 28th cement has commenced to arrive by canal and blocks made from this consignment will be fit to set in the piers in this month of March. We still have over 400 blocks on hand, and since the 1st of this month blockmaking has been resumed at the full rate of 24 blocks per day. There is every reason to believe that from this date the cement supply will be continuous.

10. QUARRIES.—The outturn of laterite from Ambatūr has exceeded that of any previous month, the quantity sent down being 25,875 tons. The quality is not so good as I could wish, but it is practically impossible to select each boulder when working at this rate. From Pallavaram the quantity had to be reduced in consequence of stoppage of blockmaking, but the outturn was nevertheless considerable, viz., 14,947 tons. The total quantity of stone received on the works in February was 40,821 tons, which for twenty-four working days gives an average of 1,701 tons a day.

11. At Pallavaram we find that the use of dynamite pays best in small charges and not in large shots. It is necessary that each piece of stone should be capable of being easily lifted by one man, and this result is not attained but by numerous small shots. Used in this manner it answers the purpose well and is appreciated by the contractor, but at present only a small quantity has been employed.

12. SOUTH PIER, SUPERSTRUCTURE.—The progress at the south pier has been very satisfactory, and the advance made in February is greater than has been made at this pier in any previous month. There were 312 blocks set in the superstructure which increased the length by $180\frac{1}{2}$ feet, and brings the total length from the point E to $2,071\frac{1}{2}$ feet.

13. At the south pier, the base of which is almost entirely made of the hard Pallavaram stone, the settlement is slight, regular and steady, so that none of the difficulties mentioned when speaking of the north pier are met with.

14. SOUTH PIER RUBBLE BASE.—The deposit of stone in the south pier base has not been much in excess of what was done in January, but has been sufficient to keep the base well in advance of the superstructure. The total quantity deposited in February was 12,945 tons, of which 1,533 tons were laterite brought by the two steamers. The south pier base now extends about 530 feet in advance of the blockwork, and of this a length of 380 feet is made up almost to its full height. The amount of stone in advance of the blockwork is approximately 47,045 tons.

15. PROTECTIVE WORKS TO BEACH.—The work of making a more substantial revetment to the beach road by Mr. Coleman's is not yet completed. During February 1,087 tons of boulders were deposited to widen the slope. I hope to finish this work before the middle of next month.

16. STORES RECEIVED ON WORKS.—The following stores have been received from vessels during February :—

560 casks Portland Cement	S.S. <i>Duke of Lancaster</i> .
722 do. do.	do. ship <i>Her Majesty</i> (178 casks still to be landed).
839 do. do.	do. S.S. <i>Merkara</i> .

2,121 total casks of Portland Cement.

Copper sounding lines,	} S.S. <i>Mirzapore</i> .
Titan chains,	
Stone crushers,	} S.S. <i>Manora</i> .
Steel locomotive tyres—	

In addition to these I obtained 249 casks of White's Portland cement from merchants in Madras.

17. PLANS AND SECTIONS.—I submit herewith the usual lithographed plan to a scale of 200 feet to 1 inch, on which the month's work is shown in red, and the extent of the bases of the piers in brown dots. This dotted boundary represents the utmost limit of the rubble base. The two longitudinal sections show the extent and height of the rubble foundations in greater detail. In the section of the base of the north pier a high spot will be observed at 2,960 feet. It was close to this that the S.S. *Himalaya* crossed over on the 16th.

18. EXPENDITURE.—The expenditure as shown in this office books up to February 29th has been Rs. 36,41,000, but to this there are considerable additions to be made for cement and salwood sleepers, payment for which is at present unadjusted.

19. INSPECTION BY HIS GRACE THE GOVERNOR.—On the 19th February His Grace the Governor visited the north pier works and proceeded to the extreme end to inspect the progress of the curved work.

No. 58. ORDER THEREON, 10th March 1880, No. 589 W.

THE Government notice with satisfaction the rapid progress of the Harbour Works during the month under review.

2. The 8th paragraph will be referred to the Marine Department for such action as may be considered necessary.

(True Extract.)

Major, R.E.,
Ag. Under Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Secretary, Madras Harbour Works Committee.
To General Morgan.
" the Marine Department.

Exd. S. T. Austin.
Spare Copies

BUILDINGS AND ROADS
CIVIL WORKS

Govt. of Madras
PUBLIC WORKS.

To
THE SUPERINTENDENT, MADRAS
HARBOUR WORKS.

cc. cc. cc.

10th March, 1880.

Issued

Recd.

Recd.

G. O., 10th March 1880, No. 589 W.

MARCE.
Nos. 57-58.

Major (General) ... progress report
... recorded with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

10th March 1880, No. 589 W.

Buildings and Roads.
Civil Works.

Read the following paper :—

No. 57. From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, (Buildings and Roads,) dated Madras, 2nd March 1880, No. 62 W.

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2. NORTH PIER, SUPERSTRUCTURE.—The work of setting blocks at the north pier was carried on steadily during February, and was only interrupted by the breaking of some of the Titan's travelling gear on the morning of the 11th. This mishap was put right in two days and block setting resumed on the 13th. There were 256 blocks set in the pier during the past month, advancing the work by a length of 145½ feet and making the total distance from the commencement 2,621 feet. More than half of the curved work is now successfully built, and if we meet with no mishap in May the whole of the curve will be finished early in June.

3. The difficulty now of advancing the north pier rapidly is much increased by the large amount of settlement that goes on in the laterite bank, which necessitates setting each row of blocks much higher than the actual level required, and therefore involves working the Titan up a perpetual incline. This adds greatly to the risk to which the Titan is exposed, as it is impossible to predict which row of blocks will settle most. Extreme caution is therefore necessary until the blocks have settled to their permanent position which is not until the Titan has passed over them.

4. This settlement increases as the depth of bank increases and, as I have once before had occasion to remark, is followed by cracking of the top edges of the blocks. To prevent this I have, in December last, altered in some degree the proportions of the concrete, so as to get a hard block in a shorter time than formerly, and for the same reason have resolved not to use any but the best English cement for the blocks in the remainder of the piers.

5. On these matters I am constantly in correspondence with Mr. Parkes, and he expresses himself quite satisfied with the behaviour of laterite in a deep bank notwithstanding my reports of the great settlement during construction. He approves however of the course I am now adopting of spreading a layer of the hard Pallavaram stone over the surface of the laterite base previous to the blocks being set upon it.

6. NORTH PIER RUBBLE BASE.—The work of depositing rubble base has been carried on at a greater rate than in any previous month, both steamers and cargo boats having been held at work. A total amount of 24,526 tons were tipped during

the twenty-four working days of February, of which quantity 20,045 tons of laterite were brought by the steam hoppers, and the remainder by cargo boats. Some of these latter brought 260 tons of Pallavaram stone from the south pier for finishing off the top of the rubble base. I hope during March to use one steamer for this purpose.

7. The north pier base now extends about 570 feet ahead of the blockwork, and is fairly made up for three-quarters of that distance. The amount of submerged rubble in advance of the work is roughly speaking 51,000 tons.

8. I would here remark that beyond the red conical buoys used by the Harbour Works staff for marking the limits of the base during construction there are no conspicuous beacons to warn ships off this artificial reef. On February 16th the S.S. *Himalaya* crossed over the rubble base within our red buoys and very near to a spot where there was only 16 feet of water at low water.

9. CONCRETE BLOCKMAKING.—Once more I have to report very unsatisfactory progress in block manufacture owing to want of cement. The local supply of cement from General Morgan I have now finally abandoned so far as blockmaking is concerned, so I am entirely dependent upon the rate of supply from England which in January and February has been but slow. During February while 568 were set in the piers only 138 blocks were made, and of these 68 were made at the south pier by hand labour. I fear therefore that some delay, as mentioned in paragraph 7 of my January report, must be regarded as certain, but I trust that instead of three weeks it need only be of ten days' duration, as since February 28th cement has commenced to arrive by canal and blocks made from this consignment will be fit to set in the piers in this month of March. We still have over 400 blocks on hand, and since the 1st of this month blockmaking has been resumed at the full rate of 24 blocks per day. There is every reason to believe that from this date the cement supply will be continuous.

10. QUARRIES.—The outturn of laterite from Ambatūr has exceeded that of any previous month, the quantity sent down being 25,875 tons. The quality is not so good as I could wish, but it is practically impossible to select each boulder when working at this rate. From Pallavaram the quantity had to be reduced in consequence of stoppage of blockmaking, but the outturn was nevertheless considerable, viz., 14,947 tons. The total quantity of stone received on the works in February was 40,821 tons, which for twenty-four working days gives an average of 1,701 tons a day.

11. At Pallavaram we find that the use of dynamite pays best in small charges and not in large shots. It is necessary that each piece of stone should be capable of being easily lifted by one man, and this result is not attained but by numerous small shots. Used in this manner it answers the purpose well and is appreciated by the contractor, but at present only a small quantity has been employed.

12. SOUTH PIER, SUPERSTRUCTURE.—The progress at the south pier has been very satisfactory, and the advance made in February is greater than has been made at this pier in any previous month. There were 312 blocks set in the superstructure which increased the length by 180½ feet, and brings the total length from the point E to 2,071½ feet.

13. At the south pier, the base of which is almost entirely made of the hard Pallavaram stone, the settlement is slight, regular and steady, so that none of the difficulties mentioned when speaking of the north pier are met with.

14. SOUTH PIER RUBBLE BASE.—The deposit of stone in the south pier base has not been much in excess of what was done in January, but has been sufficient to keep the base well in advance of the superstructure. The total quantity deposited in February was 12,945 tons, of which 1,533 tons were laterite brought by the two steamers. The south pier base now extends about 530 feet in advance of the blockwork, and of this a length of 380 feet is made up almost to its full height. The amount of stone in advance of the blockwork is approximately 40,045 tons.

15. PROTECTIVE WORKS TO BEACH.—The work of making a more substantial revetment to the beach road by Mr. Coleman's is not yet completed. During February 1,087 tons of boulders were deposited to widen the slope. I hope to finish this work before the middle of next month.

16. STORES RECEIVED ON WORKS.—The following stores have been received from vessels during February:—

560 casks Portland Cement	S.S. <i>Duke of Lancaster</i> .
722 do. do.	do. ship <i>Her Majesty</i> (178 casks still to be landed).
839 do. do.	do. S.S. <i>Merkara</i> .

2,121 total casks of Portland Cement.

Copper sounding lines,	} S.S. <i>Mirzapore</i> .
Titan chains,	
Stone crushers,	
Steel locomotive tyres—	S.S. <i>Manora</i> .

In addition to these I obtained 249 casks of White's Portland cement from merchants in Madras.

17. PLANS AND SECTIONS.—I submit herewith the usual lithographed plan to a scale of 200 feet to 1 inch, on which the month's work is shown in red, and the extent of the bases of the piers in brown dots. This dotted boundary represents the utmost limit of the rubble base. The two longitudinal sections show the extent and height of the rubble foundations in greater detail. In the section of the base of the north pier a high spot will be observed at 2,960 feet. It was close to this that the S.S. *Himalaya* crossed over on the 16th.

18. EXPENDITURE.—The expenditure as shown in this office books up to February 29th has been Rs. 36,41,000, but to this there are considerable additions to be made for cement and salwood sleepers, payment for which is at present unadjusted.

19. INSPECTION BY HIS GRACE THE GOVERNOR.—On the 19th February His Grace the Governor visited the north pier works and proceeded to the extreme end to inspect the progress of the curved work.

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THE Government notice with satisfaction the rapid progress of the Harbour Works during the month under review.

2. The 8th paragraph will be referred to the Marine Department for such action as may be considered necessary.

(True Extract.)

Major, R.E.,
Ag. Under Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Secretary, Madras Harbour Works Committee.
To General Morgan.
" the Marine Department.

Edw. S. T. Austin.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1880) Madras.
PUBLIC WORKS.

To THE SUPERINTENDENT, MADRAS
HARBOUR WORKS.

cc. - cc. - cc.

10th March, 1880.

Forward

Recd.

Recd.

G. O., 10th March 1880, No. 583 W.

MARCH.

Nos. 57-58.

Madras Harbour Works progress report
for February 1880. Forwarded with serials.

No. 62 W

From

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS.

To Colonel R. M. Searkey, B. R., P.E.
Secretary to Government Public Works Dept.
Buildings & Roads
Fort Saint George
MADRAS, 2nd March 1880.

Sir,

I have the honor to submit the following report of the progress on these works during the past month of February, and I am pleased to be able to state that on the whole the return of work is greater than in any previous month since the work commenced.

North Pier & Superstructure Pier The work of setting blocks at the North Pier was carried on steadily during February and was only interrupted by the breaking of some of the Pilant travelling gear on the morning of the 11th. This mishap was put right in two days and block setting resumed on the 13th. There were 266 blocks set in the pier during the past month advancing the work by a length of 115 1/2 feet and making the total distance from the commencement 2125 feet. More than half of the curved work is now successfully built and if we meet with no mishap in May the whole of the pier will be finished

early

early in June.

3. The difficulty now of advancing the North Pier rapidly is much increased by the large amount of settlement that goes on in the laterite bank, which necessitates setting each row of blocks much higher than the actual level required, and therefore involves working the Titan up a perpetual incline. This adds greatly to the risk to which the Titan is exposed as it is impossible to predict which row of blocks will settle most. Extreme caution is therefore necessary until the blocks have settled to their permanent position which is not until the Titan has passed over them.

4. This settlement increases as the depth of bank increases and as I have once before had occasion to remark is followed by cracking of the top edges of the blocks. To prevent this I have in December last altered in some degree the proportions of the concrete so as to get a harder block in a shorter time than formerly and for the same reason have resolved not to use any but the best English cement for the blocks in the remainder of the pier.

5. On these matters I am constantly in correspondence with Mr. Park and

He

North Pier Rubble Base

he expresses himself quite satisfied with the behaviour of laterite in a deep bank notwithstanding my reports of the great settlement during construction. He approves however of the course I am now adopting of spreading a layer of the hard Pallavaram stone over the surface of the laterite base previous to the blocks being set upon it.

6. The work of depositing rubble base has been carried on at a greater rate than in any previous month, both steamers and cargo boats having been hard at work. A total amount of 24,526 tons were tipped during the 24 working days of February of which quantity 20,000 tons of laterite were brought by the Steam Hopper, and the remainder by cargo boats. Some of these latter brought 260 tons of Pallavaram stone from the South Pier for finishing off the top of the rubble base. I hope during March to use one steamer for this purpose.

7. The North Pier base now extends about 570 feet ahead of the block work and is fairly made up for three quarters of that distance. The amount of submerged rubble in advance of the work is roughly speaking 30,000 tons.

9

8. I would here remark that beyond the red conical buoys used by the Harbour Works staff for marking the limits of the base during construction there are no conspicuous beacons to warn ships off this artificial reef. On February 16, the S.S. "Himalaya" crossed over the rubble base within our red buoys and very near to a spot where there was only 16 feet of water at Low Water. -

9. Once more I have to report very unsatisfactory progress in block manufacture owing to want of cement. The local supply of cement from General Morgan I have now finally abandoned so far as block-making is concerned, so I am entirely dependent upon the rate of supply from England which in January and February has been but slow. - During February while 568 were set in the piers only 138 blocks were made and of these 67 were made at the South Pier by hand labour. I fear therefore that some delay as mentioned in para 7 of my January report must be regarded as certain, but I trust that instead of three weeks it need only be of 10 days duration, as since February 2nd cement has commenced to arrive by canal

and

Concrete
Blockmaking

Quarries

and blocks made from this consignment will be fit to set in the piers in this month of March. We still have over 400 blocks on hand, and since the first of this month blockmaking has been resumed at the full rate of 24 blocks per day. There is every reason to believe that from this date the cement supply will be continuous. -

10. The output of laterite from Madathra has exceeded that of any previous month the quantity sent down being 25,895 tons. The quality is not so good as I could wish, but it is practically impossible to select each boulder when working at this rate. From Pallavaram the quantity had to be reduced in consequence of stoppage of blockmaking, but the output was nevertheless considerable, namely 11,947 tons. The total quantity of stone received on the works in February was 40,831 tons, which for 24 working days gives an average of 1701 tons a day. -

11. At Pallavaram we find that the use of dynamite frays but in small charges and not in large shots. It is necessary that each piece of stone should be capable of being easily lifted by one

man, and this result is not attained but by numerous small shots. Used in this manner it answers the purpose well and is appreciated by the contractor, but at present only a small quantity has been employed.

12. The progress at the South Pier has been very satisfactory and the advance made in February is greater than has been made at this pier in any previous month. There were 312 blocks set in the superstructure which increased the length by 180 $\frac{1}{2}$ feet, and brings the total length from the Point # to 2071 $\frac{1}{2}$ feet.

13. At the South pier, the base of which is almost entirely made of the hard Pullavarum stone, the settlement is slight, regular and steady, so that none of the difficulties mentioned when speaking of the North Pier are met with.

14. The deposit of stone in the South Pier base has not been much in excess of what was done in January, but has been sufficient to keep the base well in advance of the superstructure. The total quantity deposited in February was 1291 $\frac{1}{2}$ tons, of which 1633 tons were lately brought by the two steamers. The South Pier base now extends about 580 feet in advance

South Pier
Superstructure

South Pier
Rubble Base

Protective
works to Beach

Stores received
on works.

Plans & sections

8/6

of the blockwork, and of this a length of 530 feet is made up almost to its full height. The amount of stone in advance of the blockwork is approximately 40,045 tons.

15. The work of making a more substantial revetment to the beach road by a M. Coleman is not yet completed. During February 1087 tons of boulders were deposited to widen the slope. I hope to finish this work before the middle of next month.

16. The following stores have been received from vessels during February:

560 casks Portland Cement, S.S. Duke of Lancaster.

722 ——— do ——— Ship "Widdow's" (178 casks still to be landed).

839 casks do ——— S.S. "Merakara"

2121 Total casks of Portland Cement

Copper sounding lines,

Iron chains

Stone crushers

Steel Locomotive Tyres

In addition to these I obtained 2117 casks of white Portland Cement from merchants in Madras.

I submit herewith the usual lithographed plan to a scale of 200 feet to 1 inch, on which the month's work is shown

in red, and the extent of the bases of the piers in brown dots. This dotted boundary represents the utmost limit of the rubble base. The two longitudinal sections show the extent and height of the rubble foundations in greater detail. In the section of the base of the North Pier a high spot will be observed at 2960 feet. It was close to this that the S.S. "Himalaya" crossed over on the 16th.

18. The expenditure as shown in this Expenditure Office book up to February 29th has been Rs 36,41,600. But to this there are considerable additions to be made for cement and salwood sleepers, payment for which is at present unadjusted.

19. On the 19th February His Grace the Governor visited the North Pier works and proceeded to the extreme end to inspect the progress of the current work.

Inspection by
His Grace the
Governor.

I have the honour to be,
Sir,
Your most obedient servant,
G. H. Rowbotham, Esq.
Superintendent,
Madras Harbour Works.

S.B. No. 308 W. 10-2-80.

Buildings & Roads

From
The Superintendent
Madras Harbour Works

P.W.D.

3 MAR 80

N.D.

No 62 W

Dated 2nd March 1880.

No of Enclosures 3

& in library.

Submits report of progress
of the works during the
month of February 1880

8/0

No 589 W

P. W. Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 10th March 80

Read the following

From the Superintendent
Madras Harbour Works (S.B. No 62 W of 2 March 80)

The Government
noted with satisfaction
the rapid progress of
the harbour works
during the month under
review.

Att

2/3/80

2. The eighth para-
graph will be
referred to the
Marine Dept. for
their action as
may be considered
expedient.

Super. Madras Harbour Works

Secy. Mr. H. W. Committee

Genl. Manager & Secy.

Marine Dept. South India

24th 3-80

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Cont. of 18807 *Adm.*
PUBLIC WORKS.

Dated

Issued

Recd.

Encl.

10.10.1880 No 6896

Nos. 57-58

Public Works Hall

*Progress Report for Feb
1880, recorded with the*

works