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राष्ट्रीय बांध सुरक्षा प्राधिकरण

अधिसूचना

नई दिल्ली 24 अप्रैल, 2024

फा. सं. टीई-32/2/2023- एनडीएसए-एमओडब्ल्यूआर.—राष्ट्रीय बांध सुरक्षा प्राधिकरण, 2021 बांध सुरक्षा अधिनियम, 2021 (2021 का 41) की धारा 54 की उप-धारा (2) के खंड (ज), (झ), (ञ), (ट), (ड), (ढ), (त) और (द) के साथ पठित उप-धारा (1) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, राष्ट्रीय समिति की सिफारिशों के आधार पर राष्ट्रीय बांध सुरक्षा प्राधिकरण, एतद्वारा द्वारा निम्नलिखित विनियम बनाता है, अर्थात:-

- संक्षिप्त शीर्षक और शुरुआत—** (1) इन विनियमों को निरीक्षण, यांत्रिकीकरण, भूकंपीय आंकड़ों, जोखिम मूल्यांकन और निर्दिष्ट बांध विनियम, 2024 का मूल्यांकन कहा जाएगा।
(2) ये विनियम सरकारी राजपत्र में प्रकाशन की तारीख से लागू होंगे।
- परिभाषाएं—** (1) इन विनियमों में, जब तक कि संदर्भ से अन्यथा अपेक्षित न हो,—
(क) "अधिनियम" का अर्थ है बांध सुरक्षा अधिनियम, 2021 (2021 का 41);
(ख) "प्राधिकरण" का अर्थ है अधिनियम की धारा 8 के तहत स्थापित राष्ट्रीय बांध सुरक्षा प्राधिकरण;
(ग) "मालिक" का अर्थ है विनिर्दिष्ट बांध का मालिक;
(घ) "अनुसूची" का अर्थ है इन विनियमों की कोई भी अनुसूची।

5. Data requirements of seismological stations in the vicinity of specified dams.— (1) The owner of every specified dam having a height of thirty metres or above as mentioned in column (3) of the table below, or falling under such seismic zone as mentioned in column (2) of the said table, shall establish a seismological station in the vicinity of each such dam and the number of Strong Motion Accelerographs for recording strong motion earthquakes and Seismographs for recording micro earthquakes, including the locations for installing such instruments, shall be as mentioned in columns (4) and (5) respectively, of the said table, namely:—

TABLE

S. No.	Seismic Zone (as per IS code 1893 (Part-1) 2016)	Dam Ht. (H) in metres	No. of Strong Motion Accelerograph (SMA)	No. of Seismograph
(1)	(2)	(3)	(4)	(5)
1.	II and III	$30 < H < 100$	At least 4 instruments as indicated below: One at foundation gallery/ a location at the d/s toe of the dam (if the foundation gallery is not	

S. No.	Seismic Zone (as per IS code 1893 (Part-1) 2016)	Dam Ht. (H) in metres	No. of Strong Motion Accelerograph (SMA)	No. of Seismograph
			present) and the other at the top of the dam and one in the free-field (3-4 times dam height i.e. H from dam body or base, preferably on the upstream side) and one on either abutment have to be installed.	
		$H \geq 100$	All dams with $H \geq 100$ m shall be instrumented comprehensively as per the schemes indicated in the Figure 1 (Arch dam – 9 nos.), Figure 2a (Gravity dam – 6 nos.) and Figure 3a (Embankment dam – 6 nos.), below for Arch, Gravity and Embankment dams respectively.	A single station near vicinity of the dam (nearest possible location, if possible, within 1 km from dam). If at least 25 events with magnitude above 2.5 are recorded within 50 km distance and within a year, a local network as per the guidelines of the National Committee on Seismic Design Parameters shall be provided. However, a network of at least 3 stations shall be operated for at least three years. These observations will have to be continued if such seismic events with similar frequency observed even after three years.
2.	IV and V	$30 \leq H < 100$	At least 4 instruments as indicated below: One at foundation gallery/ a location at the d/s toe of the dam (if the foundation gallery is not present) and the other at the top of the dam and one in the free-field (3-4 times dam height i.e. H from dam body or base, preferably on the upstream side) and one on either abutment have to be installed.	
		$H \geq 100$	For dams of height more than 100 m, at least one spillway monolith of greatest height shall be chosen. If there are any special foundation conditions with concerns of sliding/ slope instability, such locations should also be provided with one SMA at the base of the slope/ at the foundation feature. All dams with $H \geq 100$ m shall be instrumented comprehensively as per the schemes indicated in the Figure 1 (Arch dam – 9 nos.), Figure 2b (Gravity dam – 10 nos.) and Figure 3b (Embankment dam – 9 nos.) below for Arch, Gravity and Embankment dams respectively.	A single station near vicinity of the dam (nearest possible location, if possible, within 1 km from dam). If at least 100 events with magnitude above 2.5 are recorded within 50 km distance and within a year, a local network as per the guidelines of the National Committee on Seismic Design Parameters shall be provided. However, a network of at least 3 stations shall be operated for at least three years. These observations will have to be continued if such seismic events with similar frequency observed even after three years.

(3) In the case of composite dams, the seismic instrumentation requirement for embankment and concrete or masonry part of the dam shall be as provided in the figures for embankment and concrete gravity dams under sub-regulations (7) and (8) of regulation 5.

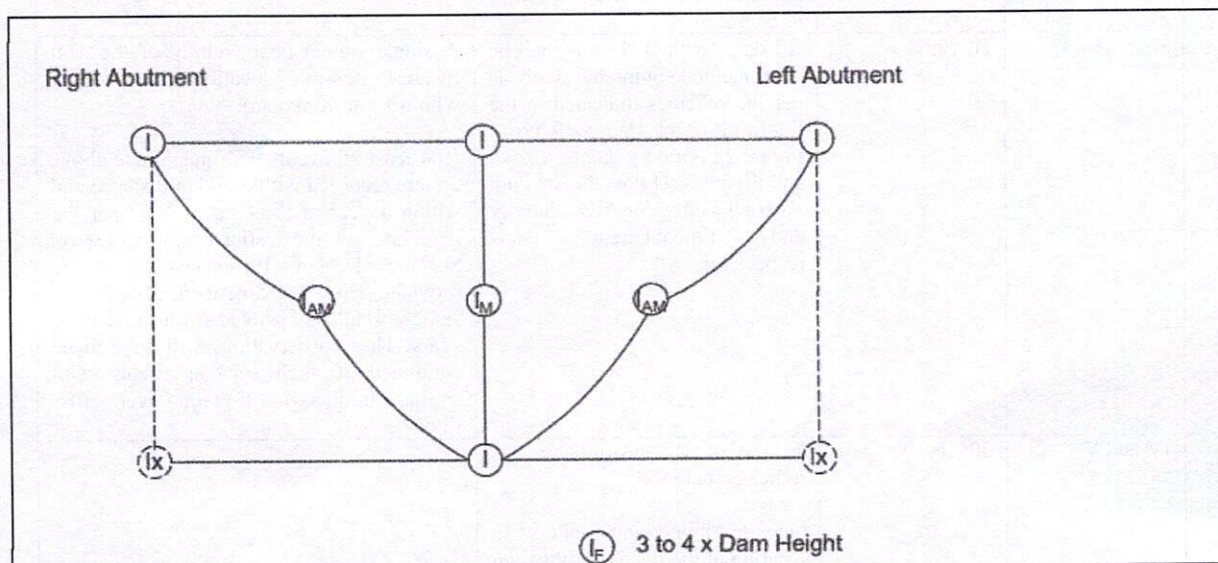
(4) If length of the dam is more than 500 metres, then additional instrument may be installed such that for every 500 metres increase in length of the dam, one additional Strong Motion Accelerograph may be installed on dam top and correspondingly one more Strong Motion Accelerographs may be installed in the gallery.

(5) In cases where the dam layout comprises of independent dams of different types across multiple channels with intervening abutments, then each of such dam shall be considered as independent dam for the purposes of this regulation.

(6) In case of arch dams, the location for installation of Strong Motion Accelerograph instruments shall be as shown in Figure 1 below:

Figure 1

Accelerograph arrays for arch dams (Downstream View)



I: Strong Motion Accelerographs

Ix: Strong Motion Accelerographs either on left abutment side or right abutment side

I_F: Free Field Motion Strong Motion Accelerographs, to be placed at 3 to 4 times of Dam Height (H) from Dam body or base

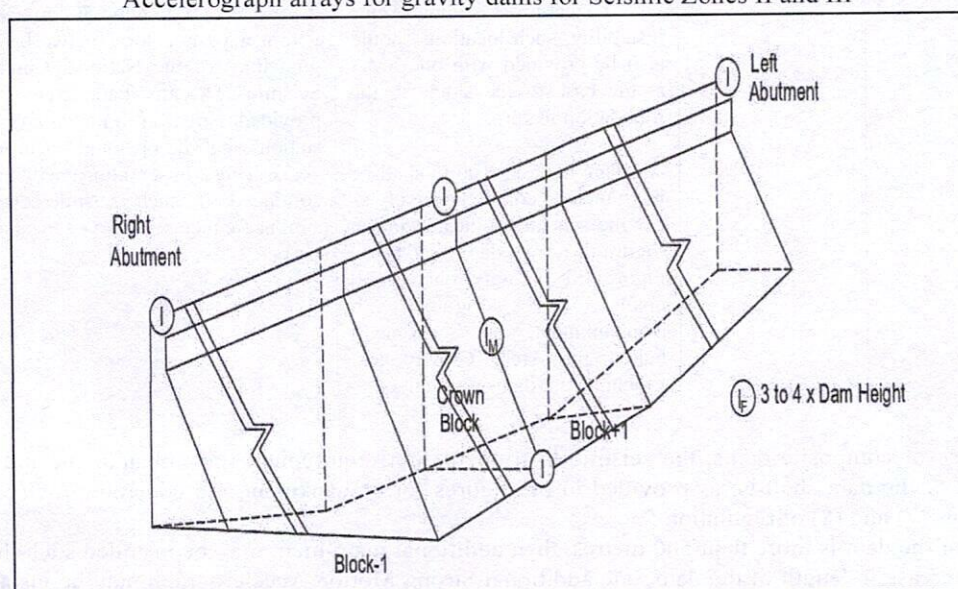
I_M: Strong Motion Accelerographs, to be placed in the middle height portion of Dam (preferably having deepest section)

I_{AM}: Strong Motion Accelerographs, to be placed in the middle height portion of Dam Abutment

(7) In the case of gravity dams, the location for installation of Strong Motion Accelerograph instruments shall be as shown in Figures 2a and 2b below:

Figure 2a

Accelerograph arrays for gravity dams for Seismic Zones II and III



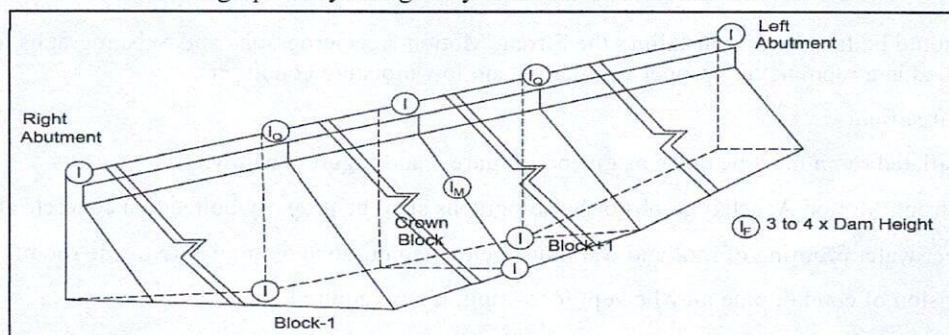
I: Strong Motion Accelerographs

I_F : Free Field Motion Strong Motion Accelerographs, to be placed at 3 to 4 times of Dam Height (H) from Dam body or base

I_M : Strong Motion Accelerographs, to be placed in the middle height portion of deepest block

Figure 2b

Accelerograph arrays for gravity dams for Seismic Zones IV and V



I : Strong Motion Accelerographs

I_F : Free Field Motion Strong Motion Accelerographs, to be placed at 3 to 4 times of Dam Height (H) from Dam body or base

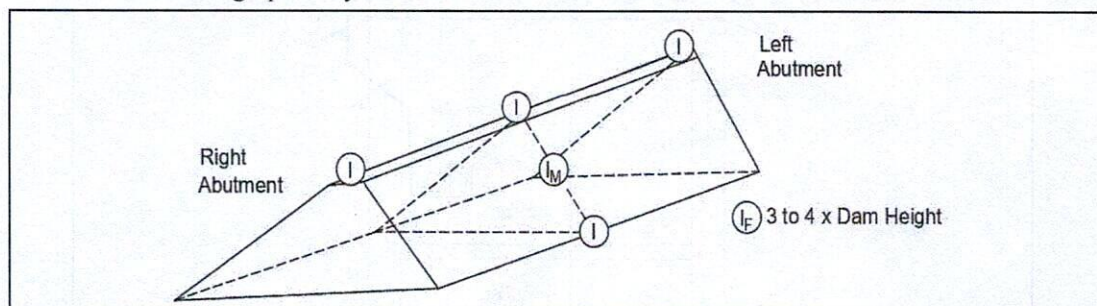
I_Q : Strong Motion Accelerographs, to be placed at quarter block (symmetrical to the central block)

I_M : Strong Motion Accelerographs, to be placed in the middle height portion of deepest block

- (8) In case of embankment dams, the location for installation of Strong Motion Accelerograph instruments shall be as shown in Figures 3a and 3b below:

Figure 3a

Accelerograph arrays for embankment dams for Seismic Zones II and III



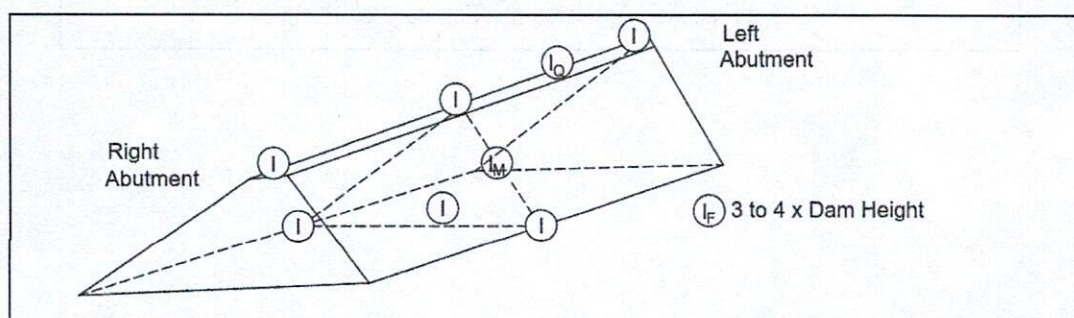
I : Strong Motion Accelerographs

I_F : Free Field Motion Strong Motion Accelerographs, to be placed at 3 to 4 times of Dam Height (H) from Dam body or base

I_M : Strong Motion Accelerographs, to be placed in the middle height portion of Dam (preferably having deepest section)

Figure 3b

Accelerograph arrays for embankment dams for Seismic Zones IV and V



I : Strong Motion Accelerographs

I_F : Free Field Motion Strong Motion Accelerographs, to be placed at 3 to 4 times of Dam Height (H) from Dam body or base

I_Q : Strong Motion Accelerographs, to be placed at quarter point either from Left Abutment or Right Abutment

I_M : Strong Motion Accelerographs, to be placed in the middle height portion of Dam (preferably having deepest section)

Note: Care should be taken while installing the Strong Motion Accelerographs and Seismographs to ensure that they are installed in a room having proper ventilation and low moisture conditions.

(9) In case of free field,—

- (i) a ventilated room must be made as given in Figure 4 and Figure 5 below;
- (ii) the Strong Motion Accelerographs or Seismographs shall be properly bolted to a concrete slab;
- (iii) proper water proofing of roof and wall must be carried out to avoid moisture inside room;
- (iv) provision of conduit pipe may be kept for wiring, if any required.

Figure 4

Sectional View

For Free Field Accelerograph/Seismograph Room

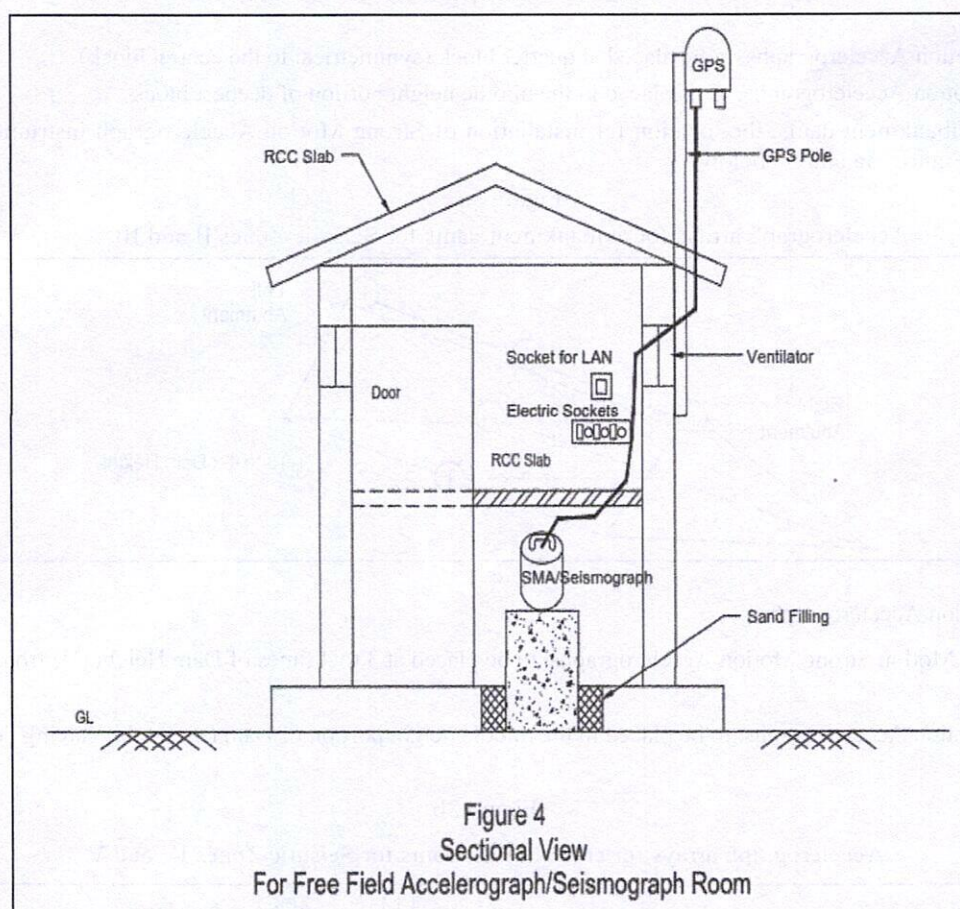
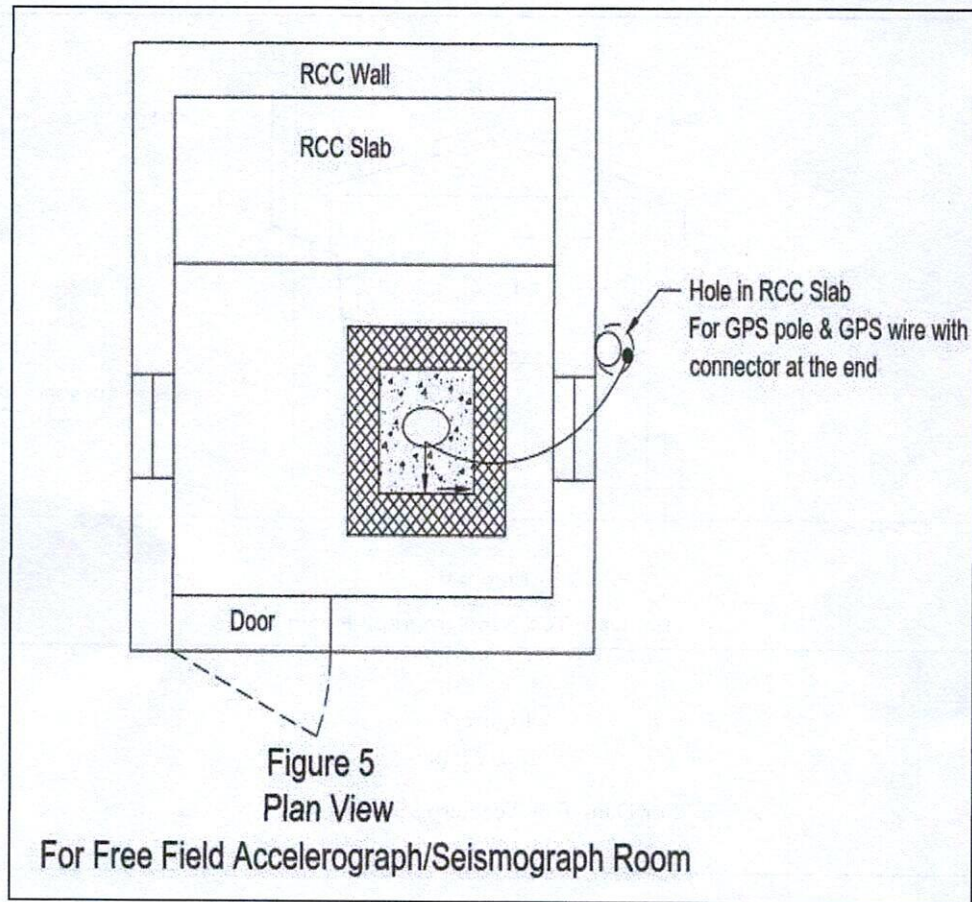


Figure 5
Plan View
For Free Field Accelerograph / Seismograph Room



(10) In case of dam top,—

- (i) a ventilated room must be made as given in Figure 6 and Figure 7 below;
- (ii) the Strong Motion Accelerographs shall properly be bolted to a concrete slab;
- (iii) proper water proofing of roof and wall must be carried out to avoid moisture inside room;
- (iv) provision of conduit pipe may be kept for wiring, if any required.

Note: Strong Motion Accelerographs installed in foundation gallery should be placed in sealed environment such that they are protected from humidity in gallery; and at such height such that they are protected from the flooding.

Figure 6

Sectional View

For Dam Top Accelerograph Room

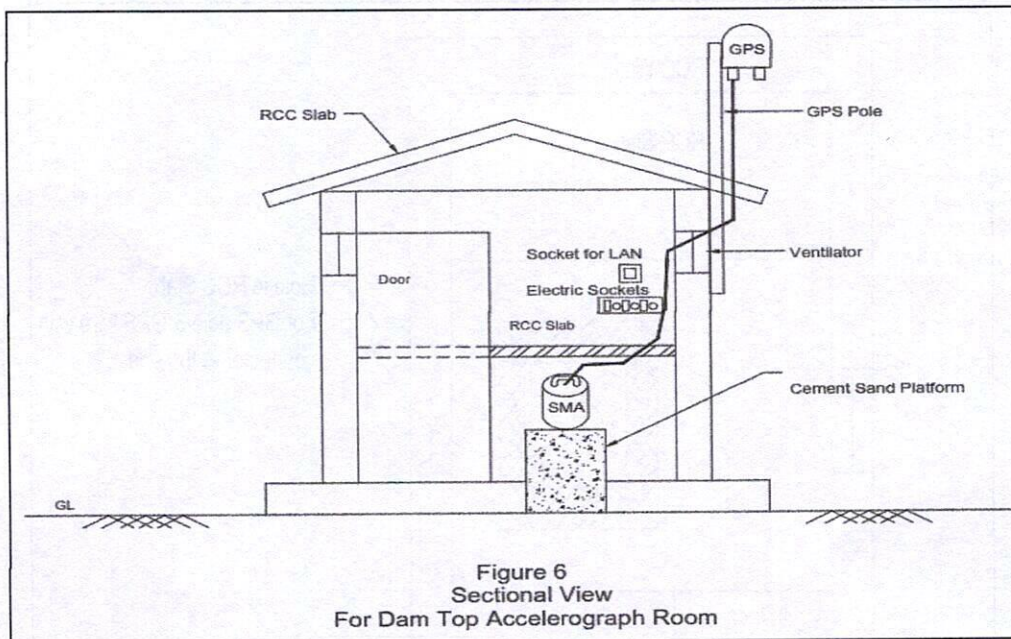


Figure 7

Plan View

For Dam Top Accelerograph Room

