SECTION 22 05 29 - HANGERS AND SUPPORTS FOR FIRE FIGHTING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Hydrant & Sprinkler Pipe Support from RCC slab
2. Hydrant & Sprinkler Pipe Support from PEB Structure
3. Hydrant & Sprinkler Pipe Support from Building Shaft
4. Hydrant & Sprinkler Pipe Support from the wall

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment.

PART 2 - PRODUCTS

2.1 Hydrant & Sprinkler Pipe support from RCC slab

A. CLAMPS:

1. The Firefighting pipe should be simply suspended by Sprinkler Clamp having knurled nut.

2. The Sprinkler Clamp should be pre-galvanized with one-piece design for safe hanging of sprinkler pipes. It should have height adjustable arrangement so as to incorporate the suspended threaded rod.

3. The Mounting according to static requirements should undertake into account the manufacturer's documents and should be monitored according to VdS or UL /FM Approval.

4. The pipe support installation should be carried out as per National Building Code 2016.

B. ACCESSORIES:

1. The Threaded Rods used for the suspension of the Pipe should be made up of partially annealed medium carbon steel of grade 4.8 strength class and as per DIN 976 standard.

C. ANCHORS:

1. The Drop-in anchors used for the suspension of the rods should be ETA (EUROPEAN TECHNICAL APPROVAL) with CE mark for cracked and un-cracked concrete.

2. It should be divided into four expansion segments for uniform pressing force distribution in the borehole.

D. CALCULATIONS AND APPROVALS:

1. The load bearing capacity for the selection of the sprinkler clamp for suitable size of the pipe should be as per V d s and FM guideline provided by the contractor to the consultant for verification.

Maximum Support Spacing (m)					
Nominal Pipe Dia (mm)	Support Dis-tance (M)	Nominal Pipe Dia (mm)	Support Distance (M)	Nominal Pipe Dia (mm)	Support Dis-tance (M)
Upto 15	2.5	65	3	250	3
20	2.5	80	3	300	3
25	2.5	100	3	350	3
32	2.5	125	3	400	3
40	2.5	150	3	450	3
50	2.5	200	3	500	3

2.2 Hydrant & Sprinkler Pipe support from PEB structure

A. CLAMPS:

1. The Firefighting pipe should be simply suspended by Sprinkler Clamp having knurled nut.

2. The Sprinkler Clamp should be pre-galvanized with one-piece design for safe hanging of sprinkler pipes. It should have height adjustable arrangement so as to incorporate the suspended threaded rod.

3. The Mounting according to static requirements should undertake into account the manufacturer's documents and should be monitored according to VdS or UL /FM Approval.

4. The pipe support installation should be carried out as per National Building Code-2016.

B. SUPPORT CHANNEL:

1. The support channel should be made up of cold rolled steel of quality DX51 or greater and as per EC3(Eurocode 3) or DIN EN 1993-1-1.

2. The Support channel should be pre-galvanized with minimum GSM of 275 and should have universal mounting slot on the front of the rail for accurate positioning of fasteners and system compatible round and long holes on back of the rail.

3. The Mounting according to static requirements should undertake into account the manufacturer's documents and should be monitored according to RAL - GZ 655-C.

C. ACCESSORIES:

1. The Threaded Rods used for the suspension of the Pipe should be made up of partially annealed medium carbon steel of grade 4.8 strength class and as per DIN 976 standard.

D. Connection with the Beam:

1. For parallel to beam application.

   a. The Girder cleat for attachment of support channel to steel girder

   b. Girder cleat should be Vds approved.

2. For perpendicular to beam application

   a. The Girder clamp for suspension of threaded pins and threaded rods for support channels.

   b. Girder clamps should be FM and Vds Approved.

E. Calculations and Approvals:

1. The load bearing capacity for the selection of the sprinkler clamp for suitable size of the pipe should be as per V d s and FM guideline provided by the contractor to the consultant for verification.

Maximum Support Spacing (m)					
Nominal Pipe Dia (mm)	Support Dis-tance (M)	Nominal Pipe Dia (mm)	Support Dis-tance (M)	Nominal Pipe Dia (mm)	Support Distance (M)
Up to 15	2.5	65	3.0	250	3.0
20	2.5	80	3.0	300	3.0
25	2.5	100	3.0	350	3.0
32	2.5	125	3.0	400	3.0
40	2.5	150	3.0	450	3.0
50	2.5	200	3.0	500	3.0

2.3 Hydrant & Sprinkler pipe support from building shaft:

A. CLAMPS:

1. The Riser Pipes should be mounted on the support channel with the help of a split clamps and STATO BRACKET which should take the entire load of the pipe.

B. SUPPORT CHANNEL:

1. The support channel should be made up of cold rolled steel of quality DX51 or greater and as per EC3(Eurocode 3) or DIN EN 1993-1-1.

2. The riser and hydrant pipe support installation should be as per National Building Code 2016

3. The Support channel should be pre-galvanized with minimum GSM of 275 and should have universal mounting slot on the front of the rail for accurate positioning of fasteners and system compatible round and long holes on back of the rail.

4. The Mounting according to static requirements should undertake into account the manufacturer's documents and should be monitored according to RAL - GZ 655-C.

C. Accessories:

1. The Threaded Rods used for fixing pipe clamp with support channel that should be made up of partially annealed medium carbon steel of grade 4.8 strength class and as per DIN 976 standard.

D. Anchors:

1. The Through anchors used for fixing channel with building shaft that should be E T A(EUROPEAN TECHNICAL APPROVAL) with CE mark for cracked and un-cracked concrete.

2. It should be divided into four expansion segments for uniform pressing force distribution in the borehole.

E. Calculation and Approvals:

1. The load bearing capacity for the selection of the sprinkler clamp for suitable size of the pipe should be as per V d s and FM guideline provided by the contractor to the consultant for verification.

Maximum Support Spacing (m)					
Nominal Pipe Dia (mm)	Support Distance (M)	Nominal Pipe D i a (mm)	Support Distance (M)	Nominal Pipe Dia (mm)	Support Distance (M)
Upto 15	Floor to Floor	65	Floor to Floor	250	Floor to Floor
20		80		300	
25		100		350	
32		125		400	
40		150		450	
50		200		500	

2.4 Hydrant & Sprinkler pipe support from wall:

A. CLAMPS:

1. The Pipes should be mounted on the support channel with the help of a split clamps DIN 3567.

B. SUPPORT CHANNEL:

1. The support channel should be made up of cold rolled steel of quality DX51 or greater and as per EC3(Eurocode 3) or DIN EN 1993-1-1.

2. The hydrant pipe support installation should be as per National Building Code -2016.

3. The Support channel should be pre-galvanized with minimum GSM of 275 and should have universal mounting slot on the front of the rail for accurate positioning of fasteners and system compatible round and long holes on back of the rail.

4. The Mounting according to static requirements should undertake into account the manufacturer's documents and should be monitored according to RAL - GZ 655-C.

C. ACCESSORIES:

1. The Threaded Rods used for fixing pipe clamp with support channel that should be made up of partially annealed medium carbon steel of grade 4.8 strength class and as per DIN 976 standard.

D. ANCHORS:

1. The Through anchors used for fixing channel with building wall that should be E T A (EUROPEAN TECHNICAL APPROVAL) with CE mark for cracked and un-cracked concrete.

2. It should be divided into four expansion segments for uniform pressing force distribution in the borehole .

E. CALCULATION AND APPROVALS:

1. The load bearing capacity for the selection of the sprinkler clamp for suitable size of the pipe should be as per V d s and FM guideline provided by the contractor to the consultant for verification.

Maximum Support Spacing (m)					
Nominal Pipe Dia (mm)	Support Distance (M)	Nominal Pipe Dia (mm)	Support Distance (M)	Nominal Pipe Dia (mm)	Support Distance (M)
Upto 15	2.5	65	3	250	3
20	2.5	80	3	300	3
25	2.5	100	3	350	3
32	2.5	125	3	400	3
40	2.5	150	3	450	3
50	2.5	200	3	500	3

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Hanger Installation: Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Fastener System Installation:

1. Verify suitability of fasteners in two subparagraphs below for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick.

2. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Install fasteners according to powder-actuated tool manufacturer's operating manual.

3. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

C. Pipe Stand Installation:

1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.

2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb

D. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

E. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

F. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

G. Install lateral bracing with pipe hangers and supports to prevent swaying.

H. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

3.2 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods. .

END OF SECTION 220529