

## SECTION 01 33 10 – COORDINATION DRAWINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes requirements for preparation of Coordination Drawings for the following:
  - 1. HVAC Coordination Drawings.
- B. Each contractor shall participate in coordination drawing process and has specific requirements identified in this Section.
  - 1. The HVAC Contractor shall be the Lead Contractor for the HVAC Coordination Drawings.
- C. Related Requirements:
  - 1. Division 01 Section "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
  - 2. Division 01 Section "Construction Progress Documentation" for construction schedule.
  - 3. Division 01 Section "Project Management and Coordination" for coordination procedures.
  - 4. Division 01 Section "Submittals" for submittal procedures.
  - 5. Division 01 Section "Execution" for procedures for coordinating general installation of the work.
  - 6. Division 01 Section "General Commissioning Requirements" for coordinating the Work with Owner's Commissioning Authority.

#### 1.3 DEFINITIONS

- A. Coordination Drawings: A special type of shop drawing prepared by each Prime Contractor which superimposes and shows the relationship and integration of different construction elements that require careful coordination during fabrication and installation to fit in the space provided or functions as intended. These drawings show the work of several trades, intended for careful coordination of installation of products and materials provided by separate entities.

#### 1.4 STIPULATIONS

- A. The Contract Documents indicate basic scope, routes, and locations of materials and equipment for the systems indicated and specified. By submission of bid, Contractor stipulates that all work required for a complete and functioning system is contained in their bid and recognizes that the basic nature of the Coordination Drawing process may require the shifting or revising of the scheduled locations of materials and equipment.
  - 1. Adjustments to the scheduled or unscheduled location or height of materials and equipment may be required to avoid conflicts with new **[or existing]** structure, **[existing conditions]**, materials of other Contractors or scheduled ceiling heights shall be performed as part of the Coordination

Drawing process. Contractor stipulates their bid contains sufficient project management personnel to identify and resolve these issues during the Coordination Drawing process prior to work progressing.

1.5 ACTION SUBMITTALS

- A. Coordination Drawings: Provide drawings indicating work of all Prime Contractors as it relates to the required coordination requirements. Provide drawings at a sufficient scale for all work to be legible. Provide enlarged details for areas of congestion or complex detail.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawing Schedule: Lead Contractor shall provide a schedule indicating when each required task shall be complete in accordance with the Project Schedule.
- B. Coordination Drawing Certification: Signed by each Contractor.

1.7 GENERAL PROCEDURES

- A. Do not use Contract Drawings as Coordination Drawings.
  - 1. General Conditions contain procedures and requirements for obtaining CAD files from the Architect.
- B. The Coordination Drawing process shall start within 30 days from Notice to Proceed.
- C. The Contractor indicated as the Lead Contractor shall be responsible to coordinate, schedule and document the Coordination Drawing process.
- D. Upon the start of the Coordination Drawing process, weekly meetings shall be held on site to review progress.
  - 1. Lead Contractor shall communicate goals of the meeting in advance and shall record minutes of the meeting.
- E. The Lead Contractor shall create Key Plan Drawings for other Contractors to utilize to indicate the work of their Contract.
  - 1. HVAC Coordination Drawings Key Plans shall include locations of ductwork, piping, equipment and service areas.
- F. All Contractors shall use the Key Plans created by the Lead Contractor to indicate the work of their Contract.
  - 1. Contractors shall utilize a CAD program to represent their work and shall provide a CAD file to the Lead Contractor to merge into the Coordination Drawings.
- G. All Contractors shall sign off on the Coordination Drawing Certification included in Part 3 of this Section.

## 1.8 HVAC COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity for logical and complete installation of the HVAC system as it relates to the spaces as indicated and the other Mechanical and Electrical systems scheduled for the building.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
- Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
  - Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
  - Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
  - Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
  - Show location and size of access doors required for access to concealed dampers, valves, and other controls.
  - Indicate required installation sequences.
  - Indicate critical and clearance dimensions. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
- Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  - Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
- C. Coordination Drawing Content:
- Column, Joist and Beam Locations (including column lines and designations): Indicate bottom elevation of joist and beams and/or bottom of supplemental reinforcing. Where other Contractors indicate work parallel to joist and beams, identify cross bracing.
  - Structural Penetrations: Indicate penetrations and openings required for all disciplines.
  - Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  - Ceiling heights, layouts and soffit locations.
    - Where no ceiling is scheduled in occupied areas, additional care shall be taken for the aesthetic layout of equipment.

5. Walls and partitions.
    - a. Include windows, doors and other openings.
  6. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
  7. HVAC and Plumbing Work: Show the following:
    - a. Sizes and bottom elevations of ductwork, piping, equipment, and conduit runs, including insulation, bracing, flanges, and support systems.
    - b. Locations and dimensions of major components, such as dampers, valves, diffusers, coils, sensors, monitors, access doors, cleanouts and electrical distribution equipment.
    - c. Fire-rated enclosures around ductwork.
  8. Fire-Protection System: Show the following:
    - a. Locations of standpipes, mains piping, branch lines, pipe drops, valves, cabinets, test assemblies, access panels, and sprinkler heads.
  9. Electrical Work: Show the following:
    - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations. Indicate fixture depths generally or for each space.
    - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
    - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
- D. Coordination Drawing Standards:
1. Conventions: Use the following colors to define the following work on printed drawings:
    - a. Structural Steel: Black.
    - b. Walls, Partitions, Soffits and Ceiling Systems: Gray.
    - c. Potable Water: Blue.
    - d. Gas and Fuel Radon Piping: Orange.
    - e. Sewer and Drains: Cyan.
    - f. Ducts and Equipment: Green.
    - g. Hydronic Water: Purple.
    - h. Electrical Systems and Equipment: Red.
  2. Drafting: Comply with the following:
    - a. Deviations: Circle, highlight or identify deviations from the Contract Documents and state reason for deviation.
    - b. Clarity: Coordination drawings shall be clear and legible.
      - 1) Areas with significant quantities of work shall be separated and indicated at a minimum scale of 1/4 inch per 1'-0".
    - c. Indicate pipes, conduits and pipes with diameter of less than 6 inches with single lines.

- d. Indicate ducts and pipes with diameter of 6 inches and greater with double lines showing width to scale.
  - e. Indicate busways to scale.
  - f. Include insulation, supports and clearance requirements.
- E. Coordination Drawing Conflict Resolution:
  - 1. Where conflicts arise, affected Contractors shall work to resolve conflict. The following priority list shall be utilized to resolve conflicts:
    - a. Structure and partitions.
    - b. Equipment location and access.
    - c. Ceiling system and recessed light fixtures.
    - d. Gravity drainage lines.
    - e. Main ductwork and devices.
    - f. Large pipe mains, valves and devices.
    - g. Material conveying systems.
    - h. Branch ductwork, diffusers, registers, grilles, HVAC equipment.
    - i. Fire protection piping, devices and heads.
    - j. Small piping, tubing, electrical conduit, and devices.
  - 2. If conflict is unable to be resolved as noted above, submit an RFI to the Architect including supporting data and confirm steps to resolve were performed. Submit RFI in accordance with Division 01 Section "Execution."
- F. Lead Contractor Review: Upon receipt of all Contractors Coordination Drawings, Lead Contractor shall review Coordination Drawings to confirm conflicts are resolved and shall secure signatures from all Contractors and subcontractors identified on the Coordination Certification Form.
  - 1. Submit color drawings in accordance with requirements of Division 01 Section "Submittal Requirements."
- G. Architect's Review of Coordination Drawings: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

- 3.1 Submit Coordination Drawing Certification attached to the end of this section along with completed Coordination Drawings.

### **HVAC COORDINATION DRAWING CERTIFICATION**

The undersigned certify by their respective signatures the following:

We certify that we have reviewed all information necessary to coordinate the installations required under our respective trades as indicated for the HVAC Coordination Drawings. We further certify that we have thoroughly reviewed the coordination drawings and work of the other trades and we accept & agree that the work indicated therein and required under the contract does not present conflicts, obstructions or installa-

COORDINATION DRAWINGS

tion problems between each trade that cannot be resolved among ourselves during the construction without additional cost to the Owner. We accept & agree that by signing this certification each of us are accepting responsibility for the resolution of any and all installation conflicts, obstructions or problems associated with our individual trade created as a result of either not providing adequate input into the preparation of coordination drawings or their subsequent review, or the lack of coordinating with the work of each other's trades during installation, or simply disregarding installation requirements as indicated on the coordination and contract drawings or as required by the manufacturers of the equipment we are installing. Finally, we agree that the owner shall not be responsible for any costs associated with the resolution of installation problems resulting from inadequate or improper coordination between our trades. Nothing contained in this certification shall relieve any trade from compliance with applicable industry tolerances unless noted otherwise herein.

HVAC Contractor:

Project Manager	Date
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Sheet Metal Superintendent	Date
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Piping Superintendent	Date
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General Contractor:

Project Manager	Date
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Structural Steel Subcontractor	Date
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Acoustical Ceiling Subcontractor	Date
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Stage Equipment Subcontractor	Date
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Food Service Subcontractor	Date
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Plumbing Contractor:

Project Manager	Date
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Fire Protection Subcontractor	Date
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Electrical Contractor:

Project Manager	Date
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END OF SECTION 01 33 10