

Quality Assessment R&I

DEVELOPMENT CHECKLIST

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Discipline Number	Area	Item Number	Discipline Name	Training Item #	Item	Verification Criteria
1	D	1	CIVIL		1 Addition is sited properly to ensure positive drainage away from building pad and entrances.	<p>Verification Criteria</p> <p>Site/civil drawings show contours and elevations for draining water away from building. Grade should slope downward 4% for first 12' (1/2 inch per foot) away from building. Grades adjacent to building should be 6" lower than interior floor elevation.</p> <p>Site/civil drawings show contours and elevations for draining water away from entrances. Grade should slope downward 1% (minimum) and 2% (maximum) at doors, for width of doors.</p> <p>For handicap accessibility, limit slopes to 5% on sidewalks, 8.3% on ramps, or as required by local codes.</p>
1	D	2	CIVIL		2 Site design minimizes slope of entrance driveways.	<p>Verification Method</p> <p>The site/civil drawings include contours and elevations that minimize slopes at entrance driveways. At entrance driveways, the slope should not exceed 5%; 8% may acceptable with project manager approval.</p>
1	D	3	CIVIL		3 Site design provides minimum positive slopes required at landscaped and paved areas for water drainage.	<p>Verification Criteria</p> <p>Site/civil drawings show contours and elevations that provide minimum slopes at landscaped and paved areas to provide adequate water drainage. At landscaped areas, slope should not exceed 2 horizontal to 1 vertical. At lawn areas, slope should not exceed 3 horizontal to 1 vertical.</p> <ul style="list-style-type: none"> • minimum slope of gutters to catch basins should be .5%. maximum slope should be 8%. • At asphalt paved areas, minimum slope should be 2%. • At concrete paved areas, minimum slope should be 1%. The maximum slope should be 5%.
1	D	4	CIVIL		4 Earthwork and pavement design requirements have incorporated recommendations of geotechnical report.	<p>Verification Criteria</p> <p>Letter from geotechnical engineer has been provided and recommendations of geotechnical report have been incorporated into contract documents.</p> <ul style="list-style-type: none"> • This is required per Section 6.C.5.m of Agreement Between Owner and Architect
1	D	5	CIVIL		5 Concrete strength and mix design are matched to local conditions.	<p>Verification Criteria</p> <p>the requirements for concrete are clearly indicated in the contract documents and matched to local conditions:</p> <ul style="list-style-type: none"> • Concrete Mix Type A (4,000 psi) unless geotechnical report requires otherwise • For exterior concrete in areas of freeze thaw, concrete strength in Schedule of Construction Materials on structural drawings should be 4,500 psi (Concrete Mix Type D)

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1	D	6	CIVIL	6	Pavement mix design is matched to local conditions, materials and methods.	<p>Verification Criteria Verify that paving mix design has been site adapted.</p> <p>For asphalt: 1. Provide the specification used for the project. 2. For a Marshall or Hveem Mix Design, verify the standard viscosity grades in Specification Section 2.1.E.1.a of 32 1216 are: a. Cold climates - AC5 b. Moderate climatic conditions - AC10 c. Hot climatic conditions - AC20 3. For a Superpave Mix Design, verify the performance grade of the asphalt has been inserted in Specification Section 2.2.C. of 32 1216.</p> <p>For concrete: Verify that a minimum paving thickness for the project has been selected in Specification Section 3.2.B.1 of 32 1313.</p>
1	D	7	CIVIL	7	Site improvements minimize cut and fill requirements.	<p>Verification Criteria Verify that the building placement minimizes cut and fill requirements:</p> <ul style="list-style-type: none"> • Future additions are accommodated in the plan • The use of retaining walls is minimized • Good visibility of the building from the road is provided
1	D	8	CIVIL	8	Top of mow strip elevations have been indicated.	<p>Verification Criteria Verify that top of mow strip elevations have been indicated on the Site Plan to ensure proper installation.</p>
2	D	9	LANDSCAPE	1	Landscape architect has provided and completed required tables on planting plan.	<p>Verification Criteria Verify on landscape planting plan that the plant coverage Design Criteria, Landscape Data tables have been provided, and information is complete.</p>
2	D	10	LANDSCAPE	2	Recommended plant coverage amounts as required by prototypical planting plans and local jurisdiction have been followed.	<p>Verification Criteria Landscape planting plan design complies with landscape requirements identified in prototypical planting plan and as modified to meet local jurisdiction requirements.</p>
2	D	11	LANDSCAPE	3	Landscape elements are appropriate per AEC Design Guidelines and local jurisdiction requirements.	<p>Verification Criteria Planting plan design complies with landscape requirements identified in AEC Design Guideline Table 4.2 and as modified based on local jurisdiction requirements.</p>
2	D	12	LANDSCAPE	4	Lawn areas have been minimized and do not exceed standard lawn area maximum percentage.	<p>Verification Criteria Landscape planting plan lawn area percentage does not exceed lawn area percentage found in AEC Design Guideline Table 4.2.</p>
2	D	13	LANDSCAPE	5	Irrigation system is appropriate per AEC Design Guidelines and local jurisdiction requirements.	<p>Verification Criteria Landscape irrigation plan irrigation system matches irrigation elements identified in AEC Design Guideline Table 4.2 and as modified based on local jurisdiction requirements.</p>

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2	D	14	LANDSCAPE	6 Meetinghouse Site Management Plan (MSMP) including Topsoil Testing Report was prepared by landscape architect and appropriate FM training completed.	<p>Verification Criteria</p> <p>Review MSMP to verify that:</p> <ol style="list-style-type: none"> 1. Document follows standard format and is completed. 2. FM and subcontractor have signed the Plant Establishment Period and training verification section of the document.
3	D	15	ARCHITECTURAL	1 Location and number of accessible parking spaces and accessible building entrances comply with accessibility requirements.	<p>Verification Criteria</p> <p>Site development plan shows at least 60% of building entrances meet accessibility requirements (IBC 1105) with use of ramps, sloped walks, etc. and that accessible parking spaces are located convenient to these entrances.</p>
3	D	16	ARCHITECTURAL	2 Building is oriented with chapel end wall facing primary street and located within standard frontage setback range in accordance with local planning authority requirements.	<p>Verification Criteria</p> <p>Site development plan indicates that building front setback is between 30 – 40 feet for a Sharon and 40 – 50 feet for a Fayette, Heritage and Legacy meetinghouse to avoid long access roads on site and to minimize site development costs.</p>
3	D	17	ARCHITECTURAL	3 Fascia and soffits have been designed to comply with or compliment profiles of the existing buildings fascia and soffits and to portray the image required by established guidelines.	<p>Verification Criteria</p> <p>Exterior elevation drawings and details show that fascia and soffits are designed to compliment profiles of the existing buildings fascia and soffit.</p>
3	D	18	ARCHITECTURAL	4 Exterior architectural design reflects Church image and cost standards with approved materials.	<p>Verification Criteria</p> <ol style="list-style-type: none"> 1. Exterior elevation drawings indicate approved standard materials were utilized (such as brick, EIFS and siding). 2. Where any non-standard materials have been utilized, review of documented cost, life and maintenance analysis that substituted materials are defensible in comparison with approved materials.
3	D	19	ARCHITECTURAL	5 Seismic bracing for suspended gypsum board ceiling track systems is incorporated into contract documents.	<p>Verification Criteria</p> <p>Contract documents specify that:</p> <ol style="list-style-type: none"> 1. Bracing size, location, spacing, and connection details are shown in architectural drawings. 2. Bracing type is shown in specifications.
3	D	20	ARCHITECTURAL	6 Wall acoustical treatment design and associated details are adequately detailed.	<p>Verification Criteria</p> <p>Acoustical treatment has been designed and detailed per standard plan details in the building plans.</p>
3	D	21	ARCHITECTURAL	7 Restroom site-lines provide adequate privacy.	<p>Verification Criteria</p> <p>Restroom sight-lines have been designed and detailed to prevent sight into restrooms by persons passing in corridors or spaces in the building plans.</p>
3	D	22	ARCHITECTURAL	8 Relationship of storage shed / trash enclosure to serving area provides convenient access.	<p>Verification Criteria</p> <p>Site development plan shows proper placement convenient to serving area entrance.</p>
3	D	23	ARCHITECTURAL	9 Transitions between new and existing materials have been designed to minimize abrupt changes in color or materials.	<p>Verification Criteria</p> <p>Planned details indicate that all junctions between new and existing materials have been planned to minimize appearance of transitions.</p>
3	D	24	ARCHITECTURAL	10 Transition between existing and new spaces provide appropriate relationships between spaces and allows for possible future expansion.	<p>Verification Criteria</p> <p>Review options considered, or associated cost estimates / effectiveness, and reasons for final decision.</p>
3	D	25	ARCHITECTURAL	11 Building code violations in existing building were addressed during planning of R&I / Addition.	<p>Verification Criteria</p> <p>Review current approved building codes approved by agency having jurisdiction.</p>

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3	D	26	ARCHITECTURAL	12	Carpet, sisal, wall coverings, folding partitions, and plastic laminate comply with standard color scheme options and / or follows the replacement & improvement standards.	<p>Verification Criteria</p> <p>Verify specifications have been edited to reflect pre-set color scheme selected for project and that no substitutions have been made. See specification sections 06 4005, 09 6816, 09 7216, 09 7226, and 10 2226.</p> <ul style="list-style-type: none"> • Replacement and Improvement Standards have been followed • Colors should be selected to compliment other existing components
3	D	27	ARCHITECTURAL	13	Ceramic tile and metal toilet partitions comply with standard color scheme options and / or R&I Standards.	<p>Verification Criteria</p> <p>Verify specifications have been edited per approved colors only. See specification sections 09 3013 and 10 2113.</p>
4	D	28	STRUCTURAL	1	Foundation system and allowable bearing pressure, as recommended by geotechnical report, are incorporated into contract documents.	<p>Verification Criteria</p> <p>Review the design Criteria Table that foundation system type and allowable soil bearing pressure used matches that recommended by geotechnical report.</p> <p>For example:</p> <ul style="list-style-type: none"> • If geotechnical report recommends drilled piers, verify foundation plan indicates drilled piers • If geotechnical report recommends "geopiers", verify foundation plan indicates "geopiers" • If geotechnical report recommends 2000 psf allowable soil bearing pressure, verify this is reflected in design Criteria Table
4	D	29	STRUCTURAL	2	Footing and foundation plan or footing details clearly indicates required top of footing elevations.	<p>Verification Criteria</p> <p>Review that top of footing elevations are shown on footing and foundation plan or in footing details.</p>
4	D	30	STRUCTURAL	3	Civil / Structural testing and inspection requirements are established.	<p>Verification Criteria</p> <p>Review the agreement between owner and testing agency to ensure that testing and inspection requirements are provided.</p> <p>For example:</p> <ul style="list-style-type: none"> • Engineered fill (required by code whenever used) • Asphalt paving (not required by code but required by owner per Civil and Structural Testing & Inspection Guidelines) • Concrete (not required by code, but required on some project sizes) • Wood (re should be no tests or inspections for wood unless nails have been spaced at less than 4" on center) • Masonry (re should be no tests or inspections for masonry) • Steel components (re should be no tests or inspections for steel)
4	D	31	STRUCTURAL	4	A structural evaluation report was prepared for facility.	<p>Verification Criteria</p> <p>Review the structural evaluation report to verify:</p> <ol style="list-style-type: none"> 1. Approved template was used for report. 2. Report was completed for entire facility.

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4	D	32	STRUCTURAL	5	All seismic upgrade measures that should be associated with R&I work are included in project.	<p>Verification Criteria</p> <p>Review the structural evaluation report to verify:</p> <ol style="list-style-type: none"> 1. All seismic upgrade measures are driven by associated R&I work. 2. Project includes all seismic upgrade measures that should be driven by R&I work. 3. FM leads design team in confirming that seismic project requirements have been incorporated into details.
4	D	33	STRUCTURAL	6	Structural design was prepared using structural evaluation report referenced seismic evaluation and upgrade procedures.	<p>Verification Criteria</p> <p>Review the structural evaluation report to verify:</p> <ol style="list-style-type: none"> 1. Seismic evaluation procedure was followed. 2. Seismic upgrade procedure was followed.
4	D	34	STRUCTURAL	7	Detailing requirements for reinforcing and grouting cells of existing masonry walls have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Extent to which walls are to be grouted is noted. Method for installing new reinforcing is noted. 2. Size and spacing of reinforcing, vertically and horizontally, is noted. 3. Cells that need to be grouted are noted. 4. Grout strength and slump requirements are noted. 5. Special inspection and testing requirements are noted. 6. Walls are detailed to be anchored to diaphragms. 7. Drag struts and / or chords are detailed to be attached to walls.
4	D	35	STRUCTURAL	8	Detailing requirements for vertical steel strongback columns have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. New strongback columns are detailed to be anchored to foundations. 2. New strongback columns are detailed to be anchored to existing walls.
4	D	36	STRUCTURAL	9	Detailing requirements for wood bearing and shear walls have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Foundations to support walls are detailed to be reinforced. 2. Type of wood sheathing and blocking requirements are noted. 3. Size, type and spacing of wood studs is noted. 4. Type of sill plate and its anchorage to foundations is noted. 5. Boundary elements (jambes) are noted with or attachment (hold downs) to foundations. 6. Walls are detailed to be anchored to diaphragms. 7. Drag struts and / or chords are detailed to be attached to walls.

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4	D	37	STRUCTURAL	10	Detailing requirements for masonry walls have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Verification Criteria Review of contract documents that:</p> <ol style="list-style-type: none"> 1. Foundations to support walls are detailed to be reinforced. 2. Walls are detailed to be reinforced. 3. Reinforced vertical boundary elements are detailed. 4. Masonry, grout and mortar strength requirements are noted. 5. Special inspection and testing requirements are noted. 6. Required bond pattern is noted. 7. Walls are detailed to be anchored to diaphragms. 8. Drag struts and / or chords are detailed to be attached to walls.
4	D	38	STRUCTURAL	11	Detailing requirements for concrete walls have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Review of contract documents that:</p> <ol style="list-style-type: none"> 1. Foundations to support walls are detailed to be reinforced. 2. Walls are detailed to be reinforced. 3. Reinforced vertical boundary elements are detailed. 4. Concrete strength requirements are noted. 5. Special inspection and testing requirements are noted. 6. Walls are detailed to be anchored to diaphragms. 7. Drag struts and / or chords are detailed to be attached to walls.
4	D	39	STRUCTURAL	12	Detailing requirements for shotcrete / gunite walls have been incorporated into contract documents.	<p>Verification Criteria</p> <p>Review of contract documents that:</p> <ol style="list-style-type: none"> 1. Foundations to support walls are detailed to be reinforced (analysis may indicate that new foundations are not necessary). 2. Walls are detailed to be reinforced and anchored to existing masonry / concrete walls. 3. Thickness of shotcrete / gunite is clearly defined. 4. Concrete strength requirements are noted. 5. Special inspection and testing requirements are noted. 6. Walls are detailed to be anchored to diaphragms. 7. Drag struts and / or chords are detailed to be attached to walls.
4	D	40	STRUCTURAL	13	Floor diaphragm to wall shear and out-of-plane anchors are incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Anchors design for seismic and wind conditions are shown in structural calculations. 2. Anchor sizes location, spacing, and connection details are shown in structural drawings. 3. Anchor type is shown in specifications.
4	D	41	STRUCTURAL	14	Roof diaphragm to wall shear and out-of-plane anchors are incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Anchor design for seismic and wind conditions are shown in structural calculations. 2. Anchor size, location, spacing, and connection details are shown in structural drawings. 3. Anchor type is shown in specifications.

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4	D	42	STRUCTURAL	15	Sub-diaphragm cross ties, beam continuity cross ties, and collectors (drag struts) are incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Cross ties design for seismic and wind conditions are shown in structural calculations. 2. Cross ties size, location, spacing, and connection details are shown in structural drawings. 3. Cross tie type is shown in specifications.
4	D	43	STRUCTURAL	16	New and / or overlay floor / roof diaphragm design is incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Overlay design for seismic and wind conditions are shown in structural calculations. 2. Overlay thickness, location, and nailing schedules are shown in structural drawings. 3. Overlay type is shown in specifications.
4	D	44	STRUCTURAL	17	Interior partition bracing is incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Bracing design for seismic conditions is shown in structural calculations. 2. Bracing size, location, spacing, and connection details are shown in structural drawings. 3. Bracing type is shown in specifications.
4	D	45	STRUCTURAL	18	Roof mounted steeple design requirements are incorporated into contract documents.	<p>Verification Criteria</p> <p>Review contract documents to verify:</p> <ol style="list-style-type: none"> 1. Steeple support design for seismic and wind conditions are shown in structural calculations. 2. Roof structure stringing size, location, spacing, reinforcement, and connection details are shown in structural drawings. 3. Steeple and support structure type are shown in specifications.
5	D	46	MECHANICAL	1	Thermal envelope design and location has not been altered.	<p>Verification Criteria</p> <p>Review building sections to verify:</p> <ol style="list-style-type: none"> 1. Gypsum board is in place on bottom chord of truss 2. All joints have been sealed 3. All penetrations through thermal envelope have been sealed.
5	D	47	MECHANICAL	2	Seismic gas valve is included in project, if applicable.	<p>Verification Criteria</p> <p>Verify by review of the Seismic Design Category in the Design Criteria table of structural drawings.</p> <p>Valve is not required if Seismic Design Category is A, B or C.</p> <p>Valve is required if Seismic Design Category is D, E, or F.</p>
5	D	48	MECHANICAL	3	Anti-freeze (glycol) protection to be at least 10° F. below winter design conditions.	<p>Verification Criteria</p> <p>Verify that specification, Section 21 1313 has been modified to include only those glycol percent concentrations that will protect the system to at least 10° F. below winter design conditions. Winter design conditions are found on sheet M1.1.</p> <p>For example: the Standard Plan shows a winter design temperature of 0° F. which means the only propylene glycol percent by weight values listed should be 40% and greater.</p>
5	D	49	MECHANICAL	4	Control equipment distributors list in specification has been edited for project.	<p>Verification Criteria</p> <p>Verify that distributors list in specification Section 23 0933 has been shortened for project.</p>

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7	D	50	ELECTRICAL	1	<p>Electrical service transformer and metering equipment are located to minimize visual impact.</p> <p>Verification Criteria Review that the installation is at least 40 feet from center line of main entrance (subject to local power company requirements).</p>
7	D	51	ELECTRICAL	2	<p>Parking area lighting layout meets AEC Design Guidelines and avoids light trespass.</p> <p>Verification Criteria Review pole heights (should be 18'), locations (should not be on outside perimeter of parking area), and type of lighting fixtures (should be cut-off type) are per AEC Design Guidelines.</p>