SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Quality control and control of installation.
   2. Tolerances.
   3. References.
   4. Mock-up requirements.
   5. Authority and duties of Owner's representative or inspector.
   6. Sampling and testing.
   7. Testing and inspection services.
   8. Contractor's responsibilities.

1.02 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

H. When specified, products will be tested and inspected either at point of origin or at Work site:
   1. Notify Engineer in writing well in advance of when products will be ready for testing and inspection at point of origin.
   2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.

I. Do not ship products which require testing and inspection at point of origin prior to testing and inspection.

1.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When Manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

A. ASTM International (ASTM):
   1. E329 - Standard for Agencies Engaged in Construction Inspection, Testing or Special Inspection.

1.05 PRODUCT REQUIREMENTS

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.06 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be comparison standard for remaining Work.

D. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Engineer.

1.07 AUTHORITY AND DUTIES OF OWNER'S REPRESENTATIVE OR INSPECTOR

A. Owner's Project Representative employed or retained by Owner is authorized to inspect the Work.

B. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.

C. Deficiencies or defects in the Work which have been observed will be called to Contractor's attention.

D. Inspector will not:
   1. Alter or waive provisions of Contract Documents.
   2. Inspect Contractor's means, methods, techniques, sequences, or procedures for construction.
   3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for Contractor. Supervise, control, or direct Contractor's safety precautions or programs; or inspect for safety conditions on Work site, or of persons thereon, whether Contractor's employees or others.

E. Inspector will:
   1. Conduct on-site observations of the Work in progress to assist Engineer in determining when the Work is, in general, proceeding in accordance with Contract Documents.
   2. Report to Engineer whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special procedures.

1.08 SAMPLING AND TESTING

A. General:
   1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in sections where materials are specified.
   2. When specified in sections where products are specified:
      a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
      b. Test materials in accordance with standards of national technical organizations.

B. Sampling:
   1. Furnish specimens of materials when requested.
   2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
   3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
   4. Assist Engineer in preparation of test specimens at site of work, such as soil samples and concrete test cylinders.

1.09 TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for specified services of an "Owner's independent testing firm" certified to perform testing and inspection as required in the technical specifications for various work and materials or stipulated in Section 01455 - Special Tests and Inspections to confirm Contractor's compliance with Contract Documents.

B. The Owner's independent testing firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner and requested by the Engineer.

C. The qualifications of laboratory that will perform the testing, contracted by the Owner shall be as follows:
   1. Has authorization to operate in the state where the project is located.
   2. Meets "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
   3. Meets requirements of ASTM E329.
   4. Laboratory Staff: Maintain full time specialist on staff to review services.
   5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards (NBS) or accepted values of natural physical constants.
   6. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory of NBS during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.

D. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing inspections and source quality control as required by Engineer or Owner.

E. Contractor shall cooperate with Owner's independent testing firm, furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Engineer and Owner's independent testing firm 48 hours prior to expected time for operations requiring testing.
   2. Make arrangements with Owner's independent testing firm and pay for additional samples and tests required for Contractor's use.

F. Limitations of authority of testing Laboratory: Owner's independent testing firm or Laboratory is not authorized to:
   1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency or laboratory may not approve or accept any portion of the Work.
   3. Agency or laboratory may not assume duties of Contractor.
   4. Agency or laboratory has no authority to stop the Work.

G. Testing and employment of an Owner's independent testing firm or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

H. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same Owner's independent testing firm on instructions by Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

I. The Owner's independent testing firm responsibilities will include:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.

4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests required by Engineer.
7. Attend preconstruction meetings and progress meetings.

J. Owner's independent testing firm individual test reports: After each test, Owner's independent testing firm will promptly submit electronically and 3 hard copies of report to Owner, Engineer and to Contractor. Include the following:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Certified test results stamped and signed by a registered Engineer in the State of Utah.
10. Summary of conformance with Contract Documents.
11. When requested by Engineer, the Owner's independent testing firm will provide interpretation of test results.

K. Owner's independent testing firm will provide monthly report of certification to identify all work performed for special inspections and other contract requirements on this project. The following certified monthly report at a minimum will include but not limited to:
1. Results of testing.
2. Testing logs.
3. Outstanding deficiencies.
4. Various statistical data.
5. Testing curves (up to 4 types) as required by the Engineer.

1.10 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with Owner's independent testing firm or laboratory personnel and provide access to construction and manufacturing operations.

B. Secure and deliver to Owner's independent testing firm or laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

C. Provide to Owner's independent testing firm or laboratory and Engineer preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.

D. Furnish electronically and 5 hard copies of product test reports.

E. Furnish incidental labor and facilities:
1. To provide access to construction to be tested.
2. To obtain and handle samples at Work site or at source of product to be tested.

3. To facilitate inspections and tests.
4. For storage and curing of test samples.

F. Notify Owner's independent testing firm or laboratory 48 hours in advance of when observations, inspections and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01455

SPECIAL TESTS AND INSPECTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: This Section describes the requirements for providing special tests and inspections.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C140 -Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   2. C270 - Standard Specification for Mortar for Unit Masonry.
   3. C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
   4. C1019 - Standard Test Method for Sampling and Testing Grout.
   5. C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.

B. International Building Code (IBC).

1.03 DESCRIPTION

A. This Section describes special tests and inspections of structural assemblies and components to be performed in compliance with the IBC.

B. These special tests and inspections are in addition to the requirements specified in Section 01450 - Quality Control, and by the individual Sections.

C. The Owner will employ 1 or more inspectors who will provide special inspections during construction.

1.04 INSPECTION

A. Duties of Special Inspector:
   1. General: Required duties of the Special Inspector are described in the IBC.

1.05 STRUCTURAL OBSERVATIONS

A. Structural observations are separate from Special Inspections and shall be conducted by the Engineer. Structural Observations shall include, but not be limited to, concrete embeds, sleeves, anchor bolts, pile layout, and other items as required by the Engineer.

1.06 TESTS

A. Selection of the material required to be tested shall be by the Owner's testing laboratory and not the Contractor.

1.07 SPECIAL TESTING AND INSPECTIONS

A. Testing laboratory: Special tests will be performed by the Owner's testing laboratory as specified in Section 01450 - Quality Control.

B. Owner reserves the right to positive material identification tests.
   1. Contractor must make materials available for testing.

C. The following types of work require special inspection as described in the IBC, Refer to the following verification, testing and inspection schedules:
   1. Appendix A, Cast-In-Place Concrete Special Inspection Schedule.
   2. Appendix B, Essential Architectural, Mechanical And Electrical Inspection Schedule.
   3. Appendix C, Level 2 Masonry Special Inspection Schedule.
   4. Appendix D, Soils Verification And Inspection Schedule.
   5. Appendix E, Structural Steel Special Inspection Schedule.
   6. Appendix F, Structural Steel Bolting Special Inspection Schedule.
   7. Appendix G, Steel Construction Other Than Structural Steel Schedule.
   8. Appendix H, Deep Foundation Elements : Driven Steel Pipe Piles: Concrete Filled.

1.08 OTHER SPECIFIC TESTS

A. Masonry shall be tested in accordance with the IBC.
   1. Minimum strength of units shall be tested in accordance with ASTM C140.
   2. Minimum strength of grout shall be tested in accordance with ASTM C1019.
   3. Prior to construction, obtain samples of the aggregates, additives, and water; mix and test in laboratory in accordance with ASTM C270.
   4. During construction, sample and test masonry for consistency prior to use on each structure in accordance with ASTM C780.
   5. When approved by the building official, if installed masonry does not meet requirements, conduct prism tests in accordance with ASTM C1314.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 SCHEDULE

A. The Contractor shall be responsible for scheduling all special inspectors in advance as required by the special inspectors and shall allow time necessary for Special Inspections as listed above.

B. Sufficient notice shall be given so that the Special Inspections can be performed. This includes time for off-site Special Inspectors to plan the inspection and travel to site.

3.02 PROCEDURE

A. The Special Inspector will immediately notify the Engineer of any corrections required and follow notification with appropriate documentation.

B. The Contractor shall not proceed until the work is satisfactory to the Engineer.

END OF SECTION

APPENDIX A

CAST-IN-PLACE CONCRETE SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard	Frequency of Inspection[1]	
		Continuous During Task Listed	Periodic During Task Listed
1. Inspection of reinforcing steel, including prestressing tendons, and placement.	ACI 318: 3.5, 7.1-7.7		X
2. Inspection of reinforcing steel welding welding in accordance with Appendix H, Item 2b.	AWS D1.4 ACI 318: 3.5.2		
3. Inspection of anchors cast in concrete prior to and during placement of concrete.	ACI 318: 8.1.3, 21.2.8		X
4. Inspection of anchors post-installed in hardened concrete members.	ACI 318: 3.8.6, 8.1.3, 21.2.8 ICC-ES Report(s)		X
5. Verifying use of required design mix.	ACI 318: Ch. 4, 5.2-5.4		X
6. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	X	
7. Inspection of concrete and shotcrete placement for proper application techniques.	ACI 318: 5.9, 5.10	X	
8. Inspection for maintenance of specified curing temperature and techniques.	ACI 318: 5.11-5.13		X
9. Inspection of prestressed concrete: Application of prestressing forces.	ACI 318: 18.20		
10. Inspection of prestressed concrete: grouting of bonded prestressing tendons in the seismic force-resisting system.	ACI 318: 18.18.4		
11. Erection of precast concrete members.	ACI 318: Ch. 16		X
12. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	ACI 318: 6.2		X
13. Inspect formwork for shape, location, and dimensions of the concrete member being formed.	ACI 318: 6.1.1		X
14. Inspection of adhesive anchors (epoxy anchors) in horizontal and upwardly inclined positions.	ACI 318: D.9.2.4	X	
15. Inspection of "Form Savers" and reinforcement couplers	Applicable ASTM material standards		X

APPENDIX B

ESSENTIAL ARCHITECTURAL, MECHANICAL AND ELECTRICAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
1. Suspended ceiling system including anchorage.		-	X
2. Anchorage of electrical equipment for emergency standby power.		-	X
3. Anchorage of other electrical or mechanical equipment over 1,000 lb. on floors or roofs.		-	X
4. Anchorage of ducts greater than 6 s.f. in cross-section.		-	X
5. Anchorage of pipelines greater than 8 inches in diameter.		-	X

APPENDIX C

LEVEL 2 - MASONRY SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Referenced Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
1. Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified.	TMS 602/ACI 530.1/ ASCE 6, Art. 1.5	-	X
2. Verification of f'_m and f'_{AAC} prior to construction and for every 5,000 square feet during construction.	TMS 602/ACI 530.1/ ASCE 6, Art. 1.4B	-	X
3. Verification of proportions of materials in premixed or preblended mortar and grout as delivered to the site.	TMS 602/ACI 530.1/ ASCE 6, Art. 1.5B	-	X
4. Verification of slump flow and VSI as delivered to the site for self-consolidating grout.	TMS 602/ACI 530.1/ ASCE 6, Art. 1.5B.1.b.3	X	-
5. The following shall be verified to ensure compliance:			
a. Proportions of site-prepared mortar and grout.	TMS 602/ACI 530.1/ ASCE 6 Art. 2.6A	-	X
b. Placement of masonry joints and construction of mortar joints.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.3B	-	X
c. Placement of reinforcement and connectors.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.4, 3.6A	-	X
d. Grout space prior to grout.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.2D	X	-
e. Placement of grout.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.5	X	-
f. Size and location of structural elements.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.3F	-	X
g. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.	TMS 402/ACI 530/ASCE 5 Sect. 1.2.2(3), 1.16.1	X	-
h. Specified size, grade and type of reinforcement and anchor bolts.	TMS 602/ACI 530.1/ ASCE 6 Art. 2.4, 3.4	-	X

Verification and Inspection	Referenced Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
i. Welding of reinforcing bars.	TMS 402/ACI 530/ASCE 5 Sect. 2.1.9.7.2, 3.3.3.4 (b)	X	-
j. Preparation, construction and protection of masonry during cold weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F).	TMS 602/ACI 530.1/ ASCE 6 Art. 1.8C, 1.8D	-	X
5. During construction the inspection program shall verify:			
a. Size and location of structural elements.	TMS 602/ACI 530.1/ ASCE 6 Art. 3.3F	-	X
b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.	TMS 402/ACI 530/ ASCE 5 Sec. 1.2.2(e), 1.16.1	-	X
c. Specified size, grade and type of reinforcement and anchor bolts.	TMS 402/ACI 530/ ASCE 5 Sec. 1.15	-	X
d. Welding of reinforcing bars.	TMS 402/ACI 530/ ASCE 5 Sec. 2.1.9.7.2, 3.3.3.4(b)	X	-
e. Preparation, construction, and protection of masonry during cold weather (temperature below 40° F) or hot weather (temperature above 90° F).	TMS 602/ACI 530.1/ ASCE 6 Art. 1.8C, 1.8D	-	X
6. Preparation of any required grout specimens and/or prisms shall be observed.	TMS 602/ACI 530.1/ ASCE 6, Art. 1.4	X	-

APPENDIX D

SOILS VERIFICATION AND INSPECTION SCHEDULE

Verification and Inspection	Reference Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
1. Verify materials below footings are adequate to achieve the design bearing capacity.		-	X
2. Verify excavations are extended to proper depth and have reached proper material.		-	X
3. Perform classification and testing of controlled fill materials.		-	X
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill.		X	-
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly.		-	X

APPENDIX E

STRUCTURAL STEEL SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
1. Material verification of high-strength bolts, nuts and washers:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.		-	X
b. Manufacturer's certificate of compliance required.		-	X
2. Inspection of high-strength bolting:			
a. Bearing-type connections.		-	X
b. Slip-critical connections.		X	X
3. Material verification of structural steel:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.		-	X
b. Manufacturers' certified mill test reports.		X	-
4. Material verification of weld filler materials:			
a. Identification markings to conform to AWS specification in the approved construction documents.		-	X
b. Manufacturer's certificate of compliance required.		-	X
5. Inspection of welding:			
a. Structural steel:		-	-
1) Complete and partial penetration groove welds.		X	-
2) Multi-pass fillet welds.		X	-
3) Single-pass fillet welds > 5/16".		X	-
4) Single-pass fillet welds ≤ 5/16".		-	X
5) Floor and deck welds.		-	X

Verification and Inspection	Reference Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
b. Reinforcing steel:		-	-
1) Verification of weldability of reinforcing steel other than ASTM A706.		-	X
2) Reinforcing steel-resisting flexural and axial forces in boundary elements of special reinforced concrete shear walls and shear reinforcement.		X	-
3) Shear reinforcement.		X	-
4) "Form Saver" (reinforcing couplers).		X	-
6. Inspection of steel frame joint details for compliance with approved construction documents:			X
a. Details such as bracing and stiffening.		X	-
b. Member locations.		X	-
c. Application of joint details at each connection.		X	
7. Seismic force resisting systems identified on structural plans.		X	-

APPENDIX F
STRUCTURAL STEEL BOLTING SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Referenced Standard	Frequency of Inspection[1]	
		Continuous During Task Listed	Periodic During Task Listed
Inspection Tasks Prior to Bolting	AISC 360, Table N5.6-1		
1. Manufacturer's certifications available for fastener materials.		X	
2. Fasteners marked in accordance with ASTM requirements.			X
3. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane).			X
4. Proper bolting procedure selected for joint detail.			X
5. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.			X
6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.			X
7. Proper storage provided for bolts, nuts, washers and other fastener components.			X
Inspection Tasks During Bolting	AISC 360, Table N5.6-2		
8. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.			X
9. Joint brought to the snug-tight condition prior to the pretensioning operation.			X
10. Fastener component not turned by the wrench prevented from rotating.			X
11. Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges.			X
Inspection Tasks After Bolting	AISC 360, Table N5.6-3		
12. Document acceptance or rejection of bolted connections.		X	

(1) The "X" represents a required inspection activity for the project where it occurs.

APPENDIX G
STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL
SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Referenced Standard	Frequency of Inspection[1]	
		Continuous During Task Listed	Periodic During Task Listed
1. Material verification of cold-formed steel deck:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	Applicable ASTM material standards	–	X
b. Manufacturer's certified test reports.	–	–	X
2. Material verification of cold-formed steel studs and joist			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	Applicable ASTM material standards	--	X
b. Manufacturer's certified test reports.	–	–	X
3. Inspection of welding:			
a. Cold-formed steel deck:			
1) Floor and roof deck welds.	AWS D1.3	–	X
b. Reinforcing steel:			
1) Verification of weldability of reinforcing steel other than ASTM A 706.	AWS D1.4, ACI 318: 3.5.2	–	X
2) Reinforcing steel-resisting flexural and axial forces in boundary elements of special structural walls and shear reinforcement.		X	–
3) Shear reinforcement.		X	–
4) "Form Saver" (reinforcing couplers).		X	–

(1) The "X" represents a required inspection activity for the project where it occurs.

APPENDIX H

DEEP FOUNDATION ELEMENTS : DRIVEN STEEL PIPE PILES : CONCRETE FILLED

Verification and Inspection	Reference Standard	Frequency of Inspection	
		Continuous During Task Listed	Periodic During Task Listed
1. Verify element materials, size and lengths comply with the requirements indicated in the drawings.		X	
2. Determine capacities of test elements and conduct additional load test, as indicated in the drawings.		X	
3. Inspect driving operations and maintain complete and accurate records for each element.		X	
4. Verify placement locations and plumbness, confirm type and size of manner, record number of blows per foot of penetration, determine required penetration to achieve design capacity, record tip and butt elevations and document any damage to foundation elements.		X	
5. Material, welding and bolting requirements set forth for Structural Steel in Appendix E above.		X	