

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES ▼
HUMAN RESOURCES ENTERPRISE
MATERIALS FABRICATION INSPECTOR 2

DEFINITION

Performs independent, highly responsible, and technical work coordinating and performing assurance sampling, inspection, and testing associated with structural metal materials fabrication at contractor plants to assure production quality and compliance relating to fabricated metal materials used in highway structure construction projects; performs related inspection or testing activities of non-metal highway construction or maintenance materials as required.

The Work Examples and Competencies listed are for illustrative purposes only and not intended to be the primary basis for position classification decisions.

WORK EXAMPLES

Plans, coordinates, prepares, performs, and directs assurance inspection procedures for a project including: prefabrication inspection of plant facilities and processes; base materials inspection and testing, production welding inspection and testing, design or laydown inspection; on the basis of structure design by comparing the structure design and contract provisions to specified codes, standards, and specifications and determining the necessary assurance inspection procedures to be used throughout the fabrication process in order to apprise effected parties of the various inspection procedures, to establish the project log, and to preclude possible fabrication problems.

Inspects: welding operations to insure the quality of weldments by verifying that only qualified welders, welding operators, or tackers weld on components and employ approved materials and procedures in accordance with project design plans, standard specifications, and special provisions; heat curving and straightening of components to assure compliance with standards and specifications relative to attainment of critical temperatures by visually observing the process and determining tolerances using temperature sensitive crayons; and the preparation of surfaces by visually observing ambient conditions, the sandblasting and cleaning of fabricated components, and examining results to assure a clean and smooth surface for proper adhesion of paint, when applied, and determining the thickness of applied paint and other films by measuring with a micro-test gauge for conformance to the specified film thickness and assuring the use of certified materials.

Accepts or rejects fabricated components, production materials, facilities, equipment, processes, and personnel qualifications throughout the various inspection phases by: determining compliance with tolerances detailed in contract design plans, specifications, and/or standard practices; advises the bridge and/or materials project engineer of any design problems, shop discrepancies, and/or materials problems exceeding tolerances by communicating in a timely manner, via telephone, the problems encountered and requesting prescribed corrective procedures; and initiates and monitors the prescribed corrective measures and logs the results in the project diary for subsequent inclusion in the final project report to insure production quality and compliance.

Monitors, reviews, interprets, and/or performs nondestructive testing including radiography, magnetic particle, liquid penetrant, and ultrasonics to assure conformance to the contract specified codes, standard specifications, and special provisions by witnessing the processes and results of testing and verifying current certification of personnel performing testing; in order to determine that weldments are free of defects which could be detrimental to the performance of the structure.

Performs design inspection (laydown) of the fabricated components during assembly to insure conformance to design drawings by making physical dimensional checks of camber, sweep, and designed thickness of fabricated components through the use of tape measures, stringlines, rules, and transits.

Visually inspects and records quantity and quality of metal products received at contractor plant for project fabrication by: verifying the actual number of plates, heat numbers, and dimensions of the materials using rules, tapes, and calipers to contractor certified purchase orders; and comparing certified steel mill test results to specifications to insure that physical and chemical properties of the materials fall within acceptable limits in order to document the level of prepayment for materials to be used in the fabrication process and assure compliance to contract provisions.

Prepares a final narrative report in order to document all areas of inspection (materials, welding shop, and design) performed during the fabrication process and to verify that all inspections were satisfactory, or were corrected satisfactorily, by expanding information included in the project diary and submitting the report to the central laboratory, Bridge Design office, and the engineers responsible for project administration.

Visually inspects the various fabrication processes of a structure by observing on a daily basis the grinding, burning, sawing, planing, drilling, milling, fitting, heating, bending, and punching of components in order to insure conformance to tolerances as specified by contract documents.

Monitors the quality control functions of the fabricator by reviewing report forms and/or inspection documents to determine conformance with codes, standards, specifications, and special provisions.

Administers welding procedure tests and welding operator tests by observing the welding process, recording welding parameters, and submitting weld test plates to the central laboratory for testing review in order to certify contractor personnel and procedures used in the fabrication of structural steel components.

Maintains and documents heat number identity of main members of the steel structure through the fabrication process to insure design and specification conformance.

Secures samples of bolts, nuts, washers, and other miscellaneous structural materials, not accepted on a certification basis, in order to submit materials to the Central Laboratory for testing and approval prior to use.

Recommends as necessary revisions of standard inspection and testing procedures, repair procedures, design detailing practices, standard specifications, and special provisions associated with the fabrication of structural metal materials to appropriate engineering personnel.

Performs, in accordance with set procedures, policies, and standards, such duties as instructing technical subordinates about tasks, answering questions about procedures and policies, distributing and balancing the workload, and checking work.

COMPETENCIES REQUIRED

Knowledge of the contemporary principles, practices, terminology, methods, equipment, and procedures associated with the areas of welding, metallurgy, and materials inspection as it relates to the fabrication of metals.

Knowledge of the requirements and intent of applicable codes, standards and specifications of: the Iowa Department of Transportation; American Association of State, Highway, and Transportation Officials; American Welding Society; American Society for Testing and Materials; American Society for Nondestructive Testing; and the Steel Structures Painting Council.

Knowledge of the common causes and acceptable methods of detecting and repairing faulty weldments.

Knowledge of the methods of basic nondestructive testing and the criteria used for the acceptance and rejection of work based on nondestructive testing results.

Knowledge of the standard principles, methods, procedures, and policies relative to the sampling, inspection, and testing of materials used in the construction and maintenance of highways.

Knowledge of the occupational hazards and safety precautions applicable to the work.

Ability to occasionally (1-33% of the time) lift /lower, carry and push/pull items weighing up to 75 pounds.

Ability to work outdoors in all types of weather conditions, day or night, in normal and emergency situations.

Ability to climb, kneel, crouch, crawl, stoop and twist and perform duties using appropriate tools and equipment within safety standards.

Ability to walk over uneven ground.

Ability to drive vehicles in a safe and conscientious manner.

Ability to read and write English.

Ability to understand and follow verbal and written directions/instructions given in English.

Ability to operate computers and/or other electronic devices and use programs/applications to conduct Department of Transportation business.

Ability to read, understand, and apply complex bridge design plans, shop drawings, codes, standards, specifications, and guidelines to the development and manufacture of structural steel and other components in order to plan, direct, and enforce fabrication inspection procedures.

Ability to measure surfaces accurately using tapes, roughness guides, fitup and welding gauges, wet and dry film gauges, and transits.

Ability to interpret, apply, and communicate the results of nondestructive tests and the criteria associated with the acceptance and rejection of work based on those results to the contractor's representative.

Ability to communicate effectively with engineers, fabricator personnel, and others in order to describe conditions relating to and explain the intent of project design plans, standard specifications, and special provisions.

Ability to accurately perform mathematic calculations, maintain record logs, and other materials associated with the inspection process.

Ability to operate the tools and equipment peculiar to materials fabrication inspection including gauges, transits, measuring devices, and welding devices.

Skill in the operation of a transit.

Sufficient manual dexterity and mobility to allow the successful physical inspection of large steel structures and components before, during, and after fabrication.

Sufficient visual acuity and near vision acuity to measure 20-40 vision as measured on corrective eye charts and the Jaeger J-1, with or without correction, as required by the American Welding Society.

Displays high standards of ethical conduct. Refrains from dishonest behavior.

Works and communicates with all clients and customers providing polite, quality professional service.

Displays a high level of initiative, effort, attention to detail and commitment by completing assignments efficiently with minimal supervision.

Follows policy, cooperates with supervisors and aligns behavior with the goals of the organization.

Fosters and facilitates cooperation, pride, trust, group identity and team spirit throughout the organization.

Exchanges information with individuals or groups effectively by listening and responding appropriately.

EDUCATION, EXPERIENCE, AND SPECIAL REQUIREMENTS

The equivalent of five years full-time journey level experience in the design, production, construction, inspection, and/or repair of weldments fabricated to a code, standard, or specification, which includes at least two years of experience in the sampling, inspection and/or testing of materials used in construction and maintenance of highways;

OR

an equivalent combination of education and experience substituting one year (30 semester hours) of college, university, or technical school course work with an emphasis in engineering technology, engineering, physics, or the physical sciences for each year of the required experience to a maximum substitution of two years, no

substitution allowed for the two years' experience in the sampling, inspection, and/or testing of materials used in the construction and maintenance of highways;

OR

an equivalent combination of experience substituting one year of full time teaching experience at a college, university, or technical school the occupational skill of welding or subjects related to welding, its application, control, materials, and processes, for each year of the required experience to a maximum substitution of two years, no substitution allowed for the two years' experience in the sampling, testing, and/or inspection of materials used in the construction and maintenance of highways.

NECESSARY SPECIAL REQUIREMENTS

All positions are required to have and maintain a minimum of a valid Class C Non-Commercial Operator's License.

Prior to starting employment, all persons are required to have a post offer pre-employment physical verifying the physical ability to perform the duties described.

Positions require certification for testing materials and operating specialized equipment as required by the Iowa Department of Transportation's Technical Training and Certification Program for Highway Materials and Construction; and/or other certifications as required.

Positions must hold current and continuous certification as a Certified Welding Inspector from the American Welding Society and non-destructive testing level 1 or 2 certification from the American Society of Non-Destructive Testing.

NOTES

Positions in this classification are required to perform inspection activities on projects at out of state contractor facilities for extended periods of time.

Employees must be able to travel extensively and to stay away from home overnight during assignments.

Effective Date: 10/13 BR