



## INTEROFFICE MEMORANDUM

**DATE:** 9/19/18

**TO:** Mayor and Council

**FROM:** Keith Helmuth, City Engineer *kh*

**SUBJECT:** Late Distribution 9/19/18 Agenda  
Items B-4 and B-5 Exhibits for On-Demand Services Agreements (2)

Attached are Exhibits A and B for agenda items B-4 (agreement with Krazan and Associates) and Item B-5 (agreement with Moore Twining Associates, Inc.). The exhibits were not available at the time of final distribution of the agenda packet.

Thank You.

C: City Administrator  
City Attorney  
Community Development Director



GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING  
CONSTRUCTION TESTING & INSPECTION

**2018 Fee Schedule (Prevailing Wage)**

***Central California***

Established 1982

**Principals**

**AUGUST HIOCO** .....President  
**DEAN L. ALEXANDER, R.E.A., R.C.E., R.G.E.** .....Principal Engineer  
**DAVE R. JAROSZ, II, R.C.E., R.G.E.** ..... VP Engineering Services  
**BYRON "KIP" WILLIAMSON**..... Managing Partner

\*This Fee Schedule was developed based on **DETERMINATION** NC-63-3-9-2017-1, **ISSUE DATE:** August 22, 2017, **EXPIRATION DATE OF DETERMINATION:** June 30, 2018, with the **PREDETERMINED** rate increases for July 1, 2018 and July 2019. For projects continuing on beyond July 1, 2018, the billings rates presented herein shall increase by \$2.80 per hour on July 1, 2018; for services that continue on beyond July 1, 2019, the billings rates as adjusted on July 1, 2018 shall increase by \$3.40 per hour on July 1, 2019. The billing rates are subject to revision at the time of issuance of a new Determination and subsequent Determinations or Predetermined Increases for the duration of the project. The rates in effect at the time of a Determination or Predetermination shall be increased proportionally with respect to any labor and benefits rate increases mandated by the California Department of Industrial Relations.

## Terms of Payment

Invoices shall be deemed delinquent if not paid within 30 days of the invoice date and will be subject to a late payment charge of 1.5% per month or the maximum percentage allowed by law, whichever is the lesser on the unpaid balance from the invoice date, including the undisputed portions of invoices with disputed charges, until the same is paid, as liquidated damages for additional credit and collection expenses incurred by Krazan & Associates, Inc.

## Charges

### **Minimum Charges**

Field services performed by our technicians are subject to a 4 hour minimum charge for each day of service, with services in excess of 4 hours subject to an 8-hour charge. Services in excess of 8 hours per day are billed in hourly increments. Field and office-based engineering and administrative services have a one-hour minimum charge and are billed in hourly increments. Expert Witness and Deposition services are billed on half- and full day (4 and 8 hour) basis and hourly after 8 hours. Sample pick-up services are subject to a 1 hour minimum charge during regular Hours Monday through Friday and a 2 hour minimum charge for pick-ups on weekends or holidays.

### **Regular Time Charges**

Regular time charges are applicable to services initiated Monday through Friday (excluding holidays), between 7 A.M. to 3 P.M. Premium charges are applicable on holidays and weekends.

### **Night Shift Differential**

For services initiated after 2:00 P.M. or before 4:00 A.M. during any twenty-four (24) hour period commencing at 12:01 A.M. shall be subject to a twelve and one-half (12.5) percent premium above the regular rate.

### **Time and One-Half Charges**

Time and one-half charges will be rendered on Regular Time weekdays for services extending beyond 8 hours and not exceeding 12 hours of total service that day. Services rendered on Saturdays will be charged at one and one-half (1.5) times the Regular Time rate for the first 8 hours.

### **Double Time Charges**

Services rendered on Holidays, Sunday, in excess of 8 hours on Saturday, or in excess of 12 hours on weekdays, will be charged at double the Regular Time rate.

### **Travel Time and Mileage Charges**

Field services are billed based on time charged portal-to-portal from the closest Krazan & Associates' office providing the required services. Projects in excess of 20 miles from our local offices are subject to mileage charges.

### **Reimbursable Expenses and Subcontractor Charges**

Direct expenses, including but not limited to shipping, overnight or expedited delivery beyond standard postage, photo processing, sublet reproduction, and consumable materials used in field services will be charged to the client at cost plus 20%.

Subcontractor, Subconsultant and equipment rental charges, including but not limited to backhoe rental or backhoe services, subcontracted drilling services, concrete pumping services, and subcontracted specialty laboratory testing and inspection services, will be charged to the client at cost plus 20%.

## **Travel and Subsistence**

On remote jobs or projects, travel and subsistence, when not furnished, will be charged to the client at cost plus 20%; the minimum per diem rate for subsistence is \$150.00.

## **Clerical and Engineer Review Charges**

All projects will incur clerical preparation and engineering review charges.

## **Supervisor Charges**

Supervisor charges are above and beyond hourly and unit rates quoted for testing and inspection services.

## **Cancellation**

All cancellations without a 12 hour notice of cancellation will be subject to 2 hour minimum charges per day cancelled. Notice of cancellation must be received by our office during our office hours of 7:30 A.M. to 5:00 P.M. Monday through Friday (excluding holidays) and cannot be left on the voice mail system.

## **Cost of Services**

Unless expressly stated in a project-specific Proposal or Agreement, services are provided on a time-and-expense basis, subject to the Basis of Charges presented above. Where provided, Cost Estimates are provided in good faith based on the scope of work and assumptions outlined in the Proposal. The term "Cost Estimate" does not imply a maximum contract amount, but only the extension value of our unit prices at the time of proposal preparation.

## **Insurance**

Krazan & Associates, Inc. carries in excess of all insurance required by law. Additional costs of extra insurance certificates, co-insurance endorsements or additional insurance will be charged to the client at cost plus 20%.

## **Cost-Of-Living Adjustment**

The rates presented in this fee schedule are applicable only through June 30, 2018. For services OTHER THAN services subject to Prevailing Wage in accordance with the requirements of the State of California Department of Industrial Relations, the rates presented herein for projects that will extend beyond June 30, 2018 are subject to an annual cost of living adjustment based on the consumer price index for the region where our services are being provided. Where Prevailing Wage is applicable for projects continuing on beyond July 1, 2018, the billings rates presented herein shall increase by \$2.80 per hour on July 1, 2018; for services that continue on beyond July 1, 2019, the billings rates as adjusted on July 1, 2018 shall increase by \$3.40 per hour on July 1, 2019. Furthermore, the billing rates are subject to revision at the time of issuance of a new Determination and subsequent Determinations or Predetermined Increases for the duration of the project. The rates in effect at the time of a Determination or Predetermination shall be increased proportionally with respect to any labor and benefits rate increases mandated by the California Department of Industrial Relations.

## GENERAL FEE SCHEDULE FOR PROFESSIONAL & TECHNICAL SERVICES

### Professional

Principal Engineer .....	\$195.00/hour
Registered Senior Engineer .....	\$150.00/hour
Professional Geologist.....	\$135.00/hour
Certified Asbestos Inspector/Manager .....	\$115.00/hour
Project Engineer/Manager .....	\$115.00/hour
Project Geologist .....	\$115.00/hour
Environmental Specialist.....	\$110.00/hour
Staff Professional (engineer/geologist) .....	\$105.00/hour

### Expert Witness Testimony

Consultation, Preparation for Court, Expert Witness – Principal Engineer .....	\$375.00/hour
Consultation, Preparation for Court, Expert Witness – Registered Senior Engineer .....	\$290.00/hour
Stand-By at Office (Waiting to be called to Court).....	By Quote

### Technicians/Technical Staff

Construction Inspector and Field Soils and Materials Tester*	
Group 1 .....	\$150.00/hour
Group 2 .....	\$125.00/hour
Group 3 .....	\$115.00/hour
Group 4 .....	\$105.00/hour
Offsite Technician / Inspector .....	\$75.00/hour
Draftsman (AutoCAD) .....	\$75.00/hour
Mileage (Portal to Portal from nearest Krazan Office) .....	\$0.55/mile

### Administrative

Administrative Support .....	\$55.00/hour
Word Processing/Reproduction .....	\$55.00/hour

### Geotechnical Exploratory Drilling and Sampling

Drilling (continuous flight, hollow stem auger or rotary wash, w/2 operators)	
CME 45 Drill Rig (truck mounted) .....	\$225.00/hour
CME 55 Drill Rig (truck mounted) .....	\$225.00/hour
Mobile Drill B-61 (truck mounted) .....	\$275.00/hour
Mobile Drill B-61/HDX Drill Rig (truck mounted) .....	\$275.00/hour
Mileage (support vehicles) .....	\$0.75/mile
Mileage (drill rig) .....	\$0.85/mile

## CONSTRUCTION TESTING AND INSPECTION SERVICES

*Specialized Services Are Available On Request*

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### **Geotechnical Field Services**

- Fill Placement Observation
- Soil In-Place Density (Compaction) Testing
- Pile Driving Observation
- Foundation Excavation Observation including piers and caissons
- Soil Nailing and Tieback Installation Observation
- Soil Sampling

### **Special Inspection Services**

- Reinforced Concrete
- Pneumatically Placed Concrete (Shotcrete/Gunite)
- Post-Tensioned Concrete
- Structural Masonry
- Structural Steel Welding
- Structural Steel High-Strength Bolting
- Spray-Applied Fire-Resistive Coatings
- Structural Wood Diaphragm Nailing/Stapling
- Epoxy-set Bolts or Dowels

### **Plant Inspection**

- Structural Steel Fabrication
- Steel Joist Fabrication
- Concrete Batch Plant
- Asphalt Batch Plant
- Pipe Plant (Reinforced Concrete, Clay, etc)
- Glue-Laminated Beam Fabrication (subcontracted service)
- Wood Truss Fabrication (subcontracted service)

### **Nondestructive Examination**

- Ultrasonic, Magnetic Particle, Dye Penetrant
- Radiographic (subcontracted service)
- Pachometer
- Schmidt Hammer
- Ground Penetrating Radar (subcontracted service)
- Ferrosan (subcontracted service)

### **Specialty Inspections and Services**

- Paint/Coating Thickness
- Build-up Roofing
- Welder Qualification

### **Coring Services**

- Asphalt Concrete, Portland Cement Concrete, Masonry

## Aggregates and Soils

### Laboratory Tests

Absorption, ASTM C 127, 128 .....	\$50.00/each
Abrasion (L.A. Rattler 100 & 500 cycles), ASTM C 131 .....	\$225.00/each
Atterberg Limits, ASTM D 4318 .....	\$175.00/each
California Bearing Ratio (CBR), ASTM D 1883 .....	\$750.00/each
Clay Lumps and Friable Particles, ASTM C 142.....	\$115.00/each
Cleanness Value, CAL. 227 .....	\$130.00/each
Consolidation Test ASTM D 2435 .....	\$225.00/each
Crushed Particles, Calif. 205 .....	\$105.00/each
Direct Shear Test, ASTM D 3080, Unconsolidated, Undrained, 3 point .....	\$215.00/each
Durability Index, CAL 229.....	\$195.00/each
Expansion Index, UBC-29-2 .....	\$195.00/each
Flat or Elongated Particles, CRD C 119.....	\$130.00/each
Hydrometer Analysis, ASTM D 422.....	\$200.00/each
Material Finer than No. 200 Sieve, ASTM C 117.....	\$65.00/each
Moisture Content .....	\$20.00/each
Moisture Content and Dry density (Liner Sample) .....	\$30.00/each
Moisture-Density Relations of Soils, ASTM D 698, D 1557, Cal 216 .....	\$200.00/each
Organic Impurities, ASTM C 40 .....	\$80.00/each
Percent Flat or Elongated Particles, CRD C 119.....	\$130.00/each
Percent Crushed Particles, Calif. 205 .....	\$105.00/each
Permeability, Constant Falling Head, ASTM 2434.....	\$275.00/each
Permeability, Failing Head/Flexible Wall, (ASTM D5084), 1.4”-4” .....	\$325.00/each
Permeability, Failing Head/Flexible Wall, (ASTM D5084), 6” .....	\$450.00/each
Permeability Sample Remold .....	\$40.00/each
Plate Bearing Test, ASTM D 1195, D 1196.....	By Quote
Potential Reactivity (Chemical Method 3 Determinations), ASTM C 289.....	By Quote
Potential Reactivity (Mortar Bar Method, ASTM C 227 .....	By Quote
Sand Equivalent (Average of 3), CAL. 217 .....	\$95.00/each
Sieve Analysis - Processed (Each Size), ASTM C 136.....	\$175.00/each
Sieve Analysis Fine (including wash), ASTM C 137, C 177.....	\$125.00/each
Specific Gravity, Coarse, ASTM C 127 .....	\$115.00/each
Specific Gravity, Fine, ASTM C 128.....	\$195.00/each

# Rate Schedule



Soft Particles, ASTM C 235 .....	\$80.00/each
Soluble Chloride Content .....	\$75.00/each
Soluble Sulfate Content .....	\$75.00/each
Soundness - Sodium or Magnesium (5 cycles), ASTM C 88.....	\$750.00/each
"R" (Resistance) Value, CAL. 301, ASTM D 2844 .....	\$250.00/each
"R" (Resistance) Value, Lime Treated or Requiring Recombining .....	\$325.00/each
Triaxial Compression Test, ASTM D 2850	
Unconsolidated, Undrained .....	\$235.00/each
Consolidated, Undrained .....	\$325.00/each
Consolidated, Undrained with Pore Pressure .....	\$500.00/each
Unconfined Compression Test, ASTM D 2166 .....	\$85.00/each
Unit Weight Per Cubic Foot, ASTM C 29 .....	\$55.00/each
 Additional Tests Not Listed.....	 By Quote

## Concrete, Shotcrete and Gunite

### Cylinder, Beams & Cores

Compression Test, 6" x 12" Cylinders, Including Hold, ASTM C 39 (set of 4).....	\$100.00/set
Compression Test, 6" x 12" Cylinders, Including Hold, ASTM C 39 (set of 5).....	\$100.00/set
Compression Test, Cores, ASTM C 42 (Does Not Include Special Prep. time).....	\$40.00/each
Core Cutting (In Laboratory).....	\$40.00/each
Flexure Test, 6" x 6" Beams, ASTM C 78.....	\$95.00/each
Splitting Tensile, 6" x 12" Cylinders, ASTM C 496.....	\$50.00/each
Modulus of Elasticity Test - Static, ASTM C 469.....	\$85.00/each
Unit Weight Determination.....	\$25.00/each

### Shrinkage

Length Change (3 Beams, 4 Readings, Up to 90 Days), ASTM C 157 Modified.....	By Quote
Additional Reading.....	\$30.00/3-bar set
Storage Over 90 days, Per set of 3 Beams.....	\$20.00/month

### Mix Design

Aggregate Tests for Concrete Mix Designs Only:

Sieve Analysis, Specific Gravity, No. 200 Wash, Organic Impurities, and Weight Per Cubic Foot (Per Aggregate Size).....	\$500.00/each
Mix Design (Calculation Only).....	\$500.00/each
Review of Mix Design Prepared by Others.....	\$290.00/each
Trial Batch, ASTM C192.....	\$900.00/each

### Coring

Technician and Equipment.....	\$185.00/hour
Bit Charge.....	\$7.00/inch

### Nozzleman Qualification

Certification of Shotcrete/Gunite Nozzleman in accordance with ACI 506, administer knowledge test, observe test panel production, coring of test panel, laboratory testing of cores..... Quote on Request

## Masonry Materials

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### Brick ASTM C 67

Modulus of Rupture (Flexure).....	\$80.00/each
Compressive Strength.....	\$100.00/each
Absorption - 5 Hour or 24 Hour.....	\$50.00/each
Initial Rate of Absorption.....	By Quote
Efflorescence.....	By Quote
Dimensions, Overall, Coring, Shell and Web Thickness.....	\$25.00/brick
Coefficient of Friction (Slip Test).....	By Quote
Cores, Compression.....	\$60.00/each
Cores, Shear, 6" and 8" Diameter, 2 Faces.....	\$80.00/core

### Concrete Block ASTM C 140

Moisture Content as Received.....	\$40.00/each
Absorption.....	\$65.00/each
Compression.....	\$100.00/each
Tension.....	By Quote
Shrinkage, Modified British, ASTM C 426.....	By Quote
Compression, 3"- 6" diameter Cores.....	\$50.00/each

### Masonry Prisms ASTM E 447

Compression Test, Grouted Prisms.....	\$150.00/each
Cutting Prisms.....	By Quote

### Mortar & Grout UBC Standard 24-22

Compression, 2" x 4" Mortar Cylinder.....	\$25.00/each
Compression, 3" x 6" Grout Prisms.....	\$40.00/each
Compression Test, 2" Cubes, ASTM C 109.....	\$30.00/each

### Unreinforced Masonry Building Tests

In-Place Shear (Push) Tests.....	By Quote
Wall Anchors.....	By Quote

## Reinforcing and Structural Steel

### Reinforcing Steel ASTM A 615

Tensile & Bend Test, No. 11 Bar or Smaller .....	\$75.00/each
Tensile & Bend Test, No. 12 Bar or Larger .....	By Quote
Receive and Distribute Mill Certificates .....	\$10.00/each

### Prestress and Post-tension Tendons (7-Wire Strands) (Attachments To Be Furnished by Client)

#### Prestress (Attachments To Be Furnished by Client)

Tensile Test and Elongation In 24" for Prestress Strand, ASTM A 416.....	By Quote
Tensile Test and Elongation In 10" for Prestressing Wire, ASTM A 421 .....	By Quote
Modulus of Elasticity (Prestressing Wire) .....	By Quote

#### Welded Specimens

Tensile Test, Welded, No. 8 Bar or Smaller.....	By Quote
Tensile Test, Welded, No. 11 .....	By Quote
Tensile Test, Welded, No. 14 and 18 Bar.....	By Quote
Tensile Test, Mechanically Spliced Bar .....	By Quote
Nick Break, Welded Re-Bar.....	By Quote

#### Welder Qualifications/Welding Procedure Specifications

Prepare Welding Procedure Specification (WPS) in accordance with AWS D1.1 .....	By Quote
Prepare Procedure Qualification Record (PQR) in accordance with ASME .....	By Quote
Observe Welder perform Qualification Test single qualification test (at Krazan facility) .....	By Quote
Observe Welder perform Qualification Test single qualification test (at job site).....	By Quote

#### Test Plates/Pipe

3/8" Carbon steel plate .....	\$20.00/set
1" Carbon steel plate .....	\$30.00/set
2" diameter Schedule 160 pipe.....	\$35.00/set
Machining of test specimen.....	By Quote
Bend Test (set of 2) .....	\$50.00/set
Macroetch .....	\$25.00/each
X-ray examination .....	By Quote
Prepare Welder Qualification Report/Certification .....	\$140.00/each

## Asphalt Concrete

Asphalt Concrete Mix Design (Hveem or Marshall) ..... By Quote

Asphalt Content Of Bituminous Mixtures By Solvent Extraction,  
ASTM D 2172 (Method B) or CAL 310 (Excluding Ash Correction) ..... \$250.00/each

Asphalt Content Of Bituminous Mixtures By The Ignition, CAL 382 ..... \$200.00/each

Correction Factor Determination for Asphalt Content, CAL 382 ..... \$450.00/each

Aggregate Gradation on Extracted Sample (Including Wash) ..... \$200.00/each

### Swell, Stability and Moisture Vapor Susceptibility Tests

#### California Test Methods

Lab Trial Batch/ Sample Preparation (per point) ..... \$60.00/each

Lab Compaction of Test Specimen Pre-Mixed, CAL 304 ..... \$200.00/each

Lab Compaction of Test Specimen, Lab-Mixed, CAL 304 ..... \$300.00/each

Hveem Stability CAL 304 and CAL 366 ..... \$290.00/each

Specified Gravity (Lab Compacted) CAL 308..... \$35.00/each

#### Marshall Method

Lab Trial Batch/ Sample Preparation (per point) ..... \$60.00/each

Lab Compaction of Test Specimen, Pre-Mixed, ASTM D 1559 ..... \$200.00/each

Lab Compaction of Test Specimen, Lab-Mixed, ASTM D 1559 ..... \$300.00/each

Stability and Flow (including lab compaction of sample)..... \$290.00/each

Specified Gravity (Lab Compacted)..... \$35.00/each

Maximum Theoretical Unit Weight (Rice Gravity) ASTM 204 ..... \$250.00/each

Asphalt Concrete Core Density ..... \$35.00/each

### Stability Tests

Hveem, Pre-Mixed, CAL. 304 ..... \$225.00/each

Hveem, Lab-Mixed, CAL. 304..... \$300.00/each

Marshall, Pre-Mixed, ASTM D 1559..... \$225.00/each

Marshall, Lab-Mixed, ASTM D 1559 ..... \$300.0/ each

### Maximum Density

Hveem, Pre-Mixed, CAL. 304 ..... \$225.00/each

Hveem, Lab-Mixed, CAL. 304..... \$300.00/each

Marshall, Pre-Mixed, ASTM D 1559..... \$225.00/each

Marshall, Lab-Mixed, ASTM D 1559 ..... \$300.00/each

## Miscellaneous Materials Tests and Equipment Charges

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### Gypsum Roof Fill ASTM C 495

Compression Test .....	\$25.00/each
Density.....	\$50.00/each

### Fireproofing Tests

Thickness, Field Sampling by Technician.....	Billed at Field Rates
Oven Dry Density .....	\$55.00/sample

### Equipment

Air Meter (Concrete) – Pressure.....	\$25.00/day
Air Meter (Concrete) – Volumetric .....	\$45.00/day
Calibrated Torque Wrench (max. capacity 200 ft-lb) .....	\$25.00/day
Calibrated Torque Wrench (capacity exceeding 200 ft-lb) .....	\$50.00/day
F-Meter Profiler (floor flatness) .....	\$250.00/day
Nuclear Density Gauge.....	\$25.00/day
Pachometer .....	\$50.00/day
Paint Thickness Gauge (electronic).....	\$50.00/day
Proof-load Equipment (testing of anchor bolts, no specialized fixtures) .....	\$50.00/day
Schmidt Hammer.....	\$50.00/day
Skidmore-Wilhelm device.....	\$100.00/day
Ultrasonic Testing Equipment (structural steel inspection) .....	\$10.00/hour
Vehicle Mileage.....	\$0.75/mile

# EXHIBIT "B"



GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING  
CONSTRUCTION TESTING & INSPECTION

September 18, 2018

TISP #18695CAF

Mr. Jerry Martinez  
City of Madera Engineering  
205 West 4<sup>th</sup> Street  
Madera, California 93637

**RE: Special Inspections and Materials Testing of  
Madera Transit Operations Facility**  
3550 Independence Drive  
Madera, California

Dear Mr. Martinez:

In accordance with your request, we are submitting our procedures for the special inspections and materials testing concerning the Madera Transit Operations Facility, located in Madera, California. The following lists the special inspections and materials testing which our firm has been requested to perform at the project site in accordance with the approved project plans and specifications and the 2016 CBC during construction of integral structural components:

**Steel Reinforcement** Inspection of steel bar reinforcement before concrete placement. Inspection shall consist of confirming details of the reinforcing steel including grade, size, orientation, distribution, lengths, bends, splices, clearances, cleanliness, stability, embed items, anchor bolt size, welded connections and continuity. Mill certifications shall be obtained for all steel reinforcement. All unidentified steel reinforcement shall be tested in accordance with the applicable reference standard.

**Concrete** Forms and excavations will be inspected for cleanliness and stability prior to the concrete placement. The approved concrete mix design will be used to verify batched concrete-making materials and the water-to-cement ratio for each delivered load of concrete. The time limitation of freshly batched concrete to placement will be monitored. Along with slump and temperature determinations of the freshly batched concrete, a set of four cylindrical concrete test samples will be molded in intervals of 150 cubic yards or fraction thereof on a daily basis for compressive strength determinations. Verify the consolidation method of the concrete placement. Inspection of finishing and curing methods are excluded from our services.

<b>Masonry</b>	Periodic to continuous inspection of the placement of concrete masonry units, mortar, wire joint reinforcement, reinforcing steel bar and anchor bolt assemblies, and grout. Verification of mortar-making materials proportioning and grout mixture to the approved mix designs shall be performed. Sample and test materials representing masonry construction. Compressive strength tests can be performed on block & mortar, grout, and prism assemblages used in the masonry construction.
<b>Shop Welding</b>	Perform material, filler metal, welding procedure specification and welder certification verifications. Single Pass fillet welds should be inspected periodically. Multi-pass welding and full-penetration welds shall be continuously inspected during welding and ultrasonic inspection provided as applicable after welding in completed. Mill test reports shall be obtained for all structural steel.
<b>Field Welding</b>	Filler metal, welding procedure specification and welder certification verifications. Single Pass fillet welds should be inspected periodically. Multi-pass welding and full-penetration welds shall be continuously inspected during welding and ultrasonic inspection provided as applicable after welding in completed
<b>Spray-Applied Fireproofing</b>	Verify Spray Applied Fire Resistive Material (SRFM) to be used. Perform visual inspection of substrate surfaces. Perform thickness tests, density tests and cohesion/adhesion tests on the spray-applied fireproofing material.
<b>High-Strength Bolt Inspection</b>	High-strength bolt inspections will be performed on a periodic basis after bolt installation. Proper bolt installation will be verified, along with the appropriate tension value, at slip-critical joints or connections subject to direct tension. Tension values will be verified with a Skidmore apparatus. A calibrated torque wrench will be used to test 10 percent or at least two bolts per joint or connection. If one bolt is found to be below required tension value, then all bolts at that joint or connection shall be checked.
<b>Concrete Anchor Inspection</b>	Special inspection will be provided for epoxy or expansion anchor operations, either by continuous inspection during installation or by conducting torque or pull-test with a calibrated torque wrench or a tensile load-proving apparatus as referred by ICBO Evaluation Reports. Post installation testing (torque or pull-test) will be performed randomly on a minimum of 10% percent of the bolts or as indicated on the approved plans. Failures within the test group may result in 100% of the anchors being tested.
<b>Special Cases – Non Shrink Grout</b>	Special Inspection of Non Shrink Grout under Column base plates will include verification of cleanliness and observation of placement per manufactures recommendations, specifications or ICC evaluation reports. Samples may be obtained for laboratory compressive strength testing.

**Ceiling Wire Inspection** Conduct observation of ceiling wire anchor installation. Typical methods of attachment are expansion anchor into concrete or screw/bolt into wood member. Inspections performed to verify type, size, location and embedment depth per plans and specifications. Perform proof load testing of wires at locations and frequency stated in plans and specifications

**Earthwork (Special Grading Excavation and Filling)** The purpose of earthwork observation and testing is to verify that the work is done in compliance with the approved plans and specifications, and in particular, the recommendations of the project geotechnical report. The materials engineering laboratory will be provided with representative samples of the subgrade, native-fill, imported materials, and any additive materials (lime, cement, sand, pozzolan, etc.). Laboratory testing may include soils classification and properties tests, moisture density relationships, and admixture analysis. Field testing will include in-place density and moisture testing at intervals to allow for representative coverage of each lift. Additional tests and observations will be made, as necessary, in order to verify compliance with specification requirements.

**Compaction Testing** Special inspection will include observation of over-excavation activities to verify all unsuitable material has been removed. During backfill activities, backfill material will be qualified to verify suitability for re-use as Engineered Fill. Compaction testing will be performed during backfill operations to verify the fill has been placed in accordance with the recommendations in the soils report and specifications.

The qualifications for our certified special inspectors and testing technicians who will be performing the inspections and materials testing are attached.

Formal reports will be issued to all parties in concern which document the special inspection and material testing services.

We trust that this report will satisfy your needs. Should you have any questions or if we can be of further assistance, please contact our office.

Respectfully Submitted,  
**KRAZAN & ASSOCIATES, INC.**



David Jarosz  
Managing Engineer  
Testing & Inspection Division