

**SECTION 01 35 13**  
**SPECIAL PROJECT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. The procedures for special project circumstances that includes, but is not limited to:

- a. Coordination with the Texas Department of Transportation
- b. Work near High Voltage Lines
- c. Confined Space Entry Program
- d. Air Pollution Watch Days
- e. Use of Explosives, Drop Weight, Etc.
- f. Water Department Notification
- g. Public Notification Prior to Beginning Construction
- h. Coordination with United States Army Corps of Engineers
- i. Coordination within Railroad permits areas
- j. Dust Control
- k. Employee Parking

**B. Deviations from this City of Fort Worth Standard Specification**

1. None.

**C. Related Specification Sections include, but are not necessarily limited to:**

1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
2. Division 1 – General Requirements
3. Section 33 12 25 – Connection to Existing Water Mains

**1.2 PRICE AND PAYMENT PROCEDURES**

**A. Measurement and Payment**

1. Coordination within Railroad permit areas

- a. Measurement
  - 1) Measurement for this Item will be by lump sum.
- b. Payment
  - 1) The work performed and materials furnished in accordance with this Item will be paid for at the lump sum price bid for Railroad Coordination.
- c. The price bid shall include:
  - 1) Mobilization
  - 2) Inspection
  - 3) Safety training
  - 4) Additional Insurance
  - 5) Insurance Certificates
  - 6) Other requirements associated with general coordination with Railroad, including additional employees required to protect the right-of-way and property of the Railroad from damage arising out of and/or from the construction of the Project.

2. Railroad Flagmen

- a. Measurement
  - 1) Measurement for this Item will be per working day.
- b. Payment
  - 1) The work performed and materials furnished in accordance with this Item will be paid for each working day that Railroad Flagmen are present at the Site.
- c. The price bid shall include:
  - 1) Coordination for scheduling flagmen
  - 2) Flagmen
  - 3) Other requirements associated with Railroad
- 3. All other items
  - a. Work associated with these Items is considered subsidiary to the various Items bid. No separate payment will be allowed for this Item.

### 1.3 REFERENCES

#### A. Reference Standards

- 1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
- 2. Health and Safety Code, Title 9, Safety, Subtitle A, Public Safety, Chapter 752, High Voltage Overhead Lines.
- 3. North Central Texas Council of Governments (NCTCOG) – Clean Construction Specification

### 1.4 ADMINISTRATIVE REQUIREMENTS

#### A. Coordination with the Texas Department of Transportation

- 1. When work in the right-of-way which is under the jurisdiction of the Texas Department of Transportation (TxDOT):
  - a. Notify the Texas Department of Transportation prior to commencing any work therein in accordance with the provisions of the permit
  - b. All work performed in the TxDOT right-of-way shall be performed in compliance with and subject to approval from the Texas Department of Transportation

#### B. Work near High Voltage Lines

- 1. Regulatory Requirements
  - a. All Work near High Voltage Lines (more than 600 volts measured between conductors or between a conductor and the ground) shall be in accordance with Health and Safety Code, Title 9, Subtitle A, Chapter 752.
- 2. Warning sign
  - a. Provide sign of sufficient size meeting all OSHA requirements.
- 3. Equipment operating within 10 feet of high voltage lines will require the following safety features
  - a. Insulating cage-type of guard about the boom or arm
  - b. Insulator links on the lift hook connections for back hoes or dippers
  - c. Equipment must meet the safety requirements as set forth by OSHA and the safety requirements of the owner of the high voltage lines
- 4. Work within 6 feet of high voltage electric lines

- 1 a. Notification shall be given to:
  - 2 1) The power company (example: ONCOR)
  - 3 a) Maintain an accurate log of all such calls to power company and record
  - 4 action taken in each case.
- 5 b. Coordination with power company
  - 6 1) After notification coordinate with the power company to:
    - 7 a) Erect temporary mechanical barriers, de-energize the lines, or raise or
    - 8 lower the lines
- 9 c. No personnel may work within 6 feet of a high voltage line before the above
- 10 requirements have been met.

11 C. Confined Space Entry Program

- 12 1. Provide and follow approved Confined Space Entry Program in accordance with
- 13 OSHA requirements.
- 14 2. Confined Spaces include:
  - 15 a. Manholes
  - 16 b. All other confined spaces in accordance with OSHA's Permit Required for
  - 17 Confined Spaces

18 D. Air Pollution Watch Days

- 19 1. General
  - 20 a. Observe the following guidelines relating to working on City construction sites
  - 21 on days designated as "AIR POLLUTION WATCH DAYS".
  - 22 b. Typical Ozone Season
    - 23 1) May 1 through October 31.
  - 24 c. Critical Emission Time
    - 25 1) 6:00 a.m. to 10:00 a.m.
- 26 2. Watch Days
  - 27 a. The Texas Commission on Environmental Quality (TCEQ), in coordination
  - 28 with the National Weather Service, will issue the Air Pollution Watch by 3:00
  - 29 p.m. on the afternoon prior to the WATCH day.
  - 30 b. Requirements
    - 31 1) Begin work after 10:00 a.m. whenever construction phasing requires the
    - 32 use of motorized equipment for periods in excess of 1 hour.
    - 33 2) However, the Contractor may begin work prior to 10:00 a.m. if:
      - 34 a) Use of motorized equipment is less than 1 hour, or
      - 35 b) If equipment is new and certified by EPA as "Low Emitting", or
      - 36 equipment burns Ultra Low Sulfur Diesel (ULSD), diesel emulsions, or
      - 37 alternative fuels such as CNG.

38 E. TCEQ Air Permit

- 39 1. Obtain TCEQ Air Permit for construction activities per requirements of TCEQ.

40 F. Use of Explosives, Drop Weight, Etc.

- 41 1. When Contract Documents permit on the project the following will apply:
  - 42 a. Public Notification
    - 43 1) Submit notice to City and proof of adequate insurance coverage, 24 hours
    - 44 prior to commencing.
    - 45 2) Minimum 24 hour public notification in accordance with Section 01 31 13

46 G. Water Department Coordination

1. During the construction of this project, it will be necessary to deactivate, for a period of time, existing lines. The Contractor shall be required to coordinate with the Water Department to determine the best times for deactivating and activating those lines.
2. Coordinate any event that will require connecting to or the operation of an existing City water line system with the City's representative.
  - a. Coordination shall be in accordance with Section 33 12 25.
  - b. If needed, obtain a hydrant water meter from the Water Department for use during the life of named project.
  - c. In the event that a water valve on an existing live system be turned off and on to accommodate the construction of the project is required, coordinate this activity through the appropriate City representative.
    - 1) Do not operate water line valves of existing water system.
      - a) Failure to comply will render the Contractor in violation of Texas Penal Code Title 7, Chapter 28.03 (Criminal Mischief) and the Contractor will be prosecuted to the full extent of the law.
      - b) In addition, the Contractor will assume all liabilities and responsibilities as a result of these actions.

#### H. Public Notification Prior to Beginning Construction

1. Prior to beginning construction on any block in the project, on a block by block basis, prepare and deliver a notice or flyer of the pending construction to the front door of each residence or business that will be impacted by construction. The notice shall be prepared as follows:
  - a. Post notice or flyer 7 days prior to beginning any construction activity on each block in the project area.
    - 1) Prepare flyer on the Contractor's letterhead and include the following information:
      - a) Name of Project
      - b) City Project No (CPN)
      - c) Scope of Project (i.e. type of construction activity)
      - d) Actual construction duration within the block
      - e) Name of the contractor's foreman and phone number
      - f) Name of the City's inspector and phone number
      - g) City's after-hours phone number
    - 2) A sample of the 'pre-construction notification' flyer is attached as Exhibit A.
    - 3) Submit schedule showing the construction start and finish time for each block of the project to the inspector.
    - 4) Deliver flyer to the City Inspector for review prior to distribution.
  - b. No construction will be allowed to begin on any block until the flyer is delivered to all residents of the block.

#### I. Public Notification of Temporary Water Service Interruption during Construction

1. In the event it becomes necessary to temporarily shut down water service to residents or businesses during construction, prepare and deliver a notice or flyer of the pending interruption to the front door of each affected resident.
2. Prepared notice as follows:
  - a. The notification or flyer shall be posted 24 hours prior to the temporary interruption.

- 1 b. Prepare flyer on the contractor's letterhead and include the following  
2 information:
  - 3 1) Name of the project
  - 4 2) City Project Number
  - 5 3) Date of the interruption of service
  - 6 4) Period the interruption will take place
  - 7 5) Name of the contractor's foreman and phone number
  - 8 6) Name of the City's inspector and phone number
- 9 c. A sample of the temporary water service interruption notification is attached as  
10 Exhibit B.
- 11 d. Deliver a copy of the temporary interruption notification to the City inspector  
12 for review prior to being distributed.
- 13 e. No interruption of water service can occur until the flyer has been delivered to  
14 all affected residents and businesses.
- 15 f. Electronic versions of the sample flyers can be obtained from the Project  
16 Construction Inspector.
- 17 J. Coordination with United States Army Corps of Engineers (USACE)
  - 18 1. At locations in the Project where construction activities occur in areas where  
19 USACE permits are required, meet all requirements set forth in each designated  
20 permit.
- 21 K. Coordination within Railroad Permit Areas
  - 22 1. At locations in the project where construction activities occur in areas where  
23 railroad permits are required, meet all requirements set forth in each designated  
24 railroad permit. This includes, but is not limited to, provisions for:
    - 25 a. Flagmen
    - 26 b. Inspectors
    - 27 c. Safety training
    - 28 d. Additional insurance
    - 29 e. Insurance certificates
    - 30 f. Other employees required to protect the right-of-way and property of the  
31 Railroad Company from damage arising out of and/or from the construction of  
32 the project. Proper utility clearance procedures shall be used in accordance  
33 with the permit guidelines.
  - 34 2. Obtain any supplemental information needed to comply with the railroad's  
35 requirements.
  - 36 3. Railroad Flagmen
    - 37 a. Submit receipts to City for verification of working days that railroad flagmen  
38 were present on Site.
- 39 L. Dust Control
  - 40 1. Use acceptable measures to control dust at the Site.
    - 41 a. If water is used to control dust, capture and properly dispose of waste water.
    - 42 b. If wet saw cutting is performed, capture and properly dispose of slurry.
- 43 M. Employee Parking
  - 44 1. Provide parking for employees at locations approved by the City.

- 1 **1.5 SUBMITTALS [NOT USED]**  
2 **1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**  
3 **1.7 CLOSEOUT SUBMITTALS [NOT USED]**  
4 **1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**  
5 **1.9 QUALITY ASSURANCE [NOT USED]**  
6 **1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**  
7 **1.11 FIELD [SITE] CONDITIONS [NOT USED]**  
8 **1.12 WARRANTY [NOT USED]**

9 **PART 2 - PRODUCTS [NOT USED]**

10 **PART 3 - EXECUTION [NOT USED]**

11 **END OF SECTION**

12

Revision Log		
DATE	NAME	SUMMARY OF CHANGE
8/31/2012	D. Johnson	1.4.B – Added requirement of compliance with Health and Safety Code, Title 9, Safety, Subtitle A, Public Safety, Chapter 752, High Voltage Overhead Lines. 1.4.E – Added Contractor responsibility for obtaining a TCEQ Air Permit

13

**EXHIBIT A**

(To be printed on Contractor's Letterhead)

Date: \_\_\_\_\_

CPN No.: \_\_\_\_\_

Project Name: \_\_\_\_\_

Mapsco Location: \_\_\_\_\_

Limits of Construction: \_\_\_\_\_

# NOTICE OF CONSTRUCTION

THIS IS TO INFORM YOU THAT UNDER A CONTRACT WITH THE CITY OF FORT WORTH, OUR COMPANY WILL WORK ON UTILITY LINES ON OR AROUND YOUR PROPERTY.

CONSTRUCTION WILL BEGIN APPROXIMATELY SEVEN DAYS FROM THE DATE OF THIS NOTICE.

IF YOU HAVE QUESTIONS ABOUT ACCESS, SECURITY, SAFETY OR ANY OTHER ISSUE, PLEASE CALL:

Mr. <CONTRACTOR'S SUPERINTENDENT> AT <TELEPHONE NO.>

OR

Mr. <CITY INSPECTOR> AT < TELEPHONE NO.>

AFTER 4:30 PM OR ON WEEKENDS, PLEASE CALL (817) 392 8306

PLEASE KEEP THIS FLYER HANDY WHEN YOU CALL

EXHIBIT B



Date: \_\_\_\_\_

DOE NO. XXXX  
Project Name: \_\_\_\_\_

**NOTICE OF TEMPORARY WATER SERVICE  
INTERRUPTION**

DUE TO UTILITY IMPROVEMENTS IN YOUR NEIGHBORHOOD, YOUR  
WATER SERVICE WILL BE INTERRUPTED ON \_\_\_\_\_  
BETWEEN THE HOURS OF \_\_\_\_\_ AND \_\_\_\_\_.

IF YOU HAVE QUESTIONS ABOUT THIS SHUT-OUT, PLEASE CALL:

MR. \_\_\_\_\_ AT \_\_\_\_\_  
(CONTRACTORS SUPERINTENDENT) (TELEPHONE NUMBER)

OR

MR. \_\_\_\_\_ AT \_\_\_\_\_  
(CITY INSPECTOR) (TELEPHONE NUMBER)

THIS INCONVENIENCE WILL BE AS SHORT AS POSSIBLE.

THANK YOU,

\_\_\_\_\_, CONTRACTOR



**SECTION 01 45 23**  
**TESTING AND INSPECTION SERVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Testing and inspection services procedures and coordination
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Work associated with this Item is considered subsidiary to the various Items bid. No separate payment will be allowed for this Item.
    - a. Contractor is responsible for performing, coordinating, and payment of all Quality Control testing.
    - b. City is responsible for performing and payment for first set of Quality Assurance testing.
      - 1) If the first Quality Assurance test performed by the City fails, the Contractor is responsible for payment of subsequent Quality Assurance testing until a passing test occurs.
      - a) Final acceptance will not be issued by City until all required payments for testing by Contractor have been paid in full.

**1.3 REFERENCES [NOT USED]**

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Testing
  - 1. Complete testing in accordance with the Contract Documents.
  - 2. Coordination
    - a. When testing is required to be performed by the City, notify City, sufficiently in advance, when testing is needed.
    - b. When testing is required to be completed by the Contractor, notify City, sufficiently in advance, that testing will be performed.
  - 3. Distribution of Testing Reports
    - a. Electronic Distribution
      - 1) Confirm development of Project directory for electronic submittals to be uploaded to the City's document management system, or another external FTP site approved by the City.

- 2) Upload test reports to designated project directory and notify appropriate City representatives via email of submittal posting.
- 3) Hard Copies
  - a) 1 copy for all submittals submitted to the Project Representative
- b. Hard Copy Distribution (if required in lieu of electronic distribution)
  - 1) Tests performed by City
    - a) Distribute 1 hard copy to the Contractor
  - 2) Tests performed by the Contractor
    - a) Distribute 3 hard copies to City's Project Representative
4. Provide City's Project Representative with trip tickets for each delivered load of Concrete or Lime material including the following information:
  - a. Name of pit
  - b. Date of delivery
  - c. Material delivered

**B. Inspection**

1. Inspection or lack of inspection does not relieve the Contractor from obligation to perform work in accordance with the Contract Documents.

**1.5 SUBMITTALS [NOT USED]**

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**

**1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS [NOT USED]**

**PART 3 - EXECUTION [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE
3/9/2020	D.V. Magaña	Removed reference to Buzzsaw and noted that electronic submittals be uploaded through the City's document management system.

**SECTION 01 50 00**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Provide temporary facilities and controls needed for the Work including, but not necessarily limited to:
    - a. Temporary utilities
    - b. Sanitary facilities
    - c. Storage Sheds and Buildings
    - d. Dust control
    - e. Temporary fencing of the construction site
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Work associated with this Item is considered subsidiary to the various Items bid.  
No separate payment will be allowed for this Item.

**1.3 REFERENCES [NOT USED]**

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Temporary Utilities
  - 1. Obtaining Temporary Service
    - a. Make arrangements with utility service companies for temporary services.
    - b. Abide by rules and regulations of utility service companies or authorities having jurisdiction.
    - c. Be responsible for utility service costs until Work is approved for Final Acceptance.
      - 1) Included are fuel, power, light, heat and other utility services necessary for execution, completion, testing and initial operation of Work.
  - 2. Water
    - a. Contractor to provide water required for and in connection with Work to be performed and for specified tests of piping, equipment, devices or other use as required for the completion of the Work.
    - b. Provide and maintain adequate supply of potable water for domestic consumption by Contractor personnel and City's Project Representatives.
    - c. Coordination
      - 1) Contact City 1 week before water for construction is desired

- d. Contractor Payment for Construction Water
  - 1) Obtain construction water meter from City for payment as billed by City's established rates.
- 3. Electricity and Lighting
  - a. Provide and pay for electric powered service as required for Work, including testing of Work.
    - 1) Provide power for lighting, operation of equipment, or other use.
  - b. Electric power service includes temporary power service or generator to maintain operations during scheduled shutdown.
- 4. Telephone
  - a. Provide emergency telephone service at Site for use by Contractor personnel and others performing work or furnishing services at Site.
- 5. Temporary Heat and Ventilation
  - a. Provide temporary heat as necessary for protection or completion of Work.
  - b. Provide temporary heat and ventilation to assure safe working conditions.
- B. Sanitary Facilities
  - 1. Provide and maintain sanitary facilities for persons on Site.
    - a. Comply with regulations of State and local departments of health.
  - 2. Enforce use of sanitary facilities by construction personnel at job site.
    - a. Enclose and anchor sanitary facilities.
    - b. No discharge will be allowed from these facilities.
    - c. Collect and store sewage and waste so as not to cause nuisance or health problem.
    - d. Haul sewage and waste off-site at no less than weekly intervals and properly dispose in accordance with applicable regulation.
  - 3. Locate facilities near Work Site and keep clean and maintained throughout Project.
  - 4. Remove facilities at completion of Project
- C. Storage Sheds and Buildings
  - 1. Provide adequately ventilated, watertight, weatherproof storage facilities with floor above ground level for materials and equipment susceptible to weather damage.
  - 2. Storage of materials not susceptible to weather damage may be on blocks off ground.
  - 3. Store materials in a neat and orderly manner.
    - a. Place materials and equipment to permit easy access for identification, inspection and inventory.
  - 4. Equip building with lockable doors and lighting, and provide electrical service for equipment space heaters and heating or ventilation as necessary to provide storage environments acceptable to specified manufacturers.
  - 5. Fill and grade site for temporary structures to provide drainage away from temporary and existing buildings.
  - 6. Remove building from site prior to Final Acceptance.
- D. Temporary Fencing
  - 1. Provide and maintain for the duration of construction when required in contract documents
- E. Dust Control

1. Contractor is responsible for maintaining dust control through the duration of the project.
  - a. Contractor remains on-call at all times
  - b. Must respond in a timely manner

**F. Temporary Protection of Construction**

1. Contractor or subcontractors are responsible for protecting Work from damage due to weather.

**1.5 SUBMITTALS [NOT USED]**

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**

**1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS [NOT USED]**

**PART 3 - EXECUTION [NOT USED]**

**3.1 INSTALLERS [NOT USED]**

**3.2 EXAMINATION [NOT USED]**

**3.3 PREPARATION [NOT USED]**

**3.4 INSTALLATION**

**A. Temporary Facilities**

1. Maintain all temporary facilities for duration of construction activities as needed.

**3.5 [REPAIR] / [RESTORATION]**

**3.6 RE-INSTALLATION**

**3.7 FIELD [or] SITE QUALITY CONTROL [NOT USED]**

**3.8 SYSTEM STARTUP [NOT USED]**

**3.9 ADJUSTING [NOT USED]**

**3.10 CLEANING [NOT USED]**

**3.11 CLOSEOUT ACTIVITIES**

**A. Temporary Facilities**

1. Remove all temporary facilities and restore area after completion of the Work, to a condition equal to or better than prior to start of Work.

**3.12 PROTECTION [NOT USED]**

**3.13 MAINTENANCE [NOT USED]**

**3.14 ATTACHMENTS [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE

**SECTION 01 55 26**  
**STREET USE PERMIT AND MODIFICATIONS TO TRAFFIC CONTROL**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Administrative procedures for:
  - a. Street Use Permit
  - b. Modification of approved traffic control
  - c. Removal of Street Signs

B. Deviations from this City of Fort Worth Standard Specification

1. None.

C. Related Specification Sections include, but are not necessarily limited to:

1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
2. Division 1 – General Requirements
3. Section 34 71 13 – Traffic Control

**1.2 PRICE AND PAYMENT PROCEDURES**

A. Measurement and Payment

1. Work associated with this Item is considered subsidiary to the various Items bid.  
No separate payment will be allowed for this Item.

**1.3 REFERENCES**

A. Reference Standards

1. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
2. Texas Manual on Uniform Traffic Control Devices (TMUTCD).

**1.4 ADMINISTRATIVE REQUIREMENTS**

A. Traffic Control

1. General

- a. Contractor shall minimize lane closures and impact to vehicular/pedestrian traffic.
- b. When traffic control plans are included in the Drawings, provide Traffic Control in accordance with Drawings and Section 34 71 13.
- c. When traffic control plans are not included in the Drawings, prepare traffic control plans in accordance with Section 34 71 13 and submit to City for review.
  - 1) Allow minimum 10 working days for review of proposed Traffic Control.

- 2) A traffic control "Typical" published by City of Fort Worth, the Texas Manual Unified Traffic Control Devices (TMUTCD) or Texas Department of Transportation (TxDOT) can be used as an alternative to preparing project/site specific traffic control plan if the typical is applicable to the specific project/site.

B. Street Use Permit

1. Prior to installation of Traffic Control, a City Street Use Permit is required.
  - a. To obtain Street Use Permit, submit Traffic Control Plans to City Transportation and Public Works Department.
    - 1) Allow a minimum of 5 working days for permit review.
    - 2) It is the Contractor's responsibility to coordinate review of Traffic Control plans for Street Use Permit, such that construction is not delayed.

C. Modification to Approved Traffic Control

1. Prior to installation traffic control:
  - a. Submit revised traffic control plans to City Department Transportation and Public Works Department.
    - 1) Revise Traffic Control plans in accordance with Section 34 71 13.
    - 2) Allow minimum 5 working days for review of revised Traffic Control.
    - 3) It is the Contractor's responsibility to coordinate review of Traffic Control plans for Street Use Permit, such that construction is not delayed.

D. Removal of Street Sign

1. If it is determined that a street sign must be removed for construction, then contact City Transportation and Public Works Department, Signs and Markings Division to remove the sign.

E. Temporary Signage

1. In the case of regulatory signs, replace permanent sign with temporary sign meeting requirements of the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).
2. Install temporary sign before the removal of permanent sign.
3. When construction is complete, to the extent that the permanent sign can be reinstalled, contact the City Transportation and Public Works Department, Signs and Markings Division, to reinstall the permanent sign.

F. Traffic Control Standards

1. Traffic Control Standards can be found on the City's website.

**1.5 SUBMITTALS [NOT USED]**

- A. Submit all required documentation to City's Project Representative.



1 1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]

2 1.7 CLOSEOUT SUBMITTALS [NOT USED]

3 1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

4 1.9 QUALITY ASSURANCE [NOT USED]

5 1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]

6 1.11 FIELD [SITE] CONDITIONS [NOT USED]

7 1.12 WARRANTY [NOT USED]

8 PART 2 - PRODUCTS [NOT USED]

9 PART 3 - EXECUTION [NOT USED]

10 END OF SECTION

11

Revision Log		
DATE	NAME	SUMMARY OF CHANGE
3/22/2021	M Owen	1.4 A. Added language to emphasize minimizing of lane closures and impact to traffic. 1.4 A. 1. c. Added language to allow for use of published traffic control "Typicals" if applicable to specific project/site. 1.4 F. 1) Removed reference to Buzzsaw 1.5 Added language re: submittal of permit

12

**SECTION 01 57 13**  
**STORM WATER POLLUTION PREVENTION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Procedures for Storm Water Pollution Prevention Plans
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements
  - 3. Section 31 25 00 – Erosion and Sediment Control

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Construction Activities resulting in less than 1 acre of disturbance
    - a. Work associated with this Item is considered subsidiary to the various Items bid. No separate payment will be allowed for this Item.
  - 2. Construction Activities resulting in greater than 1 acre of disturbance
    - a. Measurement and Payment shall be in accordance with Section 31 25 00.

**1.3 REFERENCES**

- A. Abbreviations and Acronyms
  - 1. Notice of Intent: NOI
  - 2. Notice of Termination: NOT
  - 3. Storm Water Pollution Prevention Plan: SWPPP
  - 4. Texas Commission on Environmental Quality: TCEQ
  - 5. Notice of Change: NOC
- A. Reference Standards
  - 1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
  - 2. Integrated Storm Management (iSWM) Technical Manual for Construction Controls

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. General
  - 1. Contractor is responsible for resolution and payment of any fines issued associated with compliance to Stormwater Pollution Prevention Plan.

B. Construction Activities resulting in:

1. Less than 1 acre of disturbance
  - a. Provide erosion and sediment control in accordance with Section 31 25 00 and Drawings.
2. 1 to less than 5 acres of disturbance
  - a. Texas Pollutant Discharge Elimination System (TPDES) General Construction Permit is required
  - b. Complete SWPPP in accordance with TCEQ requirements
    - 1) TCEQ Small Construction Site Notice Required under general permit TXR150000
      - a) Sign and post at job site
      - b) Prior to Preconstruction Meeting, send 1 copy to City Department of Transportation and Public Works, Environmental Division, (817) 392-6088.
    - 2) Provide erosion and sediment control in accordance with:
      - a) Section 31 25 00
      - b) The Drawings
      - c) TXR150000 General Permit
      - d) SWPPP
      - e) TCEQ requirements
3. 5 acres or more of Disturbance
  - a. Texas Pollutant Discharge Elimination System (TPDES) General Construction Permit is required
  - b. Complete SWPPP in accordance with TCEQ requirements
    - 1) Prepare a TCEQ NOI form and submit to TCEQ along with required fee
      - a) Sign and post at job site
      - b) Send copy to City Department of Transportation and Public Works, Environmental Division, (817) 392-6088.
    - 2) TCEQ Notice of Change required if making changes or updates to NOI
    - 3) Provide erosion and sediment control in accordance with:
      - a) Section 31 25 00
      - b) The Drawings
      - c) TXR150000 General Permit
      - d) SWPPP
      - e) TCEQ requirements
    - 4) Once the project has been completed and all the closeout requirements of TCEQ have been met a TCEQ Notice of Termination can be submitted.
      - a) Send copy to City Department of Transportation and Public Works, Environmental Division, (817) 392-6088.

## 1.5 SUBMITTALS

A. SWPPP

1. Submit in accordance with Section 01 33 00, except as stated herein.
  - a. Prior to the Preconstruction Meeting, submit a draft copy of SWPPP to the City as follows:
    - 1) 1 copy to the City Project Manager
      - a) City Project Manager will forward to the City Department of Transportation and Public Works, Environmental Division for review

**B. Modified SWPPP**

1. If the SWPPP is revised during construction, resubmit modified SWPPP to the City in accordance with Section 01 33 00.

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**

**1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS [NOT USED]**

**PART 3 - EXECUTION [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE

**SECTION 01 58 13**  
**TEMPORARY PROJECT SIGNAGE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Temporary Project Signage Requirements
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Work associated with this Item is considered subsidiary to the various Items bid.  
No separate payment will be allowed for this Item.

**1.3 REFERENCES [NOT USED]**

**1.4 ADMINISTRATIVE REQUIREMENTS [NOT USED]**

**1.5 SUBMITTALS [NOT USED]**

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**

**1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS**

**2.1 OWNER-FURNISHED [or] OWNER-SUPPLIED PRODUCTS [NOT USED]**

**2.2 EQUIPMENT, PRODUCT TYPES, AND MATERIALS**

- A. Design Criteria
  - 1. Provide free standing Project Designation Sign in accordance with City's Standard Details for project signs.

B. Materials

1. Sign

- a. Constructed of 3/4-inch fir plywood, grade A-C (exterior) or better

**2.3 ACCESSORIES [NOT USED]**

**2.4 SOURCE QUALITY CONTROL [NOT USED]**

**PART 3 - EXECUTION**

**3.1 INSTALLERS [NOT USED]**

**3.2 EXAMINATION [NOT USED]**

**3.3 PREPARATION [NOT USED]**

**3.4 INSTALLATION**

A. General

1. Provide vertical installation at extents of project.
2. Relocate sign as needed, upon request of the City.

B. Mounting options

- a. Skids
- b. Posts
- c. Barricade

**3.5 REPAIR / RESTORATION [NOT USED]**

**3.6 RE-INSTALLATION [NOT USED]**

**3.7 FIELD [OR] SITE QUALITY CONTROL [NOT USED]**

**3.8 SYSTEM STARTUP [NOT USED]**

**3.9 ADJUSTING [NOT USED]**

**3.10 CLEANING [NOT USED]**

**3.11 CLOSEOUT ACTIVITIES [NOT USED]**

**3.12 PROTECTION [NOT USED]**

**3.13 MAINTENANCE**

A. General

1. Maintenance will include painting and repairs as needed or directed by the City.

**3.14 ATTACHMENTS [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE

**SECTION 01 60 00**  
**PRODUCT REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. References for Product Requirements and City Standard Products List
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES [NOT USED]**

**1.3 REFERENCES [NOT USED]**

**1.4 ADMINISTRATIVE REQUIREMENTS**

- A. A list of City approved products for use is available through the City's website at: <https://apps.fortworthtexas.gov/ProjectResources/> and following the directory path; 02 - Construction Documents/Standard Products List
- B. Only products specifically included on City's Standard Product List in these Contract Documents shall be allowed for use on the Project.
  - 1. Any subsequently approved products will only be allowed for use upon specific approval by the City.
- C. Any specific product requirements in the Contract Documents supersede similar products included on the City's Standard Product List.
  - 1. The City reserves the right to not allow products to be used for certain projects even though the product is listed on the City's Standard Product List.
- D. Although a specific product is included on City's Standard Product List, not all products from that manufacturer are approved for use, including but not limited to, that manufacturer's standard product.
- E. See Section 01 33 00 for submittal requirements of Product Data included on City's Standard Product List.

**1.5 SUBMITTALS [NOT USED]**

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**



**1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS [NOT USED]**

**PART 3 - EXECUTION [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE
10/12/12	D. Johnson	Modified Location of City's Standard Product List
3/9/2020	D.V. Magaña	Removed reference to Buzzsaw and noted that the City approved products list is accessible through the City's website.

**SECTION 01 66 00**  
**PRODUCT STORAGE AND HANDLING REQUIREMENTS**

**PART 1- GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Scheduling of product delivery
  - 2. Packaging of products for delivery
  - 3. Protection of products against damage from:
    - a. Handling
    - b. Exposure to elements or harsh environments
- B. Deviations from this City of Fort Worth Standard Specification,
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Work associated with this Item is considered subsidiary to the various Items bid.  
No separate payment will be allowed for this Item.

**1.3 REFERENCES [NOT USED]**

**1.4 ADMINISTRATIVE REQUIREMENTS [NOT USED]**

**1.5 SUBMITTALS [NOT USED]**

**1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS [NOT USED]**

**1.7 CLOSEOUT SUBMITTALS [NOT USED]**

**1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

**1.9 QUALITY ASSURANCE [NOT USED]**

**1.10 DELIVERY AND HANDLING**

- A. Delivery Requirements
  - 1. Schedule delivery of products or equipment as required to allow timely installation and to avoid prolonged storage.
  - 2. Provide appropriate personnel and equipment to receive deliveries.
  - 3. Delivery trucks will not be permitted to wait extended periods of time on the Site for personnel or equipment to receive the delivery.

4. Deliver products or equipment in manufacturer's original unbroken cartons or other containers designed and constructed to protect the contents from physical or environmental damage.
5. Clearly and fully mark and identify as to manufacturer, item and installation location.
6. Provide manufacturer's instructions for storage and handling.

B. Handling Requirements

1. Handle products or equipment in accordance with these Contract Documents and manufacturer's recommendations and instructions.

C. Storage Requirements

1. Store materials in accordance with manufacturer's recommendations and requirements of these Specifications.
2. Make necessary provisions for safe storage of materials and equipment.
  - a. Place loose soil materials and materials to be incorporated into Work to prevent damage to any part of Work or existing facilities and to maintain free access at all times to all parts of Work and to utility service company installations in vicinity of Work.
3. Keep materials and equipment neatly and compactly stored in locations that will cause minimum inconvenience to other contractors, public travel, adjoining owners, tenants and occupants.
  - a. Arrange storage to provide easy access for inspection.
4. Restrict storage to areas available on construction site for storage of material and equipment as shown on Drawings, or approved by City's Project Representative.
5. Provide off-site storage and protection when on-site storage is not adequate.
  - a. Provide addresses of and access to off-site storage locations for inspection by City's Project Representative.
6. Do not use lawns, grass plots or other private property for storage purposes without written permission of owner or other person in possession or control of premises.
7. Store in manufacturers' unopened containers.
8. Neatly, safely and compactly stack materials delivered and stored along line of Work to avoid inconvenience and damage to property owners and general public and maintain at least 3 feet from fire hydrant.
9. Keep public and private driveways and street crossings open.
10. Repair or replace damaged lawns, sidewalks, streets or other improvements to satisfaction of City's Project Representative.
  - a. Total length which materials may be distributed along route of construction at one time is 1,000 linear feet, unless otherwise approved in writing by City's Project Representative.

**1.11 FIELD [SITE] CONDITIONS [NOT USED]**

**1.12 WARRANTY [NOT USED]**

**PART 2 - PRODUCTS [NOT USED]**

**PART 3 - EXECUTION**

**3.1 INSTALLERS [NOT USED]**

**3.2 EXAMINATION [NOT USED]**

**3.3 PREPARATION [NOT USED]**

**3.4 ERECTION [NOT USED]**

**3.5 REPAIR / RESTORATION [NOT USED]**

**3.6 RE-INSTALLATION [NOT USED]**

**3.7 FIELD [OR] SITE QUALITY CONTROL**

**A. Tests and Inspections**

1. Inspect all products or equipment delivered to the site prior to unloading.

**B. Non-Conforming Work**

1. Reject all products or equipment that are damaged, used or in any other way unsatisfactory for use on the project.

**3.8 SYSTEM STARTUP [NOT USED]**

**3.9 ADJUSTING [NOT USED]**

**3.10 CLEANING [NOT USED]**

**3.11 CLOSEOUT ACTIVITIES [NOT USED]**

**3.12 PROTECTION**

- A. Protect all products or equipment in accordance with manufacturer's written directions.
- B. Store products or equipment in location to avoid physical damage to items while in storage.
- C. Protect equipment from exposure to elements and keep thoroughly dry if required by the manufacturer.

**3.13 MAINTENANCE [NOT USED]**

**3.14 ATTACHMENTS [NOT USED]**

**END OF SECTION**

Revision Log		
DATE	NAME	SUMMARY OF CHANGE

**SECTION 01 70 00**  
**MOBILIZATION AND REMOBILIZATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Mobilization and Demobilization

a. Mobilization

- 1) Transportation of Contractor's personnel, equipment, and operating supplies to the Site
- 2) Establishment of necessary general facilities for the Contractor's operation at the Site
- 3) Premiums paid for performance and payment bonds
- 4) Transportation of Contractor's personnel, equipment, and operating supplies to another location within the designated Site
- 5) Relocation of necessary general facilities for the Contractor's operation from 1 location to another location on the Site.

b. Demobilization

- 1) Transportation of Contractor's personnel, equipment, and operating supplies away from the Site including disassembly
- 2) Site Clean-up
- 3) Removal of all buildings and/or other facilities assembled at the Site for this Contract

c. Mobilization and Demobilization do not include activities for specific items of work that are for which payment is provided elsewhere in the contract.

2. Remobilization

a. Remobilization for Suspension of Work specifically required in the Contract Documents or as required by City includes:

1) Demobilization

- a) Transportation of Contractor's personnel, equipment, and operating supplies from the Site including disassembly or temporarily securing equipment, supplies, and other facilities as designated by the Contract Documents necessary to suspend the Work.

- b) Site Clean-up as designated in the Contract Documents

2) Remobilization

- a) Transportation of Contractor's personnel, equipment, and operating supplies to the Site necessary to resume the Work.
- b) Establishment of necessary general facilities for the Contractor's operation at the Site necessary to resume the Work.

3) No Payments will be made for:

- a) Mobilization and Demobilization from one location to another on the Site in the normal progress of performing the Work.
- b) Stand-by or idle time
- c) Lost profits

3. Mobilizations and Demobilization for Miscellaneous Projects

a. Mobilization and Demobilization

- 1) Mobilization shall consist of the activities and cost on a Work Order basis necessary for:
    - a) Transportation of Contractor's personnel, equipment, and operating supplies to the Site for the issued Work Order.
    - b) Establishment of necessary general facilities for the Contractor's operation at the Site for the issued Work Order
  - 2) Demobilization shall consist of the activities and cost necessary for:
    - a) Transportation of Contractor's personnel, equipment, and operating supplies from the Site including disassembly for each issued Work Order
    - b) Site Clean-up for each issued Work Order
    - c) Removal of all buildings or other facilities assembled at the Site for each Work Order
  - b. Mobilization and Demobilization do not include activities for specific items of work for which payment is provided elsewhere in the contract.
  4. Emergency Mobilizations and Demobilization for Miscellaneous Projects
    - a. A Mobilization for Miscellaneous Projects when directed by the City and the mobilization occurs within 24 hours of the issuance of the Work Order.
  - B. Deviations from this City of Fort Worth Standard Specification
    1. None.
  - C. Related Specification Sections include, but are not necessarily limited to:
    1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
    2. Division 1 – General Requirements
- 1.2 PRICE AND PAYMENT PROCEDURES**
- A. Measurement and Payment [Consult City Department/Division for direction on if Mobilization pay item to be included or the item should be subsidiary. Include the appropriate Section 1.2 A. 1.]
    1. Mobilization and Demobilization
      - a. Measure
        - 1) This Item is considered subsidiary to the various Items bid.
      - b. Payment
        - 1) The work performed and materials furnished in accordance with this Item are subsidiary to the various Items bid and no other compensation will be allowed.
    2. Remobilization for suspension of Work as specifically required in the Contract Documents
      - a. Measurement
        - 1) Measurement for this Item shall be per each remobilization performed.
      - b. Payment
        - 1) The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price per each "Specified Remobilization" in accordance with Contract Documents.
      - c. The price shall include:
        - 1) Demobilization as described in Section 1.1.A.2.a.1)
        - 2) Remobilization as described in Section 1.1.A.2.a.2)

- 1 d. No payments will be made for standby, idle time, or lost profits associated this
- 2 Item.
- 3 3. Remobilization for suspension of Work as required by City
- 4 a. Measurement and Payment
- 5 1) This shall be submitted as a Contract Claim in accordance with Article 10
- 6 of Section 00 72 00.
- 7 2) No payments will be made for standby, idle time, or lost profits associated
- 8 with this Item.
- 9 4. Mobilizations and Demobilizations for Miscellaneous Projects
- 10 a. Measurement
- 11 1) Measurement for this Item shall be for each Mobilization and
- 12 Demobilization required by the Contract Documents
- 13 b. Payment
- 14 1) The Work performed and materials furnished in accordance with this Item
- 15 and measured as provided under "Measurement" will be paid for at the unit
- 16 price per each "Work Order Mobilization" in accordance with Contract
- 17 Documents. Demobilization shall be considered subsidiary to mobilization
- 18 and shall not be paid for separately.
- 19 c. The price shall include:
- 20 1) Mobilization as described in Section 1.1.A.3.a.1)
- 21 2) Demobilization as described in Section 1.1.A.3.a.2)
- 22 d. No payments will be made for standby, idle time, or lost profits associated this
- 23 Item.
- 24 5. Emergency Mobilizations and Demobilizations for Miscellaneous Projects
- 25 a. Measurement
- 26 1) Measurement for this Item shall be for each Mobilization and
- 27 Demobilization required by the Contract Documents
- 28 b. Payment
- 29 1) The Work performed and materials furnished in accordance with this Item
- 30 and measured as provided under "Measurement" will be paid for at the unit
- 31 price per each "Work Order Emergency Mobilization" in accordance with
- 32 Contract Documents. Demobilization shall be considered subsidiary to
- 33 mobilization and shall not be paid for separately.
- 34 c. The price shall include
- 35 1) Mobilization as described in Section 1.1.A.4.a)
- 36 2) Demobilization as described in Section 1.1.A.3.a.2)
- 37 d. No payments will be made for standby, idle time, or lost profits associated this
- 38 Item.

39 **1.3 REFERENCES [NOT USED]**

40 **1.4 ADMINISTRATIVE REQUIREMENTS [NOT USED]**

41 **1.5 SUBMITTALS [NOT USED]**

42 **1.6 INFORMATIONAL SUBMITTALS [NOT USED]**

43 **1.7 CLOSEOUT SUBMITTALS [NOT USED]**

44 **1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**



1.9 QUALITY ASSURANCE [NOT USED]

1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.11 FIELD [SITE] CONDITIONS [NOT USED]

1.12 WARRANTY [NOT USED]

PART 2 - PRODUCTS [NOT USED]

PART 3 - EXECUTION [NOT USED]

END OF SECTION

Revision Log		
DATE	NAME	SUMMARY OF CHANGE
11/22/16	Michael Owen	1.2 Price and Payment Procedures - Revised specification, including blue text, to make specification flexible for either subsidiary or paid bid item for Mobilization.

**SECTION 01 71 23**  
**CONSTRUCTION STAKING AND SURVEY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Requirements for construction staking and construction survey
- B. Deviations from this City of Fort Worth Standard Specification
  - 1. None.
- C. Related Specification Sections include, but are not necessarily limited to:
  - 1. Division 0 – Bidding Requirements, Contract Forms and Conditions of the Contract
  - 2. Division 1 – General Requirements

**1.2 PRICE AND PAYMENT PROCEDURES**

- A. Measurement and Payment
  - 1. Construction Staking
    - a. Measurement
      - 1) Measurement for this Item shall be by lump sum.
    - b. Payment
      - 1) The work performed and the materials furnished in accordance with this Item shall be paid for at the lump sum price bid for "Construction Staking".
      - 2) Payment for "Construction Staking" shall be made in partial payments prorated by work completed compared to total work included in the lump sum item.
    - c. The price bid shall include, but not be limited to the following:
      - 1) Verification of control data provided by City.
      - 2) Placement, maintenance and replacement of required stakes and markings in the field.
      - 3) Preparation and submittal of construction staking documentation in the form of "cut sheets" using the City's standard template.
  - 2. Construction Survey
    - a. Measurement
      - 1) This Item is considered subsidiary to the various Items bid.
    - b. Payment
      - 1) The work performed and the materials furnished in accordance with this Item are subsidiary to the various Items bid and no other compensation will be allowed.
  - 3. As-Built Survey
    - a. Measurement
      - 1) Measurement for this Item shall be by lump sum.
    - b. Payment
      - 1) The work performed and the materials furnished in accordance with this Item shall be paid for at the lump sum price bid for "As-Built Survey".

- 2) Payment for "Construction Staking" shall be made in partial payments prorated by work completed compared to total work included in the lump sum item.
- c. The price bid shall include, but not be limited to the following:
  - 1) Field measurements and survey shots to identify location of completed facilities.
  - 2) Documentation and submittal of as-built survey data onto contractor redline plans and digital survey files.

### 1.3 REFERENCES

#### A. Definitions

1. Construction Survey - The survey measurements made prior to or while construction is in progress to control elevation, horizontal position, dimensions and configuration of structures/improvements included in the Project Drawings.
2. As-built Survey - The measurements made after the construction of the improvement features are complete to provide position coordinates for the features of a project.
3. Construction Staking - The placement of stakes and markings to provide offsets and elevations to cut and fill in order to locate on the ground the designed structures/improvements included in the Project Drawings. Construction staking shall include staking easements and/or right of way if indicated on the plans.
4. Survey "Field Checks" - Measurements made after construction staking is completed and before construction work begins to ensure that structures marked on the ground are accurately located per Project Drawings.

#### B. Technical References

1. City of Fort Worth - Construction Staking Standards (available on City's Buzzsaw website) - 01 71 23.16.01\_ Attachment A\_Survey Staking Standards
2. City of Fort Worth - Standard Survey Data Collector Library (fxl) files (available on City's Buzzsaw website).
3. Texas Department of Transportation (TxDOT) Survey Manual, latest revision
4. Texas Society of Professional Land Surveyors (TSPS), Manual of Practice for Land Surveying in the State of Texas, Category 5

### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. The Contractor's selection of a surveyor must comply with Texas Government Code 2254 (qualifications based selection) for this project.**

### 1.5 SUBMITTALS

- A. Submittals, if required, shall be in accordance with Section 01 33 00.
- B. All submittals shall be received and reviewed by the City prior to delivery of work.

### 1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

- A. Field Quality Control Submittals

1. Documentation verifying accuracy of field engineering work, including coordinate conversions if plans do not indicate grid or ground coordinates.
2. Submit "Cut-Sheets" conforming to the standard template provided by the City (refer to 01 71 23.16.01 – Attachment A – Survey Staking Standards).

#### **1.7 CLOSEOUT SUBMITTALS**

##### **B. As-built Redline Drawing Submittal**

1. Submit As-Built Survey Redline Drawings documenting the locations/elevations of constructed improvements signed and sealed by Registered Professional Land Surveyor (RPLS) responsible for the work (refer to 01 71 23.16.01 – Attachment A – Survey Staking Standards).
2. Contractor shall submit the proposed as-built and completed redline drawing submittal one (1) week prior to scheduling the project final inspection for City review and comment. Revisions, if necessary, shall be made to the as-built redline drawings and resubmitted to the City prior to scheduling the construction final inspection.

#### **1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]**

#### **1.9 QUALITY ASSURANCE**

##### **A. Construction Staking**

1. Construction staking will be performed by the Contractor.
2. Coordination
  - a. Contact City's Project Representative at least one week in advance notifying the City of when Construction Staking is scheduled.
  - b. It is the Contractor's responsibility to coordinate staking such that construction activities are not delayed or negatively impacted.
3. General
  - a. Contractor is responsible for preserving and maintaining stakes. If City surveyors are required to re-stake for any reason, the Contractor will be responsible for costs to perform staking. If in the opinion of the City, a sufficient number of stakes or markings have been lost, destroyed disturbed or omitted that the contracted Work cannot take place then the Contractor will be required to stake or re-stake the deficient areas.

##### **B. Construction Survey**

1. Construction Survey will be performed by the Contractor.
2. Coordination
  - a. Contractor to verify that horizontal and vertical control data established in the design survey and required for construction survey is available and in place.
3. General
  - a. Construction survey will be performed in order to construct the work shown on the Construction Drawings and specified in the Contract Documents.
  - b. For construction methods other than open cut, the Contractor shall perform construction survey and verify control data including, but not limited to, the following:
    - 1) Verification that established benchmarks and control are accurate.

- 2) Use of Benchmarks to furnish and maintain all reference lines and grades for tunneling.
- 3) Use of line and grades to establish the location of the pipe.
- 4) Submit to the City copies of field notes used to establish all lines and grades, if requested, and allow the City to check guidance system setup prior to beginning each tunneling drive.
- 5) Provide access for the City, if requested, to verify the guidance system and the line and grade of the carrier pipe.
- 6) The Contractor remains fully responsible for the accuracy of the work and correction of it, as required.
- 7) Monitor line and grade continuously during construction.
- 8) Record deviation with respect to design line and grade once at each pipe joint and submit daily records to the City.
- 9) If the installation does not meet the specified tolerances (as outlined in Sections 33 05 23 and/or 33 05 24), immediately notify the City and correct the installation in accordance with the Contract Documents.

C. As-Built Survey

1. Required As-Built Survey will be performed by the Contractor.
2. Coordination
  - a. Contractor is to coordinate with City to confirm which features require as-built surveying.
  - b. It is the Contractor's responsibility to coordinate the as-built survey and required measurements for items that are to be buried such that construction activities are not delayed or negatively impacted.
  - c. For sewer mains and water mains 12" and under in diameter, it is acceptable to physically measure depth and mark the location during the progress of construction and take as-built survey after the facility has been buried. The Contractor is responsible for the quality control needed to ensure accuracy.
3. General
  - a. The Contractor shall provide as-built survey including the elevation and location (and provide written documentation to the City) of construction features **during the progress of the construction** including the following:
    - 1) Water Lines
      - a) Top of pipe elevations and coordinates for waterlines at the following locations:
        - (1) Minimum every 250 linear feet, including
        - (2) Horizontal and vertical points of inflection, curvature, etc.
        - (3) Fire line tee
        - (4) Plugs, stub-outs, dead-end lines
        - (5) Casing pipe (each end) and all buried fittings
    - 2) Sanitary Sewer
      - a) Top of pipe elevations and coordinates for force mains and siphon sanitary sewer lines (non-gravity facilities) at the following locations:
        - (1) Minimum every 250 linear feet and any buried fittings
        - (2) Horizontal and vertical points of inflection, curvature, etc.
    - 3) Stormwater – Not Applicable

- b. The Contractor shall provide as-built survey including the elevation and location (and provide written documentation to the City) of construction features **after the construction is completed** including the following:
  - 1) Manholes
    - a) Rim and flowline elevations and coordinates for each manhole
  - 2) Water Lines
    - a) Cathodic protection test stations
    - b) Sampling stations
    - c) Meter boxes/vaults (All sizes)
    - d) Fire hydrants
    - e) Valves (gate, butterfly, etc.)
    - f) Air Release valves (Manhole rim and vent pipe)
    - g) Blow off valves (Manhole rim and valve lid)
    - h) Pressure plane valves
    - i) Underground Vaults
      - (1) Rim and flowline elevations and coordinates for each Underground Vault.
  - 3) Sanitary Sewer
    - a) Cleanouts
      - (1) Rim and flowline elevations and coordinates for each
    - b) Manholes and Junction Structures
      - (1) Rim and flowline elevations and coordinates for each manhole and junction structure.
  - 4) Stormwater – Not Applicable

#### **1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]**

#### **1.11 FIELD [SITE] CONDITIONS [NOT USED]**

#### **1.12 WARRANTY**

### **PART 2 - PRODUCTS**

- A. A construction survey will produce, but will not be limited to:
  - 1. Recovery of relevant control points, points of curvature and points of intersection.
  - 2. Establish temporary horizontal and vertical control elevations (benchmarks) sufficiently permanent and located in a manner to be used throughout construction.
  - 3. The location of planned facilities, easements and improvements.
    - a. Establishing final line and grade stakes for piers, floors, grade beams, parking areas, utilities, streets, highways, tunnels, and other construction.
    - b. A record of revisions or corrections noted in an orderly manner for reference.
    - c. A drawing, when required by the client, indicating the horizontal and vertical location of facilities, easements and improvements, as built.
  - 4. Cut sheets shall be provided to the City inspector and Survey Superintendent for all construction staking projects. These cut sheets shall be on the standard city template which can be obtained from the Survey Superintendent (817-392-7925).
  - 5. Digital survey files in the following formats shall be acceptable:
    - a. AutoCAD (.dwg)
    - b. ESRI Shapefile (.shp)

- c. CSV file (.csv), formatted with X and Y coordinates in separate columns (use standard templates, if available)
- 6. Survey files shall include vertical and horizontal data tied to original project control and benchmarks, and shall include feature descriptions

## **PART 3 - EXECUTION**

### **3.1 INSTALLERS**

#### **A. Tolerances:**

1. The staked location of any improvement or facility should be as accurate as practical and necessary. The degree of precision required is dependent on many factors all of which must remain judgmental. The tolerances listed hereafter are based on generalities and, under certain circumstances, shall yield to specific requirements. The surveyor shall assess any situation by review of the overall plans and through consultation with responsible parties as to the need for specific tolerances.
  - a. Earthwork: Grades for earthwork or rough cut should not exceed 0.1 ft. vertical tolerance. Horizontal alignment for earthwork and rough cut should not exceed 1.0 ft. tolerance.
  - b. Horizontal alignment on a structure shall be within .01 ft tolerance.
  - c. Paving or concrete for streets, curbs, gutters, parking areas, drives, alleys and walkways shall be located within the confines of the site boundaries and, occasionally, along a boundary or any other restrictive line. Away from any restrictive line, these facilities should be staked with an accuracy producing no more than 0.05 ft. tolerance from their specified locations.
  - d. Underground and overhead utilities, such as sewers, gas, water, telephone and electric lines, shall be located horizontally within their prescribed areas or easements. Within assigned areas, these utilities should be staked with an accuracy producing no more than 0.1 ft tolerance from a specified location.
  - e. The accuracy required for the vertical location of utilities varies widely. Many underground utilities require only a minimum cover and a tolerance of 0.1 ft. should be maintained. Underground and overhead utilities on planned profile, but not depending on gravity flow for performance, should not exceed 0.1 ft. tolerance.

#### **B. Surveying instruments shall be kept in close adjustment according to manufacturer's specifications or in compliance to standards. The City reserves the right to request a calibration report at any time and recommends regular maintenance schedule be performed by a certified technician every 6 months.**

1. Field measurements of angles and distances shall be done in such fashion as to satisfy the closures and tolerances expressed in Part 3.1.A.
2. Vertical locations shall be established from a pre-established benchmark and checked by closing to a different bench mark on the same datum.
3. Construction survey field work shall correspond to the client's plans. Irregularities or conflicts found shall be reported promptly to the City.
4. Revisions, corrections and other pertinent data shall be logged for future reference.

**3.2 EXAMINATION [NOT USED]**

**3.3 PREPARATION [NOT USED]**

**3.4 APPLICATION**

**3.5 REPAIR / RESTORATION**

- A. If the Contractor's work damages or destroys one or more of the control monuments/points set by the City, the monuments shall be adequately referenced for expedient restoration.
  - 1. Notify City if any control data needs to be restored or replaced due to damage caused during construction operations.
    - a. Contractor shall perform replacements and/or restorations.
    - b. The City may require at any time a survey "Field Check" of any monument or benchmarks that are set be verified by the City surveyors before further associated work can move forward.

**3.6 RE-INSTALLATION [NOT USED]**

**3.7 FIELD [OR] SITE QUALITY CONTROL**

- A. It is the Contractor's responsibility to maintain all stakes and control data placed by the City in accordance with this Specification. This includes easements and right of way, if noted on the plans.
- B. Do not change or relocate stakes or control data without approval from the City.

**3.8 SYSTEM STARTUP**

- A. Survey Checks
  - 1. The City reserves the right to perform a Survey Check at any time deemed necessary.
  - 2. Checks by City personnel or 3<sup>rd</sup> party contracted surveyor are not intended to relieve the contractor of his/her responsibility for accuracy.

**3.9 ADJUSTING [NOT USED]**

**3.10 CLEANING [NOT USED]**

**3.11 CLOSEOUT ACTIVITIES [NOT USED]**

**3.12 PROTECTION [NOT USED]**

**3.13 MAINTENANCE [NOT USED]**

**3.14 ATTACHMENTS [NOT USED]**

**END OF SECTION**

Revision Log
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DATE	NAME	SUMMARY OF CHANGE
8/31/2012	D. Johnson	
8/31/2017	M. Owen	Added instruction and modified measurement & payment under 1.2; added definitions and references under 1.3; modified 1.6; added 1.7 closeout submittal requirements; modified 1.9 Quality Assurance; added PART 2 – PRODUCTS ; Added 3.1 Installers; added 3.5 Repair/Restoration; and added 3.8 System Startup.
2/14/2018	M Owen	Removed “blue text”; revised measurement and payment sections for Construction Staking and As-Built Survey; added reference to selection compliance with TGC 2254; revised action and Closeout submittal requirements; added acceptable depth measurement criteria; revised list of items requiring as-built survey “during” and “after” construction; and revised acceptable digital survey file format



## Section 01 71 23.01 - Attachment A Survey Staking Standards

*February 2017*

These procedures are intended to provide a standard method for construction staking services associated with the City of Fort Worth projects. These are not to be considered all inclusive, but only as a general guideline. ***For projects on TXDOT right-of-way or through joint TXDOT participation, adherence to the TXDOT Survey Manual shall be followed and if a discrepancy arises, the TXDOT manual shall prevail.*** (<http://onlinemanuals.txdot.gov/txdotmanuals/ess/ess.pdf>)  
If you have a unique circumstance, please consult with the project manager, inspector, or survey department at 817-392-7925.

## **Table of Contents**

- I. City of Fort Worth Contact Information
- II. Construction Colors
- III. Standard Staking Supplies
- IV. Survey Equipment, Control, and Datum Standards
- V. Water Staking
- VI. Sanitary Sewer Staking
- VII. Storm Staking
- VIII. Curb and Gutter Staking
- IX. Cut Sheets
- X. As-built Survey

## **I. Survey Department Contact Information**

Physical and mailing address:  
8851 Camp Bowie West Boulevard  
Suite 300  
Fort Worth, Texas 76116

Office: (817) 392-7925  
Survey Superintendent, direct line: (817) 392-8971

## **II. Construction Colors**

The following colors shall be used for staking or identifying features in the field. This includes flagging, paint of laths/stakes, paint of hubs, and any identification such as pin flags if necessary.

Utility	Color
PROPOSED EXCAVATION	WHITE
ALL ELECTRIC AND CONDUITS	RED
POTABLE WATER	BLUE
GAS OR OIL	YELLOW
TELEPHONE/FIBER OPTIC	ORANGE
SURVEY CONTROL POINTS, BENCHMARKS, PROPERTY CORNERS, RIGHT-OF-WAYS, AND ALL PAVING INCLUDING CURB, SIDEWALK, BUILDING CORNERS	PINK
SANITARY SEWER	GREEN
IRRIGATION AND RECLAIMED WATER	PURPLE

## **III. Standard Staking Supplies**

Item	Minimum size
Lath/Stake	36" tall
Wooden Hub (2"x2" min. square preferred)	6" tall
Pin Flags (2.5" x 3.5" preferred)	21" long
Guard Stakes	Not required
PK or Mag nails	1" long
Iron Rods (1/2" or greater diameter)	18" long
Survey Marking Paint	Water-based
Flagging	1" wide
Marking Whiskers (feathers)	6" long
Tacks (for marking hubs)	3/4" long

#### **IV. Survey Equipment, Control, and Datum Standards**

##### **A. City Benchmarks**

All city benchmarks can be found here: <http://fortworthtexas.gov/itsolutions/GIS/>  
Look for 'Zoning Maps'. Under 'Layers', expand 'Basemap Layers', and check on 'Benchmarks'.

##### **B. Conventional or Robotic Total Station Equipment**

- I. A minimum of a 10 arc-second instrument is required.
- II. A copy of the latest calibration report may be requested by the City at any time. It is recommended that an instrument be calibrated by certified technician at least 1 occurrence every 6 months.

##### **C. Network/V.R.S. and static GPS Equipment**

- I. It is critical that the surveyor verify the correct horizontal and vertical datum prior commencing work. A **site calibration** may be required and shall consist of at least 4 control points spaced evenly apart and in varying quadrants. Additional field checks of the horizontal and vertical accuracies shall be completed and the City may ask for a copy of the calibration report at any time.
- II. Network GPS such as the Western Data Systems or SmartNet systems may be used for staking of property/R.O.W, forced-main water lines, and rough-grade only. **No GPS staking for concrete, sanitary sewer, storm drain, final grade, or anything that needs vertical grading with a tolerance of 0.25' or less is allowed.**

##### **D. Control Points Set**

- I. All control points set shall be accompanied by a lath with the appropriate Northing, Easting, and Elevation (if applicable) of the point set. Control points can be set rebar, 'X' in concrete, or any other appropriate item with a stable base and of a semi-permanent nature. A rebar cap is optional, but preferred if the cap is marked 'control point' or similar wording.
- II. Datasheets are required for all control points set.  
Datasheet should include:
  - A. Horizontal and Vertical Datum used, Example: N.A.D.83, North Central Zone 4202, NAVD 88 Elevations
  - B. Grid or ground distance. – If ground, provide scale factor used and base point coordinate, Example: C.S.F.=0.999125, Base point=North: 0, East=0
  - C. Geoid model used, Example: GEOID12A



**E. Preferred Grid Datum**

Although many plan sets can be in surface coordinates, the City's preferred grid datum is listed below. Careful consideration must be taken to verify what datum each project is in prior to beginning work. It is essential the surveyor be familiar with coordinate transformations and how a grid/surface/assumed coordinate system affect a project.

Projected Coordinate

System: NAD\_1983\_StatePlane\_Texas\_North\_Central\_FIPS\_4202\_Feet  
Projection: Lambert\_Conformal\_Conic  
False\_Easting: 1968500.00000000  
False\_Northing: 6561666.66666667  
Central\_Meridian: -98.50000000  
Standard\_Parallel\_1: 32.13333333  
Standard\_Parallel\_2: 33.96666667  
Latitude\_Of\_Origin: 31.66666667  
Linear Unit: Foot\_US

Geographic Coordinate System: GCS\_North\_American\_1983  
Datum: D\_North\_American\_1983  
Prime Meridian: Greenwich  
Angular Unit: Degree

**Note:** Regardless of what datum each particular project is in, deliverables to the City must be converted/translated into this preferred grid datum. 1 copy of the deliverable should be in the project datum (whatever it may be) and 1 copy should be in the NAD83, TX North Central 4202 zone. See Preferred File Naming Convention below

**F. Preferred Deliverable Format**

.txt                      .csv                      .dwg                      .job

**G. Preferred Data Format**

P,N,E,Z,D,N

Point Number, Northing, Easting, Elevation, Description, Notes (if applicable)

**H. Preferred File Naming Convention**

This is the preferred format: City Project Number\_Description\_Datum.csv

Example for a project that has surface coordinates which must be translated:

**File 1:** C1234\_As-built of Water on Main Street\_Grid NAD83 TXSP 4202.csv

File 2: C1234\_As-built of Water on Main Street\_Project Specific Datum.csv

**Example Control Stakes**

FRONT

BACK

NO FLAGGING REQUIRED  
IN LIEU OF PINK PAINTED LATH

CONTROL POINT NUMBER

DOUBLE SLASH MARK

COORDINATES

CP #1

N=5000.00

E=5000.00

REBAR FLUSH WITH GROUND  
OR 'X' ETCHED IN CONCRETE

POINT NUMBER

DOUBLE SLASH MARK

ELEVATION

1016

EL. = 100.00'

## V. Water Staking Standards

O:\Specs-Stds Governance Process\Temporary Spec Files\Capital Delivery\Cap Delivery Div 01\01 71  
23.16.01\_Attachment A\_Survey Staking Standards.docx



**A. Centerline Staking – Straight Line Tangents**

- I. Offset lath/stakes every 200' on even stations
- II. Painted blue lath/stake only, no hub is required
- III. Grade is to top of pipe (T/P) for 12" diameter pipes or smaller
- IV. Grade to flow line (F/L) for 16" and larger diameter pipes
- V. Grade should be 3.50' below the proposed top of curb line for 10" and smaller diameter pipes
- VI. Grade should be 4.00' below the proposed top of curb line for 12" and larger diameter pipes
- VII. Cut Sheets are required on all staking and a copy can be received from the survey superintendent

*Optional: Actual stakes shall consist of a 60D nail or hub set with a whisker*

**B. Centerline Staking – Curves**

- I. If arc length is greater than 100', POC (Point of Curvature) offset stakes should be set at a 25' interval
- II. Same grading guidelines as above
- III. Staking of radius points of greater than 100' may be omitted

**C. Water Meter Boxes**

- I. 7.0' perpendicular offset is preferred to the center of the box
- II. Center of the meter should be 3.0' behind the proposed face of curb
- III. Meter should be staked a minimum of 4.5' away from the edge of a driveway
- IV. Grade is to top of box and should be +0.06' higher than the proposed top of curb unless shown otherwise on the plans

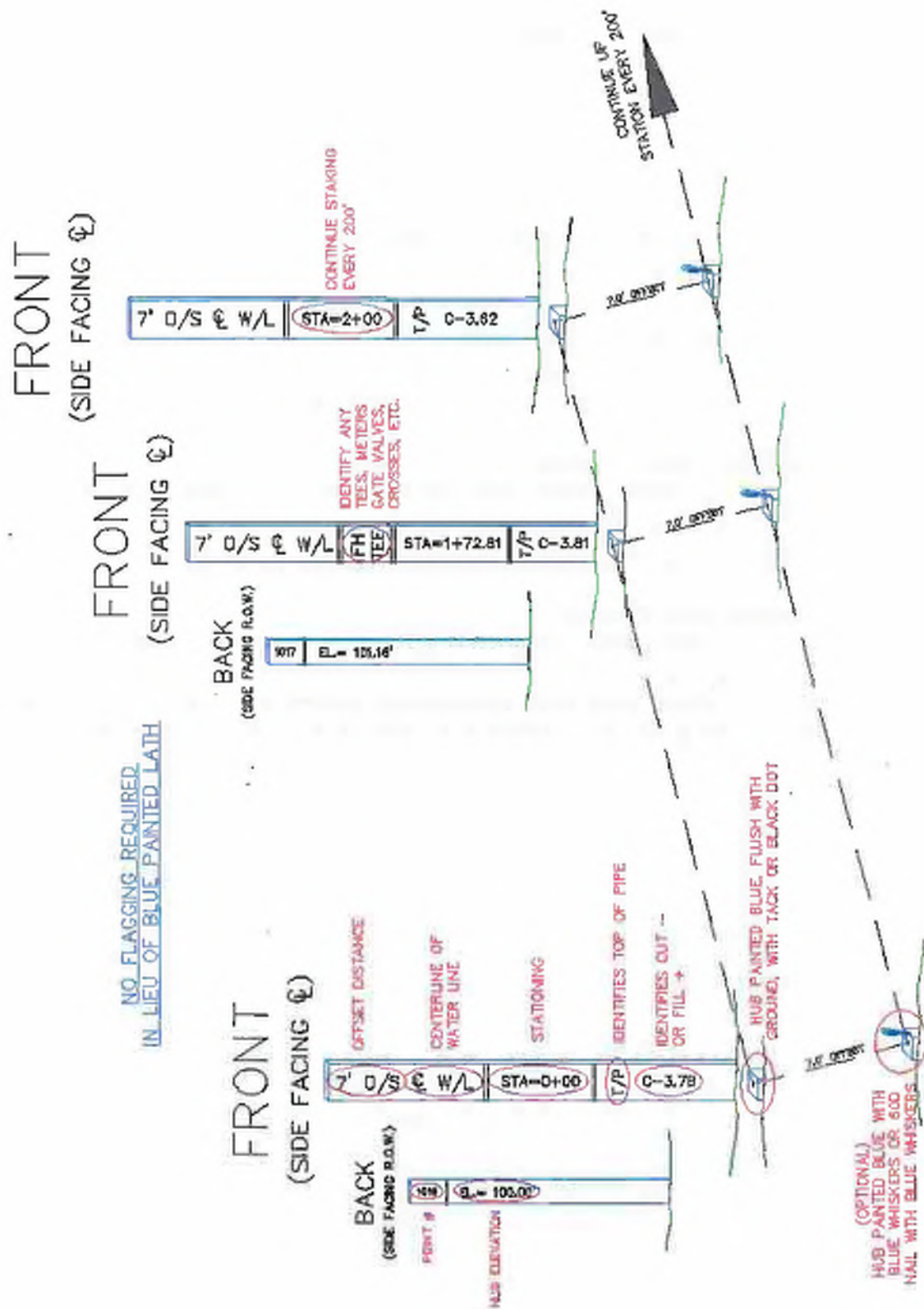
**D. Fire Hydrants**

- I. Center of Hydrant should be 3.0' behind proposed face of curb
- II. Survey offset stake should be 7.0' from the center and perpendicular to the curb line or water main
- III. Grade of hydrants should be +0.30 higher than the adjacent top of curb

**E. Water Valves & Vaults**

- I. Offsets should be perpendicular to the proposed water main
- II. RIM grades should only be provided if on plans

**Example Water Stakes**



## VI. Sanitary Sewer Staking

O:\Specs-Stds Governance Process\Temporary Spec Files\Capital Delivery\Cap Delivery Div 01\01 71  
23.16.01\_Attachment A\_Survey Staking Standards.docx

**A. Centerline Staking – Straight Line Tangents**

- I. Inverts shall be field verified and compared against the plans before staking
- II. Painted green lath/stake **WITH** hub and tack or marker dot, no flagging required
- III. 1 offset stake between manholes if manholes are 400' or less apart
- IV. Offset stakes should be located at even distances and perpendicular to the centerline
- V. Grades will be per plan and the date of the plans used should be noted
- VI. If multiple lines are at one manhole, each line shall have a cut/fill and direction noted
- VII. Stakes at every grade break
- VIII. Cut sheets are required on all staking  
*Optional: Actual stakes shall consist of a 60D nail or hub set with a whisker*

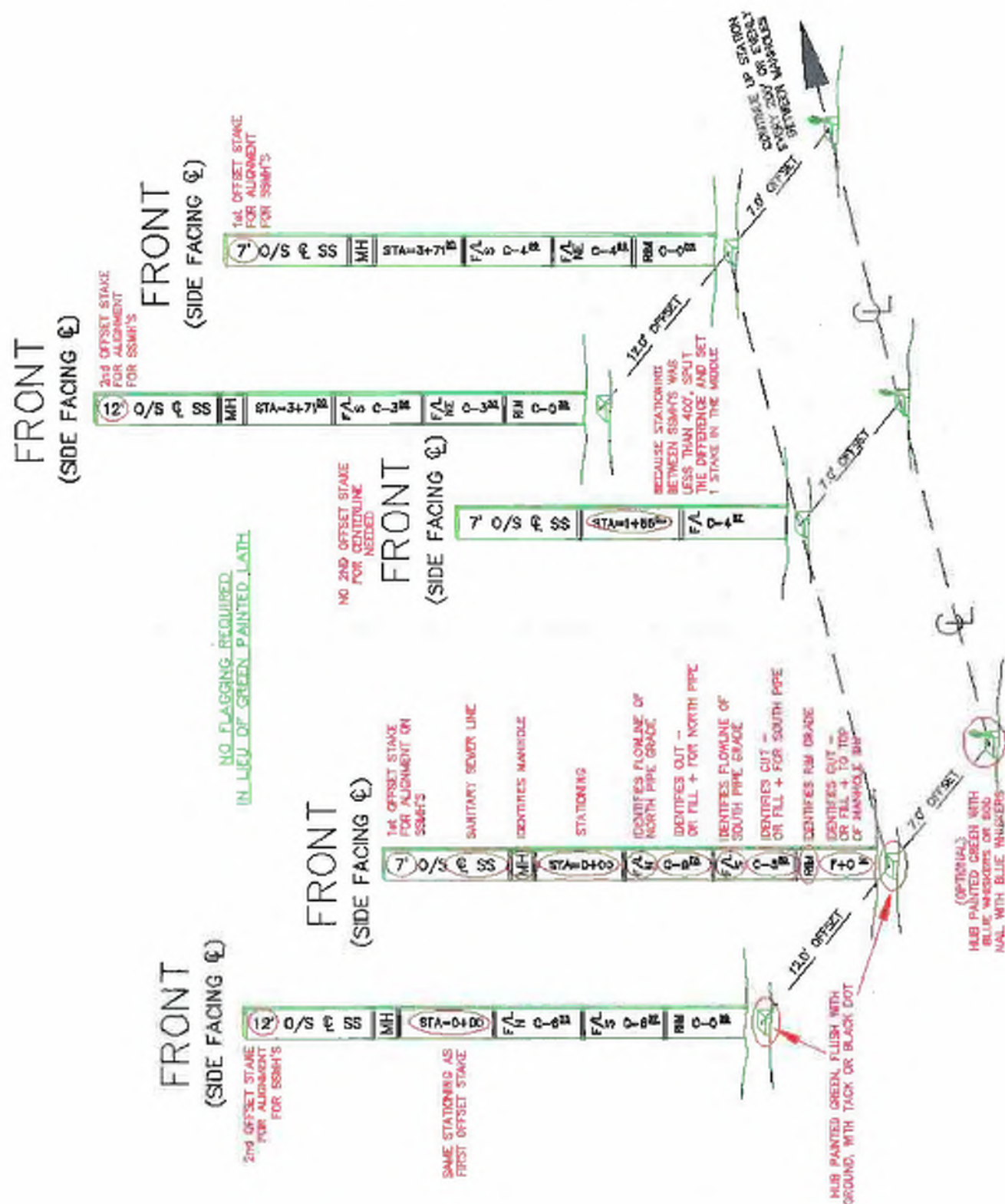
**B. Centerline Staking – Curves**

- I. If arc length is greater than 100', POC (Point of Curvature) offset stakes should be set at a 25' interval
- II. Staking of radius points of greater than 100' may be omitted

**C. Sanitary Sewer Manholes**

- I. 2 offset stakes per manhole for the purpose of providing alignment to the contractor
- II. Flowline grade should be on the lath/stake for each flowline and direction noted
- III. RIM grade should only be on the stake when provided in the plans

## Example Sanitary Sewer Stakes



## **VII. Storm Sewer & Inlet Staking**

### **A. Centerline Staking – Straight Line Tangents**

- I. 1 offset stake every 200' on even stations
  - II. Grades are to flowline of pipe unless otherwise shown on plans
  - III. Stakes at every grade break
  - IV. Cut sheets are required on all staking
- Optional: Actual stakes shall consist of a 60D nail or hub set with a whisker*

### **B. Centerline Staking – Curves**

- I. If arc length is greater than 100', POC (Point of Curvature) offset stakes should be set at a 25' interval
- II. Staking of radius points of greater than 100' may be omitted

### **C. Storm Drain Inlets**

- I. Staking distances should be measured from end of wing
- II. Standard 10' Inlet = 16.00' total length
- III. Recessed 10' Inlet = 20.00' total length
- IV. Standard double 10' inlet = 26.67' total length
- V. Recessed double 10' inlet = 30.67' total length

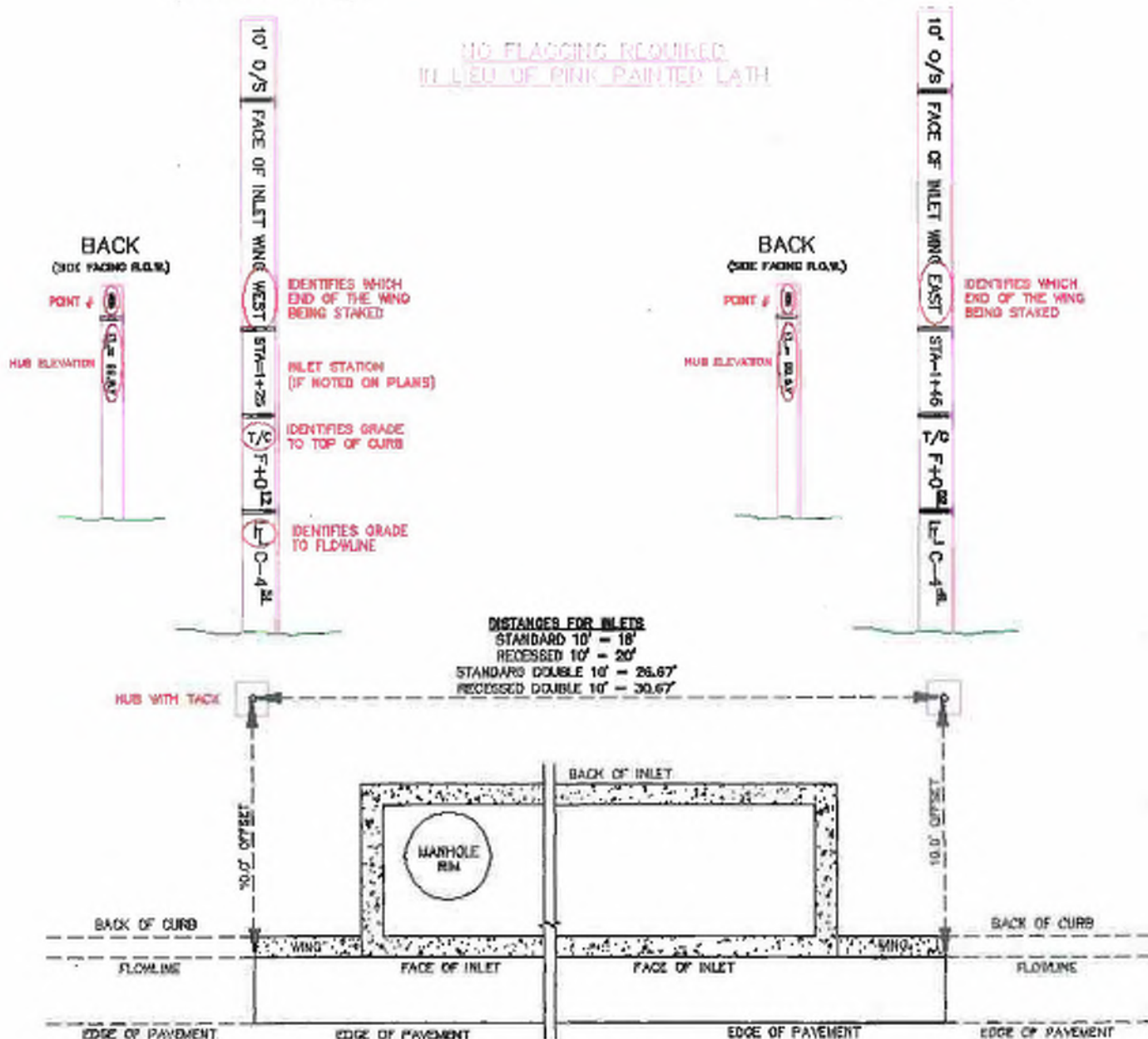
### **D. Storm Drain Manholes**

- I. 2 offset stakes per manhole for the purpose of providing alignment to the contractor
- II. Flowline grade should be on the lath/stake for each flowline and direction noted
- III. RIM grade should only be on the stake when provided in the plans

### Example Storm Inlet Stakes

FRONT  
(SIDE FACING C)

FRONT  
(SIDE FACING ☉)



## **VIII. Curb and Gutter Staking**

### **A. Centerline Staking – Straight Line Tangents**

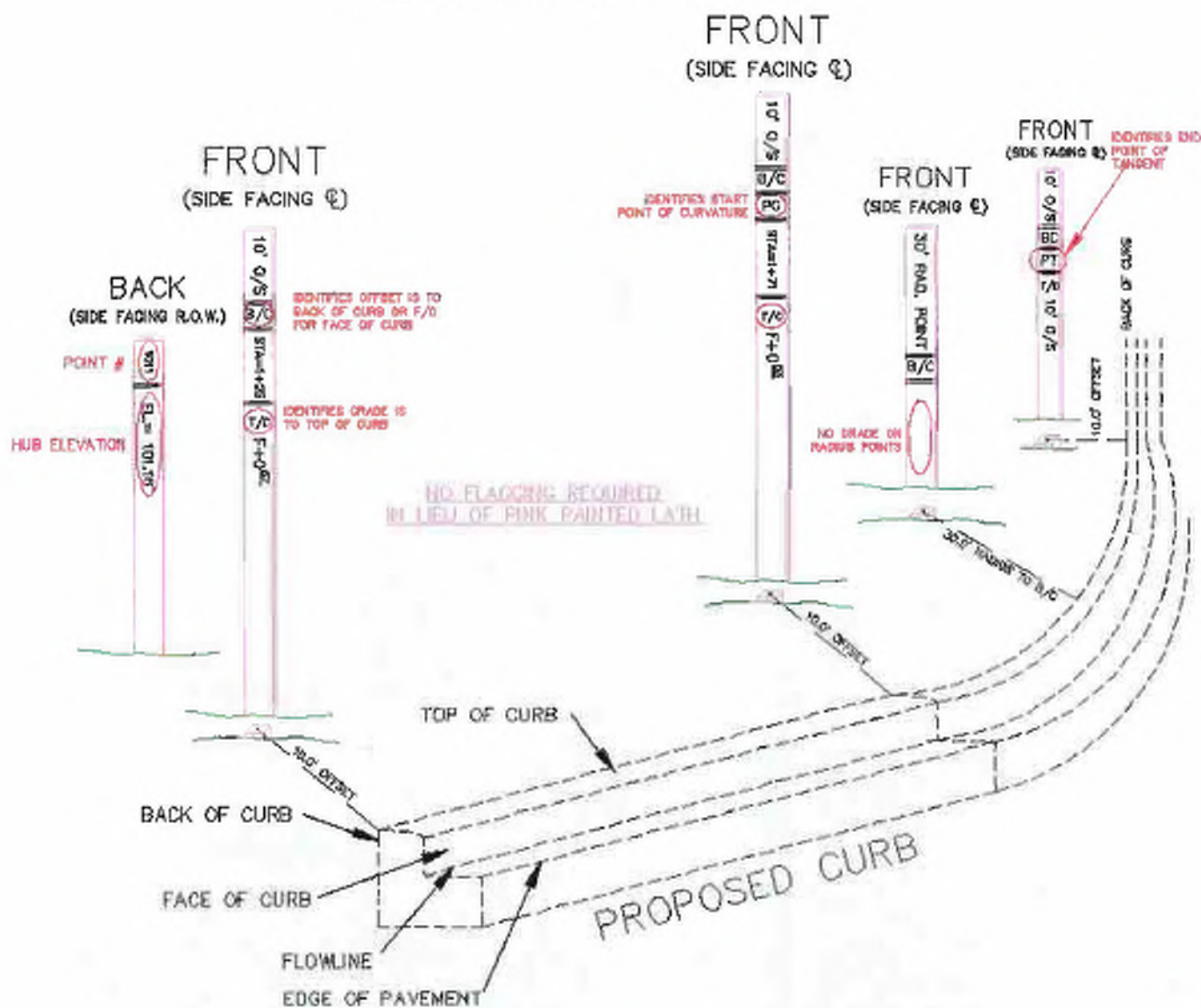
- V. 1 offset stake every 50' on even stations
  - VI. Grades are to top of curb unless otherwise shown on plans
  - VII. Stakes at every grade break
  - VIII. Cut sheets are required on all staking
- Optional: Actual stakes shall consist of a 60D nail or hub set with a whisker*

### **B. Centerline Staking – Curves**

- III. If arc length is greater than 100', POC (Point of Curvature) offset stakes should be set at a 25' interval
- IV. Staking of radius points of greater than 100' may be omitted



### Example Curb & Gutter Stakes



### Example Curb & Gutter Stakes at Intersection





## IX. Cut Sheets

- A. Date of field work
- B. Staking Method (GPS, total station)
- C. Project Name
- D. City Project Number (Example: C01234)
- E. Location (Address, cross streets, GPS coordinate)
- F. Survey company name
- G. Crew chief name
- H. A blank template can be obtained from the survey superintendent (see item I above)

## Standard City Cut Sheet

Date: \_\_\_\_\_

City Project  
Number: \_\_\_\_\_  
Project Name: \_\_\_\_\_

Staking Method: ☐ GPS

□ TOTAL  
STATION

☐ OTHER

CONSULTANT/CONTRACTOR  
SURVEY CREW INITIALS

ALL GRADES ARE TO FLOWLINE OR TOP OF CURB UNLESS OTHERWISE NOTED.

[illegible]

## **X. As-built Survey**

### **A. Definition and Purpose**

The purpose of an as-built survey is to verify the asset was installed in the proper location and grade. Furthermore, the information gathered will be used to supplement the City's GIS data and must be in the proper format when submitted. **See section IV.**

As-built survey should include the following (additional items may be requested):

*Manholes*

*Top of pipe elevations every 250 feet*

*Horizontal and vertical points of inflection, curvature, etc. (All Fittings)*

*Cathodic protection test stations*

*Sampling stations*

*Meter boxes/vaults (All sizes)*

*Fire lines*

*Fire hydrants*

*Gate valves (rim and top of nut)*

*Plugs, stub-outs, dead-end lines*

*Air Release valves (Manhole rim and vent pipe)*

*Blow off valves (Manhole rim and valve lid)*

*Pressure plane valves*

*Cleaning wyes*

*Clean outs*

*Casing pipe (each end)*

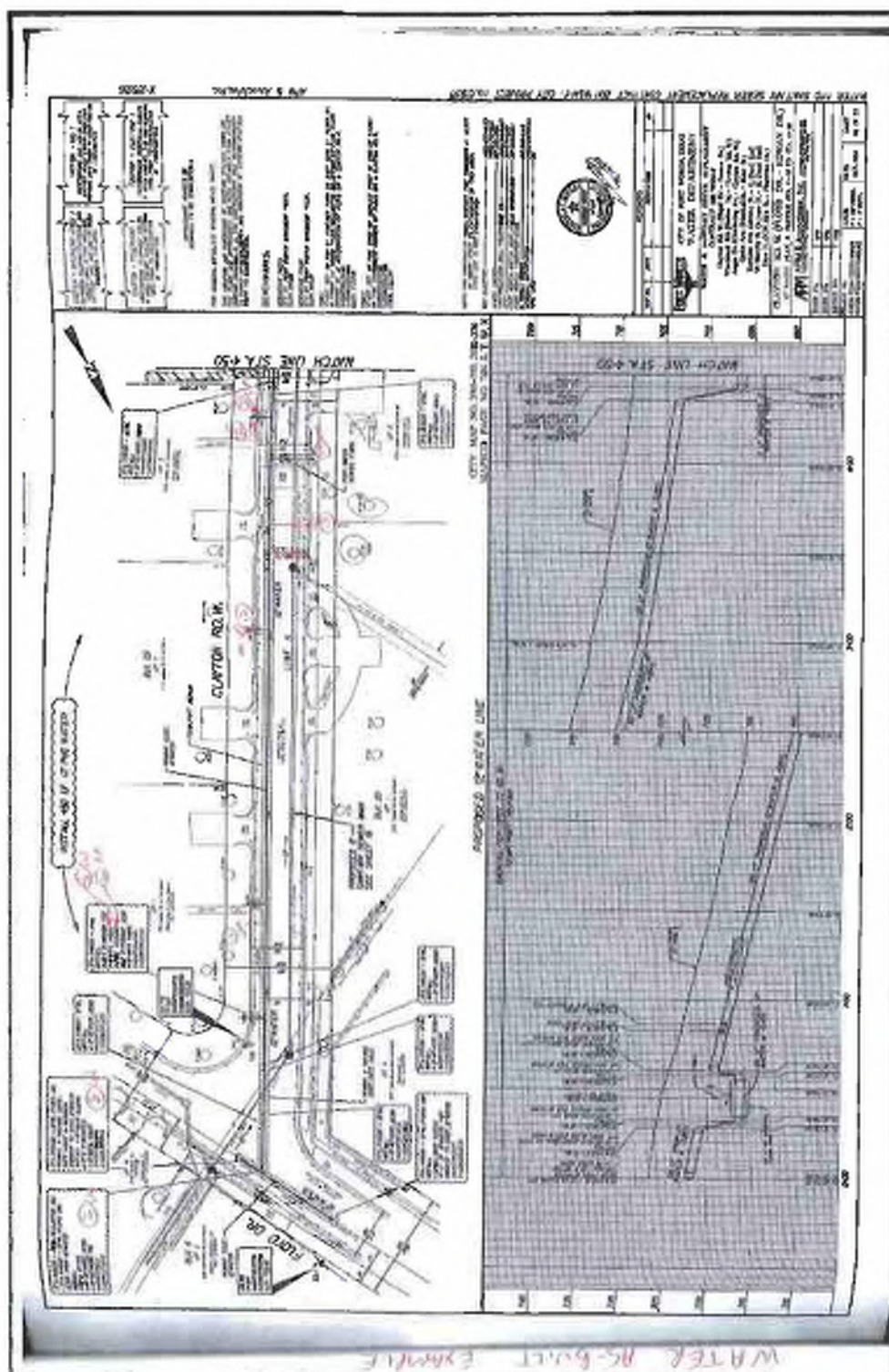
*Inverts of pipes*

*Turbo Meters*

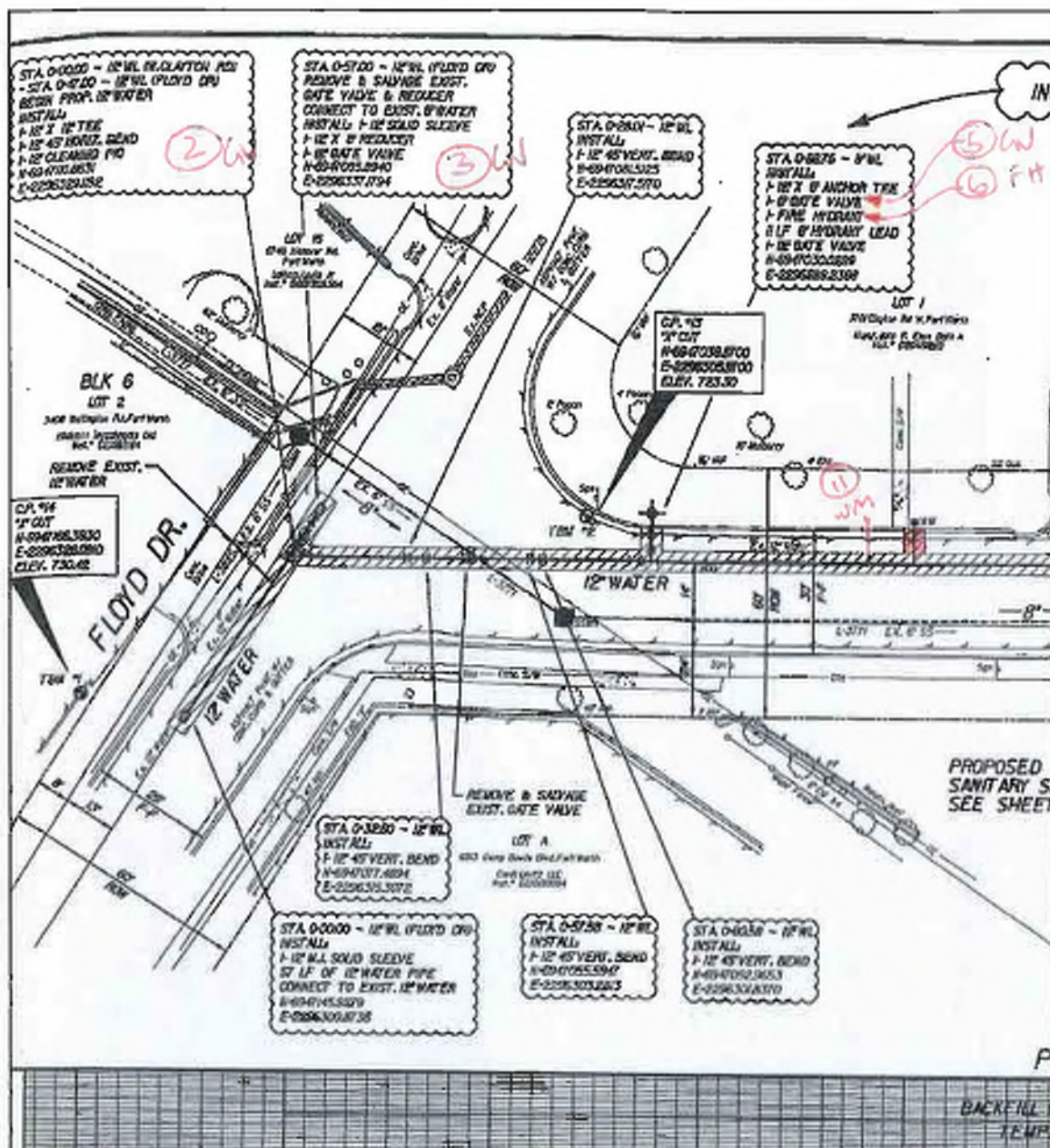
**B. Example Deliverable**

A hand written red line by the field surveyor is acceptable in most cases. This should be a copy of the plans with the point number noted by each asset. If the asset is missing, then the surveyor should write "NOT FOUND" to notify the City.

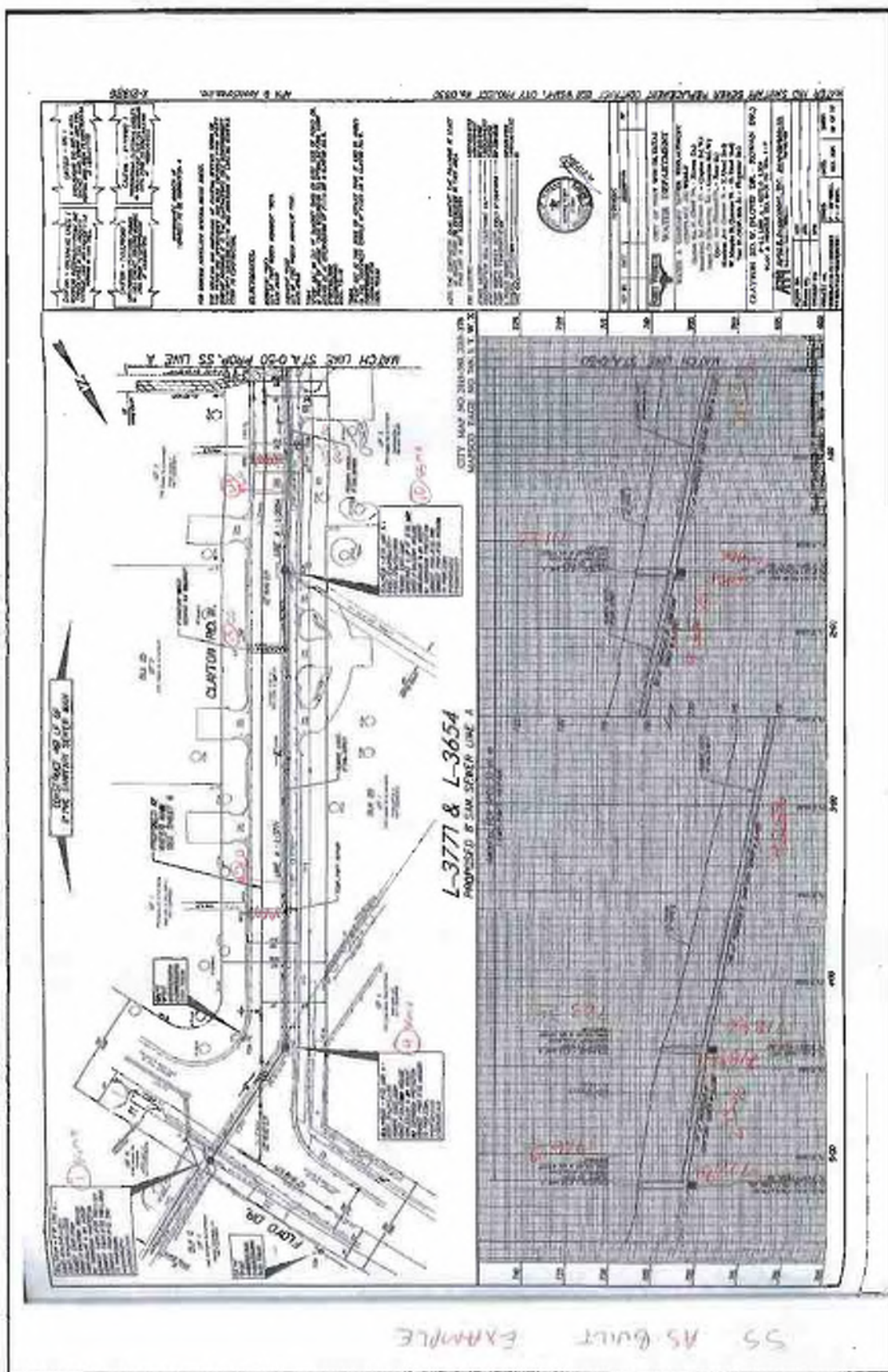



















Obviously the .csv or .txt file cannot be signed/sealed by a surveyor in the format requested. This is just an example and all this information should be noted when delivered to the City so it is clear to what coordinate system the data is in.

POINT NO.	NORTHING	EASTING	ELEV.	DESCRIPTION	
1	6946257.189	2296079.165	726.09	SSMH RIM	HORIZONTAL COORDINATES IN N.A.D. 1983 TX. N. CENTRAL ZONE 4202
2	6946260.893	2296062.141	725.668	GV RIM	
3	6946307.399	2296038.306	726.85	GV RIM	
4	6946220.582	2296011.025	723.358	SSMH RIM	
5	6946195.23	2296015.116	722.123	GV RIM	
6	6946190.528	2296022.721	722.325	FH	
7	6946136.012	2295992.115	719.448	WM RIM	
8	6946002.267	2295919.133	713.331	WM RIM	
9	6946003.056	2295933.418	713.652	CO RIM	
10	6945984.677	2295880.52	711.662	SSMH RIM	VERTICAL COORDINATES IN N.A.D. 88
11	6945986.473	2295860.892	710.046	WM RIM	
12	6945895.077	2295860.962	707.72	WM RIM	
13	6945896.591	2295862.188	708.205	WM RIM	
14	6945934.286	2295841.925	708.467	WM RIM	
15	6945936.727	2295830.441	710.084	CO RIM	
16	6945835.678	2295799.707	707.774	SSMH RIM	
17	6945817.488	2295827.011	708.392	SSMH RIM	
18	6945759.776	2295758.643	711.218	SSMH RIM	
19	6945768.563	2295778.424	710.086	GV RIM	OF CALIBRATED TO CONTROL POINTS LISTED IN THE PLANS FOR SURFACE
20	6945743.318	2295788.392	710.631	GV RIM	
21	6945723.219	2295754.894	712.849	GV RIM	
22	6945682.21	2295744.22	716.686	WM RIM	
23	6945621.902	2295669.471	723.76	WM RIM	
24	6945643.407	2295736.03	719.737	CO RIM	
25	6945571.059	2295655.195	727.514	SSMH RIM	
26	6945539.498	2295667.803	729.123	WM RIM	
27	6945519.834	2295619.49	732.689	WM RIM	
28	6945417.879	2295580.27	740.521	WM RIM	F.P.L.S. STAMPED 
29	6945456.557	2295643.145	736.451	CO RIM	
30	6945387.356	2295597.101	740.756	GV RIM	
31	6945370.688	2295606.793	740.976	GV RIM	
32	6945383.53	2295610.559	740.408	FH	
33	6945321.228	2295551.105	746.34	WM RIM	
34	6945319.365	2295539.728	746.777	CO RIM	
35	6945242.289	2295570.715	748.454	WM RIM	
36	6945233.624	2295544.626	749.59	SSMH RIM	
37	6945206.483	2295529.305	751.058	WM RIM	ANY SURVEYOR 12/30/10
38	6945142.015	2295557.066	750.853	WM RIM	
39	6945113.445	2295520.335	751.871	WM RIM	
40	6945049.02	2295527.345	752.257	SSMH RIM	
41	6945041.024	2295552.675	751.79	WM RIM	
42	6945038.878	2295552.147	751.88	WM RIM	
43	6945006.397	2295518.135	752.615	WM RIM	
44	6944944.782	2295520.633	752.801	WM RIM	
45	6944943.432	2295536.479	752.156	WM RIM	
46	6944880.416	2295534.397	752.986	SSMH RIM	

**C. Other preferred as-built deliverable**

Some vendors have indicated that it is easier to deliver this information in a different format. Below is an example spreadsheet that is also acceptable and can be obtained by request from the survey superintendent.

[illegible]