



**FRONT END BIDDING REQUIREMENTS PROVIDED
BY CONTRACTOR (CM)**

**EAST LAKE FLATS
BID PACKAGE 1
ADDENDUM NO. 1**

Date: June 18th, 2014

Item No. 1 – The correct numbers of buildings are listed below:

- (1) 81 Plex
- (2) 41 Plexes
- (6) 10 Plexes
- (1) Clubhouse/Pool
- (3) Garage Structures

Item No. 2 – The following trades need to breakout their pricing for each type of building. These scopes need to supply (1) price for all the 10 plexes, (1) price for both 41 plexes, (1) price for the 81 plex, and (1) price for the clubhouse/pool and garages.

- Plumbing
- HVAC
- Stick Framing
- Drywall

Item No. 3 – Bidding Documents may be viewed and/or obtained electronically at:

Submittal Exchange:

<https://www.submittalexchange.com/bid/EastLakeFlats/planroom>

Or

A&D Technical Supply

1822 N St

Lincoln, NE 68508

402-474-5454

Or

Hausmann Construction

Attn: Matt Miller

8545 Executive Woods Dr

Lincoln, NE 68512

402-438-3230

Item No. 4 – See attached Addenda #1 from Studio 951(view on Submittal Exchange), which replaces the civil drawings. This addendum also adds specification sections and the landscaping drawings.

End AD-1

Addendum No. 1

Project: East Lake Flats

Date: 17 June 2014
 From: Studio 951, Ltd.
 To: All plan holders.

All information and instructions given herein shall become part of the Contract Documents.

Specifications:

Please make the following changes:

Cover

Please find a revised cover for the specifications attached.

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A revised cover for the specifications is attached.

Revised Specification Sections

Please find the following revised specification sections:

21 10 00 – Fire-Suppression Piping

22 11 13 – Facility Water Distribution Piping

22 11 16 – Domestic Water Piping

22 13 13 – Facility Sanitary Sewers

23 37 23 – HVAC Gravity Ventilators

23 82 39 – Unit Heaters

31 10 00 – Site Clearing

31 20 00 – Earth Moving

31 25 13 – Erosion & Sediment Control (Including SWPPP)

32 12 16 – Asphalt Paving

32 13 13 – Concrete Paving

32 13 73 – Concrete Paving Joint Sealants

32 17 23 – Pavement Markings

33 05 00 – Common Work Results for Utilities

33 41 00 – Storm Utility Drainage Piping

Specification Clarification

04 73 00 – Manufactured Stone Masonry

At 2.01/A Manufactured Stone Masonry, add a note to read,
 "6. Table Rock Company. www.tablerockco.com."

08 41 13 – Aluminum-framed Entrances and Storefronts

At 2.08 Hardware, add a note to read, "D. Refer to the individual plan sheet drawings for door hardware to be used. See "Overall Main Floor Door & Frame Schedule". Refer to 08 71 00 Door hardware, 2.01 for manufacturers to be used."

Drawings:

Civil

Please find revised drawings attached:

C0.1 – Note Sheet
C0.2 – Existing Conditions
C1.1 – Site Plan
C2.0 – Overexcavation Plan
C2.1 – Grading Plan
C2.3 – Erosion Control Plan
C2.4 – Erosion Control Details
C2.5 – Erosion Control Details
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C5.2 – Detail Sheet
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L1.1 – Landscape Details
SL1.1 – Site Lighting Plan
SL2.1 – Site Lighting Photometric Plan

Architectural

Please make the following changes:

10-Plex Drawings

A2.02 – At the window elevations, at drawing tag R11, add a fixed window E with a size of 3'-0" wide by 5'-6" tall. Window to be tempered insulated glass.

A2.02 – At the window elevations, at drawing tag R11, at window D, delete the lines indicating the window to be a casement window. The window is to be a fixed unit.

A2.02 – At the floor plan, at Unit D-10, add a window tag "B" at the unlabeled windows.

A2.20 – At interior elevation K1, add a note to read, "All 10-plex kitchen counters to be granite, typical".

41-Plex Drawings

A2.20 – At drawing tag P1, revise Room Finish Schedule, at the Bath, Floor to be Vinyl in lieu of Tile or LVT shown. Please note this applies to all units in the 41-plex.

A2.20 – At drawing tag D12, add a note to read, "All 41-plex kitchen islands to be granite, typical".

A2.24 – At drawing tag N12, add a note to read, "Kitchen counters in this unit to be granite".

80-Plex Drawings

A2.20 – At drawing tag K1, revise Room Finish Schedule, at the Bath, Floor to be Vinyl in lieu of Tile or LVT shown. Please note this applies to all units in the 80-plex.

A2.20 – At drawing tag K12, add a note to read, “All 80-plex kitchen islands to be granite, typical”.

A2.21 – At drawing tag G1, revise the tag to read, “...1st, 2nd and 3RD Floor”.

END of Addendum No. 1

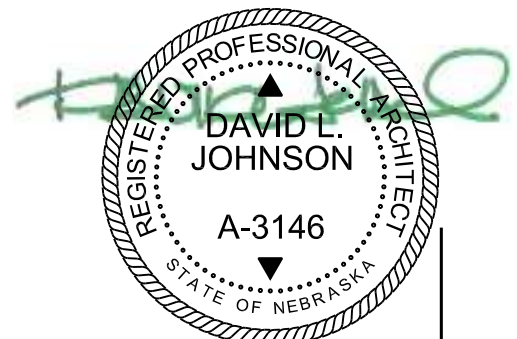
PROJECT SPECIFICATIONS



13-120 NEW MULTI-FAMILY EAST LAKE FLATS

FHA #103-35170

LINCOLN, NEBRASKA



ARCHITECT DATED > 2014.05.20

ARCHITECT'S LEAD DESIGNER: NAME:	ARCHITECT'S ADMINISTRATOR NAME:	OWNER: EAST LAKE FLATS, LLC NAME:	CONTRACTOR: HAUSMANN CONST. NAME:
SIGNATURE:	SIGNATURE:	SIGNATURE:	SIGNATURE:
DATE:	DATE:	DATE:	DATE:

BONDING CO.: HARRY A. KOCH COMPANY NAME:	MORTGAGE CO.: NAME:
SIGNATURE:	SIGNATURE:
DATE:	DATE:

ISSUE > FINAL PLANS 2014.05.20

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END OF DOCUMENT

SECTION 211000 - FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SYSTEM DESCRIPTIONS

- A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

1.3 PERFORMANCE REQUIREMENTS

- A. Standard Piping System Component Working Pressure: Listed for at least 175 psig (1200 kPa).
- B. Fire-suppression sprinkler system design shall be approved by authorities having jurisdiction.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Piping materials, including sprinkler specialty fittings.
 - 2. Valves, including listed fire-protection valves, unlisted general-duty valves, and specialty valves and trim.
 - 3. Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.
 - 4. Hose connections, including size, type, and finish.
 - 5. Fire department connections, including type; number, size, and arrangement of inlets; caps and chains; size and direction of outlet; escutcheon and marking; and finish.
 - 6. Alarm devices, including electrical data.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Fire-hydrant flow test report.
- D. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations, if applicable.

- E. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13 . Include "Contractor's Material and Test Certificate for Aboveground Piping" and "Contractor's Material and Test Certificate for Underground Piping."
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For sprinkler specialties to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer's responsibilities include designing, fabricating, and installing fire-suppression systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
 - a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports.
- B. NFPA Standards: Fire-suppression-system equipment, specialties, accessories, installation, and testing shall comply with the following:
 - 1. NFPA 13R, "Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height."
 - 2. NFPA 24, "Installation of Private Fire Service Mains and Their Appurtenances."

1.6 COORDINATION

- A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Sprinkler Cabinets: Finished, wall-mounting, steel cabinet with hinged cover, with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler on Project.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Refer to Part 3 “Piping Applications” Article for applications of pipe, tube, fitting, and joining materials.

2.2 PIPES AND TUBES

- A. Ductile-Iron Fittings: AWWA C110, ductile-iron or cast-iron type; or AWWA C153, ductile-iron, compact mechanical-joint type. Include cement-mortar lining and seal coat according to AWWA C104 and glands, rubber gaskets, and bolts and nuts according to AWWA C111.
- B. Cast-Iron Threaded Fittings: ASME B16.4.
- C. Malleable-Iron Threaded Fittings: ASME B16.3.
- D. Steel Welding Fittings: ASTM A 234/A 234M, ASME B16.9, or ASME B16.11.
- E. Steel, Grooved-End Fittings: UL-listed and FM-approved, ASTM A 47 (ASTM A 47M), malleable iron or ASTM A 536, ductile iron; with dimensions matching steel pipe and ends factory grooved according to AWWA C606.
- F. CPVC Fittings: ASTM F 438 and UL 1821 for NPS $\frac{3}{4}$ to NPS 1-1/2 (DN20 to DN40) and ASTM F 439 and UL 1821 for NPS 2 to NPS 3 (DN50 to DN80), UL-listed, 175-psig (1200-kPa) pressure rating; and made for sprinkler service. Include “Listed” and “CPVC Sprinkler Fitting” markings.

2.3 JOINING MATERIALS

- A. Refer to “Basic Mechanical Materials and Methods” for pipe-flange gasket materials and welding filler metals.
- B. CPVC Cement: Primer and solvent cement made by pipe and fitting manufacturer for joining CPVC sprinkler piping.
- C. Transition Couplings: AWWA C219, sleeve type, or other manufactured fitting the same size as, with pressure rating at least equal to, and with ends compatible with piping to be joined.

2.4 SPRINKLER SPECIALTY FITTINGS

- A. Sprinkler specialty fittings shall be UL listed or FMG approved, with 175-psig (1200-kPa) minimum working-pressure rating, and made of materials compatible with piping. Sprinkler specialty fittings shall have 250-psig (1725-kPa) minimum 300-psig (2070-kPa) working-pressure rating if fittings are components of high-pressure piping system.
- B. Sprinkler Drain and Alarm Test Fittings: Cast- or ductile-iron body; with threaded or locking-lug inlet and outlet, test valve, and orifice and sight glass.

- C. Sprinkler Branch-Line Test Fittings: Brass body with threaded inlet, capped drain outlet, and threaded outlet for sprinkler.
- D. Sprinkler Inspector's Test Fitting: Cast- or ductile-iron housing with threaded inlet and drain outlet and sight glass.
- E. Drop-Nipple Fittings: UL 1474, adjustable with threaded inlet and outlet, and seals.

2.5 SPECIALTY VALVES

A. General Requirements:

- 1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
- 2. Pressure Rating:
 - a. Standard-Pressure Piping Specialty Valves: 175 psig (1200 kPa) minimum.
- 3. Body Material: Cast or ductile iron.
- 4. Size: Same as connected piping.
- 5. End Connections: Flanged or grooved.

2.6 LISTED FIRE-PROTECTION VALVES

- A. Valves shall be UL listed or FMG approved, with 175-psig (1200 kPa) minimum pressure rating. Valves shall have 250-psig (1725-kPa) minimum pressure rating if valves are components of high-pressure piping system.
- B. Ball Valves: Comply with UL 1091, except with ball instead of disc.
 - 1. NPS 1-1/2 (DN 40) and Smaller: Bronze body with threaded ends.
 - 2. NPS 2 and NPS 2-1/2 (DN 50 and DN 65): Bronze body with threaded ends or ductile-iron body with grooved ends.
 - 3. NPS 3 (DN 80): Ductile-iron body with grooved ends.
- C. Butterfly Valves: UL 1091.
 - 1. NPS 2 (DN 50) and Smaller: Bronze body with threaded ends.
 - 2. NPS 2-1/2 (DN 65) and Larger: Bronze, cast-iron, or ductile-iron body; wafer type or with flanged or grooved ends.
- D. Check Valves NPS 2 (DN 50) and Larger: UL 312, swing type, cast-iron body with flanged or grooved ends.
- E. Gate Valves: UL 262, OS&Y type.
 - 1. NPS 2 (DN 50) and Smaller: Bronze body with threaded ends.
 - 2. NPS 2-1/2 (DN 65) and Larger: Cast-iron body with flanged ends.

- F. Indicating Valves: UL 1091, with integral indicating device and ends matching connecting piping.
 - 1. Indicator: Electrical, 115-V ac, prewired, supervisory switch.
 - 2. NPS 2 (DN 50) and Smaller: Ball or butterfly valve with bronze body and threaded ends.
 - 3. NPS 2-1/2 (DN 65) and Larger: Butterfly valve with cast- or ductile-iron body; wafer type or with flanged or grooved ends.
- G. Automatic (Ball Drip) Drain Valves:
 - 1. Standard: UL 1726.
 - 2. Pressure Rating: 175 psig (1200 kPa) minimum.
 - 3. Type: Automatic draining, ball check.
 - 4. Size: NPS 3/4 (DN 20).
 - 5. End Connections: Threaded.

2.7 FIRE-DEPARTMENT CONNECTIONS

- A. Yard-Type, Fire-Department Connection:
 - 1. Standard: UL 405.
 - 2. Type: Exposed, freestanding.
 - 3. Pressure Rating: 175 psig (1200 kPa) minimum.
 - 4. Body Material: Corrosion-resistant metal.
 - 5. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.
 - 6. Caps: Brass, lugged type, with gasket and chain.
 - 7. Escutcheon Plate: Round, brass, floor type.
 - 8. Outlet: Bottom, with pipe threads.
 - 9. Escutcheon Plate Marking: Similar to " AUTO SPKR."
 - 10. Finish, Including Sleeve: Polished chrome plated.

2.8 UNLISTED GENERAL-DUTY VALVES

- A. Ball Valves NPS 2 (DN 50) and Smaller: MSS SP-110, 2-piece copper-alloy body with chrome-plated brass ball, 600-psig (4140-kPa) minimum CWP rating, blowout-proof stem, and threaded ends.
- B. Check Valves NPS 2 (DN 50) and Smaller: MSS SP-80, Type 4, Class 125 minimum, swing type with bronze body, nonmetallic disc, and threaded ends.
- C. Gate Valves NPS 2 (DN 50) and Smaller: MSS SP-80, Type 2, Class 125 minimum, with bronze body, solid wedge, and threaded ends.
- D. Globe Valves NPS 2 (DN 50) and Smaller: MSS SP-80, Type 2, Class 125 minimum, with bronze body, nonmetallic disc, and threaded ends.

2.9 SPRINKLERS

- A. Sprinklers shall be UL listed or FMG approved, with 175-psig (1200-kPa) minimum pressure rating. Sprinklers shall have 250-psig (1725-kPa) minimum pressure rating if sprinklers are components of high-pressure piping system.
- B. Automatic Sprinklers: With heat-responsive element complying with the following:
 - 1. UL 199, for nonresidential applications.
 - 2. UL 1767, for early-suppression, fast-response applications.
- C. Sprinkler Types and Categories: Nominal 1/2-inch (12.7-mm) orifice for "Ordinary" temperature classification rating, unless otherwise indicated or required by application.
- D. Sprinkler types, features, and options as follows:
 - 1. Concealed ceiling sprinklers, including cover plate.
 - 2. Extended-coverage sprinklers.
 - 3. Pendent sprinklers.
 - 4. Quick-response sprinklers.
 - 5. Recessed sprinklers, including escutcheon.
 - 6. Sidewall sprinklers.
 - 7. Upright sprinklers.
- E. Sprinkler Finishes: Chrome plated, bronze, and painted.
- F. Special Coatings: Wax, lead, and corrosion-resistant paint.
- G. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.
 - 1. Ceiling Mounting: Chrome-plated steel, one piece, flat.
 - 2. Sidewall Mounting: Chrome-plated steel, one piece, flat.
- H. Sprinkler Guards: Wire-cage type, including fastening device for attaching to sprinkler.

2.10 BACKFLOW PREVENTERS

- A. Double-Check, Detector-Assembly Backflow Preventers:
 - 1. Standards: ASSE 1048 and UL listed or FMG approved.
 - 2. Operation: Continuous-pressure applications.
 - 3. Pressure Loss: 5 psig (35 kPa) maximum, through middle 1/3 of flow range.
 - 4. Body: Cast iron with interior lining complying with AWWA C550 or that is FDA approved.
 - 5. End Connections: Flanged.
 - 6. Accessories:

- a. Valves: UL 262, FMG-approved, OS&Y gate type with flanged ends on inlet and outlet.

2.11 ALARM DEVICES

- A. Alarm-device types shall match piping and equipment connections.
- B. Electrically Operated Alarm: UL 464, with 10-inch- (250-mm-) diameter, vibrating-type, metal alarm bell with red-enamel factory finish and suitable for outdoor use.
- C. Water-Flow Indicator: UL 346, electrical-supervision, paddle-operated-type, water-flow detector with 250-psig (1725-kPa) pressure rating and designed for horizontal or vertical installation. Include two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
- D. Pressure Switch: UL 753, electrical-supervision-type, water-flow switch with retard feature. Include single-pole, double-throw, normally closed contacts and design that operates on rising pressure and signals water flow.
- E. Valve Supervisory Switch: UL 753, electrical, single-pole, double-throw switch with normally closed contacts. Include design that signals controlled valve is in other than fully open position.

2.12 PRESSURE GAGES

- A. Description: UL 393, 3-1/2- to 4-1/2-inch- (90- to 115-mm-) diameter, dial pressure gage with range of 0 to 250 psig (0 to 1725 kPa) minimum.
 - 1. Water System Piping: Include caption "WATER" or "AIR/WATER" on dial face.
 - 2. Air System Piping: Include retard feature and caption "AIR" or "AIR/WATER" on dial face.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in Part 1 "Quality Assurance" Article.
- B. Report test results promptly and in writing.

3.2 EXAMINATION

- A. Examine roughing-in for hose connections and stations to verify actual locations of piping connections before installation.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PIPING APPLICATIONS, GENERAL

- A. Flanges, flanged fittings, unions, nipples, and transition and special fittings with finish and pressure ratings same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.
- B. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight steel pipe with grooved ends; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

3.4 PIPING APPLICATIONS

- A. Do not use welded joints with galvanized steel pipe.
- B. Flanges, unions, and transition and special fittings with pressure ratings the same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.
- C. Piping between Fire Department Connections and Check Valves: Use galvanized, standard-weight steel pipe with threaded ends; cast- or malleable-iron threaded fittings; and threaded joints.
- D. Underground Service-Entrance Piping: Use ductile-iron, mechanical-joint pipe and fittings and restrained joints/
- E. Sprinkler Feed Mains and Risers: Use the following:
 - 1. NPS 4 (DN 100) and Smaller: Schedule 10 steel pipe with roll-grooved ends; steel, grooved-end fittings; and grooved joints.
- F. Wet-Pipe, Sprinkler Branch Piping: Use the following:
 - 1. NPS 1-1/2 (DN 40) and Smaller: Standard-weight steel pipe with threaded ends; cast- or malleable-iron threaded fittings, and threaded joints.
 - 2. NPS 1-1/2 (DN40) and Smaller (use limited to concealed locations): CPVC pipe, CPVC fittings, and solvent-cement joints.
 - 3. NPS 2 (DN50) and Larger: Schedule 10 steel pipe with roll-grooved ends; steel, grooved-end fittings; steel, keyed couplings; and grooved joints.

3.5 VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Listed Fire-Protection Valves: UL listed and FMG approved for applications where required by NFPA 13 .

- a. Shutoff Duty: Use ball, butterfly, or gate valves.
- 2. Unlisted General-Duty Valves: For applications where UL-listed and FMG-approved valves are not required by NFPA 13 .
 - a. Shutoff Duty: Use ball, butterfly, or gate valves.
 - b. Throttling Duty: Use ball or globe valves.

3.6 JOINT CONSTRUCTION

- A. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread pipe smaller than NPS 8 (DN 200) with wall thickness less than Schedule 40 unless approved by authorities having jurisdiction and threads are checked by a ring gage and comply with ASME B1.20.1.
- B. Grooved Joints: Assemble joints with listed coupling and gasket, lubricant, and bolts.
 - 1. Steel Pipe: Square-cut or roll-groove piping as indicated. Use grooved-end fittings and rigid, grooved-end-pipe couplings, unless otherwise indicated.
 - 2. Dry-Pipe Systems: Use fittings and gaskets listed for dry-pipe service.

3.7 SERVICE-ENTRANCE PIPING

- A. Connect fire-suppression piping to water-service piping of size and in location indicated for service entrance to building.
- B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping.

3.8 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.
 - 1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
- B. Install underground ductile-iron service-entrance piping according to NFPA 24 and with restrained joints. Encase piping in corrosion-protective encasement.
- C. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- D. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.
- E. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger connections.

- F. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, sized and located according to NFPA 13.
- G. Install sprinkler piping with drains for complete system drainage.
- H. Install sprinkler zone control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.
- I. Install drain valves on standpipes.
- J. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.
- K. Install alarm devices in piping systems.
- L. Hangers and Supports: Comply with NFPA 13 for hanger materials.
 - 1. Install sprinkler system piping according to NFPA 13.
- M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 (DN 8) and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.
- N. Fill wet-pipe sprinkler system piping with water.

3.9 VALVE INSTALLATION

- A. Install listed fire-protection valves, unlisted general-duty valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- C. Install backflow preventers instead of check valves in potable-water supply sources.

3.10 SPRINKLER APPLICATIONS

- A. Drawings indicate sprinkler types to be used. Where specific types are not indicated, use the following sprinkler types:
 - 1. Rooms without Ceilings: Upright sprinklers.
 - 2. Rooms with Suspended Ceilings: Recessed sprinklers for accessible. Concealed sprinklers for gypsum.
 - 3. Wall Mounting: Sidewall sprinklers.
 - 4. Special Applications: Extended-coverage, flow-control, and quick-response sprinklers.
 - 5. Sprinkler Finishes:

- a. Upright, Pendent, and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view.
- b. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
- c. Recessed Sprinklers: White, with white escutcheon.

3.11 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

3.12 SPRINKLER INSTALLATION

- A. Install sprinklers in suspended ceilings in center of narrow dimension of acoustical ceiling panels and tiles.
- B. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing. Use dry-type sprinklers with water supply from heated space.

3.13 FIRE-DEPARTMENT CONNECTION INSTALLATION

- A. Install yard-type, fire-department connections in concrete slab support.
 - 1. Install two protective pipe bollards on sides of each fire-department connection.
- B. Install automatic (ball drip) drain valve at each check valve for fire-department connection.

3.14 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.
- C. Connect water-supply piping to fire-suppression piping. Include backflow preventer between potable-water piping and fire-suppression piping.
- D. Install ball drip valves at each check valve for fire department connection. Drain to floor drain or outside building.
- E. Connect piping to specialty valves, specialties, fire department connections, and accessories.
- F. Connect alarm devices to fire alarm.

- G. Ground equipment.
- H. Connect wiring.
- I. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.15 LABELING AND IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

3.16 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Energize circuits to electrical equipment and devices.
 - 4. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
 - 5. Coordinate with fire alarm tests. Operate as required.
 - 6. Verify that equipment hose threads are same as local fire department equipment.
- B. Report test results promptly and in writing to Architect and authorities having jurisdiction.

3.17 CLEANING AND PROTECTION

- A. Clean dirt and debris from sprinklers.
- B. Remove and replace sprinklers with paint other than factory finish.
- C. Protect sprinklers from damage until Substantial Completion.

3.18 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain specialty valves.

END OF SECTION 211000

SECTION 221113
FACILITY WATER DISTRIBUTION PIPING



PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes water-distribution piping and related components outside the building for water service, fire-service mains.
- B. "Utility Company" shall also be referred to as Lincoln Water System (LWS).

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control test reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of utility company supplying water. Include tapping of water mains.
 - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
 - 3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.
- D. Comply with FMG's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.
- E. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.
- F. NSF Compliance:
 - 1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
 - 2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water-distribution service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of water-distribution service without Owner's written permission.

1.7 COORDINATION

- A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
 - 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- B. PE, Fire-Service Pipe: ASTM F 714, AWWA C906, or equivalent for PE water pipe; FMG approved, with minimum thickness equivalent to FMG Class 200.
 - 1. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.
- C. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
 - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Gaskets: AWWA C111, rubber.
- D. PVC, AWWA Pipe: AWWA C900, DR 14 with O.D. conforming to that of cast iron pipe, with bell end with gasket, and with spigot end.
 - 1. Comply with UL 1285 for fire-service mains if indicated.
 - 2. PVC Fabricated Fittings: AWWA C900, Class 250, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 - 3. PVC Molded Fittings: AWWA C907, Class 250, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 - 4. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Gaskets: AWWA C111, rubber.

5. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

2.2 JOINING MATERIALS

- A. Refer to Section 330500 "Common Work Results for Utilities" for commonly used joining materials.
- B. Brazing Filler Metals: AWS A5.8, BCuP Series.
- C. Bonding Adhesive for Fiberglass Piping: As recommended by fiberglass piping manufacturer.
- D. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.3 PIPING SPECIALTIES

- A. Transition Fittings: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Tubular-Sleeve Pipe Couplings:
 1. Description: Metal, bolted, sleeve-type, reducing or transition coupling, with center sleeve, gaskets, end rings, and bolt fasteners and with ends of same sizes as piping to be joined.
 - a. Standard: AWWA C219.

2.4 GATE VALVES

- A. AWWA, Cast-Iron Gate Valves:
 1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. Crane Co.; Crane Valve Group; Stockham Div.
 - e. East Jordan Iron Works, Inc.
 - f. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - g. McWane, Inc.; Kennedy Valve Div.
 - h. McWane, Inc.; M & H Valve Company Div.
 - i. McWane, Inc.; Tyler Pipe Div.; Utilities Div.
 - j. Mueller Co.; Water Products Div.
 - k. NIBCO INC.
 - l. U.S. Pipe and Foundry Company.

2. Nonrising-Stem, Metal-Seated Gate Valves:

- a. Description: Gray- or ductile-iron body and bonnet; with cast-iron or bronze double-disc gate, bronze gate rings, bronze stem, and stem nut.

- 1) Standard: AWWA C500.
- 2) Minimum Pressure Rating: 200 psig (1380 kPa).
- 3) End Connections: Mechanical joint.
- 4) Interior Coating: Complying with AWWA C550.

3. Nonrising-Stem, Resilient-Seated Gate Valves:

- a. Description: Gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

- 1) Standard: AWWA C509.
- 2) Minimum Pressure Rating: 200 psig (1380 kPa).
- 3) End Connections: Mechanical joint.
- 4) Interior Coating: Complying with AWWA C550.

4. Nonrising-Stem, High-Pressure, Resilient-Seated Gate Valves:

- a. Description: Ductile-iron body and bonnet; with bronze or ductile-iron gate, resilient seats, bronze stem, and stem nut.

- 1) Standard: AWWA C509.
- 2) Minimum Pressure Rating: 250 psig (1725 kPa).
- 3) End Connections: Push on or mechanical joint.
- 4) Interior Coating: Complying with AWWA C550.

5. OS&Y, Rising-Stem, Metal-Seated Gate Valves:

- a. Description: Cast- or ductile-iron body and bonnet, with cast-iron double disc, bronze disc and seat rings, and bronze stem.

- 1) Standard: AWWA C500.
- 2) Minimum Pressure Rating: 200 psig (1380 kPa).
- 3) End Connections: Flanged.

6. OS&Y, Rising-Stem, Resilient-Seated Gate Valves:

- a. Description: Cast- or ductile-iron body and bonnet, with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.

- 1) Standard: AWWA C509.
- 2) Minimum Pressure Rating: 200 psig (1380 kPa).
- 3) End Connections: Flanged.

B. UL/FMG, Cast-Iron Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

- a. American Cast Iron Pipe Co.; American Flow Control Div.
- b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
- c. Crane Co.; Crane Valve Group; Stockham Div.
- d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).McWane, Inc.; Kennedy Valve Div.
- e. McWane, Inc.; M & H Valve Company Div.
- f. Mueller Co.; Water Products Div.
- g. NIBCO INC.
- h. U.S. Pipe and Foundry Company.

2. UL/FMG, Nonrising-Stem Gate Valves:

- a. Description: Iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psig (1207 kPa).
 - 3) End Connections: Flanged.

3. OS&Y, Rising-Stem Gate Valves:

- a. Description: Iron body and bonnet and bronze seating material.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psig (1207 kPa).
 - 3) End Connections: Flanged.

C. Bronze Gate Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

- a. Crane Co.; Crane Valve Group; Crane Valves.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Crane Co.; Crane Valve Group; Stockham Div.
- d. Hammond Valve.
- e. Milwaukee Valve Company.
- f. NIBCO INC.
- g. Red-White Valve Corporation.

2. OS&Y, Rising-Stem Gate Valves:

- a. Description: Bronze body and bonnet and bronze stem.
 - 1) Standards: UL 262 and FMG approved.
 - 2) Minimum Pressure Rating: 175 psig (1207 kPa).
 - 3) End Connections: Threaded.

3. Nonrising-Stem Gate Valves:

- a. Description: Class 125, Type 1, bronze with solid wedge, threaded ends, and malleable-iron handwheel.
 - 1) Standard: MSS SP-80.

2.5 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - b. East Jordan Iron Works, Inc.
 - c. Flowserve.
 - d. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - e. McWane, Inc.; Kennedy Valve Div.
 - f. McWane, Inc.; M & H Valve Company Div.
 - g. Mueller Co.; Water Products Div.
 - h. U.S. Pipe and Foundry Company.
2. Description: Sleeve and valve compatible with drilling machine.
 - a. Standard: MSS SP-60.
 - b. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
 - c. Valve: AWWA, cast-iron, nonrising-stem, metal, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.

- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel approximately 5 inches (125 mm) in diameter.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

- C. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.
- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
- C. Do not use flanges or unions for underground piping.
- D. Flanges, unions, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.

- E. Underground water-service piping NPS 3/4 to NPS 3 (DN 20 to DN 80) shall be soft copper tube, ASTM B 88, Type; wrought-copper, solder-joint fittings; and brazed joints.
- F. Underground water-service piping NPS 4 and NPS 6 (DN 100 and DN 150) shall be any of the following:
 - 1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed, mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.
 - 2. NPS 4 and NPS 6 (DN 100 and DN 150): NPS 6 (DN 150) PVC, AWWA Class 200 pipe; PVC, AWWA Class 250 molded fittings; and gasketed joints.
- G. Underground Fire-Service-Main Piping NPS 4 to NPS 8 (DN 100 to DN 200) shall be any of the following:
 - 1. Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed, mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical, grooved-end pipe; ductile-iron-pipe appurtenances; and grooved joints.
 - 2. PE, Class 200, fire-service pipe; molded PE fittings; and heat-fusion joints.
 - 3. PVC, AWWA Class 200 pipe listed for fire-protection service; PVC Class 250 fabricated or molded fittings; and gasketed joints.

3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 (DN 80) and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FMG, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 (DN 50) and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Underground Valves, NPS 3 (DN 80) and Larger: AWWA, cast-iron, nonrising-stem, metal seated gate valves with valve box.
 - 2. Underground Valves, NPS 4 (DN 100) and Larger, for Indicator Posts: UL/FMG, cast-iron, nonrising-stem gate valves with indicator post.

3.4 PIPING INSTALLATION

- A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.
- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Comply with NFPA 24 for fire-service-main piping materials and installation.
 - 1. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
- D. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
- E. Install PVC, AWWA pipe according to ASTM F 645 and AWWA M23.
- F. Bury piping with depth of cover over top at least 60 inches.

- G. Extend water-service piping and connect to water-supply source and building-water-piping systems at outside face of building wall in locations and pipe sizes indicated.
 - 1. Terminate water-service piping at building wall until building-water-piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building-water-piping systems when those systems are installed.
- H. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

3.5 JOINT CONSTRUCTION

- A. See Section 330500 "Common Work Results for Utilities" for basic piping joint construction.
- B. Make pipe joints according to the following:
 - 1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - 2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 - 3. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with grooved-end, ductile-iron-piping couplings, gaskets, lubricant, and bolts according to coupling manufacturer's written instructions.
 - 4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
 - 5. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.

3.6 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FMG, Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- C. MSS Valves: Install as component of connected piping system.
- D. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

3.7 CONNECTIONS

- A. See Section 330500 "Common Work Results for Utilities" for piping connections to valves and equipment.
- B. Connect water-distribution piping to existing water main. Use tapping sleeve and tapping valve.

3.8 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
 - 1. Increase pressure in 50-psig (350-kPa) increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig (0 kPa). Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- C. Prepare reports of testing activities.

3.9 IDENTIFICATION

- A. Install continuous underground warning tape during backfilling of trench for underground water-distribution piping. Locate below finished grade, directly over piping. Underground warning tapes are specified in Section 312000 "Earth Moving."
- B. Permanently attach equipment nameplate or marker indicating plastic water-service piping, on main electrical meter panel. See Section 330500 "Common Work Results for Utilities" for identifying devices.

3.10 CLEANING

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
 - 3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.

END OF SECTION 221113



SECTION 221116 - WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes water distribution piping from locations indicated to fixtures and equipment inside building.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide components and installation capable of producing piping systems with the following minimum working-pressure ratings, unless otherwise indicated:
 - 1. Combined Fire-Protection and Domestic, Service Entrance Piping: 175 psig.
 - 2. Service Entrance Piping: 160 psig (1100 kPa).
 - 3. Water Distribution Piping: 125 psig (860 kPa).

1.4 QUALITY ASSURANCE

- A. Provide listing/approval stamp, label, or other marking on piping made to specified standards.
- B. Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.

PART 2 - PRODUCTS

2.1 PIPES AND TUBES

- A. General: Applications of the following pipe and tube materials are indicated in Part 3 "Piping Applications" Article.
- B. Soft Copper Tube: ASTM B 88, Types K and L (ASTM B 88M, Types A and B), water tube, annealed temper.
- C. Hard Copper Tube: ASTM B 88, Types L and M (ASTM B 88M, Types B and C), water tube, drawn temper.

- D. Ductile-Iron Pipe: AWWA C151, 250-psig (1725-kPa) minimum pressure rating with mechanical- or push-on-joint bell, plain spigot end, and AWWA C104 cement-mortar lining. Include AWWA C111 ductile-iron gland, rubber gasket, and steel bolts with mechanical-joint pipe. Include AWWA C111 rubber gasket with push-on-joint pipe.

2.2 PIPE AND TUBE FITTINGS

- A. General: Applications of the following pipe and tube fitting materials are indicated in Part 3 "Piping Applications" Article.
- B. Copper, Solder-Joint Pressure Fittings: ASME B16.18 cast-copper alloy or ASME B16.22 wrought copper.
- C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
- D. Copper Unions: ASME B16.18, cast-copper-alloy, hexagonal-stock body with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends. Include threads conforming to ASME B1.20.1 on threaded ends.
- E. Ductile-Iron, Mechanical- or Push-on-Joint Fittings: AWWA C110, ductile- or gray-iron standard pattern; or AWWA C153, ductile-iron compact pattern; with 250-psig (1725-kPa) minimum pressure rating and AWWA C104 cement-mortar lining. Include AWWA C111 ductile- or gray-iron glands, rubber gaskets, and steel bolts with mechanical-joint fittings. Include AWWA C111 rubber gaskets with push-on-joint fittings.

2.3 PEX TUBE AND FITTINGS

- A. PEX Distribution System: ASTM F 877, SDR 9 tubing.
 - 1. Fittings for PEX Tube: ASTM F 1807, metal-insert type with copper or stainless-steel crimp rings and matching PEX tube dimensions.
 - 2. Manifold: Multiple-outlet, plastic or corrosion-resistant-metal assembly complying with ASTM F 877; with plastic or corrosion-resistant-metal valve for each outlet.
 - 3. The system shall also comply with ASTM F2159, NSF 14, NSF 61 and NSF Protocol P171.

2.4 JOINING MATERIALS

- A. General: Applications of the following piping joining materials are indicated in Part 3 "Piping Applications" Article.
- B. Solder: ASTM B 32, Alloy Sn95, Sn94, or E; lead free.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Transition and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.
- B. Flanges may be used on aboveground piping, unless otherwise indicated.
- C. Underground Piping: Do not use flanges or valves underground. Use the following:
 - 1. 3-1/2-Inch NPS (DN50) and Smaller: Soft copper tube, Type K (Type A); copper, solder-joint pressure fittings; and soldered joints.
 - 2. 4- to 8-Inch NPS (DN100 to DN200): Ductile-iron pipe and fittings, and mechanical or push-on joints.
- D. Aboveground, Water Distribution Piping: Use the following:
 - 1. 3-1/2-Inch NPS (DN40) and Smaller: Hard copper tube, Type L (Type B); copper, solder-joint fittings; and soldered joints.
 - 2. PEX Tube, NPS 1 (DN 25) and smaller; fittings for PEX tube; and crimped joints.

3.2 VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Shutoff Duty: Use ball or butterfly valves.
 - 2. Throttling Duty: Use ball or butterfly valves.

3.3 SERVICE ENTRANCE PIPING INSTALLATION

- A. Extend service entrance piping to exterior water service piping in sizes and locations indicated for service entrances into building.
- B. Ductile-Iron, Service Entrance Piping: Comply with AWWA C600. Install buried piping between shutoff valve and connection to water service piping with restrained joints. Anchor pipe to wall or floor at entrance. Include thrust-block supports at vertical and horizontal offsets.

3.4 WATER DISTRIBUTION PIPING INSTALLATION

- A. Install piping level without pitch.

3.5 JOINT CONSTRUCTION

- A. PEX Piping Joints: Join according to ASTM F 1807 or F2159.

3.6 VALVE INSTALLATION

- A. Sectional Valves: Install sectional valves close to main on each branch and riser serving plumbing fixtures or equipment, and where indicated. Use ball valves for piping 2-inch NPS (DN50) and smaller. Use butterfly valves for piping 2-1/2-inch NPS (DN65) and larger.
- B. Shutoff Valves: Install shutoff valve on each water supply to equipment, on each supply to plumbing fixtures without supply stops, and where indicated. Use ball valves for piping 2-inch NPS (DN50) and smaller. Use butterfly valves for piping 2-1/2-inch NPS (DN65) and larger.
- C. Drain Valves: Install drain valves for equipment, at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
 - 1. Install hose-end drain valves at low points in water mains, risers, and branches.
 - 2. Install stop-and-waste drain valves where indicated.

3.7 HANGER AND SUPPORT INSTALLATION

- A. Install the following:
 - 1. Riser clamps, MSS Type 8 or Type 42, for vertical runs.
 - 2. Adjustable steel clevis hangers, MSS Type 1, for individual, straight, horizontal runs 100 feet (30 m) and less.
- B. Support vertical piping and tubing at base and at each floor.
- C. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- D. Install hangers for copper tubing with the following maximum spacing and minimum rod diameters:
 - 1. 3/4-Inch NPS (DN20) and Smaller: Maximum horizontal spacing, 60 inches (1500 mm) with 3/8-inch (10-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).
 - 2. 1-Inch NPS (DN25): Maximum horizontal spacing, 72 inches (1800 mm) with 3/8-inch (10-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).
 - 3. 1-1/4-Inch NPS (DN32): Maximum horizontal spacing, 72 inches (1800 mm) with 3/8-inch (10-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).
 - 4. 1-1/2 and 2-Inch NPS (DN40 and DN50): Maximum horizontal spacing, 96 inches (2400 mm) with 3/8-inch (10-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).
 - 5. 2-1/2-Inch NPS (DN65): Maximum horizontal spacing, 108 inches (2700 mm) with 1/2-inch (13-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).

6. 3-Inch NPS (DN80): Maximum horizontal spacing, 10 feet (3 m) with 1/2-inch (13-mm) minimum rod diameter; maximum vertical spacing, 10 feet (3 m).
- E. Install vinyl-coated hangers for PEX piping with the following maximum horizontal spacing and minimum rod diameters:
 1. NPS 1 (DN 25) and Smaller: 32 inches (815 mm) with 3/8-inch (10 mm) rod.
- F. Install hangers for vertical PEX piping every 48 inches (1200 mm).
- G. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.8 CONNECTIONS

- A. Connect service entrance piping to exterior water service piping. Use transition fitting to join dissimilar piping materials.
- B. Connect water distribution piping to service entrance piping at shutoff valve, and extend to and connect to the following:
 1. Water Heaters: Connect cold-water supply and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
 2. Plumbing Fixtures: Connect hot- and cold-water supply piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 15 Section "Plumbing Fixtures."
 3. Equipment: Connect hot- and cold-water supply piping as indicated. Provide shutoff valve and union for each connection.

3.9 FIELD QUALITY CONTROL

- A. Inspect water distribution piping as follows:
- B. Inspect service entrance piping and water distribution piping as follows:
 1. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
 2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - a. Roughing-In Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - b. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
 3. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

C. Test service entrance piping and water distribution piping as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced water piping until it has been tested and approved. Expose work that has been covered or concealed before it has been tested and approved.
3. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for 4 hours. Leaks and loss in test pressure constitute defects that must be repaired.
4. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
5. Prepare reports for tests and required corrective action.

3.10 CLEANING

A. Clean and disinfect service entrance piping and water distribution piping as follows:

1. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed, procedure described in either AWWA C651 or AWWA C652:

3.11 COMMISSIONING

A. Fill water piping. Check components to determine that they are not air bound and that piping is full of water.

B. Perform the following steps before putting into operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Remove plugs used during testing of piping and plugs used for temporary sealing of piping during installation.
5. Remove and clean strainer screens. Close drain valves and replace drain plugs.

C. Check plumbing equipment and verify proper settings, adjustments, and operation. Do not operate water heaters before filling with water.

D. Check plumbing specialties and verify proper settings, adjustments, and operation.

END OF SECTION 221116

SECTION 221313
FACILITY SANITARY SEWERS



PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes gravity-flow, nonpressure sanitary sewerage outside the building, with the following components:
 - 1. Pipe and fittings.
 - 2. Nonpressure and pressure couplings.
 - 3. Expansion joints.
 - 4. Encasement for piping.
 - 5. Cleanouts

1.2 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Rating: 10-foot (30 kPa) head of water.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Show pipe sizes, locations, and elevations.
- C. Field quality-control test reports.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

- A. PVC Sewer Pipe and Fittings, NPS 8 (DN 200): ASTM D-3034 SDR 35 minimum.
- B. PVC Sewer Pipe and Fittings, NPS 6 (DN 200) and Smaller: PVC – DWV Schedule 40 or heavier plastic pipe

2.2 NONPRESSURE-TYPE TRANSITION COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2. For Concrete Pipes: ASTM C 443 (ASTM C 443M), rubber.
 - 3. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.

4. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
- C. Unshielded, Flexible Couplings:
1. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
- D. Ring-Type, Flexible Couplings: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.3 EXPANSION JOINTS

- A. Ductile-Iron, Flexible Expansion Joints:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. EBAA Iron, Inc.
 - b. Romac Industries, Inc.
 - c. Star Pipe Products.
 2. Description: Compound fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include two gasketed ball-joint sections and one or more gasketed sleeve sections, rated for 250-psig (1725-kPa) minimum working pressure and for offset and expansion indicated.

2.4 CLEANOUTS

- A. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material and diameter as sewer piping.
1. Available Manufacturers:
 - a. Canplas Inc.
 - b. IPS Corporation
 - c. NDS Inc.
 - d. Plastic Oddities, Inc.
 - e. Soux Chief Manufacturing Company, Inc.
 - f. Zurn Industries, Inc.; Zurn Light Commercial Specialty Plumbing Products.
 2. Top-Loading Classification(s): Light, Medium, Heavy, and Extra-heavy duty.
 3. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

2.5 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:
 - 1. Cement: ASTM C 150, Type II.
 - 2. Fine Aggregate: ASTM C 33, sand.
 - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
 - 4. Water: Potable.
- B. Portland Cement Design Mix: 4000 psi (27.6 MPa) minimum, with 0.45 maximum water/cementitious materials ratio.
 - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
 - 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60 (420 MPa), deformed steel.
- C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi (20.7 MPa) minimum, with 0.58 maximum water/cementitious materials ratio.
 - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
 - 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60 (420 MPa), deformed steel.

2.6 SERVICE PIPE

- A. Sewer Service Pipe
 - 1. Where shown on the plans, sewer services shall be constructed as necessary. All work shall be performed by local plumbing codes. These codes shall be strictly adhered to under all conditions. All materials shall conform to local plumbing codes.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewer piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements.
- C. Use fittings for branch connections unless direct tap into existing sewer is indicated.

- D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
- F. Install gravity-flow, nonpressure, drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow, at minimum slope of 1 percent unless otherwise indicated.
 - 2. Install piping NPS 6 (DN 150) and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place-concrete supports or anchors.
 - 3. Install PVC Type PSM sewer piping according to ASTM D 2321 and ASTM F 1668.
- G. Install corrosion-protection piping encasement over the following underground metal piping according to ASTM A 674 or AWWA C105:
 - 1. Hub-and-spigot, cast-iron soil pipe.
 - 2. Hubless cast-iron soil pipe and fittings.
 - 3. Expansion joints.
- H. Clear interior of piping of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops.

3.3 PIPE JOINT CONSTRUCTION

- A. Where specific joint construction is not indicated, follow piping manufacturer's written instructions.
- B. Join gravity-flow, nonpressure, drainage piping according to the following:
 - 1. Join PVC Type PSM sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasket joints.
 - 2. Join dissimilar pipe materials with nonpressure-type, flexible or rigid couplings.
- C. Pipe couplings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
 - 1. Use nonpressure flexible couplings where required to join gravity-flow, nonpressure sewer piping unless otherwise indicated.
 - a. Unshielded flexible couplings for pipes of same or slightly different OD.
 - b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.

- c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

3.4 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 - 1. Use light-duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
 - 2. Use medium-duty, top-loading classification cleanouts in paved foot-traffic areas.
 - 3. Use heavy-duty, top-loading classification cleanouts in vehicle-traffic service areas.
 - 4. Use extra-heavy-duty, top-loading classification cleanouts in roads.
- B. Set cleanout frames and covers in earth in cast-in-place-concrete block, 6 inches deep. Set with tops 1 inch above surrounding grade.
- C. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

3.5 CONNECTIONS

- A. Connect nonpressure, gravity-flow drainage piping to building's sanitary building drains.
- B. Make connections to existing piping.
 - 1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye fitting plus 6-inch (150-mm) overlap with not less than 6 inches (150 mm) of concrete with 28-day compressive strength of 3000 psi (20.7 MPa).
 - 2. Make branch connections from side into existing piping, NPS 4 to NPS 20 (DN 100 to DN 500). Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye with not less than 6 inches (150 mm) of concrete with 28-day compressive strength of 3500 psi (24.1 MPa).
 - 3. Protect existing piping and manholes to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.6 IDENTIFICATION

- A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tapes directly over piping.
 - 1. Use warning tape or detectable warning tape over ferrous piping.
 - 2. Use detectable warning tape over nonferrous piping.

3.7 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches (600 mm) of backfill is in place, and again at completion of Project.
1. Submit separate report for each system inspection.
 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 4. Re-inspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
1. Do not enclose, cover, or put into service before inspection and approval.
 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 4. Submit separate report for each test.
 5. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:
 - a. Fill sewer piping with water. Test with pressure of at least 10-foot (3-m) head of water, and maintain such pressure without leakage for at least 15 minutes.
 - b. Close openings in system and fill with water.
 - c. Purge air and refill with water.
 - d. Disconnect water supply.
 - e. Test and inspect joints for leaks.
 6. Air Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

- a. Option: Test plastic gravity sewer piping according to ASTM F 1417.
 - b. Option: Test concrete gravity sewer piping according to ASTM C 924 (ASTM C 924M).
 - C. Leaks and loss in test pressure constitute defects that must be repaired.
 - D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.
- 3.8 CLEANING
- A. Clean dirt and superfluous material from interior of piping.

END OF SECTION 221313



SECTION 233723 - HVAC GRAVITY VENTILATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof hoods.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For gravity ventilators. Include plans, elevations, sections, details, ventilator attachments to curbs, and curb attachments to roof structure.

1.4 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

PART 2 - PRODUCTS

2.1 ROOF HOODS

- A. Factory or shop fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figures 5-6 and 5-7.
- B. Materials: Galvanized-steel sheet, minimum 0.064-inch- (1.62-mm-) thick base and 0.040-inch- (1.0-mm-) thick hood; suitably reinforced.
- C. Roof Curbs: Galvanized-steel sheet; with mitered and welded corners; 1-1/2-inch- (40-mm-) thick, rigid fiberglass insulation adhered to inside walls; and 1-1/2-inch (40-mm) wood nailer. Size as required to fit roof opening and ventilator base.
 - 1. Overall Height: 18 inches.

- D. Bird Screening: Galvanized-steel, 1/2-inch- (12.7-mm-) square mesh, 0.041-inch (1.04-mm) wire.
- E. Galvanized-Steel Sheet Finish:
 - 1. Surface Preparation: Clean surfaces of dirt, grease, and other contaminants. Clean welds, mechanical connections, and abraded areas and repair galvanizing according to ASTM A 780. Apply a conversion coating suited to the organic coating to be applied over it.
 - 2. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard finish consisting of prime coat and thermosetting topcoat, with a minimum dry film thickness of 1 mil (0.025 mm) for topcoat and an overall minimum dry film thickness of 2 mils (0.05 mm).
 - a. Color and Gloss: As selected by Architect from manufacturer's full range.
- F. Capacities and Characteristics:
 - 1. Air Performance: Not more than 0.10-inch wg (25-Pa) static pressure drop at 600-fpm (3.0-m/s) free-area exhaust velocity.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install gravity ventilators level, plumb, and at indicated alignment with adjacent work.
- B. Install gravity ventilators with clearances for service and maintenance.
- C. Install perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- D. Install concealed gaskets, flashings, joint fillers, and insulation as installation progresses.
- E. Label gravity ventilators.
- F. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.
- G. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

3.2 ADJUSTING

- A. Adjust damper linkages for proper damper operation.

END OF SECTION 233723

SECTION 238239 - UNIT HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Propeller unit heaters with electric-resistance heating coils.
 - 2. Wall and ceiling heaters with propeller fans and electric-resistance heating coils.

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each product indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For cabinet unit heaters to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 PROPELLER UNIT HEATERS

- A. Description: An assembly including casing, coil, fan, and motor in vertical and horizontal discharge configuration with adjustable discharge louvers.

- B. Comply with UL 2021.
- C. Cabinet: Removable panels for maintenance access to controls.
- D. Cabinet Finish: Manufacturer's standard baked enamel applied to factory-assembled and -tested propeller unit heater before shipping.
- E. Discharge Louver: Adjustable fin diffuser for horizontal units and conical diffuser for vertical units.
- F. Electric-Resistance Heating Elements: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in steel or corrosion-resistant metallic sheath with fins no closer than 0.16 inch (4 mm). Element ends shall be enclosed in terminal box. Fin surface temperature shall not exceed 550 deg F (288 deg C) at any point during normal operation.
 - 1. Circuit Protection: One-time fuses in terminal box for overcurrent protection and limit controls for high-temperature protection of heaters.
 - 2. Wiring Terminations: Stainless-steel or corrosion-resistant material.
- G. Fan: Propeller type with aluminum wheel directly mounted on motor shaft in the fan venturi.

2.2 WALL AND CEILING HEATERS

- A. Description: An assembly including chassis, electric heating coil, fan, motor, and controls. Comply with UL 2021.
- B. Cabinet:
 - 1. Front Panel: with removable panels fastened with tamperproof fasteners.
 - 2. Finish: Baked enamel over baked-on primer with manufacturer's standard color selected by Architect, applied to factory-assembled and -tested wall and ceiling heaters before shipping.
- C. Surface-Mounting Cabinet Enclosure: Steel with finish to match cabinet.
- D. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware, and limit controls for high temperature protection. Provide integral circuit breaker for overcurrent protection.
- E. Fan: Aluminum propeller directly connected to motor.
- F. Controls: Low-voltage relay with transformer kit.
- G. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for electrical connections to verify actual locations before unit heater installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install wall boxes in finished wall assembly; seal and weatherproof.
- B. Install cabinet unit heaters to comply with NFPA 90A.
- C. Install propeller unit heaters level and plumb.
- D. Suspend propeller unit heaters from structure with all-thread hanger rods and elastomeric hangers.

3.3 CONNECTIONS

- A. Ground equipment according to Division 26 Section.
- B. Connect wiring according to Division 26 Section.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
 - 3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

3.5 ADJUSTING

- A. Adjust initial temperature set points.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain cabinet unit heaters.

END OF SECTION 238239

SECTION 311000
SITE CLEARING



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Report of Geotechnical Exploration by Olsson Associates, project number 014-0600, and all addendums.

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and removing site utilities.
 - 7. Temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction.

- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Pre-installation Conference: Coordinate with Owner and Architect/Engineer.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Salvable Improvements: Carefully remove items to be salvaged and store.
- D. Utility Locator Service: Notify One Call for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

- F. The following practices are prohibited within protection zones:
1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- I. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.
- B. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with MPI #79, Alkyd Anticorrosive Metal Primer or SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating.
1. Use coating with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches (1372 mm) above the ground.
- C. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. General: Protect trees and plants remaining on-site.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Cap existing water service and sewer services at the main.
 - 3. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
- D. Excavate for and remove underground utilities indicated to be removed.
- E. Removal of underground utilities is included in Section 024116 "Structure Demolition".

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches (450 mm) below exposed subgrade.
3. Use only hand methods for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity to be reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000



SECTION 312000
EARTH MOVING



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Report of Geotechnical Exploration by Olsson Associates, project number 014-0600, and all addendums.

1.2 SUMMARY

- A. Section Includes:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Drainage course for concrete slabs-on-grade.
 - 4. Subbase course for concrete pavements.
 - 5. Subsurface drainage backfill for walls and trenches.
 - 6. Excavating and backfilling trenches for utilities and pits for buried utility structures.
 - 7. Excavating well hole to accommodate elevator-cylinder assembly.
- B. Related Sections:
 - 1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 2. Report of Geotechnical Exploration (Olsson Project N0. 014-0600) and all addenda.

1.3 PRICES

- A. Work of this Section is affected by prices specified in Section 012000 "Price and Payment Procedures."

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 SUBMITTALS

- A. Samples for Verification: For the following products, in sizes indicated below:
 - 1. Geotextile: 12 by 12 inches (300 by 300 mm).
 - 2. Warning Tape: 12 inches (300 mm) long; of each color.
- B. Qualification Data: For qualified testing agency.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D 2487.
 - 2. Laboratory compaction curve according to ASTM D 698.
- D. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
- B. Pre-excavation Conference: Coordinate with Owner and Engineer.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Engineer.
- C. Utility Locator Service: Notify "One Call" for area where Project is located before beginning earth moving operations.
- D. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Section 311000 "Site Clearing," and specified on plans are in place.
- E. Do not commence earth moving operations until plant-protection measures are in place.
- F. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: As defined in the Report of Geotechnical Exploration prepared by Olsson Associates
- C. Unsatisfactory Soils: As defined in the Report of Geotechnical Exploration prepared by Olsson Associates.
- D. Subbase Material: As defined in the Report of Geotechnical Exploration prepared by Olsson Associates.
- E. Base Course: As defined in the Report of Geotechnical Exploration prepared by Olsson Associates.
- F. Engineered Fill: As defined in the Report of Geotechnical Exploration prepared by Olsson Associates.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Geotechnical Engineer. Changes in the Contract Time may be authorized for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. Pile Foundations: Stop excavations 6 to 12 inches (150 to 300 mm) above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended as bearing surfaces.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
 1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 2. Cut and protect roots.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
 - 1. Clearance: 12 inches (300 mm) each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. For pipes and conduit less than 6 inches (150 mm) in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 - 2. For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
 - 3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
 - 4. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches (100 mm) deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
 - 1. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- E. Trenches in Tree- and Plant-Protection Zones:
 - 1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
 - 3. Cut and protect roots.

3.8 SUBGRADE INSPECTION

- A. Notify Engineer when over-excavations have reached required subgrade.
- B. Authorized additional excavation and replacement material will be paid for according to Contract provisions for pricing.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 3000 psi (20.6 MPa), may be used when approved by Engineer.
 - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Engineer.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Place and compact initial backfill per Geotechnical Report.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

- E. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- F. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content per Geotechnical Report.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the specification in the Geotechnical Report.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm).
 2. Walks: Plus or minus 1 inch (25 mm).
 3. Pavements: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.17 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 2. Determine that fill material and maximum lift thickness comply with requirements.
 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Subgrade after Over-Excavation: At subgrade layer before backfill operations, at least one test for every 1,000 sq. ft., but in no case fewer than three tests.
 2. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 1,000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 3. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 50 feet or less of wall length, but no fewer than two tests.

4. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.

- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Engineer.
 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000



SECTION 312513
EROSION AND SEDIMENTATION CONTROL (INCLUDING SWPPP)



PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Installation of temporary and permanent erosion and sedimentation control systems.
2. Installation of temporary and permanent slope protection systems.
3. Storm Water Pollution Prevention Plan (SWPPP).

1.2 ENVIRONMENTAL REQUIREMENTS

- A. Protect adjacent properties; any identified endangered or threatened species and/or critical habitat, any identified cultural or historic resources, and receiving water resources from erosion and sediment damage until final stabilization is achieved. All storm water controls and systems must be installed & functioning as designed and free of accumulated sediment and debris before final project approval.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Seed, sod, and ground covers for the establishment of vegetation.
- B. All erosion control products sediment control devices or materials for non-storm water BMPs as specified herein and on the Construction Drawings.
- C. Rolled erosion control products according to Erosion Control Technology Council (ECTC) standard specifications.
- D. Temporary mulches such as loose straw, wood cellulose, or agricultural silage.
- F. Temporary and permanent outfall structures as specified on the drawings.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Review the drawings and Storm Water Pollution Prevention Plan.
- B. Conduct storm water pre-construction meeting with General Contractor, all ground-disturbing Sub-contractors, site engineer of record or someone from their office familiar with the site and SWPPP, and state or local agency personnel in accordance with requirements of the special conditions.

- C. Revise SWPPP as necessary to address potential pollution from site identified after issuance of the SWPPP at no additional cost to owner.

3.2 EROSION AND SEDIMENTATION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

- A. Place erosion and sediment control systems in accordance with the drawings and Storm Water Pollution Prevention Plan or as may be dictated by site conditions in order to maintain the intent of the specifications and permits.
- B. The Storm Water Pollution Prevention Plan and Site Maps shall be corrected or modified as site conditions change. General Contractor must obtain approval from Owner's Engineer prior to modifying or substituting Best Management Practices. Changes during construction shall be noted in the Storm Water Pollution Prevention Plan and posted on the drawings (Site Maps).
- C. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct General Contractor to provide immediate permanent or temporary pollution control measures.
- D. Maintain erosion and sedimentation control systems as dictated by site conditions, indicated in the construction documents, or as directed by governing authorities. Contractor shall respond to maintenance or additional work ordered by Owner or governing authorities immediately, but in any case, within not more than 48 hours at no additional cost to the Owner.
- E. General Contractor shall incorporate permanent erosion control features, paving, permanent slope stabilization, and vegetation into project at earliest practical time to minimize need for temporary controls.
- F. Permanently seed and mulch cut and fill slopes as construction proceeds to extent considered desirable and practical.
- G. Unless required within a shorter timeframe by the applicable General Permit for Storm Water Discharges Associated with Construction Activity, disturbed areas that will not be graded or actively worked for a period of 14 days or more shall be temporarily stabilized as work progresses with vegetation or other acceptable means. In the event it is not practical to seed areas, slopes must be stabilized with mulch and tackifier, bonded fiber matrix, netting, blankets or other means to reduce the erosive potential of the area.

END OF SECTION 312513



STORM WATER POLLUTION PREVENTION PLAN
FOR
CONSTRUCTION ACTIVITIES
AT

**88 East Lake Flats
South 88th St. and Pine Lake Rd.
Lincoln, Lancaster County, Nebraska**

Prepared for:

Hausmann Construction
8545 Executive Woods Drive, Suite #1
Lincoln, Nebraska 68512

Prepared by:

Olsson Associates
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68508
402.474.6311
402.474.5160

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Olsson Project No.: 014-0600

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I. SUMMARY OF PERMIT AND PROGRAM REQUIREMENTS

The Storm Water Pollution Prevention Plan (SWPPP) includes, the Erosion and Sedimentation Control Plan included in the Construction Drawings with the Detail Sheet, the Notice of Intent, Transfer forms, Permit Authorization, General Permit, Notice of Termination, all records of inspections and activities which are created during the course of the project, and other documents as may be included by reference to this SWPPP. Changes, modifications, revisions, additions, or deletions shall become part of this SWPPP as they occur.

Note: The General Contractor must complete the Contact List included in Appendix A and maintain the list in the SWPPP Binder until the storm water permit is terminated.

Note: The General Contractor (GC) must certify this SWPPP by signing the GC SWPPP certification letter included in Appendix B. All signed certifications must be kept in the jobsite SWPPP Binder and be available for inspection on the construction site. Signed documents including permits, certifications and qualification forms can not be modified or revised in the field.

The General Contractor and all subcontractors involved with a construction activity that disturbs site soil or who implement a pollutant control measure identified in the SWPPP, or otherwise required, must comply with the following requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit ("General Permit"), Nebraska Department of Environmental Quality (NDEQ), and any local governing agency having jurisdiction concerning NPDES, storm water, erosion and sedimentation control:

A. General Permit Information

1. Permit Information:

Unless otherwise notified by the NDEQ, discharge authorization will be granted 7 days after the NDEQ receives the complete NOI form.

A project location/vicinity map is located in Appendix C.

The Notice of Intent is located in Appendix D.

2. Permit transfer information:

The permittee may transfer all or any part of the project property subject to the permit.

3. Waiting Period:

Ground-disturbing activities can not begin until 7 days after submittal of a complete NOI Package to the appropriate governing agency.

4. Permit Expiration:

The applicable General Permit expires 5 years following the permit issued date. A copy of the General Permit is located in Appendix N.

5. Permit modification:

A permit modification is required prior to land disturbing activity in non-permitted areas. The General Contractor must contact the Owner's Engineer as soon as a need to work in non-permitted areas is identified. Work in non-permitted areas may not proceed until written approval is provided by the governing agency.

6. Off-Site Permits:

Note: For purposes of this SWPPP and associated storm water permit, 'off-site' is defined as any and all areas beyond the project permitted limits of disturbance.

Any areas outside the limits of disturbance acquired for use by the General Contractor or a subcontractor of the General Contractor must be managed in accordance with Section V. D. of this specification.

Off-Site storm water permits are not part of this project. All off-site activities shall be the responsibility of the General Contractor to obtain storm water permits for those activities.

7. Governing Agency:

The following agency or agencies have governing authority for storm water-related regulations and permits and must receive a complete NOI Package.

Nebraska Department of Environmental Quality
Water Quality Division
1200 'N' Street, Suite 400
P.O. Box 98922
Lincoln, NE 68509-8922
Phone: 402-471-8330
Fax: 402-471-2909

City of Lincoln
Watershed Management
Sediment & Erosion Control
555 South 10th Street, Suite 203
Lincoln, NE 68508
Phone: 402-441-7589

B. Public Posting (Including SWPPP Information Sign)

Install the SWPPP Information Sign and have Site Maps and Details Sheets on the project site readily available upon request. The following information must be posted near the construction exit in a prominent place for public viewing until termination of permit coverage has been obtained by filing the Notice of Termination (NOT): 1) Notice of Intent; 2) Permit Authorization; 3) Construction Site Notice (found in Appendix E); and 4) The location of the SWPPP on site. Reference the Entrance Sign (SWPPP Information Sign) detail for proper posting of documents.

C. Retention of Records

A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during the duration of the project (until NOT is filed) and kept in the permanent project records of the General Contractor for at least three years following submission of the Notice of Termination (NOT).

D. Contractor/Sub-Contractor List

The General Contractor must provide names and addresses of all subcontractors working on this project who will be involved with the major construction activities that disturb site soil or otherwise affect BMP implementation. This information must be kept with the SWPPP.

E. Contractor/Sub-Contractor Certification Form

The General Contractor and all contractors and/or subcontractors that will implement, maintain and/or impact the pollution control measures in the SWPPP and/or are involved in ground-disturbing activities on the site must sign a copy of the Contractor certification included in Appendix F. An authorized representative from each company on the construction project must sign this form certifying that company representatives understand the General Permit authorizing storm water discharges during construction. This information must be kept in the SWPPP Binder.

F. Inspections

Inspections must be conducted at least once every fourteen (14) calendar days, and within 24 hours of the end of a storm event of 0.5 inches or greater of precipitation in a 24-hour period. Any delay in the replacement or maintenance of nonfunctional BMPs beyond seven (7) calendar days shall be documented in the SWPPP with sufficient detail as to explain the reason for the delay.

The SWPPP, including the best management practices implemented on the jobsite, shall be modified as needed to reduce or prevent pollutants from discharging from the site. Modifications to BMPs that change a hydraulic design component (diversions, basins, etc.) must first be approved by the Owner's Engineer.

The inspector must be a person familiar with the site, the nature of the major construction activities, and qualified to evaluate both overall system performance and individual component performance. The inspector must either be someone empowered to implement BMPs in order to increase effectiveness to an acceptable level or someone with the authority to cause such things to happen. Additionally, the inspector shall be properly authorized in accordance with the applicable General Permit to conduct the certified site storm water inspections.

Inspection Frequency Reduction

Inspection frequency may be reduced to at least once every month if:

- 1) The entire site is temporarily stabilized.
- 2) Ground is frozen and/or snow covered.

Reduced inspection frequency does not relieve the permittee of the maintenance responsibilities during interim periods.

G. SWPPP Updates and Amendments

The General Contractor must update the SWPPP and Site Maps bi-weekly to reflect the progress of construction activities and general changes to the project site. SWPPP contact and contractor information and the record of site stabilization activities log must be maintained by the General Contractor throughout the project.

BMPs that do not impact the hydraulic design of the site may be modified or added by the General Contractor, and site maps updated accordingly, as needs arise. Examples of BMPs that do not typically impact the hydraulic design of the site include silt fence, silt dike, wattles, construction exit and various forms of temporary and permanent erosion controls (blankets, nets, seed, sod, etc.). Examples of BMPs that commonly impact hydraulic design include storm water basins, diversions, check dams, inlet protection or any product, process or system that changes the storm water flow path or storm water storage capacity of the site or is located in an area of concentrated flow.

The General Contractor must submit a request for information (RFI) to the Owner's Engineer and obtain written approval before modifying or adding sediment controls that may impact the hydraulic design of the site.

Substitution of any erosion or sediment control BMPs beyond those specified in the SWPPP must first be approved in writing by the Owner's Engineer. Substitutions are typically only approved if specified materials are not available or there is a valid reason the specified BMP will not work.

Amending the SWPPP does not mean that it has to be reprinted. It is acceptable to add addenda, sketches, new sections, details, and/or revised drawings that are initialed and dated.

H. Discharge of Petroleum Products or Hazardous Substances

Discharge of petroleum products or other hazardous substances into storm water or the storm water (storm sewer) system is subject to reporting and clean up requirements. See Section V.B.8. of this SWPPP for state and local information on reporting spills. Refer to the General Permit for additional information. A copy of the spill form is located in Appendix H and the General Permit is located in Appendix N.

I. Notice of Termination

Once the site reaches final stabilization with all permanent erosion and sedimentation controls installed, all temporary erosion and sedimentation controls removed, and construction complete the Construction Manager will contact the Owner's Engineer to complete a site inspection and report.

Upon approval by the Construction Manager, the Owner's Engineer, and General Contractor, as applicable, must complete and submit an NOT included in Appendix I.

NOTE: Stabilization requirements include all areas covered by applicable permits, including out lots and utility easements, unless the new Owner and/or Operator have submitted an NOI(s) to the applicable agency and a copy of the NOI(s) has been put in the SWPPP Binder.

J. General Contractors Responsibility

This SWPPP intends to control water-borne and liquid pollutant discharges by some combination of interception, sedimentation, filtration, and containment. The General Contractor and subcontractors implementing this SWPPP must remain alert to the need to periodically refine the update the SWPPP in order to accomplish the intended goals. The General Contractor is ultimately responsible for all site conditions and permit compliance.

K. Log of Construction Activity

A record of dates must be maintained when:

- major ground-disturbing activities including earthwork or grubbing occur;
- construction activities temporarily or permanently cease on a portion of the site;
- stabilization measures are initiated or completed; and
- BMPs are installed or permanently removed.

This log must be maintained in the SWPPP until the NOT is filed.

A Record of Stabilization and Construction Activity Dates (Stabilization) log for documenting such activities is included in Appendix J. The General Contractor shall complete, at a minimum, 1-page of Stabilization log entries for each month of active construction.

Controls must be in place down gradient of any ground-disturbing activities prior to the commencement of grading construction activities and noted on the Site Maps and the Stabilization log. Site Map and Stabilization log comments and entries must compliment one another with greater detail provided in the Stabilization log, as needed.

L. Agency Storm Water Inspections

The General Contractor must walk the site with the regulatory inspector and document any deficiencies noted during the inspection. Deficiencies of any type, field or documentation-related, identified during the regulatory inspection, must be noted on the bi-weekly report as a deficiency and resolved within 24 or 48-hours, as appropriate. A second report must be submitted if the agency inspection occurs after the first bi-weekly report was submitted and the inspector identifies any deficiencies.

The General Contractor must call the Owner's Engineer to report the agency inspection immediately, but no later than 1-hour after the inspector has left the jobsite. All storm water or erosion and sediment (E&S) agency visits to the jobsite, whether an official inspection occurred or not, must be reported to the Owner's Engineer. Any agency inspector, including OSHA and utility inspectors, that comment on storm water BMPs (inlet protection, track out, etc.) must be reported to the Owner's Engineer.

A log of all inspections by Federal, State, or local storm water or other environmental agencies shall be kept in the General Contractor SWPPP Binder. The log form can be found in Appendix K and must include the date and time of the visit and whether a report was issued or will be issued as a result of the inspection.

II. INTRODUCTION

This SWPPP has been prepared for major activities associated with the construction of:

88 East Lake Flats

This SWPPP, including the applicable General Permit, includes the elements necessary to comply with the General Permit for construction activities administered by the U.S. Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES) program and all local governing agency requirements. This SWPPP must be implemented at the start of construction.

Construction phase pollutant sources anticipated at the site are disturbed (bare) soil, vehicle fuels and lubricants, chemicals and coatings associated with site or building construction and pavement installation, construction-generated litter and debris, and building materials. Without adequate control there is a potential for each type of pollutant to be transported by storm water.

Project construction will consist primarily of site grading, paving, storm drainage, water supply, sewage collection, and site lighting to facilitate construction of office and industrial buildings and associated drives and parking areas composing of 9.10 acres.

A. Purpose

A major goal of pollution prevention efforts during project construction is to control soil and pollutants that originate on the site and prevent them from flowing to surface waters. The purpose of this SWPPP is to provide guidelines for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness.

B. Scope

The erosion and sediment control measures outline in this SWPPP must be implemented before construction begins on the site. The measures primarily address the impact of storm rainfall and runoff on areas of the ground surface disturbed during the construction process. In addition, there are recommendations for controlling other sources of pollution that could accompany the major construction activities. Applicability of this SWPPP will terminate when disturbed areas are stabilized, permanent erosion and sedimentation controls are installed, temporary erosion and sedimentation controls are removed, construction activities covered herein have ceased, and a completed Notice of Termination (NOT) is transmitted to the governing agency.

Forms which are necessary for implementing the SWPPP are included herein.

The General Permit for Storm Water Discharges Associated with Construction Activities prohibits most non-storm water discharges during the construction phase. Allowable non-storm water discharges that occur during construction on this project, which are covered by the General Permit, include:

1. Discharges from fire-fighting activities;
2. Fire hydrant flushings;
3. Waters used to wash vehicles where detergents are not used;
4. Water used to control dust in accordance with Subpart 3.4.G;
5. Potable water including uncontaminated water line flushings;
6. Routine external building wash down that does not use detergents;
7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
8. Uncontaminated air conditioning or compressor condensate;
9. Uncontaminated ground water or spring water;
10. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
11. Uncontaminated excavation dewatering;
12. Landscape irrigation.

Best Management Practices (BMPs) must be implemented for the above allowable foreseeable discharges for the duration of the permit. Each non-storm water discharge should be noted in the SWPPP and have proper erosion and sedimentation controls in place with the exception of discharges from fire fighting activities.

The techniques described in this SWPPP focus on providing control of pollutant discharges with practical approaches that utilize readily available expertise, material, and equipment.

The Owner referred to in this SWPPP is East Lake Apartments. The General Contractor shall construct the site development improvements while working under contract with the Owner.

III. PROJECT DESCRIPTION

Described below are the major construction activities that are the subject of this SWPPP. Also included in the sequence are BMP installation activities that must take place prior to construction activities.

NOTE: Down slope protective measures must always be in place before soil is disturbed.

Activities are presented in the order (sequence) they are expected to be completed.

All activities and timeframes (beginning and ending dates) shall be noted on the Site Map and the "Record of Stabilization and Construction Activity Dates" form found in Appendix J of this SWPPP. The sequence of construction is as follows:

Note: Upon implementation and installation of the following areas: trailer, parking, lay down, porta-potty, wheel wash, concrete washout, mason's area, fuel and material storage containers, solid waste containers, etc., immediately denote them on the Site Maps and note any changes in location as they occur throughout the construction process. In addition, note any off-site areas where fill is imported from or soil is exported to on the Site Maps.

Phase I

1. *Install stabilized construction exit(s) and SWPPP Information Sign.*
2. *Install silt fence(s) on the site (clear only those areas necessary to install silt fence).*
3. *Prepare temporary parking and storage area.*
4. *Construct and stabilize sediment basin(s) and sediment trap(s) with appropriate outfall structures (clear only those areas necessary to install basins and traps).*
5. *Install and stabilize hydraulic control structures (dikes, swales, check dams, etc.).*
6. *Begin clearing and grubbing the site.*
7. *Begin grading the site.*
8. *Start construction of building pad and structures.*

Phase II

1. *Temporarily seed, throughout construction, denuded areas that will be inactive for 14 days or more.*
2. Install utilities, underdrains, storm sewers, curbs and gutters.
3. *Install rip rap around outlet structures as each outlet structure is installed.*
4. *Install inlet protection at all storm sewer structures as each inlet structure is installed.*
5. *Permanently stabilize areas to be vegetated as they are brought to final grade.*
6. Prepare site for paving.
7. Pave site.
8. *Install appropriate inlet protection devices for paved areas as work progresses.*
9. Complete grading and *installation of permanent stabilization* over all areas including out lots.
10. Obtain concurrence with the Construction Manager that the site has been fully stabilized then:
 - a. Remove all remaining temporary erosion and sediment control devices,
 - b. Stabilize any areas disturbed by the removal of BMPs, and
 - c. Ask the Construction Manager to contact the Owner's Engineer to complete the site inspection and report.
11. Continue weekly Inspection Reports until the Final inspection is signed off by the Construction Manager that the site is fully stabilized and the permit may be terminated.

NOTE: The General Contractor may complete construction-related activities concurrently only if all preceding BMPs have been completely installed. BMP-related steps in the above sequence are italicized for clarity.

The actual schedule for implementing pollutant control measures will be determined by project construction progress and recorded by the General Contractor on the Soil Erosion/Sedimentation Control Operation Time Schedule on the Erosion and Sedimentation Control plans (Site Maps). Down slope protective measures must always be in place before soil is disturbed.

IV. SITE DESCRIPTION

Included as parts of this SWPPP are the project Construction Drawings – East Lake Apartments Development Grading Plan and Sediment and Erosion Control Plan & Details. Refer to the Construction Drawings for detailed site information.

A. Site Location

- Address: South 88th St. and Pine Lake Rd., Lincoln, NE
- Latitude: 40° 44' 22.72" N
- Longitude: 96° 36' 00.67" W
- Adjacent surrounding properties:

- North: Residential
- South: Commercial
- West: Commercial
- East: Commercial/Multifamily
- A vicinity map is included in Appendix C.

B. Site Topography

- Lowest elevation on project site: 1406
- Highest elevation on project site: 1421
- Percent slope variation: <1% to 4% on drives, and 2% to 3:1 slopes green spaces
- Topography changes: The site generally drains north/northeast.
- Vegetation: The site is generally covered with grass vegetation. The site will be stripped and graded. Select strippings will be redistributed on green spaces following site grading. All other areas will be designated for building and paving.

C. Rainfall Information

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Average rainfall in inches	0.67	0.66	2.21	2.90	4.23	3.51	3.54	3.35	2.92	1.94	1.58	0.86	28.37

- The total average annual rainfall for the project area is: 28.37 inches
- The design rain event for this project is: 10 year rain event for commercial use.

D. Site Soils

- Soil type and texture: See Report of Geotechnical Exploration for soils and boring profiles.
- Average depth to groundwater: None reported.

This information is an estimate and shall not be used for construction costs or estimating.

E. Total Site Area, Area to be Disturbed, and Runoff Coefficient

- The project site contains: 11.78 acres
- The area to be disturbed on the project site is: 12.41 acres
- Off-site areas to be disturbed as part of this project: N/A
- Pre-Construction Runoff Coefficient: CN =78
- Post-Construction Runoff Coefficient: CN =92

F. Receiving Surface Waters

- Receiving waters: Storm runoff enters a private storm sewer systems and eventually discharges to Antelope Creek.
- Distance to named receiving waters: Approximately 1.61 miles
- Receiving water quality: The receiving water is listed on the 303(d) list. The 2012 Surface Water Quality Integrated Report, April 2012, lists Antelope Creek as a Water Assessment Category 5.
- Discharge criteria include: There are no project-specific discharge criteria associated with this site.
- 100-year floodplain: No portion of the project site that is located within the 100-yr floodplain.

G. Erosion and Sedimentation Control Plan

Erosion and Sedimentation Control (Site Maps) plan sheets are in the Construction Drawings.

H. Environmental Permits—Other than NPDES, Storm Water and/or Erosion & Sediment Control

- Stream Crossings: None
- Wildlife Habitat: None
- Wetland Mitigation: None

I. Threatened and Endangered Species

See Appendix M for Threatened and Endangered Species Guidance Checklist for NPDES Construction Storm Water General Permit.

J. Historic Properties

Here is no known historic property which will or could be impacted by construction.

V. STORM WATER POLLUTION PREVENTION MEASURES AND CONTROLS

A variety of storm water pollutant controls are recommended for this project. Some controls are intended to function temporarily and will be used as needed for pollutant control during the construction period. These include temporary sediment barriers and permanent storm retention ponds (which can also function as temporary sediment basins). Permanent stabilization will be accomplished in all disturbed areas by covering the soil with pavement, building foundation, vegetation, or other forms of soil stabilization.

A. Erosion and Sediment Controls

1. Minimization of Disturbed Areas

Note to General Contractor: Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment

operations and to direct General Contractor to provide immediate permanent or temporary pollution control measures.

2. Soil Stabilization

The purpose of soil stabilization is to prevent soil from eroding and leaving the site. In the natural condition, soil is stabilized by native vegetation. The primary technique to be used at this project for stabilizing site soils will be to provide a protective cover of grass, pavement, or building structure.

- a.) Temporary Seeding – Temporary seeding is the establishment of a temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing annual plants. Its purpose is to reduce erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a period of thirty days or more, reduce damage from sediment and runoff to downstream or off-site areas, and to provide protection to bare soils exposed during construction until permanent vegetation or other erosion control measures can be established.

It should be used on exposed soil surfaces. Such areas include denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, temporary road banks, etc. permanent vegetative cover shall be applied to areas that will be left dormant for a period of more than 1 year.

Note to General Contractor: Temporary stabilization is not achieved simply through seeding. In order for an area or stockpile to be sufficiently stabilized via temporary vegetation, seed must germinate, grow and provide adequate vegetative density.

- b.) Permanent Seeding – Permanent vegetation is the establishment of perennial vegetative cover on disturbed areas by planting seed. Its purpose is to reduce erosion and sediment yield from disturbed areas, to permanently stabilize disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant materials, to improve wildlife habitat and to enhance natural beauty. It may be used on disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil and rough-graded areas which will not be brought to final grade for a year or more.
- c.) Hydroseeding/Hydromulching – Hydro- mulching/Hydro- seeding is a grass planting process. The process begins by mixing mulch, seed, tackifier, fertilizer, and water into a tank of a hydro-mulching machine. The material is often called a slurry. Once applied to the soil, the material enhances initial growth.

3. Structural Controls

The following list of structural BMP controls are listed in the design drawings to control perimeter sediment control to prevent sediment from leaving the site boundary through overland flow or pipe collection systems

- a.) Temporary Sediment Basins – This control not designed for at this time.
- b.) Temporary Sediment Trap – This control not designed for at this time.
- c.) Silt Fence – Silt fence is a temporary sediment barrier consisting of a synthetic fabric stretched across and attached to supporting posts and entrenched or sliced in place. Silt fences can be used in the following applications:
 - for intercepting and detaining small amounts of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the construction site,
 - for decreasing the velocity of sheet flows
 - in high-risk areas, such as those adjacent to streams, wetlands, reservoirs, lawns, etc.,
 - in short lengths at the toe of fill where ground slopes toward the fill,
 - behind curb and gutter to prevent silting of the pavement.Prior to start of construction, silt fence placement should be designed by a qualified professional. Plans and specifications should be referred to by field personnel throughout the construction process.

Use limitations include:

- If the size of the drainage areas is more than 1/4-acre per 100 feet of silt fence length, a different sediment and erosion control strategy should be investigated. The maximum gradient behind the barrier should be no more than 25% (4H:1V).
 - Under no circumstances should silt fences be constructed in live streams or in swales or ditch lines where flows are likely to exceed 1 cubic foot per second.
 - On steep slopes, care should be given to placing alignment of fence perpendicular to the general direction of the flow.
- d.) Construction Entrance – A construction entrance is a stabilized stone pad with a filter fabric underliner located at any point where vehicular traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk or parking area. Its purpose is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets. It should be used wherever traffic

will be leaving a construction site and move directly onto a public road or other paved area.

- e.) Storm Sewer Inlet Protection – Storm drainage inlet protection is a sediment filter or an excavated impounding area around a storm drain drop inlet or curb inlet. Its purpose is to prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area. This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device and watertight blocking of the inlets is not advisable. It is not to be used in place of sediment trapping devices. This may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle. There are eight specific types of storm drain inlet protection practices that vary according to their function, location, drainage area and availability of materials:
- Silt Fence Drop-Inlet Protection
 - Block and Gravel Drop-Inlet Sediment Filter
 - Gravel Curb Inlet Sediment Filter
 - Curb Inlet Protection with Weir
 - Block and Gravel Curb Inlet Sediment Filter

Note to General Contractor: All inlet protection devices create ponding of storm water that can result in flooding or by-pass conditions.

- f.) Check Dams - This control not designed for at this time.
- g.) Diversions – - This control not designed for at this time.
- h.) Wattle Barrier – This control not designed for at this time.
- i.) Compost Berms – Compost berms are contoured runoff and erosion filtration methods usually used for steeper slopes with high erosive potential. The berm allows runoff water to penetrate it and continue to flow while filtering sediment and pollutants from the water. It also slows the flow down, allowing soil particles to settle out. Compost berms work well when the slope exceeds 4:1.
- a. Compost Berms may be used as an alternate to silt fence for this project.
- j.) Outlet Protection – This control not designed for at this time.
- k.) Scour Protection Mat – This control not designed for at this time.
- l.) Temporary Culvert Stream Crossing – This control not designed for at this time.

Final site stabilization is achieved when perennial vegetative cover provides permanent stabilization with a density greater than 70 percent over the entire area to be stabilized by vegetative cover. This is exclusive of areas paved, rocked, or have a building on them.

B. Other Pollutant Controls

This section includes the controls of pollutants other than sediment and additional requirements of the General Permit.

1. Dust Control

Construction traffic must enter and exit the site at the stabilized construction exit. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic. Large areas of soil that are denuded of vegetation and have no protection from particles being picked up and carried by wind should be protected with a temporary cover or kept under control with water or other soil adhering products to limit wind transported particles exiting the site perimeter.

Water trucks or other dust control agents will be used as needed during construction to reduce dust generated on the site. Dust control must be provided by the General Contractor to a degree that is in compliance with applicable local and state dust control regulations.

2. Dewatering

Verify discharges from dewatering activities are allowed non-storm water discharges under the General Permit. Obtain a dewatering permit according to the regulations, if discharges from dewatering activities are not allowed under the General Permit. Discharges from dewatering operations must be directed through an appropriate pollution prevention/treatment measure, such as a pump discharge filter bag, sediment trap or sediment basin prior to being discharged from the site. Under no circumstances are discharges from dewatering operations to be discharged directly into streams, rivers, lakes or other areas off-site. Likewise, discharges into storm sewer systems that do not drain to a suitable on-site treatment facility, such as a basin, are also prohibited. Discharges from dewatering operations must also be conducted in a manner sufficient to prevent erosion from the discharge runoff.

3. Solid Waste Disposal

No solid materials, including building materials, are allowed to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied as necessary by a contract trash disposal service and hauled away from the site. Covers for the containers will be provided as necessary to meet state and local requirements. The location of solid waste receptacles shall be shown on the Site Maps.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed of so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

4. Sanitary Facilities

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and will be serviced by a commercial operator. The location of sanitary facilities shall be shown on the Site Maps. Portable toilets must be securely anchored and are not allowed within 30' of inlets or permitted limit of disturbance or within 50' of a water of the State.

5. Non-Storm Water Discharges

Non-storm water components of site discharges must be clean water. Water used for construction which discharges from the site must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in the ponds until it infiltrates and evaporates. Other non-storm water discharges would include ground water. Only uncontaminated ground water can be discharged from the site, as allowed by and in accordance with applicable local ground water dewatering permits/regulations. When non-storm water is discharged from the site, it must be done in a manner such that it does not cause erosion of the soil during discharge.

Process water such as power washing and concrete cutting must be collected for treatment and disposal. It is not to be flushed into the site storm drain system.

6. Concrete Waste from Concrete Ready-Mix Trucks

Discharge of excess or waste concrete and/or wash water from concrete trucks will be allowed on the construction site, but only in specifically designated lined and diked areas prepared to prevent contact between the concrete and/or wash water and storm water that will be discharged from the site. Alternatively, waste concrete can be placed into forms to make rip rap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations. The project construction manager is responsible for assuring that these procedures are followed. The location of concrete washout areas shall be shown on the Site Maps. Follow all applicable environmental regulations for concrete wash out pits.

7. Mason's Area

Contractor shall identify mason's area on the site and indicate location on the Site Map. To the extent practical, all masonry tools, material, including sand and sacked cement or mortar materials, and equipment shall be located within the area identified. Runoff control, such as berms or diversion ditches, silt fence, straw wattles, or other means of containment shall be provided to prevent the migration of storm water pollutants in runoff from the mason's area. Receptacles for debris and trash disposal shall also be provided.

8. Fuel Tanks

Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations. Tanks shall have approved spill containment with the capacity required by the applicable regulations. From NFPA 30: All tanks shall be provided with secondary containment (i.e. containment external to and separate from primary containment). Secondary containment shall be constructed of materials of sufficient thickness, density, and composition so as not to be structurally weakened as a result of contact with the fuel stored and capable of containing discharged fuel for a period of time equal to or longer than the maximum anticipated time sufficient to allow recovery of discharged fuel. It shall be capable of containing 110% of the volume of the primary tank if a single tank is used, or in the case of multiple tanks, 150% of the largest tank or 10% of the aggregate, whichever is larger.

The tanks shall be in sound condition free of rust or other damage which might compromise containment. Fuel storage areas will meet all EPA, OSHA and other regulatory requirements for signage, fire extinguisher, etc. Hoses, valves, fittings, caps, filler nozzles, and associated hardware shall be maintained in proper working condition at all times. The location of fuel tanks shall be shown on the Site Maps and shall be located to minimize exposure to weather and surface water drainage features.

A Spill Prevention, Control and Countermeasure (SPCC) Plan must be developed if aboveground oil storage *capacity* at the construction site exceeds 1,320-gallons or as specified by state. Containers with a storage capacity of 55-gallons or less are not included when calculating site storage capacity. The General Contractor shall work with the Owner's Engineer to develop and implement a SPCC Plan in accordance with the Oil Pollution Prevention regulation at Title 40 of the Code of Federal Regulations, Part 112, (40 CFR 112).

9. Hazardous Material Management and Spill Reporting Plan

Any hazardous or potentially hazardous material that is brought onto the construction site will be handled properly in order to reduce the potential for storm water pollution. All materials used on this construction site will be properly stored, handled, dispensed and disposed of following all applicable label directions. Flammable and combustible liquids will be stored and handled according to 29 CFR 1926.152. Only approved containers and

portable tanks shall be used for storage and handling of flammable and combustible liquids.

Material Safety Data Sheets (MSDS) information will be kept on site for any and all applicable materials.

In the event of an accidental spill, immediate action will be undertaken by the General Contractor to contain and remove the spilled material. All hazardous materials will be disposed of by the Contractor in the manner specified by federal, state and local regulations and by the manufacturer of such products. As soon as possible, the spill will be reported to the appropriate agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States will be properly reported. The General Contractor will prepare a written record of any spill of petroleum products or hazardous materials in excess of 1 gallon or reportable quantities, whichever is less. The General Contractor will provide notice to Owner, immediately upon identification of a reportable spill. A spill report form is located in Appendix H.

Any spills of petroleum products or hazardous materials in excess of Reportable Quantities as defined by EPA or the state or local agency regulations, shall be immediately reported to the EPA National Response Center (1-800-424-8802) and NDEQ (1-877-253-2603).

The State reportable quantity for petroleum products is 25 gallons or more, per NDEQ Title 126, Ch. 18, 002.01B.

The reportable quantity for hazardous materials is equal to or greater than 100 pounds.

In order to minimize the potential for a spill of petroleum product or hazardous materials to come in contact with storm water, the following steps will be implemented:

- a) All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, additives for soil stabilization, concrete, curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.
- b) The minimum practical quantity of all such materials will be kept on the job site and scheduled for delivery as close to time of use as practical.
- c) A spill control and containment kit (containing for example, absorbent material such as kitty litter or sawdust, acid neutralizing agent, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided on the construction site and location(s) shown on Site Maps.

- d) All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed, with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.
 - e) All products will be stored in and used from the original container with the original product label.
 - f) All products will be used in strict compliance with instructions on the product label.
 - g) The disposal of excess or used products will be in strict compliance with instructions on the products label.
10. Long-Term Pollutant Controls
- Storm water pollutant control measures installed during construction that will also provide storm water management benefits after construction, include vegetative buffers.

All controls and systems must be installed & functioning as designed and free of accumulated sediment and debris during final project inspection and approval.

C. "Best Management Practices" (BMPs)

Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct the General Contractor to install immediate permanent or temporary pollution control measures.

During the construction phase, the General Contractor shall implement the following measures:

1. Materials resulting from the clearing and grubbing or excavation operations shall be stockpiled up-slope from adequate sedimentation controls. Ensure that materials removed to an off-site location shall be protected with appropriate controls and properly permitted and otherwise comply with applicable laws, all in accordance with this SWPPP, including Section V.D. below.
2. The General Contractor shall designate areas on the Site Maps for equipment cleaning, maintenance, and repair. The General Contractor and subcontractors shall utilize such designated areas. Cleaning, maintenance, and repair areas shall be protected by a temporary perimeter berm, shall not occur within 150 feet of any waterway, water body or wetland, and in areas located as far as practical from storm sewer inlets.

3. Use of detergents for large-scale washing is prohibited (i.e. vehicles, buildings, pavement surfaces, etc.).
4. Chemicals, such as paints, solvents, fertilizers, and other toxic materials, must be stored in waterproof containers. Except during application, the containers and the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed of at an approved solid waste and chemical disposal facility.

D. Material Storage, Borrow, or Disposal Areas Outside of Permitted Limits of Disturbance

This section describes roles and responsibilities of the General Contractor in verifying and documenting that activities associated with site construction at material storage, borrow, or disposal areas outside of the Permitted Limits of Disturbance have obtained proper coverage under the NPDES program.

Definitions Applicable to this Section

Site - The location(s) described in this SWPPP and on the associated Site Maps at which the General Contractor has operational control.

Operational Control - Control over construction plans and specifications, including the ability to make modifications to those plans and specifications, or day-to-day operational control of those activities at the Site which are necessary to ensure compliance with the SWPPP.

Off-site – Any area outside the Limits of Disturbance as shown on the Site Maps in the SWPPP. This is not necessarily the same as the property ownership boundary.

Permitted Limits of Disturbance - Any area of the Site for which the operator(s) are authorized to disturb the ground surface or conduct construction-related activities (i.e. areas shown inside the Limits of Disturbance on the Site Maps in the SWPPP).

Material – Rock, soil, or other construction materials obtained as part of an earth disturbing activity.

Responsibilities of the General Contractor

When any material storage, borrow, or disposal will take place during construction outside of Permitted Limits of Disturbance the General Contractor must:

1. Verify that any proposed material storage, borrow, or disposal areas have obtained proper coverage under the NPDES program. This shall include obtaining copies of signed and submitted NPDES Notices of Intent or applications, Storm Water Discharge Authorizations, or other

documentation necessary to verify compliance with the NPDES program (e.g., documentation from local qualified programs, MS4s, Soil Conservation District permits, etc.)

2. Prior to any Storage, Borrow, or Disposal activities properly execute the Material Storage, Borrow, or Disposal Manifest and related Contract for each area. Blank copies of the appropriate forms are provided in Appendix L.
3. The General Contractor shall complete and keep current the Off-Site Material box on the project site map and update the map and site stabilization log to indicate locations where, and dates when, storage, borrow, or disposal occur on the Site.
4. All documentation obtained as described in this section shall be retained in the SWPPP binder at the site and in accordance with the Retention of Records as described in Part I.D of Section 312513.

VI. LOCAL PLANS

In addition to this SWPPP, construction activities associated with this project must comply with any guidelines set forth by local regulatory agencies. The General Contractor shall maintain documents evidencing such compliance in this SWPPP.

VII. INSPECTIONS AND SYSTEM MAINTENANCE

Between the times this SWPPP is implemented and final Notice of Termination has been submitted, all disturbed areas and pollutant controls must be inspected weekly. The purpose of site inspections is to assess performance of pollutant controls. The inspections will be conducted by the General Contractor's project construction manager. Based on these inspections, the General Contractor will decide whether it is necessary to modify this SWPPP, add or relocate controls, or revise or implement additional Best management Practices in order to prevent pollutants from leaving the site via storm water runoff. The General Contractor has the duty to cause pollutant control measures to be repaired, modified, supplemented, or take additional steps as necessary in order to achieve effective pollutant control. **Note: If a BMP is covered by snow, mark the BMP as not applicable and document the reason the BMP can not be inspected on the weekly report.**

Examples of specific items to evaluate during site inspections are listed below. This list is not intended to be comprehensive. During each inspection, the inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

A. Construction Exit and Track Out

Locations where vehicles enter and exit the site must be inspected for evidence of off-site sediment tracking. A stabilized construction exit shall be constructed where vehicles enter and exit. Exits shall be maintained or supplemented with additional rock as necessary to prevent the release of sediment from vehicles leaving the site. Any sediment deposited on the roadway shall be swept as necessary throughout the day or at the end of every day and disposed of in an appropriate manner. Sediment shall NOT be washed into storm sewer systems.

Note to Contractor: Track out is a sediment release (sediment from the construction site was allowed beyond the permitted limits of disturbance). All sediment releases must be reported to the Owner's Engineer. See Item H below for additional information.

B. Erosion Control Devices

Rolled erosion control products (nets, blankets, turf reinforcement mats) and marginally vegetated areas (areas not meeting required vegetative densities for final stabilization) must be inspected weekly. Rilling, rutting and other signs of erosion indicate the erosion control device is not functioning properly and additional erosion control devices are warranted.

C. Sediment Control Devices

Sediment barriers, traps and basins must be inspected and they must be cleaned out at such time as their original capacity has been reduced by 50 percent. All material excavated from behind sediment barriers or in traps and basins shall be incorporated into on-site soils or spread out on an upland portion of the site and stabilized. To minimize the potential for sediment releases from the project site, perimeter control devices shall be inspected with consideration given to changing up-gradient conditions.

D. Material Storage Areas

Inspections shall evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system or discharging from the site. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas. All state and local regulations pertaining to material storage areas will be adhered to.

E. Vegetation

Consideration must be given to anticipated climate and seasonal conditions when specifying and planting seed. Seed shall be free of weedy species and appropriate for site soils and regional climate. Seed and mulch per the construction drawings and the 329000 Planting specification immediately after topsoil is applied and final grade is reached. Grassed areas shall be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with building foundation or pavement, or have a stand of grass with a minimum of 70 percent density or greater of natural background cover over the entire vegetated area in accordance with the General Permit requirements. Vegetated areas must be watered, fertilized, and reseeded as needed to achieve this requirement. The vegetative density must be maintained through project completion to be considered stabilized. Areas protected by erosion control blankets are not permanently stabilized until the applicable General Permit requirement for final vegetative density is achieved.

Rip-rap, mulch, gravel, decomposed granite or other equivalent permanent stabilization measures may be employed in lieu of vegetation based on site-specific conditions and governing authority approval.

F. Discharge Points

All discharge points must be inspected to determine whether erosion and sediment control measures are effective in preventing discharge of sediment from the site or impacts to receiving waters.

G. Off-Site or Special Project Areas

Off-site areas or special projects associated with the construction project that will require routine inspection and maintenance are the responsibility of the General Contractor.

H. Sediment Releases

The bi-weekly inspection report must identify each and every time sediment is allowed beyond permitted limits of disturbance. This includes sediment that escapes or is allowed to leave via designed discharge points. Storm water that leaves the permitted limits of disturbance and is discolored contains soil particles (sediment) and must be treated as a sediment release.

The bi-weekly Inspection Report Form (Appendix G) must identify all deficiencies, any corrections, whether they are identified during the current inspection or have occurred since the previous inspection, and any additional comments. Based on inspection results, any modification necessary to increase effectiveness of this SWPPP to an acceptable level must be made immediately but no longer than within 48 hours of the inspection. The inspection reports must be complete and additional information should be included if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance.

Inspection reports must include an original, authorized signature and date of the inspection. Inspection reports must be retained by the General Contractor as an integral part of this SWPPP for at least three years from the date of submission of the Notice of Termination of permit coverage.

Ultimately, it is the responsibility of the General Contractor to assure the adequacy of site pollutant discharge controls. Actual physical site conditions or contractor practices could make it necessary to install more structural controls than are shown on the plans. For example, localized concentrations of runoff could make it necessary to install additional sediment barriers. Assessing the need for additional controls and implementing them or adjusting existing controls will be a continuing aspect of this SWPPP until the site achieves final stabilization. Any modifications, additions or deletions of sediment control devices that may alter the hydraulic design of the site or are located in areas of potential high flow (basins, traps, check dams, diversions, etc.) must be approved by the Owner's Engineer through the request for information process (RFI).

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APPENDIX A

CONTACT LIST

Contact List

Contacts for: 88 East Lake Flats

Owner's SWPPP Engineer: Brad J. Marshall, P.E. Phone: (402) 474-6311

Responsible for the development of the SWPPP for this site and obtaining the NPDES permit.

General Contractor's
Construction Manager:

Name: _____

Company: _____

Phone (office): _____

Phone (mobile): _____

Responsible for conducting the bi-weekly inspections, the supervision or completion of construction at a site, able to adequately identify and implement storm water sediment and erosion control practices and effectively instruct employees and contractors in the implementation of such practices to comply with a Permit, the Clean Water Act, and the site's SWPPP.

APPENDIX B

GENERAL CONTRACTOR SWPPP CERTIFICATIONS

NOTES to General Contractor:

The General Contractor must certify this SWPPP by signing the GC SWPPP certification letter located in this Appendix.

Signed SWPPP certifications can not be modified or revised in the field.

General Contractor's SWPPP Certification

Date: _____

RE: 88 East Lake Flats

Address:

CERTIFICATION OF THE
STORM WATER POLLUTION PREVENTION PLAN

GENERAL PERMIT FOR STORM WATER DISCHARGES
FROM CONSTRUCTION ACTIVITIES

I certify under penalty of law that all revisions, modifications, deletions, or additions to this document and all attachments created during construction were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Signature

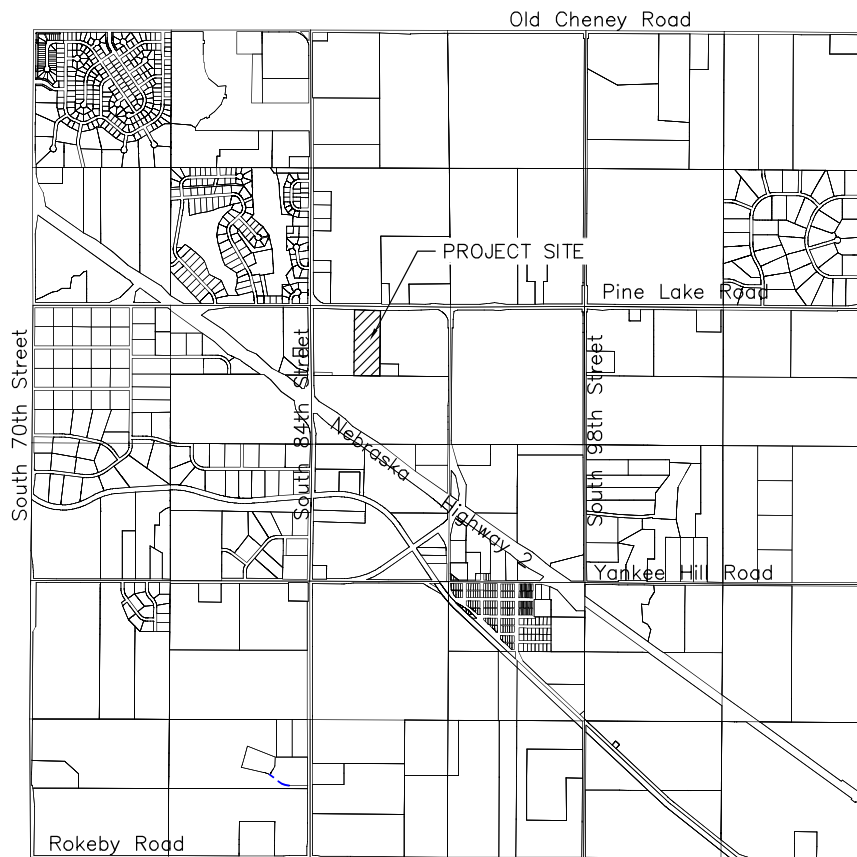
Printed Name

Title

Company

APPENDIX C

VICINITY MAP



VICINITY MAP

NOT TO SCALE

APPENDIX D

CONSTRUCTION STORM WATER NOTICE OF INTENT (CWS-NOI)

NOTES to General Contractor:

Signed NOIs must be posted on the SWPPP Sign near the job-site entrance within view of the public.

Signed NOIs can not be modified or revised in the field.



Construction Storm Water Notice of Intent (CSW-NOI)

Readiness to Apply (Circle "yes" or "no" as it applies to this project)

Does a reasonable potential exist for permit authorization to be limited? [Part I.C.3]

YES **NO**

If the answer to this question is Yes, contact NDEQ at 402-471-4220 before proceeding with this CSW-NOI.

Storm water Pollution Prevention Plan (SWPPP) Part III

a. Has a **Storm Water** Pollution Prevention Plan been developed for this project?

YES NO

b. Has a qualified individual [Part III A] prepared the SWPPP?

YES NO

Has the following been incorporated into the SWPPP?

c. Site and activity descriptions as per Part III.B;

YES NO

d. Sediment and pollution control measures and record keeping as per Part III.C;

YES NO

e. **Erosion prevention** measures and record keeping as per Part III.C;

YES NO

f. Inspections, maintenance of **BMPs** and associated record keeping as per Part III.E, I-J;

YES NO

g. **Final stabilization** addressed as per Part III.M;

YES NO

h. Does the SWPPP include documentation supporting a determination of permit eligibility with regards to endangered and threatened species and critical habitat? (Guidance is available on the NDEQ website: www.deq.state.ne.us)

YES NO

If any questions in **Storm Water Pollution Prevention Plan (SWPPP)**, "a – h" above, have been answered **No**, complete those requirements before proceeding with this **CSW-NOI**.

A. Construction Site Description

a. **Project Name:** East Lake Flats Apartments

b. **Physical Address and County** (Indicate general location description if no address is available):
South 88th Street and Pine Lake Road, Lincoln, Lancaster County, Nebraska

c. **Project Type:** Residential ☐ Commercial/Industrial ☒ Linear ☐ Other ☐

d. **Project Size:** Total Area (acres): 11.78 Area to be disturbed (acres): 12.41

e. **Identify surface waters within ½ mile of project boundary that will receive storm water or discharge from permanent storm water management system.**
None

f. **Name of Receiving Waters** (Add attachments if more than two (2) bodies of water and/or Outfalls): Storm sewer system to Antelope Creek.
Waterbody Type Creek (ditch, pond, stream, river etc.).

g. **Legal Description ⁽¹⁾:** SE Quarter of the SE Quarter,
Section 23, Township 9 N, Range 7 (E or W)

(1) Applicants may enter a legal description in terms other than those requested. For example: N1/2, Section 8, Township 8 N, Range 6 W.

h. Include a general location map with enough detail to identify the location of the construction site and waters of the state within one mile of the site. Has the map been included? **(YES)** NO
 (e.g., USGS 7.5 minute quad map, a portion of a city or county map, or equivalent map)

i. **SWPPP Designer, company, address and phone number:**

<u>Brad J. Marshall</u>	<u>Olsson Associates</u>
First and Last Name	Company Name
<u>1111 Lincoln Mall, Suite 111</u>	<u>Lincoln, Nebraska 68508</u>
Mailing Address	City, State, Zip Code
<u>402-474-6311</u>	<u>bmarshall@oaconsulting.com</u>
Phone Number	Email

j. **SWPPP Location:**

Contractor shall maintain SWPPP plan and documents on-site.

k. **Project start date** (approximate): May 2014

l. **Project end date** (estimated): May 2015

m. List any state or federally-listed threatened or endangered species, or state or federally-designated critical habitat that is in your project area to be covered by this permit.
None.

n. For sites previously authorized under a Construction Storm Water (CSW) permit **and** undergoing a transfer of **owner and / or certifying official**. List the previous NPDES CSW Permit Number:
NER 1 _____.

B. Certification

The appropriate individuals must sign information submitted on this **CSW-NOI** form as required in **NPDES** General Permit NER110000 Part VI.D.6, and below or the application will not be authorized. If more than one certifying official, submit multiple copies of the following information.

All permit applications shall be signed as per Title 119, Chapter 13 *Applications; Signatories* as follows:

002.01 For a corporation. By a **Responsible Corporate Officer**, which means:

- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or
- The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

002.02 For a partnership or sole proprietorship: By a general partner or proprietor, respectively.

002.03 For a municipality, State, Federal, or other public agency.

- By either a principal executive officer of the agency, or
- A senior executive officer having responsibility for the operations of a principal geographic unit of the agency.

Certifying Official:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Certifying Official / Date: _____ / _____

Certifying Official, company name, address, and phone number:

Chad Wiles

First and Last Name

402-438-3230

Phone Number

8545 Executive Woods Dr. Ste #1

Mailing Address

Hausmann Construction

Company Name/Applicant

Vice President

Title

Lincoln, Ne 68512

City, State, Zip Code

Certifying Official #2 (optional)/ Date: _____ / _____

Certifying Official #2, company name, address, and phone number:

First and Last Name

Company Name/Applicant

Phone Number

Title

Mailing Address

City, State, Zip Code

Authorized Representative, company name, address, and phone number:

First and Last Name

Company Name

Phone Number

Title

Mailing Address

City, State, Zip Code

Submit this form to:

Water Quality Division

Storm Water

Suite 400, The Atrium

1200 'N' Street

PO Box 98922

Lincoln NE 68509-8922

APPENDIX E

CONSTRUCTION SITE NOTICE

To be located on the SWPPP Information Sign

NOTES to General Contractor:

The Construction Site Notice must be posted on the SWPPP Information Sign located near the construction exit along with the NOI, GC permit authorization(s) and a reference to where the SWPPP is located on the jobsite.

CONSTRUCTION SITE NOTICE

**FOR THE
NPDES GENERAL PERMIT**

Contractor Firm:	
Contractor Address:	
Contact Name & Number:	NamePhone Number
Project Description:	

APPENDIX F

CONTRACTOR/SUBCONTRACTOR CERTIFICATION

&

**CERTIFICATION OF QUALIFICATIONS FOR
COMPLIANCE OFFICER**

Contractor/Subcontractor Certification

The General Contractor and all contractors and/or subcontractors and their employees that will implement and maintain the pollution control measures in the SWPPP and/or are involved in ground-disturbing activities on the site must be identified below. Each must sign a statement certifying that they understand the General Permit authorizing storm water discharges during construction. These certifications must be maintained in the SWPPP file.

Contractor Name

Trade

Company Name

Business Phone Number

Business Address

City, State Zip

CERTIFICATION:

"I certify that I understand the term and conditions of the National Pollutant Discharge Elimination System (NPDES) General Permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification. The SWPPP and General Permit have been made available to me to review and I agree to stay in compliance with the permit."

Signature

Date

Printed Name

_____ Initial here if you received a copy
of storm water compliance Guidance
material appropriate for the
conditions at the site.

Title (Must be an Officer of company if form is a permit requirement. See Note below.)

* All employees of contractors and subcontractors have the responsibility of notifying the General Contractor's Project Manager of any Storm Water BMP deficiencies or damage.

The above listed contractor is responsible for the following BMPs: (check all that apply)

✓	Best Management Practice	✓	Best Management Practice	✓	Best Management Practice
	Construction Exit		Diversions		Solid Waste
	Silt Fence		Sediment Traps		Sanitary Waste
	Check Dams		Sediment Basins		Hazardous Waste Management
	Inlet Protection		Dust Control		Record Keeping
	Erosion Control		Concrete Wash-out		SWPPP modifications
	Vegetation		Fuel Storage/Containment		

Certification of Qualifications

88 East Lake Flats

Certification of Compliance Officer Storm Water Qualifications

I certify under penalty of law that the Project
Construction Manager:

Print Name
Certificate #

Project Construction Manager E-mail Address

- 1) is a Storm Water Professional*;
- 2) has at least 5 years of construction-related experience; and
- 3) is able to adequately identify and implement storm water sediment and erosion control practices and effectively instruct employees and contractors in the implementation of such practices.

Contractor Company Name

Date

Signature of Officer of the Company

Title

*A Storm Water Professional is an individual who is currently certified through the storm water training program required pursuant to a training program approved by US EPA.

APPENDIX G

STORMWATER CONSTRUCTION SITE INSPECTION REPORT

Stormwater Construction Site Inspection Report

General Information			
Project Name:	88 East Lake Flats		
NPDES Tracking No.		Location	
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Describe present phase of construction			
Type of Inspection: ☐ Regular ☐ Pre-storm event ☐ During storm event ☐ Post-storm event			
Weather Information			
Has there been a storm event since the last inspection? ☐ Yes ☐ No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			
Weather at time of this inspection? ☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds ☐ Other: Temperature:			
Have any discharges occurred since the last inspection? ☐ Yes ☐ No If yes, describe:			
Are there any discharges at the time of inspection? ☐ Yes ☐ No If yes, describe:			

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		☐ Yes ☐ No	☐ Yes ☐ No	
2		☐ Yes ☐ No	☐ Yes ☐ No	
3		☐ Yes ☐ No	☐ Yes ☐ No	
4		☐ Yes ☐ No	☐ Yes ☐ No	
5		☐ Yes ☐ No	☐ Yes ☐ No	
6		☐ Yes ☐ No	☐ Yes ☐ No	
7		☐ Yes ☐ No	☐ Yes ☐ No	
8		☐ Yes ☐ No	☐ Yes ☐ No	
9		☐ Yes ☐ No	☐ Yes ☐ No	
10		☐ Yes ☐ No	☐ Yes ☐ No	
11		☐ Yes ☐ No	☐ Yes ☐ No	
12		☐ Yes ☐ No	☐ Yes ☐ No	
13		☐ Yes ☐ No	☐ Yes ☐ No	
14		☐ Yes ☐ No	☐ Yes ☐ No	
15		☐ Yes ☐ No	☐ Yes ☐ No	
16		☐ Yes ☐ No	☐ Yes ☐ No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	☐ Yes ☐ No	☐ Yes ☐ No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	☐ Yes ☐ No	☐ Yes ☐ No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
4	Are discharge points and receiving waters free of any sediment deposits?	☐ Yes ☐ No	☐ Yes ☐ No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
5	Are storm drain inlets properly protected?	☐ Yes ☐ No	☐ Yes ☐ No	
6	Is the construction exit preventing sediment from being tracked into the street?	☐ Yes ☐ No	☐ Yes ☐ No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	☐ Yes ☐ No	☐ Yes ☐ No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	☐ Yes ☐ No	☐ Yes ☐ No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No	☐ Yes ☐ No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ No	☐ Yes ☐ No	
12	(Other)	☐ Yes ☐ No	☐ Yes ☐ No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature: _____

Date: _____

APPENDIX H

SPILL REPORT FORM

NOTES to General Contractor:

- 1) Contact the appropriate regulatory agency if the spill exceeds the applicable reportable quantity.
- 2) Complete this form in full for each spill that exceeds 1-gallon or exceeds the reportable quantity for the Governing Agency.
- 3) Transfer spill information to the Bi-weekly report and resolve as appropriate.

Spill Report Form

Spill Reported by: _____

Date/Time Spill: _____

Describe spill location and events leading to spill: _____

Material spilled: _____

Source of spill: _____

Amount spilled: _____ Amount spilled to waterway: _____

Containment or clean up action: _____

Approximate depth of soil excavation: _____

List Injuries or Personal Contamination: _____

Action to be taken to prevent future spills: _____

Modifications to the SWPPP necessary due to this spill: _____

Agencies notified of the spill: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Project Construction Manager

Date

**IMMEDIATELY COMPLETE IF THE SPILL EXCEEDS 1-GALLON or EXCEEDS THE REPORTABLE
QUANTITY FOR THE GOVERNING AGENCY.
SEE SECTION V, PART B.9. OF THE SWPPP TO DETERMINE THE REPORTABLE QUANTITY FOR
GOVERNING AGENCY.**

APPENDIX I

NOTICE OF TERMINATION (NOT)



Construction Storm Water Notice of Termination (CSW-NOT)

1. Termination Prerequisites

- | | | |
|---|------------|-----------|
| a. Have the final stabilization requirements been met on the entire site? [See Part III.M]; | YES | NO |
| b. Has the entire Construction Activity been transferred to another Owner/Operator who has received authorization under the conditions of a NPDES permit for Storm Water runoff? [See Part V] OR | YES | NO |
| c. Has Coverage under an alternative NPDES permit been obtained by the same Owner ? | YES | NO |

What is the alternative **NPDES** Permit Number? NER _____

*If any of the termination prerequisite questions are answered **Yes**, complete the remaining **NOT** form.*

Construction Storm Water – Notice of Termination (CSW - NOT)

2. Project Information

NPDES General Permit Number: **NER110000** Permit **Authorization Number**: NER _____

Project Name (from original CSW-NOI): _____

3. Signature

*The appropriate individuals must sign information submitted on this CSW-**NOT** form as required in **NPDES** General Permit NER110000 Part VI.D.6 or the authorization will not be terminated.*

Certifying Official Signature

Date

Print Certifying Official Signature

Submit this form to:

Water Quality Division
Storm Water
 Suite 400, The Atrium
 1200 'N' Street
 PO Box 98922
 Lincoln NE 68509-8922
 Telephone. 402/471-4220
 Fax: 402/471-2909

Construction Storm Water Notice of Termination (CWS-NOT)

Four copies of the Notice of Termination (NOT) must be completed for the SWPPP specifications when construction activities that disturb site soil have been completed and the site has achieved final stabilization. One copy shall be forwarded to each of the following:

Olsson Associates
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68508
402.474.6311
402.474.5160

Nebraska Department of Environmental Quality
Water Quality Division
1200 'N' Street, Suite 400
P.O. Box 98922
Lincoln, NE 68509-8922
Phone: 402-471-8330
Fax: 402-471-2909

City of Lincoln
Watershed Management
Sediment & Erosion Control
555 South 10th Street, Suite 203
Lincoln, NE 68508
Phone: 402-441-7589

APPENDIX J

RECORD OF STABILIZATION AND CONSTRUCTION ACTIVITY DATES

NOTE to General Contractor:

The General Contractor shall complete at least 1-page of stabilization and grading activities for each month of active construction.

Site Stabilization and Construction Activity Dates

A record of dates when BMPs are installed or removed, stabilization measures are initiated, major grading activities occur, and construction activities temporarily or permanently cease on a portion of the site shall be maintained until final site stabilization is achieved and the Notice of Termination (NOT) is filed. This form must be updated continuously throughout the project until the NOT is filed.

MAJOR STABILIZATION AND GRADING ACTIVITIES

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

Description of Activity: _____
Site Contractor: _____ Begin (date): _____
End(date): _____
Location: _____

APPENDIX K

FEDERAL, STATE, OR LOCAL STORM WATER OR OTHER ENVIRONMENTAL INSPECTOR SITE VISIT LOG

**Federal, State, or Local Storm Water or other
Environmental Inspector Site Visit Log**

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared: Yes No

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared: Yes No

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present: _____

Comments: _____

Time and Date: _____ Report Prepared: Yes No

The Engineer must be contacted at the conclusion of any agency inspection of the site. Caller must provide as a minimum the date, inspection beginning and completion times, inspecting agency, agency inspector name, all contractor representative names, and a brief summary of any comments, observations or deficiencies noted during the inspection.

APPENDIX L

MATERIAL CERTIFICATION STATEMENT

The General Contractor shall coordinate completion of the following forms, as applicable, found in this Appendix:

- 1) Material Storage, Borrow or Disposal Manifest

The General Contractor shall also complete and keep current the Off-site Material information box on the project Site Maps.

**Material Storage, Borrow, or Disposal Manifest To or From Sites
Outside of Permitted Limits of Disturbance**

Project: 88 East Lake Flats

Location:

General Contractor:

Storm Water Contact (Name & Phone #):

	Material Storage, Borrow, or Disposal Area Information
Name of facility material is being transferred to or from	
Address	
Facility Contact Name and Title Mailing Address Phone	
General Description of Storage, borrow, or disposal (e.g., Top Soil / Clay/ Sand / Rock)	

1) Who will be responsible for transporting the material? Provide contact information.

2) Dates of storage, borrow, or disposal

Start Date _____

End Date _____

3) Material provided to site – Total Quantity Estimate (CY)

or Material accepted from site – Total quantity estimate (CY)

4) The storage, borrow, or disposal site is:

Active Construction Site?

☐

Industrial Facility (e.g., Mining)?

☐

Under active agricultural production?

☐

Other (Describe) _____

5) Area of the storage, borrow, or disposal site? (Ac)

Total _____

Disturbed _____

APPENDIX M

THREATENED AND ENDANGERED SPECIES GUIDANCE CHECKLIST



THREATENED & ENDANGERED SPECIES Guidance Checklist for NPDES Construction Storm Water General Permit #NER110000

***** Disclaimer:** This checklist was developed for guidance purposes only in an effort to assist Construction Storm Water permit applicants to identify potential locations of threatened and endangered species. Completion of this checklist is not a requirement for permit authorization and is not intended to be used as a substitute for a professional environmental review. The use of this form does not relieve the permittee from further review or enforcement action by the Department of Environmental Quality (NDEQ) or Nebraska Game and Parks Commission (NG&PC).

Section I

1. For projects not located in Lancaster County: Is the project located outside of designated city limits? ☒ No ☐ Yes
2. For projects located in Lancaster County: Does the project discharge storm water to Salt Creek, Little Salt Creek or Rock Creek? ☒ No ☐ Yes
*If project is not in Lancaster County check **No**.*
3. For all projects: Is this project located in mature oak woodlands within 5 miles of the Missouri River in the area stretching from the Kansas border to Ponca? ☒ No ☐ Yes
4. For all projects: Is this project within 0.25 miles of a *stream of concern* or does it discharge to an stream of concern? (See *Attached Stream Map*) ☒ No ☐ Yes
5. For projects located within the distribution of the American Burying Beetle (See *Attached Map*): Is the project located on potential habitat*? ☒ No ☐ Yes
*If it is not within the American Burying Beetle distribution, check **No**.*

** Potential habitat constitutes land which has not been previously disturbed, typically by crop agriculture, and land not located within city limits.*

- ♦ *If you answered **No** to all questions in Section I, a NDEQ and NG&PC review may not be needed (see disclaimer above). Include this form with your SWPPP documentation.*
- ♦ *If you answered **YES** to only question 1, complete Section II.*
- ♦ *If you answered **YES** to any of questions 2 thru 5 in Section I, consultation with NDEQ & NG&PC is necessary (Section III).*

Section II

1. Will project construction take place between April 1 and May 10 or October 1 and November 15 in the following locations? ☒ No ☐ Yes
- In non-urban areas within 3 miles of the Platte, Loup, Middle Loup, North Loup or Niobrara Rivers; or
 - In non-urban areas within 1 mile of a wetland within the Primary Whooping Crane Use area.
2. Will project construction take place between April 1 and June 15 in the following locations? ☒ No ☐ Yes
- A wheat field or heavily grazed prairie in
 - Kimball County; or
 - Banner County (south of Harrisburg); or
 - Cheyenne County (west of Sidney).
3. Will project construction take place between April 15 and September 15 within 0.25 miles of rivers at the following locations? ☒ No ☐ Yes
- The Lower Platte River from Columbus to Plattsmouth; or
 - The Missouri River from where it joins the Nebraska/South Dakota state border to Ponca; or
 - The Loup River between St. Paul and Columbus; or
 - The Niobrara River between Springview and where the Missouri and Niobrara Rivers converge.
4. Will project construction take place between April 15 and September 15 in the following locations? ☒ No ☐ Yes
- An active or recently active sand and gravel operation with bare sand substrate located within 5 miles of the Platte, Loup, South Loup, Middle Loup, North Loup, Niobrara, Elkhorn, or Missouri Rivers.
5. Is the project construction on a non-crop, non-urban site in Pawnee County (west of Pawnee City), Johnson County or Gage County (south of Beatrice)? ☒ No ☐ Yes
6. Is the project construction within 1 mile of the North Platte, Platte, Little Nemaha, Cedar, Loup, South Loup, North Loup, Calamus, Niobrara, Elkhorn Rivers, or Lodgepole Creek from Kimball to the Wyoming State line? ☒ No ☐ Yes
7. Is the project construction on a non-crop, non-urban site in the Swift Fox distribution area? (See *Attached Distribution Map*) ☒ No ☐ Yes
8. Will the project construction impact open active sandy blowouts in Cherry County, the south east quarter of Sheridan County, or the north half of Thomas, Hooker or Grant Counties? ☒ No ☐ Yes
9. Is the project construction within 0.5 miles of the Niobrara River from Highway 29 to the Wyoming state line? ☒ No ☐ Yes
10. Will the project construction impact wet meadows in the Orchid distribution area? (See *Attached Distribution Map*) ☒ No ☐ Yes

♦ If you answered **No** to all questions in Section II, a NDEQ and NG&PC review may not be needed (see disclaimer above). Include this form with your SWPPP documentation.

- ♦ If you answered **YES** to any of questions in Section II, consultation with NDEQ & NG&PC is necessary (Section III).

Section III

- ♦ If you answered Yes to any of the questions in Section I or II, Please complete the information in this section and submit the information to NDEQ.
- ♦ Questions regarding use of this form may be directed to NDEQ staff at (402) 471-8330.
- ♦ Questions regarding specific items in Section I or II may be directed to NG&PC staff at (402)471-5444.

Applicant Information

Project Name: _____ County: _____
 Physical Address: _____ Date: _____
 Legal Description: _____ (Q), Section _____, Township _____ N, Range _____ (E or W)
 Latitude: _____ Longitude: _____ Method: _____
 Project Contact: _____ Telephone: _____
 Email: _____

Type of Construction: ☐ Residential ☐ Commercial ☐ Industrial ☐ Linear
 ☐ Livestock ☐ Other _____

Size of Construction Area: _____ acres Size of Borrow Area: _____ acres
 Current Land Use: _____

Description of Project: *Description should include the general project description. A second page should be used if necessary.*

Map of Project Area: *Topographic and/or aerial maps with the specific project area delineated are encouraged as this will expedite processing time.*

NDEQ:

Water Quality Division

Storm Water

Suite 400, The Atrium
 1200 'N' Street
 P.O. Box 98922
 Lincoln, NE 68509-8922
 (402) 471-8330

NG&PC:

Nebraska Game & Parks Commission

Environmental Analyst Supervisor, Heritage Division

2200 North 33rd Street
 P.O. Box 30370
 Lincoln, NE 68508-2707
 (402) 471-5444

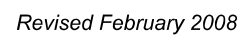
Stream and River Reaches of Concern for Nebraska Fish Species



Map produced by the Nebraska Game and Parks Commission
February 19, 2008

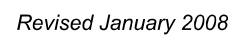
Streams and rivers within shaded areas are of concern for at-risk fish species.

6



Nebraska Game and Parks Commission 2008

7



[illegible]

APPENDIX N

GENERAL PERMIT

**Authorization to Discharge Under the
National Pollutant Discharge Elimination System (NPDES)
General NPDES Permit Number NER110000
for Storm Water Discharges from
Construction Sites to Waters of the State of Nebraska**

This **NPDES** general permit is issued in compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. Secs. 1251 *et. seq.* as amended to date), the Nebraska Environmental Protection Act (Neb. Rev. Stat. Secs. 81-1501 *et. seq.* as amended to date), and the Rules and Regulations promulgated pursuant to these Acts. Application may be made under this general permit for authorization to discharge **Storm Water** from construction sites. **Owners** or **Operators** issued a discharge authorization under this general permit are required to comply with the limits, requirements, prohibitions, and conditions set forth herein. The issuance of a discharge authorization under this general permit does not relieve **Permittees** of other duties and responsibilities under the Nebraska Environmental Protection Act, as amended, or established by regulations promulgated pursuant thereto.

NPDES Permit Number: NER110000

This permit shall become effective on **January 1, 2008**.

This permit and the authorization to discharge shall expire at midnight, **December 31, 2012**

Pursuant to a Delegation Memorandum dated January 12, 1999 and signed by the **Director**, the undersigned hereby executes this document on behalf of the **Director**.

Signed this _____ day of _____, _____

Patrick W. Rice
Assistant Director

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ATTACHMENTS

Attachment # 1 Construction **Storm Water** Notice of Intent Form (CSW-NOI)

Attachment # 2 Construction **Storm Water** Transfer Form (CSW-TRANSFER)

Attachment # 3 Construction **Storm Water** Notice of Termination Form (CSW-NOT)

*Terms written in **BOLDFACE** in this permit are defined in the Definitions section of Part VII.*

PART I. COVERAGE UNDER THIS PERMIT

A. Introduction

This permit is required and shall apply to **storm water** discharges associated with **construction activity** that causes land disturbance of equal to or greater than one acre and less than one acre if part of a larger **common plan of development or sale**. All references in this permit to **construction activity** shall be read to include both **large construction activity** and **small construction activity**. This permit authorizes the discharge of storm water from **construction activity** entering **waters of the state**, a **municipal separate storm sewer system (MS4)** or a **combined sewer** within the State of Nebraska. Discharges are subject to the specific terms and conditions in this permit.

This permit also authorizes **storm water** discharges from any other **construction activity**, as designated by the **Director**, where the designation is made based on the potential for an excursion of a water quality standard or for significant contribution of pollutants to **waters of the state**. The goal of this permit is to reduce or eliminate **storm water** pollution from **construction activity** by requiring implementation of appropriate pollution control practices to protect water quality.

B. Permit Area

This permit provides **coverage** for **construction** and **support activity** throughout the State of Nebraska excluding tribal land within the State of Nebraska and as per limitations in Part I.C.3 of this permit.

C. Eligibility

Permit eligibility is limited to discharges from **construction activity** as defined in Part VII or as otherwise designated by the Director. This general permit contains eligibility restrictions, as well as permit conditions and requirements. In such cases, you must continue to satisfy those eligibility provisions to maintain permit authorization. If you do not meet the requirements that are a pre-condition to eligibility, then resulting discharges constitute unpermitted discharges. By contrast, if you do not comply with the requirements of the general permit, you may be in violation of the general permit for your otherwise eligible discharges.

1. Allowable Storm Water Discharges

Subject to compliance with the terms and conditions of this permit, you are authorized to discharge pollutants in:

- a. **Storm water** associated with **large and small construction activity** as defined in Part VII;
- b. **Storm water** discharges designated by the Director requiring a **storm water** permit under NDEQ Title 119, *Rules and Regulations Pertaining to the Issuance of Permits Under the **National Pollutant Discharge Elimination System (NPDES)** Chapter 2 002*;
- c. Discharges composed of allowable discharges listed in Part I.C.1.a and Part I.C.1.b commingled with a discharge authorized by a different **NPDES** permit and/or a discharge that does not require **NPDES** permit authorization; and
- d. **Storm water** discharges from **support activities** (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

- 1) The **support activity** is directly related to the construction site required to have **NPDES** permit **coverage** for discharges of **storm water** associated with **construction activity**;
- 2) The **support activity** is not a commercial operation serving multiple unrelated construction projects by different **operators**, and does not operate beyond the completion of the **construction activity** at the last construction project it supports; and
- 3) Appropriate controls and measures are identified in a **Storm Water Pollution Prevention Plan (SWPPP)** covering the discharges from the **support activity** areas;

2. Allowable Non-Storm Water Discharges

You are authorized for the following non-**storm water** discharges, provided the non-storm water component of the discharge is in compliance with Part III.D:

- a. Discharges from fire-fighting activities;
- b. Fire hydrant flushings;
- c. Waters used to wash vehicles where detergents are not used;
- d. Water used to control dust;
- e. Potable water including uncontaminated water line flushings;
- f. Routine external building wash down that does not use detergents;
- g. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
- h. Uncontaminated air conditioning or compressor condensate;
- i. Uncontaminated ground water or spring water;
- j. Foundation or footing drains where flows are not contaminated with process materials such as solvents; and
- k. Landscape irrigation.

3. Limitations on Coverage

This permit does not authorize the following **storm water** runoff conditions and may be the basis for denial or termination of authorization under this general permit. The **Department** shall be consulted prior to your submission of the **CSW-NOI** if any of the following conditions apply:

- a. This permit does not authorize post-construction discharges that originate from the site after construction activities have been completed and the site has achieved **final stabilization**, including any temporary **support activity**. Post-construction **storm water** discharges from industrial sites may need to be covered by a separate **NPDES** permit.
- b. This permit does not authorize discharges mixed with non-**storm water**. This exclusion does not apply to discharges identified in Part I.C.2 provided the discharges are in compliance with Part III.D.
- c. This permit does not authorize **storm water** discharges associated with **construction activity** that have been covered under an individual NPDES permit or required to obtain **coverage** under an alternative general permit in accordance with Part IV.A.
- d. This permit does not authorize discharges that the Director, prior to authorization under this permit, determines will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality or groundwater quality standards. Where such a determination is made prior to authorization, NDEQ may notify you that an individual permit application is necessary in accordance with Part IV.A. However, NDEQ may authorize your **coverage** under this permit after you have included appropriate controls and implementation procedures in your **SWPPP** designed to bring your discharge into compliance with water quality standards.
- e. Storm water runoff from construction activity within the limits of any tribal lands under the jurisdiction of the United States Government, dependent tribal communities within the borders of the United States, or other tribal allotments;
- f. Non-point source agricultural and silvicultural discharges;

- g. Those storm water discharges for which storm water effluent guideline limitations apply;
- h. Those from an operating landfill;
- i. Storm water runoff from field activities or operations, including construction, associated with oil and gas exploration, production, processing or treatment operations or transmission facilities as dictated by NDEQ Title 119, Chapter 10.
- j. Storm water runoff that may adversely impact critical habitat of aquatic related, threatened or endangered species as designated by Nebraska Game and Parks Commission (www.ngpc.state.ne.us) or the U.S. Fish and Wildlife Service (www.fws.gov).
- k. Storm water runoff that may adversely affect properties listed or eligible for listing in the National Register of Historic Places (www.nebraskahistory.org) or affecting known or discovered archeological sites; or
- l. Those that the Director determines would be more effectively regulated with a site specific, area specific, or a basin specific permit.

4. Period of Coverage

- a. This permit is effective as of the issued date and is effective for five years.
- b. Coverage shall commence at the time discharge authorization is granted and shall continue for a period lasting at least 180 days after final stabilization and **Notice of Termination** is received for the site.
- c. The Director can extend coverage under the permit beyond the time period specified in this section if excessive erosion problems remain at the site.

PART II. AUTHORIZATION FOR DISCHARGES OF STORM WATER FROM CONSTRUCTION ACTIVITY

To obtain **coverage** under this general permit, you must prepare and submit a complete and accurate construction **storm water Notice of Intent (CSW-NOI)**, as described in this Part. Discharges are not authorized if your **CSW-NOI** is incomplete or inaccurate or if you were never eligible for permit **coverage**.

A. Authorization to discharge date

- 1. If you submit a **CSW-NOI** after the issuance date of this permit you are authorized to discharge **storm water** from construction activities under the terms and conditions of this permit seven (7) calendar days after submittal to NDEQ of a complete and accurate **CSW-NOI** (i.e., 7 days from date of postmark), except as noted in Part II.A.2. The Department will notify you of the permit authorization in writing.
- 2. The **Director** may delay your authorization based on eligibility considerations of Part I.C. In these instances, you are not authorized for **coverage** under this permit until you receive notice from NDEQ of your eligibility.

B. CSW Notice of Intent Contents

You must use the **CSW-NOI** form provided in *Attachment 1* (or a photocopy thereof or electronic **CSW-NOI** form that may become available during the term of this permit provided by NDEQ), You must provide the following information on the **CSW-NOI** form:

- 1. Project/Site name, address, county or similar governmental subdivision, and latitude/longitude of your construction project or site;
- 2. The **certifying official's** legal name, address and phone number;
- 3. The **SWPPP** designer name, company, address and phone number;
- 4. The location where the applicable **SWPPP** may be viewed;
- 5. A site map as described in Part III.B.1.d of this permit;
- 6. Name of the **water(s) of the state** into which your site discharges;

7. Estimated dates of commencement of **construction activity** and **final stabilization** (i.e., project start and completion dates);
8. Total acreage (to the nearest quarter acre) to be disturbed for which you are requesting permit **coverage**;
9. Any state or federally-listed threatened or endangered species, or state or federally-designated critical habitat are in your project area to be covered by this permit.
10. A certification statement, signed and dated by an **certifying official** as defined in Part VI.D.

C. Submission Deadlines

1. New Projects: To obtain **coverage** under this permit, you must submit a complete and accurate **CSW-NOI** and be authorized consistent with Part II.A.1 prior to commencement of construction activities.
2. Permitted Ongoing Projects (only applicable for first 90 days after this permit is issued): If you previously received authorization to discharge for your project under the 1997 Construction Storm Water General Permit (CSW-1997) and you wish to continue **coverage** under this permit:
 - a. Submit an **CSW-NOI** within 90 days of the issuance date of this permit, and
 - b. Until you are authorized under this permit consistent with Part II.A, comply with the terms and conditions of the CSW-1997 general permit under which you were previously authorized.
 - c. If you meet the termination of **coverage** requirements in accordance with Part V.A within 90 days of the issuance date of this permit (e.g., construction will be finished and **final stabilization** achieved) you must:
 - 1) Submit an CSW-NOT using the form provided in Attachment #3, and
 - 2) Until coverage is no longer required, comply with the terms and conditions of the CSW-1997 general permit under which you were previously authorized.

3. Late Notifications:

You are not prohibited from submitting a **CSW-NOI** after initiating clearing, grading, excavation activities, or other construction activities. When a late **CSW-NOI** is submitted, authorization for discharges occurs consistent with Part II.A. The **Department** reserves the right to take enforcement action for any unpermitted discharges that occur between the commencement of construction and discharge authorization.

D. Where to Submit

Original applications and forms (no photocopies or faxes) for **NPDES** General Permit NER110000 shall be submitted to the following address:

Water Quality Division
Storm Water
Suite 400, The Atrium
1200 'N' Street
PO Box 98922
Lincoln Nebraska 68509-8922

E. Additional Requirements

1. The Department may request additional information from the source:
 - a. To facilitate the review of the **CSW-NOI**;
 - b. To finalize a determination related to the granting of a discharge authorization; or
 - c. To determine whether a site specific, area specific, or basin specific permit application may be required.
2. When **storm water** is discharged through **municipal separate storm sewer systems**, applicants shall concurrently submit a copy of **NPDES** form **CSW-NOI** to the **operator** of the **municipal separate storm sewer system** through which they discharge. Appendix B has a listing of those municipalities that are permitted under the **Municipal Separate Storm Sewer program**.

3. Other government agencies (e.g. US Army Corps of Engineers, Local City/County Government, or the local Natural Resource District) may have additional notification requirements. Submittal of the **NPDES** form **CSW-NOI** does not relieve the applicant of responsibility to comply with the requirements of other government agencies.

PART III. STORM WATER POLLUTION PREVENTION PLANS (SWPPP)

A. Storm Water Pollution Prevention Plan Framework

1. A **SWPPP** must be prepared prior to submission of a **CSW-NOI** as required in Part II.B. The **SWPPP** must be prepared by a qualified individual such as a Professional Engineer, Certified Landscape Architect, and /or Certified Professional in **Erosion and Sediment Control**.
2. The **SWPPP** must:
 - a. Identify all potential sources of pollution which may reasonably be expected to affect the quality of **storm water** discharges from the construction site;
 - b. Minimize erosion on disturbed areas and minimize the discharge of sediment and other pollutants in storm water runoff;
 - c. Describe practices to be used to reduce pollutants in **storm water** discharges from the construction site; and
 - d. Assure compliance with the terms and conditions of this permit.
3. Once a definable area has achieved **final stabilization**, you may mark this on your **SWPPP** and no further **SWPPP** or inspection requirements apply to that portion of the site (e.g., earth-disturbing activities around one of three buildings in a complex are done and the area is finally **stabilized**, one mile of a roadway or pipeline project is done and finally **stabilized**, etc).
4. You must implement the **SWPPP** as written from commencement of **construction activity** until **final stabilization** is complete.

B. Pollution Prevention Plan Contents: Site and Activity Description

1. The **SWPPP** must describe the nature of the **Construction Activity**, including:
 - a. The function of the project (e.g., low density residential, shopping mall, highway, etc.);
 - b. The intended sequence and timing of activities that disturb soils at the site;
 - c. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas; and
 - d. A general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and **waters of the state** within one mile of the site.
2. The **SWPPP** must contain legible site map(s) showing the entire site during grading, construction, and post-construction phases, identifying:
 - a. Direction(s) of **storm water** flow and approximate slopes anticipated after major grading activities;
 - b. Areas of soil disturbance and areas that will not be disturbed;
 - c. Locations of major structural and nonstructural **Best Management Practices (BMPs)** identified in the **SWPPP**;
 - d. Locations where stabilization practices are expected to occur;
 - e. Locations of off-site material, waste, borrow or equipment storage areas;
 - f. Locations of all **Waters of the State** (including wetlands);
 - g. Locations where **storm water** discharges to a surface water; and
 - h. Areas where **final stabilization** has been accomplished and no further construction-phase permit requirements apply.

3. The **SWPPP** must describe and identify the location and description of any **storm water** discharge associated with industrial activity other than construction at the site. This includes **storm water** discharges from dedicated asphalt plants and dedicated concrete plants, which are covered by this permit.

C. Pollution Prevention Plan Contents: Controls to Reduce Pollutants

1. The **SWPPP** must include a description of all pollution control measures (i.e., **BMPs**) that will be implemented as part of the **Construction Activity** to control pollutants in **storm water** discharges. For each major activity identified in the project description the **SWPPP** must clearly describe appropriate control measures and the general sequence during the construction process in which the measures will be implemented.
2. The **SWPPP** must include a description of interim and permanent stabilization practices for the site including a schedule of when the practices will be implemented.
3. The following records must be maintained as part of the **SWPPP**:
 - a. Dates when major grading activities occur;
 - b. Dates when construction activities temporarily or permanently cease on a portion of the site; and
 - c. Dates when stabilization measures are initiated.
4. The **SWPPP** must include a description of structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site.
5. The **SWPPP** must include a description of all post-construction **storm water** management measures that will be installed during the construction process to control pollutants in **storm water** discharges after construction operations have been completed. Such measures must be designed and installed in compliance with applicable federal, state, and local requirements. Maintenance plans of permanent management measures must be included in the **SWPPP**.
6. The **SWPPP** must describe measures to prevent the discharge of solid materials, including building materials and cement truck washout to **waters of the state**, except as authorized by a permit issued under section 404 of the CWA.
7. The **SWPPP** must describe measures to minimize, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust.
8. The **SWPPP** must include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The **SWPPP** must also include a description of controls, including storage practices, to minimize exposure of the materials to **storm water**, and **spill prevention control and countermeasure** practices.
9. The **SWPPP** must include a description of pollutant sources from areas other than construction (including **storm water** discharges from dedicated asphalt plants and dedicated concrete plants), and a description of controls and measures that will be implemented at those sites to minimize pollutant discharges.

D. Non-Storm Water Discharge Management

The **SWPPP** must identify all allowable sources of non-**storm water** discharges listed in Part I.C.2 of this permit, except for flows from fire fighting activities that are combined with **storm water** discharges associated with **Construction Activity** at the site. Non-**storm water** discharges should be eliminated or reduced to the extent feasible. The **SWPPP** must identify and ensure the implementation of appropriate pollution prevention measures for the non-**storm water** component(s) of the discharge.

E. Maintenance of Controls

1. All erosion and **sediment control** measures and other protective measures identified in the **SWPPP** must be maintained in effective operating condition. If site inspections required by Part III.I identify **BMPs** that are not operating effectively, maintenance must be performed within seven days and before the next storm event whenever practicable to maintain the continued effectiveness of **storm water** controls.

2. If existing **BMPs** need to be modified or if additional **BMPs** are necessary for any reason, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the **SWPPP** and alternative **BMPs** must be implemented as soon as possible.
3. Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.

F. Permit Eligibility Related to Endangered Species

The **SWPPP** must include documentation supporting a determination of permit eligibility with regard to Endangered Species, including:

1. Information on whether state or federally-listed endangered or threatened species, or designated critical habitat may be in the project area;
2. Whether such species or critical habitat may be adversely affected by **storm water** discharges or **storm water** discharge-related activities from the project;
3. Any correspondence for any stage of project planning between the U.S. Fish and Wildlife Service (FWS), Nebraska Game and Parks Commission (NGPC), EPA, NDEQ or others and you regarding listed species and critical habitat, including any notification that delays your authorization to discharge under this permit;
4. A description of measures necessary to protect state- and federally-listed endangered or threatened species, or state and federally-designated critical habitat. The **permittee** must describe and implement such measures to maintain eligibility for **coverage** under this permit.

G. Copy of Permit Requirements

Copies of this permit and of the signed and certified **CSW-NOI** form that was submitted to NDEQ must be included in the **SWPPP**. Also, upon receipt, a copy of the letter from the NDEQ notifying you of their receipt of your administratively complete **CSW-NOI** must also be included as a component of the **SWPPP**.

H. Applicable State, or Local Requirements

The **SWPPP** must be consistent with all applicable federal, state, or local requirements for soil and erosion control and **storm water** management, including updates to the **SWPPP** as necessary to reflect any revisions to applicable federal, state, or local requirements for soil and erosion control.

I. Inspections

1. Inspections must be conducted at least once every fourteen (14) calendar days, and within 24 hours of the end of a storm event of 0.5 inches or greater. Any delay in the replacement or maintenance of non-functional **BMPs** beyond seven (7) calendar days shall be documented in the **SWPPP** with sufficient detail as to explain the reason for the delay.
2. Inspection frequency may be reduced to at least once every month if:
 - a. The entire site is temporarily **stabilized**;
 - b. Runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen);
 - c. Reduced inspection frequency does not relieve the permittee of the maintenance responsibilities during interim periods.
3. Inspections must be conducted by qualified personnel (provided by the **operator** or cooperatively by multiple **operators**). “Qualified personnel” means a person knowledgeable in the principles and practice of erosion and **sediment controls** who possesses the skills to assess conditions at the construction site that could impact **storm water** quality and to assess the effectiveness of any erosion and **sediment control** measures selected to control the quality of **storm water** discharges from the **construction activity**.

4. Inspections must include all areas of the site disturbed by **construction activity** and areas used for storage of materials that are exposed to precipitation. Inspectors must look for evidence of, or the potential for, pollutants entering the **storm water** conveyance system. Erosion and **sediment control** measures identified in the **SWPPP** must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether control measures are effective in preventing significant impacts to **waters of the state**, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of off-site sediment tracking.
5. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described above. Inspection of these areas could require that vehicles compromise temporarily or even permanently **stabilized** areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 mile above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described above. The conditions of the controls along each inspected 0.25 mile segment may be considered as representative of the condition of controls along that reach extending from the end of the 0.25 mile segment to either the end of the next 0.25 mile inspected segment, or to the end of the project, whichever occurs first.
6. For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include:
 - a. The inspection time and date;
 - b. Names, titles, and qualifications of personnel making the inspection;
 - c. Weather information for the period since the last inspection (or since commencement of **construction activity** if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;
 - d. Weather information and a description of any discharges occurring at the time of the inspection;
 - e. Location(s) of discharges of sediment or other pollutants from the site;
 - f. Location(s) of **BMPs** that need to be maintained;
 - g. Location(s) of **BMPs** that failed to operate as designed or proved inadequate for a particular location;
 - h. Monitoring results if requested;
 - i. Records of the last grading activity;
 - j. Location(s) where additional **BMPs** are needed that did not exist at the time of inspection; and
 - k. Corrective action required including any changes to the **SWPPP** necessary and implementation dates.

A record of each inspection and of any actions taken must be retained as part of the **SWPPP** for at least three years from the date that permit **coverage** expires or is terminated. The inspection reports must identify any incidents of non-compliance with the permit conditions. Where a report does not identify any incidents of non-compliance, the report must contain a certification that the construction project or site is in compliance with the **SWPPP** and this permit. The report must be signed in accordance with Part VI.D.6 of this permit.

J. Maintaining an Updated Plan

1. The **SWPPP**, including the site map, must be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to **waters of the state** that has not been previously addressed in the **SWPPP**.
2. The **SWPPP** must be amended if during inspections or investigations by site staff, or by local, state, or federal officials, it is determined that the **SWPPP** is ineffective in eliminating or significantly minimizing pollutants in **storm water** discharges from the construction site.

3. Based on the results of an inspection, the **SWPPP** must be modified as necessary to include additional or modified **BMPs** designed to correct problems identified. Revisions to the **SWPPP** must be completed within seven (7) calendar days following the inspection. Implementation of these additional or modified **BMPs** must be accomplished as described in Part III.E.

K. Signature, Plan Review and Making Plans Available

1. A copy of the **SWPPP** (including a copy of the permit), **CSW-NOI**, and the letter from **NDEQ** notifying you of the receipt of the complete and accurate **CSW-NOI** must be retained at the construction site or other location easily accessible during normal business hours. The **SWPPP** must be made available upon request to Federal, State, and local agencies, from the date of commencement of construction activities to the date of **final stabilization**.
2. A sign or other notice must be posted conspicuously near the main entrance of the construction site. If displaying near the main entrance is infeasible, the notice can be posted in a local public building such as the town hall or public library. The sign or other notice must contain the following information:
 - a. A copy of the completed **CSW-NOI** as submitted to the NDEQ; and
 - b. If the location of the **SWPPP** or the name and telephone number of the contact person for scheduling **SWPPP** viewing times has changed (i.e., is different than that submitted to NDEQ in the **CSW-NOI**), the current location of the **SWPPP** and name and telephone number of a contact person for scheduling viewing times. For linear projects, the sign or other notice must be posted at a publicly accessible location near the active part of the construction project (e.g., where a pipeline project crosses a public road).

L. Management Practices

1. All control measures must be properly selected, installed, and maintained in accordance with any relevant manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the **operator** must replace or modify the control for site situations as soon as practicable.
2. If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts. Sediment escaping the construction site indicates there may be insufficient **BMPs** to control runoff.
3. Litter, construction debris, and construction chemicals that could be exposed to **storm water** must be prevented from becoming a pollutant source in **storm water** discharges.
4. Except as provided below, stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the **construction activity** in that portion of the site has temporarily or permanently ceased.
 - a. Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.
 - b. Where **construction activity** on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the site.
 - c. In semiarid and drought-stricken areas where initiating perennial vegetative stabilization measures is not possible within 14 days after **construction activity** has temporarily or permanently ceased, final vegetative stabilization measures must be initiated as soon as practicable.
5. Velocity dissipation devices must be placed at discharge locations and along the length of any **outfall** channel to provide a non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).

M. Final Stabilization

The **Permittee** shall be responsible for ensuring that **final stabilization** is accomplished on all non-**impervious surfaces** of the authorized construction site prior to submitting form CSW-NOT.

1. **Coverage** under this permit is normally terminated 180 calendar days after:
 - a. All soil disturbing **construction activity** has been completed;
 - b. A uniform perennial vegetative cover with a minimum density of 70 percent of the native background vegetative cover, has been established on all non-**impervious surfaces** and areas not covered by permanent structures unless equivalent permanent stabilization (such as riprap, gabions, and geotextiles) measures have been employed;
 - c. All permanent drainages, constructed to drain water from the site, has been **stabilized** to prevent erosion;
 - d. All **temporary erosion protection** and **sediment control BMPs** have been removed without compromising the permanent erosion protection and **sediment control BMPs**;
 - e. All sediment build-up has been removed from conveyances and basins that are to be used as permanent water quality management **BMPs**. The cleanout of permanent basins used as temporary **BMPs** during construction shall be sufficient to return the basin to design capacity.
 - f. Responsibility for long-term maintenance of permanent BMPs must be assigned.
 - g. **Construction activity** conducted on or through agricultural or silvicultural land shall be considered finally **stabilized** upon return to the preexisting agriculture or silviculture use;
 - h. **Construction activity** conducted at new industrial facilities that will operate the site in an exposed manner (such as limestone mining and solid waste landfills) shall be considered finally **stabilized** upon commencement of industrial activity consistent with the industrial use and **coverage** under the appropriate **NPDES** permit for industrial **storm water**.

PART IV. SPECIAL CONDITIONS, MANAGEMENT PRACTICES, OTHER NON-NUMERIC LIMITATIONS

A. Requiring an Individual Permit or an Alternative General Permit

1. NDEQ may require you to apply for and/or obtain either an individual **NPDES** permit or an alternative **NPDES** general permit. Any interested person may petition NDEQ to take action under this paragraph. If NDEQ requires you to apply for an individual **NPDES** permit, NDEQ will notify you in writing that a permit application is required. This notification will include a brief statement of the reasons for this decision and an application form. In addition, if you are an existing **permittee** covered under this permit, the notice will set a deadline to file the application, and will include a statement that on the effective date of issuance or denial of the individual **NPDES** permit or the alternative general permit as it applies to you, **coverage** under this general permit will automatically terminate. Applications must be submitted to NDEQ. NDEQ may grant additional time to submit the application upon your request. If you are covered under this permit and you fail to submit in a timely manner an individual **NPDES** permit application as required by NDEQ, then the applicability of this permit to you is automatically terminated at the end of the day specified by NDEQ as the deadline for application submittal.
2. You may request to be excluded from the **coverage** of this general permit by applying for an individual permit. In such a case, you must submit an individual application in accordance with the requirements of NDEQ Title 119, with reasons supporting the request to NDEQ. The request may be granted by issuance of an individual permit or an alternative general permit if your reasons are adequate to support the request.
3. When an individual **NPDES** permit is issued to you, who are otherwise subject to this permit, or you are authorized to discharge under an alternative **NPDES** general permit, the applicability of this permit to you is automatically terminated on the effective date of the individual permit or the date of authorization of **coverage** under the alternative general permit, whichever the case may be. If you, who are otherwise subject to this permit, are denied an individual **NPDES** permit or an alternative **NPDES** general permit,

the applicability of this permit to you is automatically terminated on the date of such denial, unless otherwise specified by NDEQ.

B. Oil and Hazardous Substances/Spill Notification

The discharge of hazardous substances or oil in **storm water** discharges from the construction site must be prevented or minimized in accordance with the **SWPPP**. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill. The **Permittee** shall conform to the provisions set forth in NDEQ Title 126, *Rules and Regulations Pertaining to the Management of Wastes* and federal reporting requirements of 40 CFR Part 110, 40 CFR Part 117 and 40 CFR Part 302 relating to spills or other releases of oil or hazardous substances.

If the **permittee** knows, or has reason to believe, that a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under NDEQ Title 126, 40 CFR Part 110, 40 CFR Part 117 and 40 CFR Part 302, occurs during a 24-hour period:

1. **Permittee** shall immediately notify the **Department** of a release of oil or hazardous substances. During office hours (i.e., 8:00 a.m. to 5:00 p.m., Monday through Friday, except holidays), notification shall be made to the **Department** at telephone numbers (402) 471-2186 or (877) 253-2603 (toll free).
2. When NDEQ cannot be contacted, the **Permittee** shall report to the Nebraska State Patrol for referral to the NDEQ Emergency Response Team at telephone number (402) 471-4545. It shall be the **Permittee's** responsibility to maintain current telephone numbers necessary to carry out the notification requirements set forth in this paragraph.
3. **Permittee** must modify the **SWPPP** as required under Part III.J within 7 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. Plans must identify measures to prevent the reoccurrence of such releases and to respond to such releases.

C. Attainment of Water Quality Standards After Authorization

1. You must select, install, implement and maintain **BMPs** at your construction site that minimize pollutants in the discharge as necessary to meet applicable water quality standards. In general, except in situations explained in this section, your **SWPPP** developed, implemented, and updated consistent with Part III is considered as stringent as necessary to ensure that your discharges do not cause or contribute to an excursion above any applicable water quality standard.
2. At any time after authorization NDEQ may determine that your **storm water** discharges may cause, have reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. If such a determination is made, NDEQ will require you to:
 - a. Develop a supplemental BMP action plan describing **SWPPP** modifications in accordance with Part III to address adequately the identified water quality concerns;
 - b. Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or
 - c. Cease discharges of pollutants from **Construction Activity** and submit an individual permit application according to Part IV.A.

All written responses required under this part must include a signed certification from the **certifying official**.

D. Discharges Affecting Endangered or Threatened Species

This permit does not replace or satisfy any review requirements for Endangered or Threatened species from new or expanded discharges that adversely impact or contribute to adverse impacts on a listed endangered or threatened species or adversely modify a designated critical habitat. The **owner** must conduct any required review and coordinate with appropriate agencies for any project with the potential of affecting threatened or endangered species, or their critical habitat.

E. Discharges Affecting Historical Places or Archeological Sites

This permit does not replace or satisfy any review requirements for Historic Places or Archeological Sites, from new or expanded discharges which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered Archeological Sites. The **owner** must be in compliance with National Historic Preservation Act and conduct all required review and coordination related to historic preservation, including significant anthropological sites and any burial sites, with the Nebraska Historic Preservation Officer. You must comply with all applicable state, and local laws concerning the protection of historic properties and places, your discharge authorization under this permit is contingent upon this compliance.

F. Activities/Discharges subject to other Applicable Regulations

This permit does not replace or satisfy any other applicable regulatory requirements that the applicant/**permittee** is subject to. The initiator of any controlled/regulated activity is the sole responsible party for obtaining authorization or permit **coverage** and for maintaining compliance with any applicable laws, regulations or rules that may apply to their activities.

G. Continuation of the Expired General Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedure Act and remain in force and effect. If you were granted permit coverage prior to the expiration date, you will automatically remain covered by the continued permit until reissuance or replacement of this permit, at which time you must comply with the conditions of Part II C.2; or

1. Submit of a Notice of Termination form; or
2. Apply for coverage under an individual permit for the project's discharges; or
3. If NDEQ determines a general permit will not be reissued, you must seek coverage under an alternative general permit or an individual permit.

PART V. TERMINATION, TRANSFER OR REASSIGNMENT OF PERMIT COVERAGE

A. Notice of Termination Requirements

You may only submit a **Notice of Termination (NOT)** after one or more of the following conditions have been met:

1. **Final stabilization** has been achieved on all portions of the site for which you are responsible;
2. Another **operator** has assumed control according to Part VI.D.6 over all areas of the site that have not been finally **stabilized**;
3. **Coverage** under an individual or alternative general **NPDES** permit has been obtained; or
4. For residential construction only, **temporary erosion protection** has been completed and the residence has been reassigned to the homeowner.

The **CSW-NOT** must be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight of the day the **CSW-NOT** is signed.

B. Submitting a Notice of Termination

It is your responsibility to submit a complete and accurate **Notice of Termination (CSW-NOT)** form *Attachment #3*. If NDEQ notifies dischargers (either directly, by public notice, or by making information available on the Internet) of other **CSW-NOT** form options (e.g., electronic submission), you may take advantage of those options to satisfy the requirements of Part V.

1. After one or more of the **Notice of Termination** Requirements in Part V.A has been met, submit the following information to the NDEQ:
 - a. The **NPDES** permit authorization number for the **storm water** discharge;

- b. The basis for submission of the **CSW-NOT**, including: **final stabilization** has been achieved on all portions of the site for which the **permittee** is responsible; another **operators/permittee** has assumed control over all areas of the site that have not been finally **stabilized**; **coverage** under an alternative **NPDES** permit has been obtained; or, for residential construction only, **temporary erosion protection** has been completed and the residence has been transferred to the homeowner;
- c. The **Certifying Official's** legal name, address and phone number;
- d. The name of the project, address (or a description of location if no street address is available), and county of the construction site for which the notification is submitted; and
- e. A certification statement signed and dated by a **certifying official**.

C. Transfer of Permit

When responsibility for **storm water** discharges at a construction site changes from one entity to another, the **permittee** shall submit a completed Notice of Transfer, *Attachment #2*, that is signed in accordance with Part VI.D.6 of this permit.

1. The Notice of Transfer (CSW-Transfer), *Attachment # 2*, includes:
 - a. Permit certification number;
 - b. Name, location, and county for the construction site for which the CSW-Transfer is being submitted;
 - c. Identifying information for the new **permittee**;
 - d. Identifying information for the current **permittee**; and
 - e. Effective date of transfer;
2. Other Requirements of a Permit Transfer:
 - a. If the **storm water** discharge, associated with **construction activity**, is covered by this permit then the new **owner(s)** shall comply with all terms and conditions of this permit.
 - b. A copy of the CSW-Transfer shall be included in the **SWPPP**.
 - c. A **CSW-NOI** shall be submitted to NDEQ by the new owner(s).
 - d. For **construction activity** which is part of a larger **common plan of development**, if the **permittee** transfers ownership of all or any part of property subject to this permit, both the **permittee** and transferee shall be responsible for compliance with this permit for that portion of the project which has been transferred including when the transferred property is less than one acre in area.
 - e. If the new **owner(s)** agree in writing to be solely responsible for compliance with this permit for the property that has been transferred, then the existing **permittee(s)** authorization shall be terminated.

D. Where to Submit

All paperwork must be submitted to the following address:

Water Quality Division
Storm Water
 Suite 400, The Atrium
 1200 'N' Street
 PO Box 98922
 Lincoln, Nebraska 68509-8922

PART VI. STANDARD CONDITIONS AND REQUIREMENTS

These general conditions shall not preempt any more stringent requirements found elsewhere in this permit.

A. Other Conditions

1. Narrative Limits

Discharges authorized under this permit;

 - a. Shall not be toxic to aquatic life in surface **waters of the state**;

- b. Shall not contain pollutants at concentrations or levels that produce objectionable films, colors, turbidity, deposits, or noxious odors in the receiving stream or waterway; and
 - c. Shall not contain pollutants at concentrations or levels that cause the occurrence of undesirable or nuisance aquatic life in the receiving stream.
2. Inspection and Entry
The **permittee** shall allow the **Director** or his appointed representative, upon the presentation of his identification and at a reasonable time:
 - a. To enter upon the **permittee's** premises where a regulated **construction activity** is located or conducted, or records are required to be kept under the terms and conditions of this permit;
 - b. To have access to and copy any records required to be kept under the terms and conditions of this permit;
 - c. To inspect any facilities, equipment (including monitoring and control), practices or operations regulated or required in this permit; and
 - d. To sample or monitor any substances or parameters at any location.
3. Changes in Discharge

Any revision in the size of **construction activity** (such as the addition of disturbed acres not previously identified under the original **CSW-NOI** form), which will result in new or substantially increased discharges of pollutants or a change in the nature of the discharge of pollutants must be reported by the **permittee** seven (7) calendar days prior to the expansion, increases or modifications by submitting a modification of the original form **CSW-NOI** or by submitting a new form **CSW-NOI**. Permit authorization may be modified or revoked and reissued as a result of this notification to maintain compliance with applicable state or federal regulations.

B. Procedures for Modification or Revocation

Permit modification or revocation will be conducted according to Title 119, Chapter 24.

If there is evidence indicating that the **storm water** discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard, you may be required to obtain an individual permit in accordance with Part IV.A of this permit, or the permit may be modified to include different limitations and/or requirements.

C. Timing of Permit Modification

1. NDEQ may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines, that may be promulgated in the course of the current permit cycle.

D. Management Requirements

1. Duty to Comply
All authorized discharges shall be consistent with the terms and conditions of this permit. The **Permittee** shall comply with all conditions of this permit. Failure to comply with these conditions may be grounds for administrative action or enforcement proceedings including injunctive relief and civil or criminal penalties. The filing of a request by the **Permittee** for a permit modification, revocation and re-issuance, termination or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
2. Duty to Mitigate
The **Permittee** shall take all reasonable steps to minimize, prevent or correct any adverse impact to the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as required by the NDEQ to determine the nature and impact of the noncompliant discharge.

3. Duty to Provide Information

The **Permittee** shall furnish to the **Department** within seven (7) calendar days, any information which the **Department** may request to determine whether cause exists for modifying, revoking and reissuing, or terminating permit **Coverage**; or to determine compliance with this permit. The **Permittee** shall also furnish to the **Department** upon request, copies of records retained as a requirement of this permit.

4. Reporting Requirements

The **Permittee** shall be responsible for reporting any instance of non-compliance with the terms and conditions of this permit in accordance with NDEQ Title 119, Chapter 14. In most instances, initial notification shall be made as soon as the **Permittee** becomes aware of the non-compliance. A written follow-up shall be submitted within five (5) days of reporting the non-compliance. The submittal of a written noncompliance report does not relieve the **Permittee** of any liability from enforcement proceedings that may result from the violation of permit or regulatory requirements. The written notice shall include, at a minimum:

- a. A description of the discharge and cause of noncompliance;
- b. The period of noncompliance, including exact dates and times, or if not corrected, the anticipated time the noncompliance is expected to continue; and
- c. The steps taken to reduce, eliminate, and prevent the reoccurrence of the noncompliance.

5. Proper Operation and Maintenance

The **Permittee** shall, at all times, maintain in good working order and operate as efficiently as possible, any facilities or systems of control installed by the **Permittee** in order to achieve compliance with the terms and conditions of this permit. This would include, but not be limited to, effective performance based on designed facility removals, effective management, adequate **Operator** staffing and training, adequate laboratory and process controls, and adequate funding that reflects proper user fee schedules.

6. Signatory Requirements

All reports and applications required by this permit or submitted to maintain compliance with this permit shall be signed and certified as set forth in this section.

- a. Permit applications shall be signed by a **certifying official** who meets the following criteria:
 - 1) For a corporation: a **responsible corporate officer**;
 - 2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - 3) For a municipality, state, federal or other public facility: by either a principal executive officer or ranking elected official, chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
- b. The discharge monitoring reports and other information may be signed by the **certifying official**.
- c. The **certifying official** designates an **authorized representative**. The **authorized representative** is responsible for the overall implementation of the **SWPPP** (i.e., the general contractor).
- d. Any change in the signatories shall be submitted to the **Department**, in writing, within seven (7) days after the change, but no later than with the submission of information required by the **Department** to be submitted while the new signatory has taken responsibility.
- e. All applications, reports and information submitted as a requirement of this permit, shall contain the following certification statement:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

E. Monitoring and Records Requirements

1. Routine periodic monitoring of storm water discharges is not required unless requested by the Department. Monitoring may be required by the Department for any of the following reasons:
 - a. The identification of potential ground and / or surface water quality impacts to which the permittee may be contributing;
 - b. The failure by the permittee to implement pollution prevention or pollution control procedures set forth in the SWPPP;
 - c. The recognition of potential pollutant sources during site inspections or investigations; and/or
 - d. To obtain information for watershed basin or industry group studies.
2. Retention of Records
The **Permittee** shall retain records of all monitoring activities for a period of at least three years as set forth in NDEQ Titles 119, Chapter 14 001.02. The types of records that must be retained include, but are not limited to:
 - a. Calibration and maintenance records;
 - b. Original strip chart recordings;
 - c. Copies of all reports required by this permit;
 - d. Monitoring records and information; and
 - e. Electronically readable data.
3. Record Contents
As set forth in NDEQ Title 119, Chapter 14, records of sampling or monitoring information shall include:
 - a. The date(s), exact place, time and methods of sampling or measurements;
 - b. The name(s) of the individual(s) who performed the sampling or measurements;
 - c. The date(s) the analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used;
 - f. The results of such analyses; and
 - g. Laboratory data, bench sheets and other required information.

F. General Requirements

1. Permit Attachments
The attachments to this permit (e.g., forms and guidance) may be modified without a formal modification of the permit.
2. Information Available
All permit applications, fact sheets, permits, discharge data, monitoring reports, and any public comments concerning such shall be available to the public for inspection and copying, unless such information about methods or processes is entitled to protection as trade secrets of the **Owner** or **Operator** under Neb. Rev. Stat. §81-1527, (Cum. Supp. 1992) and NDEQ Title 115, Chapter 4.
3. Permit Actions
This permit may be modified, suspended, revoked or reissued, in part or in whole, in accordance with the regulations set forth in NDEQ Titles 119, Chapter 24. In addition, this permit may be modified, revoked and reissued to incorporate standards or limitations issued pursuant to Sections 301(b)(b)(c), 301(b)(b)(d), 304(b)(b), 307(a)(b), or 405(d) of the Clean Water Act and Public Law 100-4.

4. Property Rights

Coverage under this permit does not convey any property rights of any sort or any exclusive privileges nor does it authorize any damage to private property or any invasion of personal rights nor any infringement of federal, state or local laws or regulations.

5. Severability

If any provision of this permit is held invalid, the remainder of this permit shall not be affected.

6. Other Rules and Regulations Liability

The issuance of this permit in no way relieves the obligation of the **Permittee** to comply with other rules and regulations of the **Department**.

7. Penalties

Nothing in this permit shall preclude the initiation of any legal action or relieve the **Permittee** from any responsibilities, liabilities or penalties under Section 311 of the Clean Water Act. Violations of the terms and conditions of this permit may result in the initiation of criminal and/or civil actions. Civil penalties can result in fines of up to \$10,000.00 per day (Neb. Rev. Stat. §81-1508, as amended to date). Criminal penalties for willful or negligent violations of this permit may result in penalties of \$10,000.00 per day or by imprisonment. Violations may also result in federal prosecution.

PART VII. DEFINITIONS

Authorized Representative: Individual or position designated the authorization to submit reports, notifications, or other information requested by the **Director** on behalf of the **Owner** under the circumstances that the authorization is made in writing by the **Owner**, the authorization specifies the individual or position who is duly authorized, and the authorization is submitted to the **Director**.

Best Management Practices (BMPs): Erosion and **Sediment Control** and water quality management practices that are the most effective and practicable means of controlling, preventing, and minimizing degradation of surface water, including avoidance of impacts, construction-phasing, minimizing the length of time soil areas are exposed, prohibitions, and other management practices published by state or designated area-wide planning agencies.

Certifying Official

- For a corporation. By a **Responsible Corporate Officer**, which means:
 - A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or
 - The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- For a partnership or sole proprietorship: By a general partner or proprietor, respectively.
- For a municipality, State, Federal, or other public agency.
 - By either a principal executive officer of the agency, or
 - A senior executive officer having responsibility for the operations of a principal geographic unit of the agency.

Combined Sewer System (CSO): Is defined as a collection system that collects both **Storm Water** and sanitary wastewater with **outfalls** discharging directly into the **Waters of the State**.

Common Plan of Development or Sale: A contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

Construction Activity: Includes **Large Construction Activity** and **Small Construction Activity**. This includes a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated **Storm Water** runoff, leading to soil erosion and movement of sediment into **Waters of the State** or urban drainage systems. **Construction Activity** includes the disturbance of less than one acre of total land area that is a part of a larger **Common Plan of Development or Sale** if the larger common plan will ultimately disturb one (1) acre or more and includes all areas of **Support Activity**.

Coverage: A **Permittee** status of compliant operation under the terms and conditions of this general permit once a **Discharge Authorization Number** has been obtained until that authorization is terminated.

Department: Nebraska Department of Environmental Quality.

Director: The **Director** of the Nebraska Department of Environmental Quality.

Discharge Authorization Number: A specific authorization number (NER 1xx xxx) issued to a specific **Permittee** that meets the application requirements for **Coverage** under this general permit.

Erosion Prevention: Measures employed to prevent sediment from moving from its existing location including but not limited to: soil stabilization practices, limited grading, mulch, temporary or permanent cover, and construction phasing.

Final Stabilization: Condition where all soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a minimum density of 70 percent of the native background vegetative cover has been established on all non-**Impervious Surfaces** and areas not covered by permanent structures unless equivalent permanent stabilization (such as riprap, gabions, or geotextiles) measures have been employed.

Impervious Surface: A constructed hard surface that either prevents or retards the entry of water into the soil and causes water to flow off the surface in greater quantities and at an increased rate of flow than prior to development (such as streets, sidewalks, parking lots, roofs, and in some cases highly compacted soil).

Large Construction Activity: Is the clearing, grading and excavating resulting in a land disturbance that will disturb equal to or greater than five acres of land or will disturb less than five acres of total land area but is part of a Larger **Common Plan of Development or Sale** that will ultimately disturb equal to or greater than five acres. Large Construction Activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

Municipal Separate Storm Sewer System (MS4) is a separate **storm water** sewer system in urbanized cities and counties as having populations of 10,000 or greater as determined by the Bureau of Censes 1990 Decennial Censes.

National Pollutant Discharge Elimination System (NPDES): Program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits under the Clean Water Act (Sections 301, 318, 402, and 405) and C.F.R. Title 33, Sections 1317, 1328, 1342, and 1345.

Notice of Termination (CSW-NOT): Notice to terminate **Coverage** under this permit after construction is completed, the site has undergone **Final Stabilization**, and maintenance agreements for all permanent facilities have been established, in accordance with all applicable conditions of this permit.

Operator: Person (often the general contractor) designated by the **Owner**, who has day-to-day operational control and/or the ability to modify project plans and specifications related to the **SWPPP**. The person shall be knowledgeable in those areas of the permit for which the **Operator** is responsible.

Outfall: A discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants from **Construction Activity** are or may be discharged into **Waters of the State**.

Owner: Person or party possessing the title of the land on which the construction activities will occur; or if the **Construction Activity** is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the **Construction Activity**.

Permittee: Person(s), firm, or governmental agency or other institution that signs the application submitted to the **Department** and is responsible for compliance with the terms and conditions of this permit.

Receiving Waters: A general term used to describe all **Waters of the State**. **Responsible Corporate Officer:** means the **Owner** or **Operator** meeting either of the following conditions: A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental law as and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Sediment Control: Methods employed to prevent sediment from leaving the construction site after it has eroded from its existing location. **Sediment Control** practices include silt fences, sediment traps, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, and temporary or permanent sedimentation basins.

Silvicultural Discharges: "Silvicultural point source" means any discernible, confined, and discrete conveyance related to rock crushing, gravel washing, log sorting, or log storage facilities which are operated in connection with silvicultural activities and from which pollutants are discharged into **Waters of the State**. The term does not include nonpoint source silvicultural activities such as nursery operations, site preparation, reforestation and subsequent cultural treatment, thinning, prescribed burning, pest and fire control, harvesting operations, surface drainage, and road construction and maintenance from which there is natural runoff during precipitation events.

Small Construction Activity: Is the clearing, grading, and excavation that result in land disturbance of equal to or greater than one acre and less than five acres including disturbance of less than one acre of total land area that is part of a larger **Common Plan of Development or Sale** if the larger common plan will ultimately disturb equal to or greater than one and less than five acres. **Small Construction Activity** does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

Spill Prevention Control and Countermeasure (SPCC): Federal regulation set forth in 40 CFR 112 requiring a **SPCC** Plan to be developed for facilities that store fuels and hazardous substances that meet the following criteria:

- Above ground fuel storage with the capacity for at least 660 gallons.
- Two or more above ground fuel storage tanks with the capacity for at least 1,320 gallons.
- Below ground fuel storage tanks with the capacity for at least 42,000 gallons.

Stabilized: Exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, wood fiber blanket, established grass bed, or other material that prevents erosion from occurring.

Storm Water: **Storm Water** runoff, snow melt runoff, and surface runoff and drainage.

Storm Water Pollution Prevention Plan (SWPPP): A plan for **Storm Water** discharge that includes **Erosion Prevention** measures and **Sediment Controls** that, when implemented, will decrease soil erosion on a parcel of land and decrease off-site, non-point source pollution.

Support Activity: Associated **Construction Activity** that is directly related to the construction site (such as concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) required to have **NPDES** permit **Coverage** for discharges of **Storm Water** that may be located on site or in a remote location, but is not a commercial operation serving multiple unrelated construction projects by different **operators** nor operates beyond the completion of the **Construction Activity** at the last construction project it supports.

Temporary Erosion Protection: Methods employed to temporarily prevent erosion during the construction sequence or while **Final Stabilization** is being established. Examples of **Temporary Erosion Protection** include; straw, mulch, wood chips, and erosion netting.

Total Maximum Daily Load (TMDL): The sum of the individual wasteload allocations (WLAs) for point sources and load (Load Allocations) for nonpoint sources and natural background levels for a specific pollutant. The **Department** establishes **TMDLs** that are expressed in terms of either mass per unit of time, relative level of toxicity, or other appropriate measure.

Toxic Pollutant: Pollutants or combination of pollutants, including disease causing agents, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through food chains will, on the basis of information available to the **Department**, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunction (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.

Waters of the State: All waters within the jurisdiction of this state including all streams, lakes, ponds, impounding reservoirs, marshes, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the state.

Appendix A: Abbreviations

BMP: Best Management Practice(s)

CFR: Code of Federal Regulations

CSO: Combined Sewer Overflow

CSW: Construction Storm Water

CSW-NOI: Notice of Intent

CSW-NOT: Notice of Termination

NDEQ: Nebraska Department of Environmental Quality

NDEQ Title 115: *Rules of Practice and Procedure*

NDEQ Title 117: *Nebraska Surface Water Quality Standards*

NDEQ Title 118: *Ground Water Quality Standards and Use Classification*

NDEQ Title 119: *Rules and Regulations Pertaining to the Issuance of Permits under the **National Pollutant Discharge Elimination System***

NDEQ Title 126: *Rules and Regulations Pertaining to the Management of Wastes*

NDEQ Title 132: *Integrated Solid Waste Management Regulations*

NPDES: National Pollutant Discharge Elimination System

SPCC: Spill Prevention, Control, and Countermeasures

SWPPP: Storm Water Pollution Prevention Plan

TMDL: Total Maximum Daily Load

Appendix B: Listing of the Nebraska Municipal Separate Storm Sewer System NPDES Permits

Cities

Beatrice
Bellevue
Boys Town
Columbus
Dakota City
Fremont
Grand Island
Hastings
Kearney
La Vista
Lexington
Norfolk
North Platte
Omaha
Papillion
Ralston
Scottsbluff
South Sioux City

Counties

Douglas
Dakota
Sarpy

Federal Facility

Offutt Air Force Base

State of Nebraska Facilities

Nebraska Department of Roads
University of Nebraska – Lincoln

APPENDIX O

APPLICABLE SECTIONS

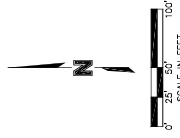
Items Included:

Item 1Project Construction Plans

[illegible]

SUMMARY OF EROSION CONTROL	
SYMBOL/LABEL	DESCRIPTION
CS-1	CONSTRUCTION ENTRANCE
CS-1	CONCRETE WASHOUT
SW-1	SITE INFORMATION SIGN
IP-1	INLET PROTECTION
IP-2	INLET PROTECTION
IP-3	INLET PROTECTION
IP-4	INLET PROTECTION
IP-5	INLET PROTECTION
IP-6	INLET PROTECTION
IP-7	INLET PROTECTION
IP-8	INLET PROTECTION
IP-9	INLET PROTECTION
IP-10	INLET PROTECTION
IP-11	INLET PROTECTION
IP-12	INLET PROTECTION
IP-13	INLET PROTECTION
SP-1	SILT FENCE
SP-2	SILT FENCE
SP-3	SILT FENCE
SD-1	SEEDING
SD-2	SEEDING
SB-1	SEDIMENT BASIN
SB-2	DIVERSION BERM
DB-2	DIVERSION BERM

CE	24" WIDE X 70" LONG FROM EXISTING ROAD. 2" TO 1.5" CLEAN MINIMUM	
CF	24" WIDE X 70" LONG FROM EXISTING ROAD. 2" TO 1.5" CLEAN MINIMUM	
CG	6" THICK MAN. WITH GEOTEXTILE FIBER FABRIC PER DETAIL ON SHEET C2.5	
CH	6" THICK MAN. WITH GEOTEXTILE FIBER FABRIC PER DETAIL ON SHEET C2.5	
CI	18" DIA. OF EACH RUN. MUST TURN UP 18" (18" DIA.) FOR EACH RUN. SEE	
CJ	APPROPRIATE DISTANCE TO KEEP WATER FROM FLOWING TO THE NEXT	
CK	SECTION OF SALT FENCE. (TYPICAL) PER DETAIL ON SHEET	
CL	INSTALL SWEEP INLET PROTECTION PER DETAIL ON SHEET C2.4	
CM	INSTALL SWEEP INFORMATION SIGN. PER DETAIL ON SHEET C2.5	
CN	INSTALL CONCRETE WASHOUT. PER DETAIL ON SHEET C2.5	
CO	COORDINATE SHALL BE PROVIDED BY CONTRACTOR. CONTRACTOR TO	
CP	SEEDING WITH SEED MATERIAL FOLLOWING FINAL GRADING.	
CQ	CONSTRUCT DIVERSION BERM PER DETAILS ON SHEET C2.5	
CR	CONSTRUCT DIVERSION BERM PER DETAILS ON SHEET C2.5	
CS	CONSTRUCT SEDIMENT BASIN PER DETAILS ON SHEET C2.4	

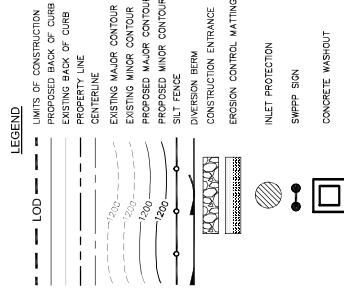


SITE INFORMATION	
TOTAL DISTURBED AREA	12.41 AC
TOTAL SITE AREA	11.78 AC

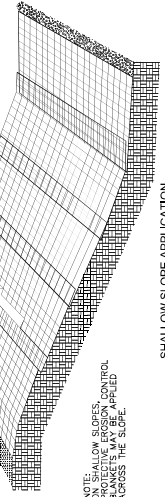
NOTE:
FOLLOWING GRADING, UTILITY, AND PAVEMENT WORK,
CONTRACTOR SHALL INSTALL SILT FENCE AS DIRECTED
BY THE ENGINEER TO CONTROL SEDIMENT FROM
DISCHARGING INTO ROW AND PAVED AREAS.
CONTRACTOR TO PROVIDE UNIT PRICE FOR SILT FENCE
INSTALLATION, MAINTENANCE, AND REMOVAL.

NOTE:
ALL SILT FENCE SHALL NOT BE INSTALLED WITHIN ANY
FASFMENTS UNLESS APPROVED BY THE ENGINEER.

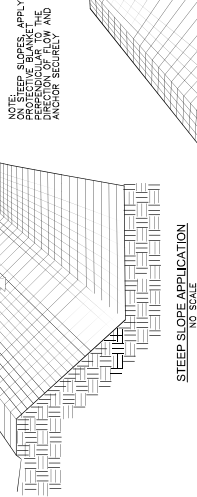
NOTE:
EXISTING SURFACE SHALL BE CONFIRMED BY
CONTRACTOR PRIOR TO BEGINNING WORK TO VERIFY
QUANTITIES.



NOTE: ALLOW STIFFS PROJECTING BEYOND CONTROL POINTS TO BE APPLIED ACROSS THE SLOPE.



SHALLOW SLOPE APPLICATION

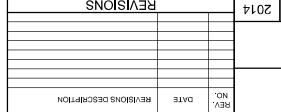


DITCH APPLICATION



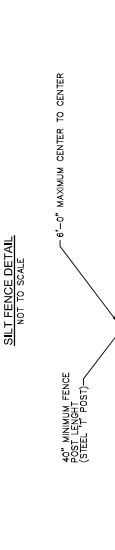
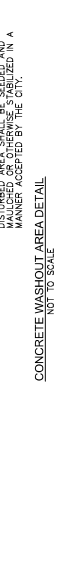
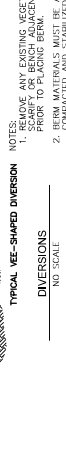
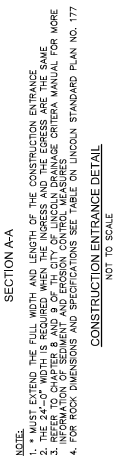
SILT FENCE INLET PROTECTION
NOT TO SCALE

WOLSSON ASSOCIATES
 Lincoln Mall, Suite 111
 Box 8408
 NE 68501-4608
 TEL: 402.474.9311
 FAX: 402.474.9100
 www.dbsaassociates.com



drawn by: _____ approved by: _____ QADC by: _____ project no.: _____ drawing no.: _____ date: _____	REV	BY	DATE
	1	B.M.	B.M.
	2	B.M.	B.M.
	3	B.M.	01-11-2000
	4		5-20-04

drawn by: BRW
checked by: B.M
approved by: B.M
QA/QC by: B.M
project no.: 014-0600
drawing no.: 1
date: 2014



SECTION 321216
ASPHALT PAVING



PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hot-mix asphalt paving.

B. Related Sections:

1. Section 31200 "Earth Moving" for subgrade preparation.
2. Nebraska Department of Roads Standard Specifications for Highway Construction. 2007 Edition.
3. Report of Geotechnical Exploration by Olsson Associates, project number 014-0600, and all addendums.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

1. Job-Mix Designs: For each job mix proposed for the Work.

B. Material Certificates: For each paving material, from manufacturer.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by the Nebraska Department of Roads.

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of Nebraska Department of Roads Standard Specifications for asphalt paving work.

PART 2 - MATERIALS

2.1 ASPHALTIC CONCRETE MATERIALS

A. Materials for asphaltic concrete pavement construction including: Asphalt Binder, tack coats, and mineral aggregates shall be in accordance with Nebraska Department of Roads Standard Specifications, Section 1028.

2.2 MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes complying with the following requirements:

1. Base Course: NDOR Section 1028, Asphaltic Concrete, Type SPL

2. Surface Course: NDOR Section 1028, Asphaltic Concrete, Type SPL

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment in accordance with the recommendations of the geotechnical report.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 ASPHALTIC CONCRETE PLACEMENT

- A. Asphaltic concrete shall be installed in accordance with the Nebraska Department of Roads Standard, Division 500.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Replace and compact hot-mix asphalt where core tests were taken.
- C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.4 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 321216



SECTION 321313
CONCRETE PAVING



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Nebraska Department of Roads Standard Specifications for Highway Construction. 2007 Edition.
- B. Report of Geotechnical Exploration by Olsson Associates, project number 014-0600, and all addendums.

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
 - 1. Driveways and roadways.
 - 2. Parking lots.
 - 3. Curbs and gutters.
 - 4. Walkways.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete pavement mixture.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- C. Refer to Geotechnical Report and Section 031200 – Earth Moving for requirements for subbase courses.
- D. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Materials for portland concrete pavement construction including: fly ash, admixtures, curing compounds, dowel bars, joint sealing filler, portland cement concrete, preformed joint filler, preformed polychloroprene elastomeric joint seals, reinforcing steel, and tie bars shall be in accordance with Nebraska Department of Roads Standard Specifications, Section 1028.

2.2 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to the Geotechnical Report prepared by Olsson Associates, project number 014-0600, and all addendums.

2.3 CONCRETE MIXING

- A. Concrete Mixes: Concrete mixes shall be in accordance of NDOR Standard Specifications, Table 1002.02. Type 1 PF cement shall be used for all classes of concrete. Type 1 PF shall meet all requirements of ASTM C 595

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.
- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

- A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.
- B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- D. Screed pavement surfaces with a straightedge and strike off.
- E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.6 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
 - 2. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by a combination of moisture curing, moisture-retaining-cover curing, and curing compound.

3.8 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
 - 1. Elevation: 1/4 inch (6 mm).
 - 2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
 - 3. Surface: Gap below 10-foot- (3-m-) long, unlevelled straightedge not to exceed 1/4 inch (6 mm).
 - 4. Joint Spacing: 3 inches (75 mm).
 - 5. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.
 - 6. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.9 PAVEMENT MARKING

- A. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.
- B. Sweep and clean surface to eliminate loose material and dust.
- C. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Cooperate and coordinate with Construction Manager, requirements associated with testing and inspections. A qualified independent testing and inspecting agency will be provided to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.
- C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313



SECTION 321373
CONCRETE PAVING JOINT SEALANTS



PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Expansion and contraction joints within cement concrete pavement.
 - 2. Joints between cement concrete and asphalt pavement.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type and color of joint sealant required.
- C. Product certificates, test reports.
- D. Compatibility and Adhesion Test Reports: From sealant manufacturer.

1.3 QUALITY ASSURANCE

- A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint-sealant manufacturers for testing according to ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- B. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and

application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

1. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 COLD-APPLIED JOINT SEALANTS

- A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.

1. Products:

- a. Crafcro Inc.; RoadSaver Silicone.
- b. Dow Corning Corporation; 888.

- B. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.

1. Products:

- a. Crafcro Inc.; RoadSaver Silicone SL.
- b. Dow Corning Corporation; 890-SL.

2.4 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.

- C. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- D. Install backer materials to support sealants during application and at position required to produce optimum sealant movement capability. Do not leave gaps between ends of backer materials. Do not stretch, twist, puncture, or tear backer materials. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- E. Install sealants at the same time backings are installed to completely fill recesses provided for each joint configuration and to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
- G. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 321373



SECTION 321723
PAVEMENT MARKINGS



PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes painted markings applied to asphalt and concrete pavement.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Aexcel Inc.
2. Benjamin Moore & Co.
3. Color Wheel Paints & Coatings.
4. Columbia Paint & Coatings.
5. Conco Paints.
6. Coronado Paint; Division of INSL-X Products Corporation.
7. Diamond Vogel Paints.
8. Dunn-Edwards Corporation.
9. Ennis Traffic Safety Solutions, Inc.
10. Frazee Paint.
11. General Paint.
12. Kwal Paint.
13. M.A.B. Paints.
14. McCormick Paints.
15. Miller Paint.
16. Parker Paint Mfg. Co. Inc.
17. PPG Industries.
18. Pratt & Lambert.
19. Rodda Paint Co.
20. Rohm and Haas Company; a subsidiary of The Dow Chemical Company.
21. Scott Paint Company.
22. Sherwin-Williams Company (The).

2.2 PAVEMENT-MARKING PAINT

- A. Pavement-Marking Paint: MPI #32, alkyd traffic-marking paint.
 - 1. Color: As indicated.
- B. Pavement-Marking Paint: MPI #97, latex traffic-marking paint.
 - 1. Color: As indicated.
- C. Glass Beads: AASHTO M 247, Type 1 made of 100 percent recycled glass.
- D. VOC Content: Pavement markings used on building interior shall have a VOC content of 150 g/L or less.

PART 3 - EXECUTION

3.1 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).
 - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils. Apply paint so that it cannot run beneath the stencil.
 - 2. Broadcast glass beads uniformly into wet markings at a rate of 6 lb/gal. (0.72 kg/L).

END OF SECTION 321723



SECTION 330500
COMMON WORK RESULTS FOR UTILITIES



PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Piping joining materials.
 2. Dielectric fittings.
 3. Sleeves.
 4. Identification devices.
 5. Grout.
 6. Piping system common requirements.
 7. Equipment installation common requirements.
 8. Concrete bases.
 9. Metal supports and anchorages.

1.2 DEFINITIONS

- A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

- A. Product Data: For the following:
1. Dielectric fittings.
 2. Identification devices.
- B. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Steel Piping Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

- C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

PART 2 - PRODUCTS

2.1 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch (3.2-mm) maximum thickness, unless otherwise indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 - 2. AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- G. Solvent Cements for Joining Plastic Piping:
 - 1. ABS Piping: ASTM D 2235.
 - 2. CPVC Piping: ASTM F 493.
 - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 - 4. PVC to ABS Piping Transition: ASTM D 3138.
- H. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.2 DIELECTRIC FITTINGS

- A. Dielectric Fittings, General: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature.
- B. Dielectric Unions:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Co.
 - b. Central Plastics Company.
 - c. Epco Sales, Inc.
 - d. Hart Industries, International, Inc.
 - e. Watts Water Technologies, Inc.
 - f. Zurn Plumbing Products Group; Wilkins Div.
 - 3. Description: Factory fabricated, union, NPS 2 (DN 50) and smaller.
 - a. Pressure Rating: 150 psig (1035 kPa) minimum at 180 deg F (82 deg C).
 - b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded ferrous.
- C. Dielectric Flanges:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Co.
 - b. Central Plastics Company.
 - c. Epco Sales, Inc.
 - d. Watts Water Technologies, Inc.
 - 3. Description: Factory-fabricated, bolted, companion-flange assembly, NPS 2-1/2 to NPS 4 (DN 65 to DN 100) and larger.
 - a. Pressure Rating: 150 psig (1035 kPa) minimum.
 - b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric Couplings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Calpico, Inc.
 - b. Lochinvar Corporation.
3. Description: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining, NPS 3 (DN 80) and smaller.
 - a. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).
 - b. End Connections: Threaded.

E. Dielectric Nipples:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Perfection Corporation.
 - b. Precision Plumbing Products, Inc.
 - c. Victaulic Company.
3. Description: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining.
 - a. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C)
 - b. End Connections: Threaded or grooved.

2.3 SLEEVES

- A. Mechanical sleeve seals for pipe penetrations are specified in Division 22 Section "Common Work Results for Plumbing."
- B. Galvanized-Steel Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- C. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized, plain ends.
- D. Cast-Iron Sleeves: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

- E. Molded PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.
- F. PVC Pipe Sleeves: ASTM D 1785, Schedule 40.
- G. Molded PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.4 IDENTIFICATION DEVICES

- A. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.
 - 1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
 - 2. Location: Accessible and visible.
- B. Snap-on Plastic Pipe Markers: Manufacturer's standard preprinted, semirigid, snap-on type. Include color-coding according to ASME A13.1, unless otherwise indicated.
- C. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, color-coded, pressure-sensitive-vinyl type with permanent adhesive.
- D. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Full-band pipe markers, extending 360 degrees around pipe at each location.
- E. Pipes with OD, Including Insulation, 6 Inches (150 mm) and Larger: Either full-band or strip-type pipe markers, at least three times letter height and of length required for label.
- F. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
 - 1. Arrows: Either integrally with piping system service lettering to accommodate both directions of flow, or as separate unit on each pipe marker to indicate direction of flow.
- G. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils (0.08 mm) thick.
 - 1. Width: 1-1/2 inches (40 mm) on pipes with OD, including insulation, less than 6 inches (150 mm); 2-1/2 inches (65 mm) for larger pipes.
 - 2. Color: Comply with ASME A13.1, unless otherwise indicated.
- H. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) sequenced numbers. Include 5/32-inch (4-mm) hole for fastener.
 - 1. Material: 0.032-inch- (0.8-mm-) thick, polished brass or aluminum.
 - 2. Material: 0.0375-inch- (1-mm-) thick stainless steel.
 - 3. Material: 3/32-inch- (2.4-mm-) thick plastic laminate with 2 black surfaces and a white inner layer.

4. Material: Valve manufacturer's standard solid plastic.
5. Size: 1-1/2 inches (40 mm) in diameter, unless otherwise indicated.
6. Shape: As indicated for each piping system.

I. Valve Tag Fasteners: Brass, wire-link or beaded chain; or brass S-hooks.

J. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
2. Thickness: [1/16 inch (1.6 mm)] [1/8 inch (3 mm)], unless otherwise indicated.
3. Thickness: 1/16 inch (1.6 mm), for units up to 20 sq. in. (130 sq. cm) or 8 inches (200 mm) in length, and 1/8 inch (3 mm) for larger units.
4. Fasteners: Self-tapping, stainless-steel screws or contact-type permanent adhesive.

K. Plastic Equipment Markers: Manufacturer's standard laminated plastic, in the following color codes:

1. Green: Cooling equipment and components.
2. Yellow: Heating equipment and components.
3. Brown: Energy reclamation equipment and components.
4. Blue: Equipment and components that do not meet criteria above.
5. Hazardous Equipment: Use colors and designs recommended by ASME A13.1.
6. Terminology: Match schedules as closely as possible. Include the following:
 - a. Name and plan number.
 - b. Equipment service.
 - c. Design capacity.
 - d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
7. Size: 2-1/2 by 4 inches (65 by 100 mm) for control devices, dampers, and valves; 4-1/2 by 6 inches (115 by 150 mm) for equipment.

2.5 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 DIELECTRIC FITTING APPLICATIONS

A. Dry Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 (DN 50) and Smaller: Dielectric unions.
2. NPS 2-1/2 (DN 65) and Larger: Dielectric flanges.

B. Wet Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 (DN 50) and Smaller: Dielectric couplings or dielectric nipples.
2. NPS 2-1/2 (DN 65) and Larger: Dielectric nipples.

3.2 PIPING INSTALLATION

- A. Install piping according to the following requirements and Division 33 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on the Coordination Drawings.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping to permit valve servicing.
- E. Install piping at indicated slopes.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Select system components with pressure rating equal to or greater than system operating pressure.
- I. Sleeves are not required for core-drilled holes.
- J. Permanent sleeves are not required for holes formed by removable PE sleeves.
- K. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.
1. Cut sleeves to length for mounting flush with both surfaces.

- a. Exception: Extend sleeves installed in floors of equipment areas or other wet areas 2 inches (50 mm) above finished floor level.
 - 2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
 - a. Steel Pipe Sleeves: For pipes smaller than NPS 6 (DN 150).
 - b. Steel Sheet Sleeves: For pipes NPS 6 (DN 150) and larger, penetrating gypsum-board partitions.
 - L. Verify final equipment locations for roughing-in.
 - M. Refer to equipment specifications in other Sections for roughing-in requirements.
- ### 3.3 PIPING JOINT CONSTRUCTION
- A. Join pipe and fittings according to the following requirements and Division 33 Sections specifying piping systems.
 - B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
 - C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
 - D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
 - E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
 - F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
 - G. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.
 - H. Soldered Joints: Apply ASTM B 813 water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.
 - I. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

- J. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.
- K. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
 - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
 - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- L. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- M. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- N. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
 - 1. Plain-End PE Pipe and Fittings: Use butt fusion.
 - 2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.
- O. Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 3. Install dielectric fittings at connections of dissimilar metal pipes.

3.5 EQUIPMENT INSTALLATION

- A. Install equipment level and plumb, unless otherwise indicated.
- B. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.

- C. Install equipment to allow right of way to piping systems installed at required slope.

3.6 IDENTIFICATION

- A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.
 - 1. Plastic markers, with application systems. Install on insulation segment if required for hot noninsulated piping.
 - 2. Locate pipe markers on exposed piping according to the following:
 - a. Near each valve and control device.
 - b. Near each branch, excluding short takeoffs for equipment and terminal units. Mark each pipe at branch if flow pattern is not obvious.
 - c. Near locations where pipes pass through walls or floors or enter inaccessible enclosures.
 - d. At manholes and similar access points that permit view of concealed piping.
 - e. Near major equipment items and other points of origination and termination.
- B. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of equipment.
 - 1. Lettering Size: Minimum 1/4 inch (6.4 mm) high for name of unit if viewing distance is less than 24 inches (610 mm), 1/2 inch (13 mm) high for distances up to 72 inches (1800 mm), and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
 - 2. Text of Signs: Provide name of identified unit. Include text to distinguish among multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- C. Adjusting: Relocate identifying devices that become visually blocked by work of this or other Divisions.

3.7 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of base.
 - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.

4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."

3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 05 Section "Metal Fabrications" for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor piped utility materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.9 GROUTING

- A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION



SECTION 334100
STORM UTILITY DRAINAGE PIPING



PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Pipe and fittings.
 2. Grates
 3. In-Line Drains
 4. Drain basins.
 5. Curb inlet structures.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:
1. Drain basins and stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.
- B. Field quality-control reports.

1.4 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
1. Notify Architect no fewer than two days in advance of proposed interruption of service.
 2. Do not proceed with interruption of service without Architect's written permission.

PART 2 - PRODUCTS

2.1 PE PIPE AND FITTINGS

- A. Corrugated PE Drainage Pipe and Fittings NPS 3 to NPS 10 (DN 80 to DN 250): AASHTO M 252M, Type S, with smooth waterway for coupling joints.
1. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with tube and fittings.

2. Soiltight Couplings: AASHTO M 252M, corrugated, matching tube and fittings.
- B. Corrugated PE Pipe and Fittings NPS 12 to NPS 60 (DN 300 to DN 1500): AASHTO M 294M, Type S, with smooth waterway for coupling joints.

1. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings.
2. Soiltight Couplings: AASHTO M 294M, corrugated, matching pipe and fittings.

2.2 PVC PIPE AND FITTINGS

A. PVC Corrugated Sewer Piping:

1. Pipe: ASTM F 949, PVC, corrugated pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM F 949, PVC molded or fabricated, socket type.
3. Gaskets: ASTM F 477, elastomeric seals.

2.3 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R (ACI 350M/350RM), and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi (27.6 MPa) minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.4 GRATES

A. Nyloplast-ADS Drop-in Grates:

1. Fits into ADS N-12 (smooth interior), SDR 35 pipe, and SCH 40 pipes
2. Standard Light Duty

2.5 IN-LINE DRAINS

A. Nyloplast-ADS Inline Drain:

1. Standard Light Duty
2. Locking Assembly to be included

2.6 DRAIN BASINS

A. Nyloplast-ADS Drain Basins:

1. 24" Structure
2. Stub dimensions: 4" thru 12", 4" thru 15", and 4" thru 18".

2.7 CURB INLET STRUCTURES

A. Frames and Grates:

1. Dimensions: 2' x 3'.
2. Diagonal H-20

PART 3 - EXECUTION

3.1 EARTHWORK

- #### A.
- Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

- #### A.
- General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- #### B.
- Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- #### C.
- Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.
- #### D.
- Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- #### E.
- When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.
- #### F.
- Install gravity-flow, nonpressure drainage piping according to the following:
1. Install piping pitched down in direction of flow.
 2. Install piping NPS 6 (DN 150) and larger with restrained joints at tee fittings and at changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
 3. Install PE corrugated sewer piping according to ASTM D 2321.

4. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
5. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping according to the following:
 1. Join ductile-iron piping and special fittings according to AWWA C600 or AWWA M41.
 2. Join corrugated PE piping according to ASTM D 3212 for push-on joints.
 3. Join PVC corrugated sewer piping according to ASTM D 2321 for elastomeric-seal joints.
 4. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
 5. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 GRATES

- A. Set frames and grates to elevations indicated.
- B. Install per manufacturers specifications.

3.5 IN-LINE DRAINS

- A. Set frames and grates to elevations indicated.
- B. Install per manufacturers specifications.

3.6 DRAIN BASIN INSTALLATION

- A. Set frames and grates to elevations indicated.
- B. Install per manufacturers specifications.

3.7 CURB INLET STRUCTURES

- A. Set frames and grates to elevations indicated.
- B. Install per manufacturers specifications.

3.8 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318.

3.9 CONNECTIONS

- A. Connect nonpressure, gravity-flow drainage piping in building's storm building drains as shown on the plans.

B. Make connections to existing piping as shown on the plans.

1. Protect existing piping to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

3.10 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.11 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches (610 mm) of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

END OF SECTION 334100



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88 EAST LAKE FLATS

NOTE SHEET

GENERAL UTILITY NOTES

1. THE CONTRACTOR SHALL MAINTAIN STRICT LATERAL CLEARANCE AS SHOWN ON THE PLANS FOR ALL UTILITY LINES.
2. IN ANY OF THE MAIN OR SERVICE ROUTES ARE ADJUSTED IN THE FIELD BY THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE ENGINEER A RECORD OF THE EXACT LOCATIONS, AT THE CONTRACTOR'S EXPENSE.
3. ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED PER THE SPECIFICATIONS IN THE GEOTECHNICAL REPORT.
4. THE CONTRACTOR SHALL RESTORE ANY DISTURBED AREA TO ITS PREVIOUS CONDITION.
5. ALL CONDUITS SHALL BE TERMINATED 5 FEET FROM THE BUILDING.
6. THE CONTRACTOR SHALL VERIFY ALL VERTICAL AND HORIZONTAL CROSSINGS OF ALL PROPOSED AND EXISTING UTILITIES PRIOR TO INSTALLATION OF CONDUIT. CONTACT THE ENGINEER WITH ANY CONFLICTS.
7. ALL CONDUIT STUBS SHALL BE CAPPED AND MARKED ABOVE GROUND WITH REBAR AND A FLAG.
8. ALL CONDUIT SHALL BE PLACED A MINIMUM OF 42" BELOW FINISHED GRADE, OR PER UTILITY PROVIDER SPECIFICATIONS.
9. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE & CONFIGURATION OF ALL UTILITY CONCRETE PADS (I.E. MECHANICAL UNITS, SATELLITE, TRANSFORMER, ETC.) WITH THE GENERAL CONTRACTOR AND UTILITY COMPANIES.
10. CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL UTILITIES (I.E. PHONE, CABLE, POWER, ETC.) ARE INSTALLED AND SERVICE THE NEW BUILDING.

WATER NOTES

1. THE CONTRACTOR SHALL COORDINATE CONNECTION TO THE EXISTING WATER MAIN WITH LINCOLN WATER SYSTEM. CONTRACTOR IS RESPONSIBLE FOR WORK, FEES, PERMITS, AND COORDINATION EFFORTS NECESSARY TO THE CONNECT INTO THE EXISTING UTILITIES.
2. WATER SERVICE CONSTRUCTION SHALL COMPLY WITH LINCOLN WATER SYSTEM SPECIFICATIONS.
3. REFER TO MEP PLANS FOR WATER SERVICE TIE-INS WITH BUILDINGS.
4. MATERIAL OF PIPE FROM TAP OF PUBLIC MAIN TO METER IN BUILDING SHALL BE COPPER OR PER LOCAL CODES & REGULATIONS.
5. BUILD 1 1/2" PVC RISER PIPE W/ 1 1/2" SOLVENT WELDED CAP, AT THE END OF WATER SERVICE.
6. ALL WATER SERVICE CONSTRUCTION TO BE DONE UNDER A PLUMBERS PERMIT, AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
7. ALL WATER METERS, PUMPS, AND BACKFLOW PREVENTERS ARE LOCATED INSIDE BUILDING. REFER TO MEP PLANS FOR DESIGN AND LOCATIONS.
8. CONTRACTOR SHALL PAY ALL METER COSTS, TAPPING FEES, IMPACT FEES, AND ALL OTHER INCIDENTAL COSTS REQUIRED BY LINCOLN WATER SYSTEM OR THE CITY OF LINCOLN.
9. WATER SERVICES SHALL HAVE A 5.0' MINIMUM BURY DEPTH AS MEASURED FROM FINISHED GROUND TO TOP OF PIPE.
10. ALL FITTINGS (HORIZONTAL AND VERTICAL), AND VALVES SHALL BE SECURELY RESTRAINED USING CONCRETE THRUST BLOCKS, OR OTHER METHOD(S) APPROVED BY THE ENGINEER AND LINCOLN WATER SYSTEM TO WITHSTAND TEST AND OPERATING PRESSURES.
11. CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM STRENGTH OF 3500 PSI @ 28 DAYS.
12. TRACER WIRE SHALL BE INSTALLED ON ALL PIPE SHALL BE INCIDENTAL TO THE PIPE.
13. THE MINIMUM HORIZONTAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND SEWER LINE IS TEN FEET (10'). THE MINIMUM VERTICAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND SEWER LINE IS EIGHTEEN INCHES (18"). REFER TO "TEN STATE STANDARDS" FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
14. CRUSHED ROCK BEDDING SHALL BE INSTALLED FOR ALL UTILITY PIPE, AS DETAILED ON THESE PLANS.

ELECTRICAL SERVICE

1. ELECTRICAL TRANSFORMER PAD TO BE BUILT BY SITE CONTRACTOR. COORDINATE WITH LINCOLN ELECTRIC SYSTEM FOR EXACT SIZE, LOCATION, AND MATERIALS USED FOR PAD.
2. UNDERGROUND ELECTRIC PRIMARY CONDUITS AND CONDUCTORS TO BE BUILT BY LINCOLN ELECTRIC SYSTEM. COORDINATE WITH LINCOLN ELECTRIC SYSTEM FOR EXACT LOCATION AND SCHEDULING OF CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR SECONDARY CONDUIT FROM TRANSFORMER TO WITHIN 5' OF BUILDING.
3. REFER TO THE BUILDING ELECTRICAL PLANS FOR CONTINUATION OF SERVICE IN BUILDING.

TELEPHONE SERVICE

1. THE CONTRACTOR IS RESPONSIBLE TO FURNISH AND INSTALL CONDUIT FOR TENANT TELEPHONE SERVICE AS SHOWN.
2. WINDSTREAM WILL DIRECT BURY TELEPHONE LINES.
3. CONTRACTOR TO CONTACT WINDSTREAM TO VERIFY EXACT CONNECTION POINT OF SERVICE ON THE PROPERTY.
4. REFER TO BUILDING MECHANICAL PLANS FOR CONTINUATION OF SERVICE IN BUILDING.

CABLE TELEVISION

5. CONDUIT FOR CABLE TELEVISION IS TO BE INSTALLED IN THE SAME TRENCH AS THE TELEPHONE.
6. CONTACT TIME WARNER FOR EXACT LOCATION OF CONNECTION POINTS.
7. REFER TO BUILDING MECHANICAL PLANS FOR CONTINUATION OF SERVICE IN BUILDING.

GAS MAIN

1. UNDERGROUND GAS SERVICE TO BE BUILT BY BLACK HILLS ENERGY. COORDINATE WITH BLACK HILLS ENERGY FOR EXACT LOCATION AND SCHEDULING OF CONSTRUCTION.
2. REFER TO BUILDING MECHANICAL PLANS FOR CONTINUATION OF SERVICE IN BUILDING.

SANITARY SEWER NOTES

1. ALL SANITARY SEWER CONSTRUCTION TO BE DONE UNDER A PLUMBERS PERMIT, AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL THE NECESSARY PERMITS.
2. ALL FITTINGS & SERVICE PIPE SHALL BE SCHEDULE 40 PVC.
3. CRUSHED ROCK BEDDING SHALL BE INSTALLED FOR ALL UTILITY PIPE, AS DETAILED ON THESE PLANS.
4. REFER TO MEP PLANS FOR SANITARY SEWER TIE-INS WITH BUILDING.
5. BUILD 1 1/2" PVC RISER PIPE W/ 1 1/2" SOLVENT WELDED CAP, AT THE END OF SANITARY SEWER SERVICE.

STORM SEWER NOTES

1. CONTRACTOR TO PRESERVE ALL SURVEY CONTROL.
2. FOR DETAILS OF STORM SEWER CONSTRUCTION. SEE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, NEBRASKA DEPARTMENT OF ROADS, 2007 EDITION, DIVISION 900, SECTION 916. ALL STANDARD SPECIFICATIONS AND ADDENDUMS SHALL APPLY.
3. ALL STATIONING AND DIMENSIONS ARE TO BE CENTERLINE OF VAULT UNLESS OTHERWISE NOTED.
4. ALL STORM SEWER CONNECTIONS SHALL BE SOIL-TIGHT (MINIMUM).
5. ALL PIPE SHALL HAVE SMOOTH INTERIOR WALL WITH A MANNING'S ROUGHNESS VALUE OF 0.013 OR LESS.
6. HDPE PIPE (IF USED) SHALL MEET OR EXCEED THE REQUIREMENTS FOR ADS N-12 SMOOTH INTERIOR WALL PIPE.
7. ALL PIPE SHALL BE INSTALLED WITH GRANULAR BEDDING IN ACCORDANCE WITH BEDDING DETAIL INCLUDED IN PLANS AND THE MANUFACTURER'S INSTALLATION REQUIREMENTS. IN CASE OF CONFLICT THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
8. ALL FLEXIBLE STORM SEWER PIPE APPROVED FOR USE ON THIS PROJECT MUST BE INSTALLED IN ACCORDANCE WITH PROJECT REQUIREMENTS, AND MANUFACTURER SPECIFICATIONS (MORE STRINGENT REQUIREMENT SHALL GOVERN).
9. ALL ROOF DRAINS AND/OR DOWNSPOUTS SHALL BE TIED INTO THE PROPOSED STORM SEWER PIPE. LATERALS SHALL BE BURIED A MINIMUM OF 18" (TO TOP OF PIPE) AND SLOPE AT 1.0%.
10. ROOF DRAIN CONNECTIONS TO STORM SEWER PIPE SHALL BE ACCOMPLISHED USING PRE-MANUFACTURED FITTINGS (I.E. WYE, TEE, ETC.) THAT SHALL BE SOIL-TIGHT AND HAVE SMOOTH INTERIOR WALLS.
11. MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL MEET OR EXCEED THE SPECIFICATIONS AND INSTALLATION REQUIREMENTS OF THE MANUFACTURER.
12. DOWNSPOUT LATERALS SHALL BE FIELD FIT. CONTRACTOR SHALL VERIFY SIZE AND LOCATION WITH ARCHITECTURAL DRAWINGS.
13. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL NECESSARY BENDS, FITTINGS, AND/OR CONNECTIONS TO INSTALL A COMPLETE STORM SYSTEM. ALL INCIDENTALS ARE SUBSIDIARY TO THE COST OF THE STORM PIPE.

GENERAL NOTES

1. CONTRACTOR TO PRESERVE ALL SURVEY CONTROL.
2. PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND REQUEST A FINAL WALK-THROUGH OF THE CONSTRUCTION SITE.
3. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL REPORT TO THE DEVELOPER'S ENGINEER, CITY INSPECTOR, OR DEVELOPER'S ENGINEER FIELD REPRESENTATIVE ANY DISCREPANCIES BETWEEN HIS MEASUREMENTS AND THESE PLANS. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS TO THE BEST OF OUR KNOWLEDGE CONSTITUTES ALL KNOWN FACILITIES. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT UNDERGROUND SERVICE ALERT @ 1-800-331-5666 IN ADVANCE OF ANY EXCAVATION FOR THE MARK-OUT OF THE LOCATION OF UTILITIES AND NOTIFICATION OF COMMENCEMENT OF WORK.
5. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF UNDERGROUND UTILITIES. CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLAN IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
6. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
7. THE CONTRACTOR SHALL USE CAUTION AROUND ANY EXISTING UTILITIES OR IMPROVEMENTS LOCATED ON SITE. HE SHALL BE RESPONSIBLE FOR THE REPAIRS OF SUCH STRUCTURES WHEN BROKEN OR OTHERWISE DAMAGED BY THE NEW CONSTRUCTION.
8. ALL SPOIL MATERIAL SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, NO SEPARATE PAYMENT SHALL BE MADE FOR DISPOSAL OF SPOIL MATERIAL; IT SHALL BE CONSIDERED SUBSIDIARY TO THE PRICE BID.
9. A PORTABLE RESTROOM FACILITY WILL BE REQUIRED ON-SITE DURING CONSTRUCTION ACTIVITIES.
10. ANY ON-SITE FUELING WILL COMPLY WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
11. A CONCRETE TRUCK WASHOUT WILL BE LOCATED ON ON-SITE.
12. THE CONTRACTOR SHALL REPAIR OR REPLACE ALL EROSION CONTROL MEASURES DAMAGED BY CONSTRUCTION ACTIVITIES.
13. EXISTING UTILITY LINES, EITHER OVERHEAD OR UNDERGROUND, AND PERMANENT STRUCTURE WITHIN THE PROPERTY LINES SHALL BE KEPT FREE OF DAMAGE BY CONTRACTOR'S OPERATIONS. IF SUCH UTILITY OR STRUCTURE IS DAMAGED, IT SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE. IF ANY UTILITY LINES OR STRUCTURES ARE DAMAGED DURING OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTIONS.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING CONSTRUCTION.
15. ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT, FACE OF BUILDING, OR BACK OF CURB. FOLLOW WRITTEN DIMENSIONS ALWAYS. DO NOT SCALE. DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.
16. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL & SAFETY MEASURES.
17. ALL DISABLED PARKING STALLS SHALL BE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (FEDERAL REGISTER/ VOL. 58 NO. 144/ RULES AND REGULATIONS).
18. CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANIES TO COORDINATE CONNECTIONS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND DUST CONTROL, ANY DAMAGE FROM BLOWING DUST OR EROSION AND RUNOFF FROM THE SITE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
20. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.
21. CONSTRUCTION FOUND TO BE UNACCEPTABLE TO THE ENGINEER/ARCHITECT/OWNER SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.
22. ALL CONSTRUCTION SHALL BE SHOWN ON THESE PLANS. ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
23. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE ALL TRAFFIC CONTROL THAT MAY BE NECESSARY DURING CONSTRUCTION ACTIVITIES.
24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT SAFETY. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS AND ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
25. ALL DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS SHALL BE HAULED OFF-SITE AND DISPOSED OF PROPERLY AND LEGALLY.

PAVING NOTES

1. CONSTRUCT PORTLAND CONCRETE PAVEMENT IN ACCORDANCE WITH DIVISION 600 OF NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
2. CONSTRUCT ASPHALT PAVEMENT IN ACCORDANCE WITH DIVISION 500 OF NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
3. PROVIDE OPENINGS IN CURB FOR WHEELCHAIR RAMP AS SHOWN ON THE PLANS.
4. MAXIMUM SPACING FOR SAWED TRANSVERSE CONSTRUCTION JOINTS FOR P.C.C. SHALL BE 12' SLABS SHALL BE KEPT AS SQUARE AS POSSIBLE, TRANSVERSE JOINT SPACING SHALL NOT EXCEED 125% OF THE LONGITUDINAL JOINT SPACING.
5. MAXIMUM JOINT SPACING ON CONCRETE SIDEWALKS SHALL BE 5'.
6. TRANSVERSE JOINTS SHALL BE ALIGNED TO COINCIDE WITH THE CENTER LINE OF INTERSECTING SIDE STREETS WHEREVER POSSIBLE.
7. A 1/2" EXPANSION JOINT SHALL BE PLACED BETWEEN P.C.C. PAVEMENT AND ADJACENT SIDEWALKS.
8. ALL SAWED TRANSVERSE JOINTS SHALL BE CONTINUOUS ACROSS THE PAVEMENT AND EXTEND THROUGH CURBS.
9. ALL PARKING LOT PAVEMENT JOINTS SHALL BE THOROUGHLY SEALED WITH COLD APPLIED JOINT SEALANT. COLOR SHALL BE SELECTED BY THE ARCHITECT. SIDEWALK JOINTS SHALL BE SEALED WITH SELF-LEVELING SILICONE SEALANT WITH COLOR MATCHING THE CONCRETE PAVEMENT, UNLESS OTHERWISE DIRECTED BY THE ARCHITECT.
10. THE MAXIMUM CROSS SLOPE ON ALL SIDEWALKS SHALL BE 2.0%. THE MAXIMUM RUNNING SLOPE ON ALL SIDEWALKS (EXCLUDING CURB RAMPS) SHALL BE 5.0%.
11. ALL CONCRETE SHALL BE PLACED IN ACCORDANCE WITH ACI 305 & 206 'HOT WEATHER' & COLD WEATHER' CONCRETING. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BLANKETS, EXTERNAL HEAT, OR OTHER METHODS AS REQUIRED TO ENSURE CONCRETE PLACEMENT AND TEMPERATURE ARE MAINTAINED WITHIN SPECIFIED REQUIREMENTS. CONCRETE SHALL BE MAINTAINED AT A MINIMUM TEMPERATURE OF 50° FOR THREE DAYS AFTER THE COMPLETION OF PLACEMENT.
12. PRIOR TO PLACING CONCRETE PAVEMENT (INCLUDING SIDEWALK) ALL SUBGRADE SHALL HAVE BEEN SCARIFIED AND RE-COMPACTED TO THE SPECIFIED DENSITY.
13. ALL OTHER APPLICABLE SECTIONS FOR MATERIALS AND CONSTRUCTION, WITHIN THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2007 EDITION, NEBRASKA DEPARTMENT OF ROADS, SHALL APPLY.
14. PAVING CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING THE INLET TOP AND BUILDING THE COMBINED CURB AND GUTTER THROUGH THE CONCRETE INLET TOP.
15. THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF THE EXISTING PAVEMENT.
16. THE CONTRACTOR SHALL REFERENCE THE GEOTECHNICAL REPORT AND CONSTRUCT PAVEMENT ACCORDING TO THE GEOTECHNICAL ENGINEER'S SPECIFICATIONS.
17. CONTRACTOR SHALL FOLLOW GEOTECHNICAL REPORT RECOMMENDATIONS FOR SUBGRADE PREPARATION AND PAVING DESIGN.
18. THE CONTRACTOR SHALL COORDINATE ALL PAVEMENT TESTING.
19. THE CONTRACTOR SHALL REFERENCE THE STRIPPING DETAIL FOR PAVEMENT MARKINGS.
20. THE PAVING CONTRACTOR SHALL ADJUST ALL MANHOLES, VALVES, INLETS, AND CLEAN-OUTS TO GRADE. THE PAVING CONTRACTOR IS RESPONSIBLE FOR SETTING INLET TOPS.
21. THE PAVING CONTRACTOR SHALL PLACE TRAFFIC RATED CAPS ON ALL CLEAN-OUTS WITHIN PAVED AREAS.
22. CONTRACTOR SHALL STRIPE ALL PARKING LOTS AS SHOWN. PARKING STALL STRIPPING SHALL BE 4" WHITE MARKINGS.
23. CONTRACTOR SHALL COMPLETE ALL NECESSARY PERMITS AND INSPECTIONS PRIOR TO CONSTRUCTION.
24. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
25. ALL COORDINATE POINTS ARE TO BACK OF CURB UNLESS SPECIFIED OTHERWISE.
26. ALL HANDICAPPED STALLS TO BE PAINTED AND SIGNPOST WITH SIGN INSTALLED.
27. ALL ISLANDS AND SETBACK AREAS SHALL BE BACKFILLED WITH TOPSOIL.
28. ALL CURB CUTS AND RAMPS SHALL BE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (FEDERAL REGISTER/ VOL. 58 NO. 144/ RULES AND REGULATIONS).
29. MAINTAIN 2% CROSS SLOPE ON SIDEWALKS UNLESS OTHERWISE NOTED. ALL SIDEWALKS TO BE 4" P.C.C. PAVEMENT.
30. CONSTRUCTION OF CURB RAMPS CONSIDERED SUBSIDIARY TO THE PRICE BID CONCRETE SIDEWALK. (ALL CURB RAMPS SHALL BE 6" THICK W/ CROSS HATCH GROOVING ON ALL RAMP SURFACES)

GRADING NOTES

1. THE OWNER HAS OBTAINED AN NPDES PERMIT FOR THIS PROJECT. ALL CONTRACTORS AND SUBCONTRACTORS WILL BE RESPONSIBLE FOR COMPLYING WITH ALL THE REQUIREMENTS OF THE PERMIT AS WELL AS ANY ADDITIONAL LOCAL, STATE & FEDERAL REQUIREMENTS THAT MAY APPLY TO THIS WORK.
2. ALL BORROW MATERIAL HAULED IN FROM OFF-SITE (IF NECESSARY) SHALL BE OBTAINED FROM AN ACCEPTABLE SOURCE THAT IS COVERED BY AN EXISTING NPDES PERMIT (AS REQUIRED BY LOCAL JURISDICTION); OTHERWISE THE CONTRACTOR SHALL OBTAIN ALL ADDITIONAL GRADING PERMIT(S) REQUIRED AT THE BORROW SITE(S), AT NO ADDITIONAL COST TO THE OWNER. PROOF OF PERMIT COVERAGE MUST BE PROVIDED PRIOR TO STARTING ANY HAULING OPERATIONS ONTO THE SITE.
3. THE CONTRACTOR MUST OBTAIN AND/OR CONFIRM THAT ALL NECESSARY PERMITS HAVE BEEN OBTAINED PRIOR TO STARTING ANY WORK ON-SITE OR WITHIN RIGHT-OF-WAY (IF APPLICABLE).
4. ALL APPLICABLE CHAPTERS AND SECTIONS FROM THE NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SHALL APPLY.
5. FULL TIME OBSERVATION AND TESTING BY A QUALIFIED TESTING LAB OR PROFESSIONAL GEOTECHNICAL ENGINEER SHALL OCCUR IN ALL FILL AND CORE OUT AREAS. DENSITY TEST REPORTS FROM THE GEOTECHNICAL ENGINEER SHALL BE SUBMITTED TO THE ENGINEER AND OWNER.
6. FILL AND CUT AREAS SHALL BE STRIPPED OF ALL VEGETATION, TOPSOIL, ROOTS, AND OTHER DELETERIOUS MATERIALS APPROXIMATELY 0.1 TO 1.0 FEET IN DEPTH. ADDITIONAL STRIPPING DEPTH MAY BE REQUIRED BY GEOTECHNICAL ENGINEER. STRIPPINGS SHALL BE STOCKPILED OUTSIDE OF THE CONSTRUCTION AREA PRIOR TO THE PLACEMENT OF STRUCTURAL FILL. STRIPPINGS SHALL BE REDISTRIBUTED WITH THE TOPSOIL.
7. SUFFICIENT TOPSOIL SHOULD BE SALVAGED AND STOCKPILED BY THE CONTRACTOR FOR RE-SPREADING IN PERMANENT PLANTING AREAS, INCLUDING GREEN SPACES. STOCKPILING AND RE-SPREADING OF TOPSOIL IS NOT A SEPARATE BID ITEM, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE SITE GRADING.
8. TOPSOIL SALVAGED AS PART OF THE EXCAVATION SHALL BE PLACED TO A MINIMUM DEPTH OF 12 INCHES OVER ALL AREAS DISTURBED BY THE WORK. LARGE STONES, STICKS AND LUMPS SHALL BE REMOVED OR BROKEN UP, AND THE TOPSOIL SHALL BE LEVELED AND RAKED TO MATCH ADJACENT GRADES, READY FOR SEEDING. ANY ROCK OR SAND FROM TOPSOIL SHALL BE LEVELED AND RANKED PRIOR TO PLACEMENT OF TOPSOIL. ALL EXCESS SOILS, NOT RE-SPREAD WITHIN THE PROJECT LIMITS, SHALL BE REMOVED BY THE CONTRACTOR.
9. IF THERE ARE TREES ON THIS SITE THAT DO NOT SHOW UP ON THE PLANS, THE CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE OR ENGINEER FOR REMOVAL OR RELOCATION, IF REQUIRED.
10. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR SETTLEMENT DUE TO IMPROPER COMPACTION.
11. ALL COMPACTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE MODIFIED PROCTOR (ASTM D1557).
12. FINAL ELEVATIONS SHOWN ARE TO FINISH SURFACES. CONTRACTOR SHALL VERIFY THE PROPOSED DEPTH OF BUILDING SLABS AND FOOTINGS, PAVING, SIDEWALKS AND TOPSOIL PLACEMENT, GRADE ALL AREAS TO ACHIEVE THE REQUIRED SUBGRADE ELEVATIONS.
13. MATCH EXISTING ELEVATIONS AS INDICATED ON THE PLANS.
14. EXISTING AND PROPOSED CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
15. ANY EXCESS AND/OR UNSUITABLE SOIL MATERIAL THAT IS HAULED OFF-SITE MUST BE PLACED AT A LOCATION THAT IS CURRENTLY COVERED UNDER AN EXISTING GRADING PERMIT (AS REQUIRED BY LOCAL JURISDICTION). IF NO GRADING PERMIT EXIST AT THE 'WASTE' LOCATION, IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY AND ALL NECESSARY PERMITS NECESSARY BEFORE WASTING THE EXCESS MATERIAL. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH DOCUMENTATION SHOWING THAT ANY WASTE AREAS ARE COVERED BY AN EXISTING PERMIT OR THAT NO SUCH PERMIT IS REQUIRED BY LOCAL, STATE OR FEDERAL REGULATIONS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY AND ALL COSTS (INCLUDING FINES) ASSOCIATED WITH HIS FAILURE TO OBTAIN THE NECESSARY GRADING PERMIT(S).
16. ALL AREAS SHALL BE GRADED TO ENSURE POSITIVE DRAINAGE AWAY FROM BUILDING(S), FOUNDATIONS, RETAINING WALLS, OTHER STRUCTURES, NATURAL AND PAVED AREAS. AREAS OF PONDING WATER SHALL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE.
17. AFTER REMOVING UNSUITABLE MATERIALS AND STABILIZING WEAK SUBGRADES, THE SITE SHALL BE FILLED TO THE DESIGN GRADES WITH STRUCTURAL FILL.
18. GRADING TOLERANCES: BUILDING PADS: -0.0' TO +0.1'; PAVED AREAS -0.0' TO +0.2'; ALL OTHER AREAS: -0.2' TO +0.2'.
19. CAD FILES FOR THE PROPOSED SURFACE ARE AVAILABLE FROM OLSSON ASSOCIATES.
20. ALL LINES SHOWN REPRESENTING PAVEMENT ARE TO BACK OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.
21. CONTRACTOR SHALL GRADE TO CONTOURS SHOWN IN GREENSPACES.
22. AT THE COMPLETION OF GRADING, THE CONTRACTOR SHALL REMOVE ANY EXCESS EXCAVATION FROM THE SITE.
23. ANY GEOTECHNICAL/TESTING REPORTS SOLICITED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE OWNER AND THE ENGINEER.
24. IMPORTED FILL SHALL BE TESTED PRIOR TO PLACEMENT ON THE SITE TO VERIFY THE MATERIAL COMPLIES WITH THE CRITERIA OUTLINED IN THE GEOTECHNICAL REPORT.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT CONTROL BARRIERS UNTIL THE SITE MEETS THE FINAL STABILIZATION REQUIREMENTS OF THE NPDES PERMIT.
26. THE CONTRACTOR SHALL BE REQUIRED TO INSTALL EROSION CONTROL AND/OR BMP'S TO COMPLY WITH THE PROJECT STORM WATER POLLUTION PREVENTION PLAN REQUIREMENTS, AS REQUIRED, UNDER THE NDEQ NPDES PERMIT.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND DUST CONTROL ANY DAMAGE FROM BLOWING DUST OR EROSION AND RUNOFF FROM THE SITE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
28. OBSERVATION AND TESTING BY AN OLSSON ASSOCIATES REPRESENTATIVE SHALL OCCUR TO MONITOR SITE STRIPPING, SURCHARGE REMOVAL OF EXISTING UNSUITABLE MATERIALS, PROOF-ROLLING, FROST REMOVAL, FILL REMOVAL AND FILL PLACEMENT. NOTIFY 48 HOURS IN ADVANCE TO BRAD MARSHALL, 402-458-5672.
29. ALL EXCAVATION FOR CONSTRUCTION SHALL BE IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS.

NOTE SHEET

88 EAST LAKE FLATS

LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5/20/14

SHEET
C0.1



OLSSON ASSOCIATES
1111 Lincoln Main Suite 111
P.O. Box 111
Lincoln, NE 68501-4008
TEL 402.474.6311
FAX 402.474.5160
www.olssonassociates.com

REV. NO.		DATE	REVISIONS DESCRIPTION
1		6/17/14	UPDATE NOTES

88 EAST LAKE FLATS
EXISTING CONDITIONS / DEMOLITION PLAN

DEMOLITION PLAN LEGEND

UTILITY CONTACTS

LINCOLN WASTE WATER - (402)441-7711
LINCOLN ELECTRIC SYSTEM - (402)467-7623
BLACK HILLS ENERGY - (402)437-1715
WINDSTREAM COMMUNICATIONS - (402)436-5691
TIME WARNER - (402)421-0330
LINCOLN WATER SYSTEM - (402)441-7571

- A SAWCUT & REMOVE EXISTING ASPHALT PAVEMENT TO PROVIDE A CLEAN STRAIGHT EDGE. REFERENCE PAVING PLAN FOR LIMITS OF PROPOSED PAVEMENT.

DEMOLITION NOTES

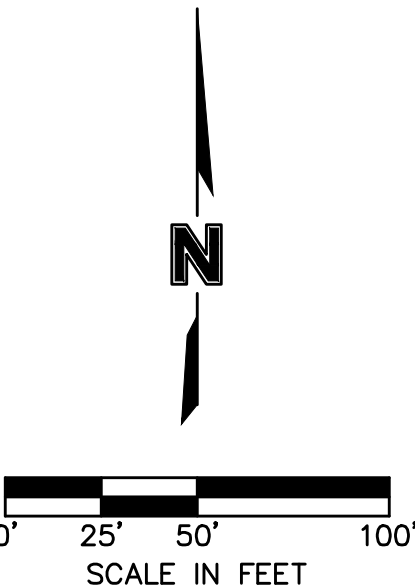
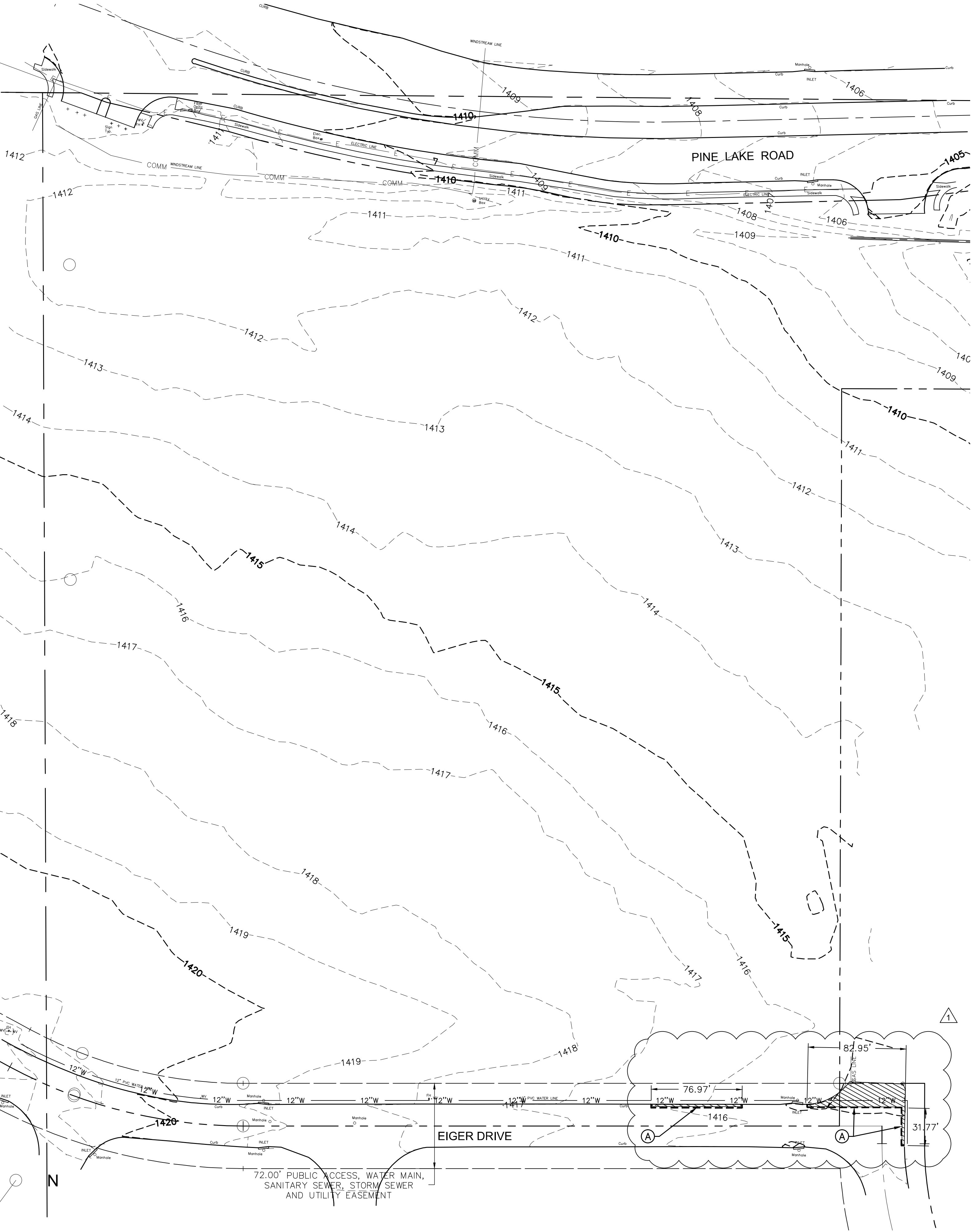
- THE CONTRACTOR SHALL LIMIT REMOVAL AND DEMOLITION WORK TO THAT SPECIFICALLY CALLED FOR IN THE DOCUMENTS. THE CONTRACTOR SHALL DOCUMENT EXISTING CONDITIONS USING PHOTO GRAPHS PRIOR TO START OF WORK. ANY STRUCTURES TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION SHALL BE REPAIRED BACK TO THEIR ORIGINAL DESIGN AT NOT COST TO THE OWNER.
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYMENT OF ALL PERMITS NECESSARY TO PERFORM WORK, DEMOLITION AND DISPOSAL.
- THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER.
- THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOCATIONS OF EXISTING UTILITIES. ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHOULD NOT BE INTERPRETED AS THE EXACT LOCATION NOR AS THE ONLY OBSTACLES WHICH MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH THE WORK. UTILITIES DETERMINED TO BE ABANDONED SHALL BE REMOVED TO 5' OUTSIDE OF BUILDING EDGE OR TO SERVICE MAINS IF REQUIRED BY UTILITY COMPANY.
- DAMAGE TO ANY REMAINING EXISTING CONDITIONS WILL BE REPLACED AT CONTRACTORS EXPENSE.
- CONTRACTOR SHALL LIMIT SAW-CUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS. BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR AT NO ADDITIONAL COST TO THE OWNER.
- LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT TO THE ENGINEER ANY DISCREPANCIES BETWEEN HIS MEASUREMENTS AND THESE PLANS.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS AND TO THE BEST OF OUR KNOWLEDGE CONSTITUTES ALL KNOWN FACILITIES. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT UNDERGROUND SERVICE ALERT IN ADVANCE OF ANY EXCAVATION FOR THE MARK-OUT OF THE LOCATION OF UTILITIES AND NOTIFICATION OF COMMENCEMENT OF WORK.
- CONTRACTOR MUST PROTECT THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, ETC., TO ENSURE A SAFE WORKING ENVIRONMENT.
- CONTRACTOR IS REQUIRED TO PROVIDE TRAFFIC CONTROL AS NECESSARY FOR DISPOSAL TRUCKING OPERATIONS.
- ALL EXISTING TREES/SHRUBS NOT MARKED FOR REMOVAL, SHALL BE PROTECTED DURING ALL DEMOLITION/CONSTRUCTION ACTIVITIES.
- ANY DAMAGE TO EXISTING FEATURES WHICH ARE TO REMAIN SHALL BE RESTORED BY THE CONTRACTOR TO ORIGINAL CONDITION.
- WHERE SHOWN, REMOVE EXISTING CONCRETE PAVEMENT IN ITS ENTIRETY. PROVIDE CLEAN STRAIGHT CUTS WHERE PAVEMENT REMOVAL ENDS BY SAW CUTTING FULL DEPTH PAVEMENT. WHERE REMOVAL ABUTS EXISTING FEATURES, REMOVALS SHALL BE MADE BY SAW CUTTING AND/OR REMOVING TO THE NEAREST CONTROL JOINT.

NOTES:

- THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THIS INCLUDES PRIVATE AND PUBLIC UTILITIES.
- TREE SIZES ARE THE TRUNK SIZE AT APPROX. 3' FROM GROUND LEVEL. TREE CANOPY SIZES ARE NOT INCLUDED.
- HORIZONTAL CONTROL IS: LANCASTER COUNTY GRID.

NOTE:
THE OWNER ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS BEING ACCURATELY SHOWN OR NOT SHOWN ON THE PLANS.
THE EXACT LOCATION AND/OR SIZE OF UNDERGROUND FEATURES MAY NOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. FIELD VERIFICATION OF UTILITIES MAY BE REQUIRED. CONTRACTOR(S) SHALL NOTIFY THE RESPECTIVE UTILITY COMPANIES BEFORE COMMENCING ANY WORK.

NOTE: THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE FROM A SURVEY PROVIDED BY OTHERS. THESE PLANS WERE DESIGNED WITH THE ASSUMPTION THE SURVEY REFLECTS PRESENT CONDITIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO OBSERVE THE EXISTING FIELD CONDITIONS AND NOTIFY THE OWNER, ARCHITECT AND ENGINEER IF DISCREPANCIES ARE OBSERVED.



LEGEND

---	BOUNDARY LINE
---	PROPERTY LINE
---	RIGHT OF WAY LINE
---	EASEMENT
---	UTILITY EASEMENT
SS	SANITARY SEWER LINE
W	WATER LINE
TL	TELEPHONE LINE
G	GAS LINE
P-OH	OVERHEAD POWER
P-UG	UNDERGROUND POWER
COMM	UNDERGROUND COMMUNICATIONS
---	ROAD CENTERLINE
---	CONCRETE PAVEMENT
---	CONCRETE CURB AND GUTTER
---	MAJOR CONTOUR
---	MINOR CONTOUR
---	PAVEMENT REMOVAL
---	SAWCUT EXISTING PAVEMENT
●	SET 5/8" REBAR W/CAP LS#625
●	FOUND PIN
●	SECTION CORNER
○	TRAFFIC SIGNAL MANHOLE
○	LIGHT POLE
○	POWER POLE
○	POWER POLE WITH LIGHT
○	GAS MANHOLE
○	GAS RISER
○	SANITARY SEWER CLEANOUT
○	SANITARY SEWER MANHOLE
○	ELECTRICAL MANHOLE
○	ELECTRIC BOX
○	ELECTRIC VAULT
○	ELECTRIC METER
○	ELECTRIC RISER
○	AIR CONDITIONER UNIT
○	CABLE VAULT
○	TELEVISION BOX
○	TELEPHONE RISER
○	SPRINKLER BOX
○	TELEPHONE CABINET
○	TELEPHONE RISER
○	TRANSFORMER
○	STORM SEWER MANHOLE
○	STORM CURB INLETS
○	STORM AREA INLETS
○	WATER MANHOLE
○	FIRE HYDRANT
○	WATER VALVE
○	GAS VALVE
○	VENT PIPE
○	MONITORING WELL
○	PULL BOX
○	SIGN
○	BOLLARD
○	HANDICAPPED STALL



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REV. NO.	DATE	REVISIONS DESCRIPTION
1	6.17.14	SAWCUT / DEMO PAVEMENT

EXISTING CONDITIONS	88 EAST LAKE FLATS	2014
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drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

88 EAST LAKE FLATS
SITE PLAN

FLAG NOTES

- 1 TRASH ENCLOSURE, REFERENCE ARCHITECTURAL PLANS FOR DETAILS
- 2 PROPOSED ADA CURB RAMP, PER DETAIL SHEET
- 3 INSTALL ACCESSIBLE PAVEMENT MARKINGS SEE DETAIL SHEET
- 4 INSTALL HANDICAP PARKING SIGN SEE DETAIL SHEET
- 5 PROPOSED TRANSFORMER LOCATION, CONTRACTOR SHALL COORDINATE WITH LES FOR EXACT SIZE AND LOCATION.
- 6 PROPOSED 4" THICK CONCRETE SIDEWALK, (2% MAX CROSS-SLOPE) SEE DETAIL SHEET
- 7 GARAGE ENCLOSURE, REFERENCE ARCHITECTURAL PLANS FOR DETAILS
- 8 BALCONY OVERHANG LIMITS FOR ABOVE GROUND FLOORS
- 9 PROPOSED FENCE FINAL LOCATION, STYLE, COLOR SHALL BE DETERMINED BY OWNER
- 10 PROPOSED CANTILEVER GATE WITH CARD READERS (SEE ARCHITECTURAL SPECIFICATIONS)
- 11 PROPOSED RETAINING WALL
- 12 PROPOSED PEDESTRIAN ACCESS GATE (SEE ARCHITECTURAL SPECIFICATIONS)

LEGEND

BOUNDARY LINE
PROPERTY LINE
UTILITY EASEMENT
BOUNDARY SETBACK
UTILITY EASEMENT
ROAD CENTERLINE
CONCRETE PAVEMENT
CONCRETE CURB AND GUTTER
BUILDING ENVELOPE
CONCRETE SIDEWALK

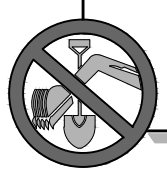
SITE INFORMATION

EAST LAKE FLATS
ADDRESS: TBP
ZONING: B-5

PARKING SUMMARY TABLE

REQUIRED STALLS (INCLUDES ADA STALLS)	444
OPEN SURFACE PARKING (INCLUDES ADA STALLS)	195
TANDEM DRIVEWAY PARKING SPACES	90
DETACHED GARAGE SPACES	27
ATTACHED GARAGE SPACES	149
ADA ACCESSIBLE STALLS (INCLUDED IN TOTAL)	10
TOTAL	461

- A Δ=020°10'27" R=415.00' L=2974.14' CL=145.37' TL=73.83'
- B Δ=025°07'06" R=1000.00' L=2974.14' CL=434.89' TL=222.78'
- C Δ=025°38'08" R=600.00' L=2974.14' CL=266.22' TL=136.51'
- D Δ=10°14'59" R=1259.98' L=2974.14' CL=225.10' TL=113.00'
- E Δ=000°43'54" R=1280.19' L=2974.14' CL=150.09' TL=8.05'
- F Δ=008°12'17" R=282.00' L=2974.14' CL=40.35' TL=20.23'
- G Δ=013°21'55" R=318.00' L=2974.14' CL=74.01' TL=37.26'
- H Δ=001°41'06" R=1270.00' L=2974.14' CL=37.35' TL=18.67'



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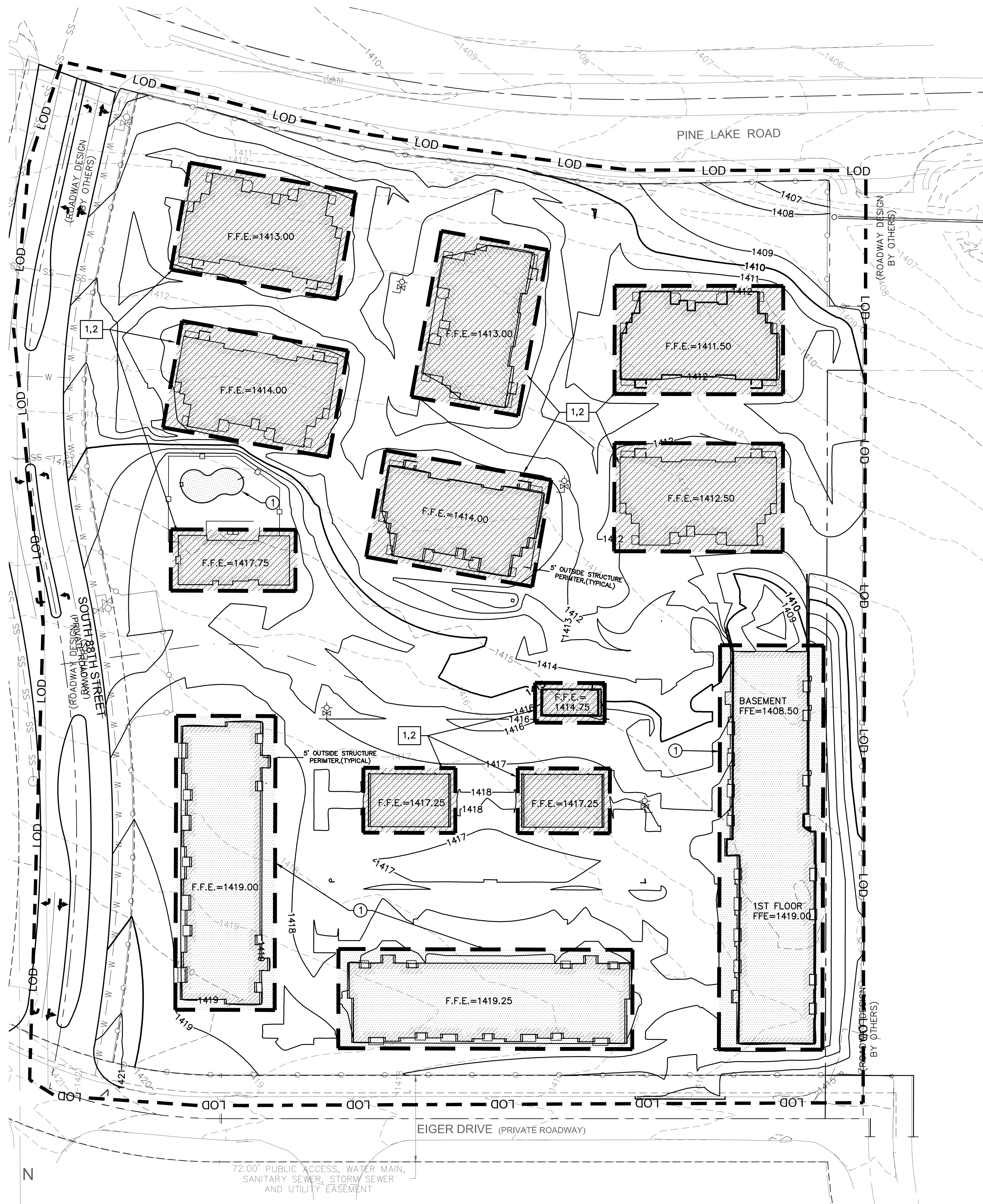
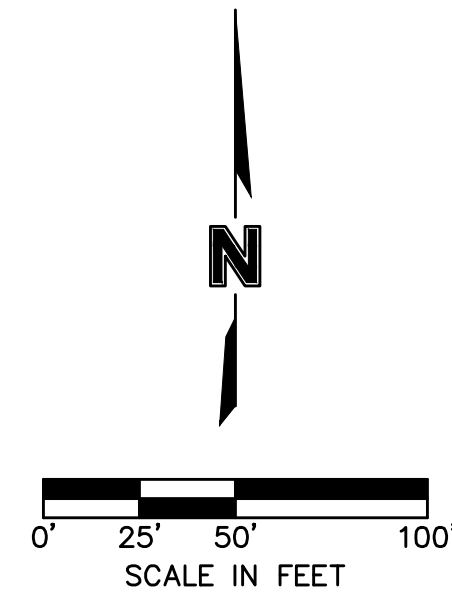
REV	NO.	DATE	REVISIONS DESCRIPTION
1	1	6.17.14	SITELAYOUT REVISION

SITE PLAN	88 EAST LAKE FLATS	2014	REVISIONS
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drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

SHEET
C1.1

88 EAST LAKE FLATS OVER-EXCAVATION PLAN



- GRADING IMPROVEMENT LEGEND**
- ① OVER-EXCAVATE THE EXISTING FILL, PEORIA LOESS, LOVELAND FORMATION, AND WEATHERED AND UNWEATHERED GLACIAL TILL SOILS TO A DEPTH OF TWO (2) FEET BELOW THE BASE OF THE FLOOR SLABS AND POOL AREA AND REPLACE WITH LEAN CLAY STRUCTURAL FILL MATERIAL UP TO THE FINISHED FLOOR ELEVATION. OVER-EXCAVATION SHALL EXTEND A MINIMUM OF FIVE (5) FEET BEYOND THE OUTSIDE PERIMETER OF THE STRUCTURES. SIDES OF EXCAVATION SHALL BE SLOPED AT A MINIMUM OF 1:H:1V TO EXISTING GRADES. THE UPPER 12" AT THE BASE OF THE EXCAVATION SHALL BE SCARIFIED AND RE-COMPACTED PRIOR TO PLACEMENT OF STRUCTURAL FILL. PLACE STRUCTURAL FILL MATERIAL TO THE PROPOSED CONCRETE SLAB SUBGRADE FINISH FLOOR ELEVATION. STRUCTURAL FILL MATERIAL SHALL BE PLACED AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.
- ② OVER-EXCAVATE A MINIMUM DEPTH OF TWO (2) FEET BELOW THE BOTTOM OF FOOTINGS. THE FOOTING OVER-EXCAVATION SHOULD BE BACKFILLED WITH OFF-SITE LEAN CLAY STRUCTURAL FILL SOILS THAT MEETS THE REQUIREMENTS OF THE GEOTECHNICAL REPORT. OVER-EXCAVATION SHALL EXTEND A MINIMUM OF TWO (2) FEET BEYOND THE OUTSIDE EDGE OF THE FOOTING. SIDES OF EXCAVATION SHALL BE SLOPED AT A MINIMUM OF 1:H:1V TO EXISTING GRADES. PLACE STRUCTURAL FILL MATERIAL TO THE PROPOSED FOOTING SUBGRADE ELEVATION. STRUCTURAL FILL MATERIAL SHALL BE PLACED AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.

- LIMITS OF OVER-EXCAVATION FOR BUILDING FLOOR SLAB AND POOL AREA
- LIMITS OF OVER-EXCAVATION FOR BUILDING FOOTINGS (BEARING PRESSURE LESS THAN 2,000 PSF)

- GRADING OVER-EXCAVATION NOTES**
- TEMPORARY CONSTRUCTION SLOPES SHALL BE DESIGNED AND EXCAVATED IN STRICT COMPLIANCE WITH THE RULES AND REGULATIONS OF THE FEDERAL REGISTER, VOLUME 54, NO. 209 (OCTOBER 1989), THE UNITED STATES DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), 29 CFR, PART 1926.
 - OLSSON ASSOCIATES SHALL BE CONTACTED TO EVALUATE AND DOCUMENT THE BASE OF THE OVER-EXCAVATION PRIOR TO PLACEMENT OF NEW FILL SOILS PRIOR TO NEW STRUCTURAL FILL PLACEMENT. THE CONTRACTOR SHALL SCARIFY THE UPPER TWELVE (12) INCHES OF RESULTANT SUBGRADE, MOISTURE CONDITION AND RECOMPACT THE SUBGRADE SOILS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
 - PER THE GEOTECHNICAL REPORT, STRUCTURAL FILL USED ON THIS SITE SHALL CONSIST OF APPROVED MATERIALS FREE OF INORGANIC MATTER AND DEBRIS. SOILS MUST BE LOW-PLASTICITY, COHESIVE MATERIAL WITH A LIQUID LIMIT LESS THAN 45 AND PLASTICITY INDEX LESS THAN 25.
 - PROPOSED FILL SOILS MUST BE TESTED AND APPROVED PRIOR TO PLACEMENT USING AT A MINIMUM A STANDARD PROCTOR TEST (ASTM D698) AND AN ATTEBERG LIMITS TEST FOR EACH SOIL TYPE OR SOURCE CONSIDERED.
 - OBSERVATION AND TESTING BY AN OLSSON ASSOCIATES REPRESENTATIVE SHALL OCCUR TO MONITOR SITE STRIPPING, SURCHARGE, REMOVAL OF EXISTING UNSUITABLE MATERIALS, PROOFROLLING, FROST REMOVAL, AND FILL PLACEMENT. NOTIFY 48 HOURS IN ADVANCE TO BRAD MARSHALL, 402-458-5672.

LEGEND	
	BOUNDARY LINE
	PROPERTY LINE
	RIGHT OF WAY LINE
	EASEMENT
	UTILITY EASEMENT
	SANITARY SEWER LINE
	WATER LINE
	TELEPHONE LINE
	GAS LINE
	OVERHEAD POWER
	UNDERGROUND POWER
	UNDERGROUND COMMUNICATIONS
	ROAD CENTERLINE
	CONCRETE PAVEMENT
	CONCRETE CURB AND GUTTER
	LIMITS OF CONSTRUCTION
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	SET 5/8" REBAR W/CAP LS#625
	FOUND PIN
	SECTION CORNER
	TRAFFIC SIGNAL MANHOLE
	LIGHT POLE
	POWER POLE
	POWER POLE WITH LIGHT
	GAS MANHOLE
	GAS RISER
	SANITARY SEWER CLEANOUT
	SANITARY SEWER MANHOLE
	ELECTRICAL MANHOLE
	ELECTRIC BOX
	ELECTRIC VAULT
	ELECTRIC METER
	ELECTRIC RISER
	AIR CONDITIONER UNIT
	CABLE VAULT
	TELEVISION BOX
	TELEPHONE RISER
	SPRINKLER BOX
	TELEPHONE CABINET
	TELEPHONE RISER
	TRANSFORMER
	STORM SEWER MANHOLE
	STORM CURB INLETS
	STORM AREA INLETS
	WATER MANHOLE
	FIRE HYDRANT
	WATER VALVE
	GAS VALVE
	VENT PIPE
	MONITORING WELL
	PULL BOX
	SIGN
	BOLLARD
	HANDICAPPED STALL

1111 Lincoln Way, Suite 111
P.O. Box 111
Lincoln, NE 68501-4808
TEL: 402.474.6311
FAX: 402.474.5160
www.olssonassociates.com

OVER-EXCAVATION PLAN		88 EAST LAKE FLATS		2014		LINCOLN, NE	
REV. NO.		DATE		REVISIONS DESCRIPTION		REVISIONS	
1		6.17.14		SITELAYOUT REVISIONS			

drawn by: BRW

checked by: BJM

approved by: BJM

QA/QC by: BJM

project no.: 014-0600

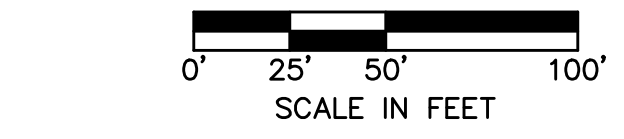
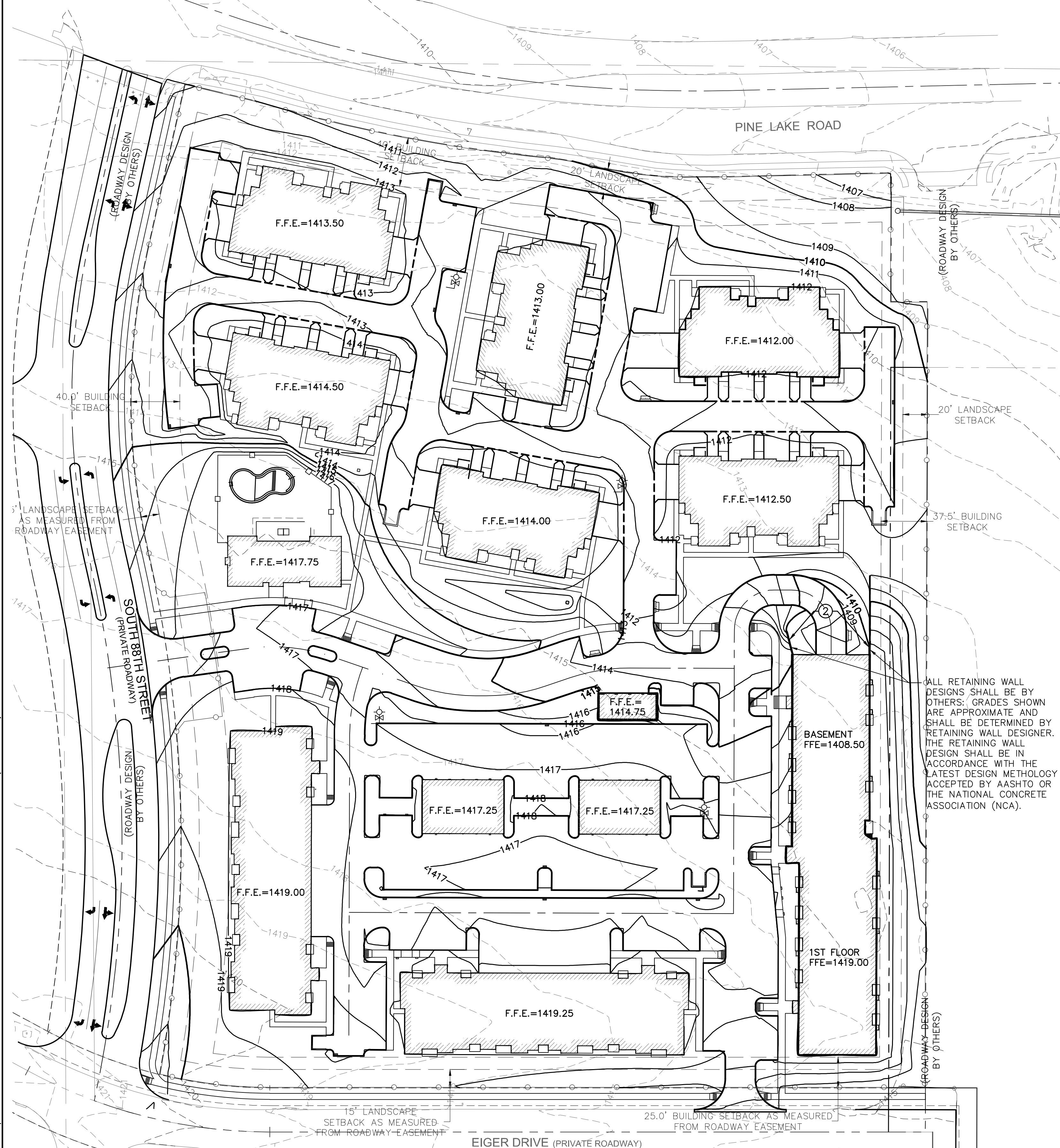
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date: 5.20.14

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88 EAST LAKE FLATS
GRADING PLAN



- LEGEND**
- BOUNDARY LINE
 - PROPERTY LINE
 - UTILITY EASEMENT
 - BOUNDARY SETBACK
 - UTILITY EASEMENT
 - ROAD CENTERLINE
 - CONCRETE PAVEMENT
 - CONCRETE CURB AND GUTTER
 - BUILDING ENVELOPE
 - CONCRETE SIDEWALK
 - EASEMENT LINE
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR

NOTE:
CONTRACTOR SHALL REFERENCE REPORT OF GEOTECHNICAL EXPLORATION FOR EAST LAKE FLATS PREPARED BY OLSSON ASSOCIATES. FOR SITE PREPARATION OF BUILDING, POOL, AND PARKING AREAS; BUILDING FOUNDATION DESIGN, BUILDING FLOOR SLAB AND POOL SUBGRADE PREPARATION; AND PAVEMENT SUBGRADE PREPARATION AND DESIGN.

NOTE:
FOR DETAILS OF OVER EXCAVATION RECOMMENDATIONS, SEE REPORT OF GEOTECHNICAL EXPLORATION, PREPARED BY OLSSON ASSOCIATES.

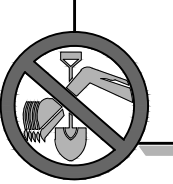
NOTE:
THE CONTOURS SHOWN REPRESENT THE FINISHED GROUND SURFACE. THE CONTRACTOR SHALL ADJUST GRADING IN PAVEMENT AND BUILDING AREAS TO ACCOMMODATE PAVING AND BUILDING SLAB THICKNESS. THE CONTRACTOR SHALL COORDINATE WITH THE BUILDING CONTRACTOR FOR FINAL BUILDING SLAB.

FILL PLACEMENT GUIDELINES		
AREAS OF FILL PLACEMENT	COMPACTION RECOMMENDATION (ASTM D698-STANDARD PROCTOR)	MOISTURE CONTENT (PERCENT OF OPTIMUM)
GRANULAR CUSHION BENEATH FLOOR SLAB (IF USED)	98%	AS NECESSARY TO OBTAIN DENSITY
FLOOR SLAB/POOL SUBGRADE - 12" BELOW THE BASE OF THE GRANULAR CUSHION (IF USED) OR FLOOR SLAB	98%	OPTIMUM TO +3%
STRUCTURAL FILL PLACED BELOW THE FLOOR SLAB SUBGRADE AND WITHIN 5 FEET OF THE PERIMETER OF THE BUILDING PAD	98%	OPTIMUM TO +3%
PAVEMENT SOIL SUBGRADE - 12" BELOW THE BASE OF THE PAVEMENT OR GRANULAR BASE	98%	OPTIMUM TO +3%
STRUCTURAL FILL PLACED BELOW THE BASE OF THE PAVEMENT SOIL SUBGRADE	95%	OPTIMUM TO +3%
UTILITY TRENCHES - WITHIN BUILDING AND PAVEMENT AREAS	98%	OPTIMUM TO +3%
BENEATH LANDSCAPED/GRASS AREAS	92%	AS NECESSARY TO OBTAIN DENSITY

* ALTERNATIVE COMPACTION METHOD - 70% RELATIVE DENSITY

- FLAG NOTES**
- PROPOSED SWALE, CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS. (MINIMUM 1% SLOPE)
 - PROPOSED RETAINING WALL, CONTRACTOR SHALL DESIGN AND SUBMIT SHOP DRAWINGS FOR REVIEW. OWNER/ ARCHITECT TO APPROVE STYLE AND COLOR.
 - FILL TO BE PLACED AGAINST BUILDING STRUCTURE
 - EXPOSED FOUNDATION. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS.

- GRADING PROCEDURE NOTES**
- GENERAL:**
- SEE REPORT OF GEOTECHNICAL EXPLORATION BY OLSSON ASSOCIATES DATED MAY 29, 2014 FOR ALL GEOTECHNICAL RECOMMENDATIONS. IF THERE IS DISCREPANCY BETWEEN THE REPORT AND THE CONSTRUCTION PLANS, THE CONTRACTOR SHALL INFORM THE ENGINEER AND THE REPORT SHALL TAKE PRECEDENCE.
- GENERAL SITE PREPARATION:**
- SITE CLEARING, GRUBBING, AND STRIPPING SHALL BE COMPLETED ONLY DURING PERIODS OF DRY WEATHER CONDITIONS. VEGETATION STRIPPING DEPTH BETWEEN 1 AND 12 INCHES SHALL BE ANTICIPATED ACROSS THE SITE, WHERE PRESENT.
 - PRIOR TO STRUCTURAL FILL PLACEMENT, THE BASE OF THE EXCAVATION OPERATIONS, SHALL BE EVALUATED BY THE GEOTECHNICAL ENGINEER. ONCE THE BASE OF THE EXCAVATION IS DOCUMENTED TO BE STABLE, STRUCTURAL FILL MAY BE PLACED AND COMPACTED TO DESIGN GRADE PER THE GEOTECHNICAL REPORT.
 - AT THE BASE OF THE EXCAVATION OPERATIONS, CONTRACTOR SHALL SCARIFY AND RECOMPACT THE UPPER TWELVE (12) INCHES OF EXPOSED SUBGRADE. THE SUBGRADE SHALL BE COMPACTED TO THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
 - UNSTABLE AND UNSUITABLE SOILS, WHICH CANNOT BE ADEQUATELY DENSIFIED IN-PLACE, SHOULD BE REMOVED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. IF REQUIRED, THE METHODS OF STABILIZATION WILL TYPICALLY INCLUDE THE USE OF CRUSHED STONE AND/OR A GEOSYNTHETIC FABRIC OR GRID INSTALLED OVER THE SOFT SOILS.
 - AREAS TO RECEIVE STRUCTURAL FILL SHALL BE PROOFROLLED WITH A LOADED DUMP TRUCK, SCRAPER, OR SIMILAR RUBBER-TIRED EQUIPMENT WEIGHING AT LEAST 15 TONS TO DETECT ANY LOCALIZED AREAS OF INSTABILITY. UNSTABLE AREAS SHALL BE REWORKED TO PROVIDE A UNIFORM SUBGRADE. PROOFROLLING OPERATIONS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER.
- OVER-EXCAVATION FOR BUILDINGS AND POOL AREAS:**
- THE BUILDING AND POOL AREAS SHALL BE OVEREXCAVATED TO REMOVE THE EXISTING FILL, PEORIA LOESS, LOVELAND FORMATION, AND WEATHERED AND UNWEATHERED GLACIAL TILL SOILS TO A DEPTH OF TWO (2) FEET BELOW THE BASE OF THE FLOOR SLABS AND POOL AREA AND REPLACED WITH LEAN CLAY STRUCTURAL FILL MATERIAL UP TO THE FINISHED FLOOR ELEVATION.
 - OVER-EXCAVATION SHALL EXTEND HORIZONTALLY FIVE (5) FEET BEYOND THE OUTSIDE PERIMETER OF THE STRUCTURES.
 - ALL OVER-EXCAVATED SUBGRADES SHALL BE OBSERVED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO STRUCTURAL FILL PLACEMENT.
 - EXCAVATIONS SHALL BE SLOPED AT A 1(H):1(V) TO PERMIT CONTROLLED FILL TO BE PLACED AGAINST THE SIDES OF THE EXCAVATIONS TO THE COMPACTION REQUIREMENTS FOR STRUCTURAL FILL. BACKFILL PLACED ON SLOPES WITHIN THE BUILDING AND POOL AREAS SHALL BE BENCHMARKED HORIZONTALLY A MINIMUM OF FIVE (5) FEET INTO THE SLOPE, RESULTING LIFTS OF FILL PLACED AND COMPACTED IN NEAR HORIZONTAL PLANES.
 - THE OVER-EXCAVATED AREAS SHALL BE BACKFILLED IN ACCORDANCE WITH THE STRUCTURAL FILL SECTION OF THE GEOTECHNICAL REPORT. ALL STRUCTURAL FILL MATERIALS PLACED SHALL HAVE A LIQUID LIMIT LESS THAN 45, A PLASTICITY INDEX LESS THAN 25.
 - OVER-EXCAVATION FOR LIGHTLY LOADED FOUNDATIONS (BEARING PRESSURE LESS THAN 2,000 PSF):
 - FOUNDATIONS SHALL BE OVER-EXCAVATED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW THE BOTTOM OF FOOTINGS. FOOTING OVER-EXCAVATION SHALL BE BACKFILLED WITH OFF-SITE LEAN CLAY STRUCTURAL FILL SOILS THAT MEETS THE REQUIREMENTS AS SPECIFIED IN THE GEOTECHNICAL REPORT.
 - OVER-EXCAVATION SHALL EXTEND HORIZONTALLY TWO (2) FEET BEYOND THE OUTSIDE EDGE OF THE FOOTING.
 - ALL OVER-EXCAVATED SUBGRADES SHALL BE OBSERVED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO STRUCTURAL FILL PLACEMENT.
 - EXCAVATIONS SHALL BE SLOPED AT A 1(H):1(V) TO PERMIT CONTROLLED FILL TO BE PLACED AGAINST THE SIDES OF THE EXCAVATIONS TO THE COMPACTION REQUIREMENTS FOR STRUCTURAL FILL. BACKFILL PLACED ON SLOPES WITHIN THE BUILDING AREA SHALL BE BENCHMARKED HORIZONTALLY A MINIMUM OF THREE (3) FEET INTO THE SLOPE, RESULTING LIFTS OF FILL PLACED AND COMPACTED IN NEAR HORIZONTAL PLANES.
 - OVER-EXCAVATED AREAS SHALL BE BACKFILLED IN ACCORDANCE WITH THE STRUCTURAL FILL SECTION OF THE GEOTECHNICAL REPORT. ALL STRUCTURAL FILL MATERIALS PLACED SHALL HAVE A LIQUID LIMIT LESS THAN 45, A PLASTICITY INDEX LESS THAN 25 WITHIN TWO (2) FEET OF THE BOTTOM OF THE LIGHTLY LOADED FOOTINGS.
- STRUCTURAL FILL:**
- ALL UNSUITABLE SOILS SHALL BE REMOVED AND REPLACED WITH COMPACTED STRUCTURAL FILL.
 - UNSTABLE SOILS SHALL NOT BE REUSED AS FILL MATERIALS BELOW BUILDING, POOL, AND PAVEMENT AREAS AND FOOTINGS.
 - STRUCTURAL FILL MATERIALS PLACED WITHIN TWO (2) FEET OF THE BASE OF THE BUILDING FLOOR SLABS, POOL AREA, AND LIGHTLY LOADED FOOTINGS SHALL HAVE A LIQUID LIMIT LESS THAN 45, A PLASTICITY INDEX LESS THAN 25. STRUCTURAL FILL MATERIAL PLACED IN PAVEMENT AREAS SHALL HAVE A LIQUID LIMIT LESS THAN 50, A PLASTICITY INDEX LESS THAN 30.
 - SEE GEOTECHNICAL REPORT FOR RECOMMENDATIONS FOR REUSE OF ON-SITE SOIL MATERIALS. THE SUITABILITY OF STRUCTURAL FILL SOILS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER THROUGH ATTERBERG LIMITS TESTING DURING CONSTRUCTION.
 - IMPORTED FILL MATERIAL SHALL BE TESTED PRIOR TO PLACEMENT AT THE SITE TO VERIFY IT COMPLIES WITH THE CRITERIA RECOMMENDED IN THE GEOTECHNICAL REPORT.
 - STRUCTURAL FILL SHALL BE PLACED IN THIN LIFTS, DEPENDING ON COMPACTION EQUIPMENT, IN GENERAL, LIFTS OF FOUR (4) TO EIGHT (8) INCHES LOOSE MEASUREMENT.
 - EXCAVATIONS SHALL BE SLOPED AT A 1(H):1(V) TO PERMIT CONTROLLED FILL TO BE PLACED AGAINST THE SIDES OF THE EXCAVATIONS TO THE COMPACTION REQUIREMENTS FOR STRUCTURAL FILL. FILL PLACED ON SLOPES WITHIN THE BUILDING AND BIN AREAS SHALL BE BENCHMARKED HORIZONTALLY A MINIMUM OF FIVE (5) FEET INTO THE SLOPE, RESULTING LIFTS OF FILL PLACED AND COMPACTED IN NEAR HORIZONTAL PLANES. BENCHES SHALL HAVE A VERTICAL HEIGHT NO GREATER THAN TWO (2) FEET WITH LIFTS PLACED AND COMPACTED AS REQUIRED. LIFTS OF FILL MATERIAL SHALL BE PLACED AND COMPACTED TO ALLOW OVERLYING LIFTS TO INTERLOCK WITH THE UNDERLYING SOILS.
- CONSTRUCTION EQUIPMENT MOBILITY:**
- THE CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO IMPROVE CONSTRUCTION MOBILITY IF CONSTRUCTION MUST PROCEED UNDER UNFAVORABLE CONDITIONS. METHODS FOR COPING WITH EQUIPMENT MOBILITY PROBLEMS MAY RANGE FROM REMOVING SEVERAL FEET OF SOFT WET SOILS TO UTILIZING CRUSHED STONE MATERIALS AND STABILIZATION FABRIC. OTHER METHODS INCLUDE CEMENT MODIFICATION OF SOILS, LIME STABILIZATION, ETC. THE OPTIMAL APPROACH SHALL BE DETERMINED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION.
- TEMPORARY SLOPES AND EXCAVATIONS:**
- CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 - THE CONTRACTOR SHALL BE AWARE THAT SLOPE HEIGHT, SLOPE INCLINATION, AND EXCAVATION DEPTHS (INCLUDING UTILITY TRENCH EXCAVATIONS) SHALL IN NO CASE EXCEED THOSE SPECIFIED IN LOCAL, STATE, OR FEDERAL SAFETY REGULATION; E.G. OSHA HEALTH AND SAFETY STANDARDS CFR EXCAVATIONS, 29 CFR PART 19266, OR SUCCESSOR REGULATIONS.
- FLOOR SLAB SUBGRADE PREPARATION:**
- TO PREPARE THE FLOOR SLAB SUBGRADE, THE TOP TWELVE (12) INCHES OF THE SUBGRADE SHALL BE COMPACTED PER THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT, DEPENDING ON THE TIME LAPSE BETWEEN INITIAL SUBGRADE PREPARATION AND INSTALLATION OF THE CONCRETE FLOOR SLAB, IT MAY BE NECESSARY TO APPROPRIATELY ADJUST THE MOISTURE CONTENT OF THE SUBGRADE SOILS IMMEDIATELY PRIOR TO THE PAVEMENT CONSTRUCTION.
 - THE FINAL SUBGRADE SHALL BE PROOFROLLED AND EVALUATED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER IMMEDIATELY PRIOR TO THE PAVEMENT CONSTRUCTION.
- PAVEMENT SUBGRADE PREPARATION:**
- TO PREPARE THE PAVEMENT SUBGRADE, THE TOP TWELVE (12) INCHES OF THE SUBGRADE SHALL BE COMPACTED PER THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. DEPENDING ON THE TIME LAPSE BETWEEN INITIAL SUBGRADE PREPARATION AND INSTALLATION OF THE CONCRETE PAVEMENT, IT MAY BE NECESSARY TO APPROPRIATELY ADJUST THE MOISTURE CONTENT OF THE SUBGRADE SOILS IMMEDIATELY PRIOR TO THE PAVEMENT CONSTRUCTION.
 - THE FINAL SUBGRADE SHALL BE PROOFROLLED AND EVALUATED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER IMMEDIATELY PRIOR TO PLACEMENT OF THE CONCRETE TO DETECT ANY LOCALIZED AREAS OF INSTABILITY.

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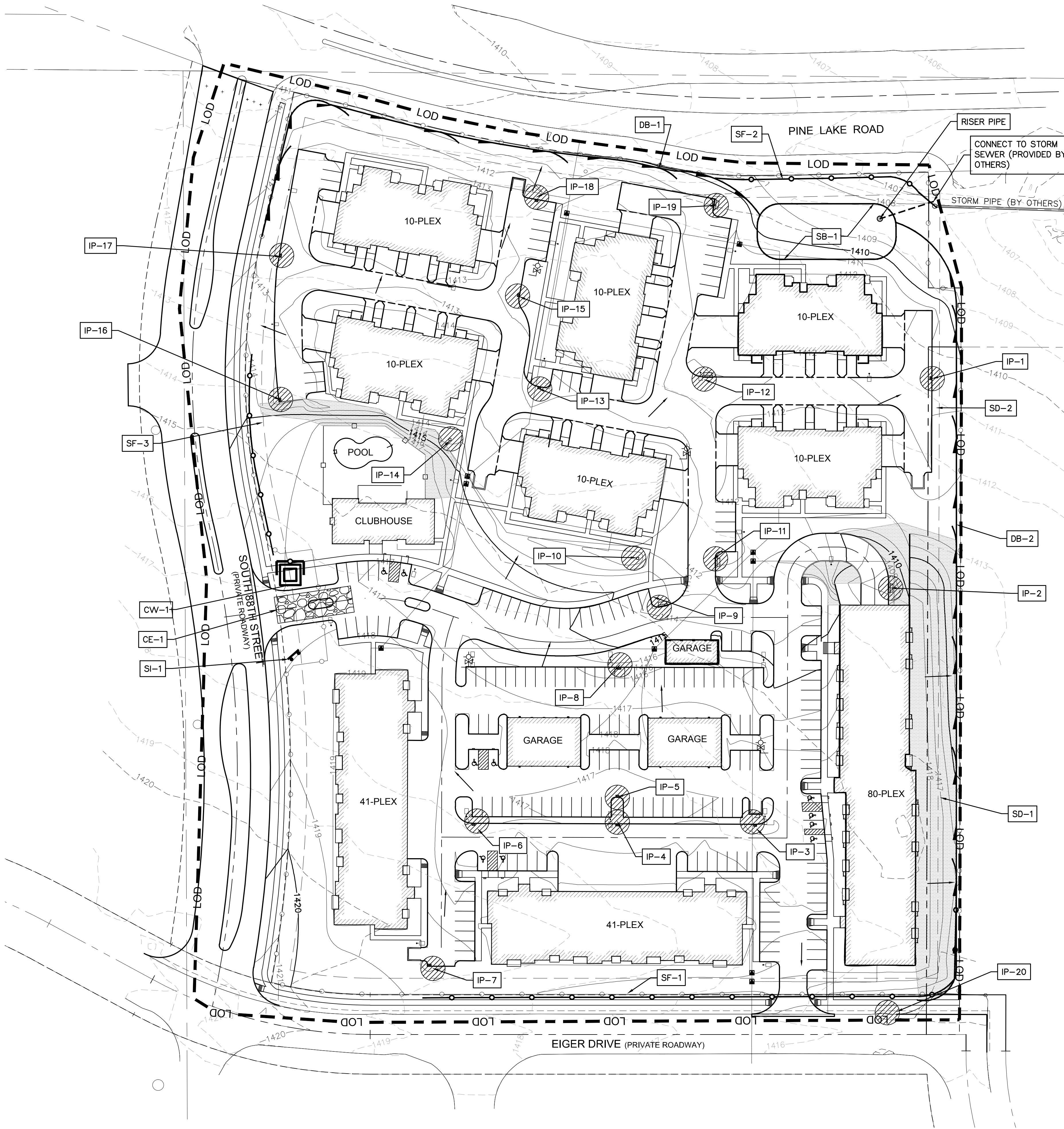
1111 Lincoln Ave., Suite 111
P.O. Box 111
Lincoln, NE 68501-4808
TEL 402.474.6311
FAX 402.474.5160
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REVISIONS		REVIEWS	
REV. NO.	DATE	REVISIONS DESCRIPTION	DATE
1	6.17.14	SITELAYOUT REVISIONS	
		2014	
		88 EAST LAKE FLATS	
		LINCOLN, NE	
		GRADING PLAN	
		SHEET C2.1	

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

88 EAST LAKE FLATS
EROSION CONTROL PLAN



- EROSION AND SEDIMENT CONTROL NOTES
- THIS EROSION AND SEDIMENT CONTROL PLAN (E & S PLAN) IS PART OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THIS E & S PLAN MUST BE USED IN CONJUNCTION WITH THE SWPPP.
 - ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - ALL HERBACEOUS VEGETATION SHALL BE REMOVED FROM WITHIN THE LIMITS OF THE GRADING, STOCKPILED AND REDISTRIBUTED WITH THE TOPSOIL FOR FINAL GRADING AND PERMANENT STABILIZATION. IF POSSIBLE, LEAVE VEGETATION BUFFER TO NEIGHBORING PROPERTIES AND SENSITIVE AREAS.
 - THE ENGINEER WILL FLAG ANY TREES TO BE REMOVED. NO TREES SHALL BE REMOVED WITHOUT PRIOR APPROVAL FROM THE OWNERS REPRESENTATIVE & OR THE ENGINEER.
 - THE CONTRACTOR SHALL INSTALL GRAVEL CHECK DAMS OR SEDIMENT BARRIERS IN ANY GULLY WASHOUT AREAS TO CONTROL FURTHER EROSION AS DIRECTED BY THE ENGINEER.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT CONTROL STRUCTURES UNTIL FINAL SITE STABILIZATION IS ACHIEVED.
 - ADDITIONAL SILT FENCE SHALL BE INSTALLED WHEN NECESSARY TO PREVENT SEDIMENT FROM MIGRATING ONTO THE ROADS OR ADJACENT PROPERTY.
 - INSPECTION AND MAINTENANCE OF EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH SECTION 9.7.4 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL.
 - WHEN STORM SEWERS ARE INSTALLED AND STREETS PAVED, ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IF SITE IS NOT STABILIZED.
 - TEMPORARY SEEDING SHALL BE IN ACCORDANCE WITH CHAPTER 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL.
 - THE STRIPPING STOCKPILE IS APPROXIMATE, THE ACTUAL STRIPPING STOCKPILE SHALL BE LOCATED BY THE GRADING CONTRACTOR AT TIME OF GRADING. THE STOCKPILE, SHALL BE STABILIZED WITH TEMPORARY VEGETATION.
 - FOLLOWING SOIL DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS TO THE SURFACE OF ALL PERIMETER CONTROLS, TOPSOIL STOCKPILES, AND ANY OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE WHICH ARE NOT BEING USED FOR MATERIAL STORAGE, OR ON WHICH ACTUAL EARTH MOVING ACTIVITIES ARE NOT BEING PERFORMED.
 - ALL SEDIMENT AND EROSION CONTROL PRACTICES WILL BE INSPECTED AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD BY RESPONSIBLE PERSONNEL. ANY NECESSARY REPAIRS OR CLEAN-UP TO MAINTAIN THE EFFECTIVENESS OF THE BEST MANAGEMENT PRACTICES SHALL BE MADE IMMEDIATELY.
 - BMP IMPLEMENTATION SCHEDULE SHALL BE FOLLOWED FOR INSTALLATION, MAINTENANCE AND REMOVAL OF BMP'S.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND DUST CONTROL. ANY DAMAGE FROM BLOWING DUST OR EROSION AND RUNOFF FROM THE SITE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
 - CONTRACTOR IS RESPONSIBLE FOR OBTAINING PROPER NPDES PERMITS ON ALL BORROW SITES.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT CONTROL BARRIERS FOR A PERIOD OF 1 YEAR AFTER COMPLETION OF THE PROJECT OR UNTIL HE IS RELEASED FROM THIS RESPONSIBILITY BY THE OWNER, WHICHEVER PERIOD IS SHORTER.
 - ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS

SUMMARY OF EROSION CONTROL	
SYMBOL/LABEL	DESCRIPTION
CE-1	CONSTRUCTION ENTRANCE
CW-1	CONCRETE WASHOUT
SI-1	SITE INFORMATION SIGN
IP-1	CURB INLET PROTECTION
IP-2	CURB INLET PROTECTION
IP-3	CURB INLET PROTECTION
IP-4	CURB INLET PROTECTION
IP-5	CURB INLET PROTECTION
IP-6	CURB INLET PROTECTION
IP-7	CURB INLET PROTECTION
IP-8	CURB INLET PROTECTION
IP-9	CURB INLET PROTECTION
IP-10	GRATE INLET PROTECTION
IP-11	CURB INLET PROTECTION
IP-12	CURB INLET PROTECTION
IP-13	CURB INLET PROTECTION
IP-14	GRATE INLET PROTECTION
IP-15	CURB INLET PROTECTION
IP-16	CURB INLET PROTECTION
IP-17	CURB INLET PROTECTION
IP-18	CURB INLET PROTECTION
IP-19	CURB INLET PROTECTION
IP-20	CURB INLET PROTECTION
SF-1	SILT FENCE
SF-2	SILT FENCE
SF-3	SILT FENCE
SD-1	SEEDING
SD-2	SEEDING
SB-1	SEDIMENT BASIN
DB-1	DIVERSION BERM
DB-2	DIVERSION BERM

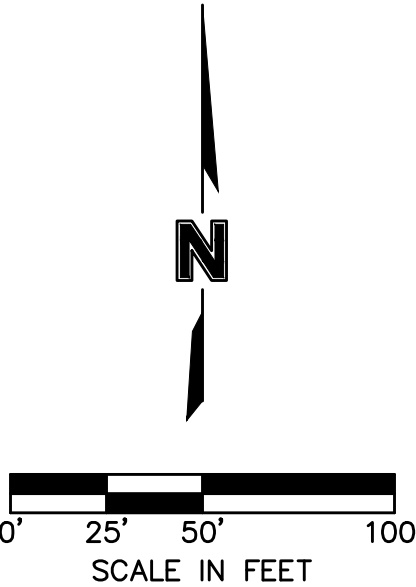
- EROSION CONTROL IMPROVEMENT LEGEND
- CE CONSTRUCTION ENTRANCE/EXIT TO BE BUILT BY CONTRACTOR. MINIMUM 24' WIDE X 70' LONG FROM EXISTING ROAD. 2" TO 3.5" CLEAN STONE, 6" THICK MIN. WITH GEOTEXTILE FILTER FABRIC, PER DETAIL ON SHEET
- SF SILT FENCE MUST BE INSTALLED IN NO GREATER THAN 100' RUNS, THE ENDS OF EACH RUN MUST TURN UPHILL ('J' HOOKS) FOR AN APPROPRIATE DISTANCE TO KEEP WATER FROM FLOWING TO THE NEXT SECTION OF SILT FENCE. (TYPICAL), PER DETAIL ON SHEET
- IP INSTALL INLET PROTECTION PER DETAIL ON SHEET C2.4
- SI INSTALL SWPPP INFORMATION SIGN, PER DETAIL ON SHEET C2.5
- CW INSTALL CONCRETE WASHOUT, PER DETAIL ON SHEET C2.5
- SD SEEDING SHALL BE PROVIDED BY CONTRACTOR. CONTRACTOR TO COORDINATE WITH SEED INSTALLER FOLLOWING FINAL GRADING.
- DB CONSTRUCT DIVERSION BERM PER DETAILS ON SHEET C2.5
- SB CONSTRUCT SEDIMENT BASIN PER DETAILS ON SHEET C2.4

SITE INFORMATION	
TOTAL DISTURBED AREA	12.41 AC
TOTAL SITE AREA	11.78 AC

NOTE:
FOLLOWING GRADING, UTILITY, AND PAVEMENT WORK,
CONTRACTOR SHALL INSTALL SILT FENCE AS DIRECTED BY
THE ENGINEER TO CONTROL SEDIMENT FROM DISCHARGING
INTO ROW AND PAVED AREAS. CONTRACTOR TO PROVIDE
UNIT PRICE FOR SILT FENCE INSTALLATION, MAINTENANCE,
AND REMOVAL.

NOTE:
ALL SILT FENCE SHALL NOT BE INSTALLED WITHIN ANY
EASEMENTS UNLESS APPROVED BY THE ENGINEER.

- LEGEND
- LOD --- LIMITS OF CONSTRUCTION
- PROPOSED BACK OF CURB
- EXISTING BACK OF CURB
- PROPERTY LINE
- CENTERLINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- SILT FENCE
- DIVERSION BERM
- CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING
- INLET PROTECTION
- SWPPP SIGN
- CONCRETE WASHOUT

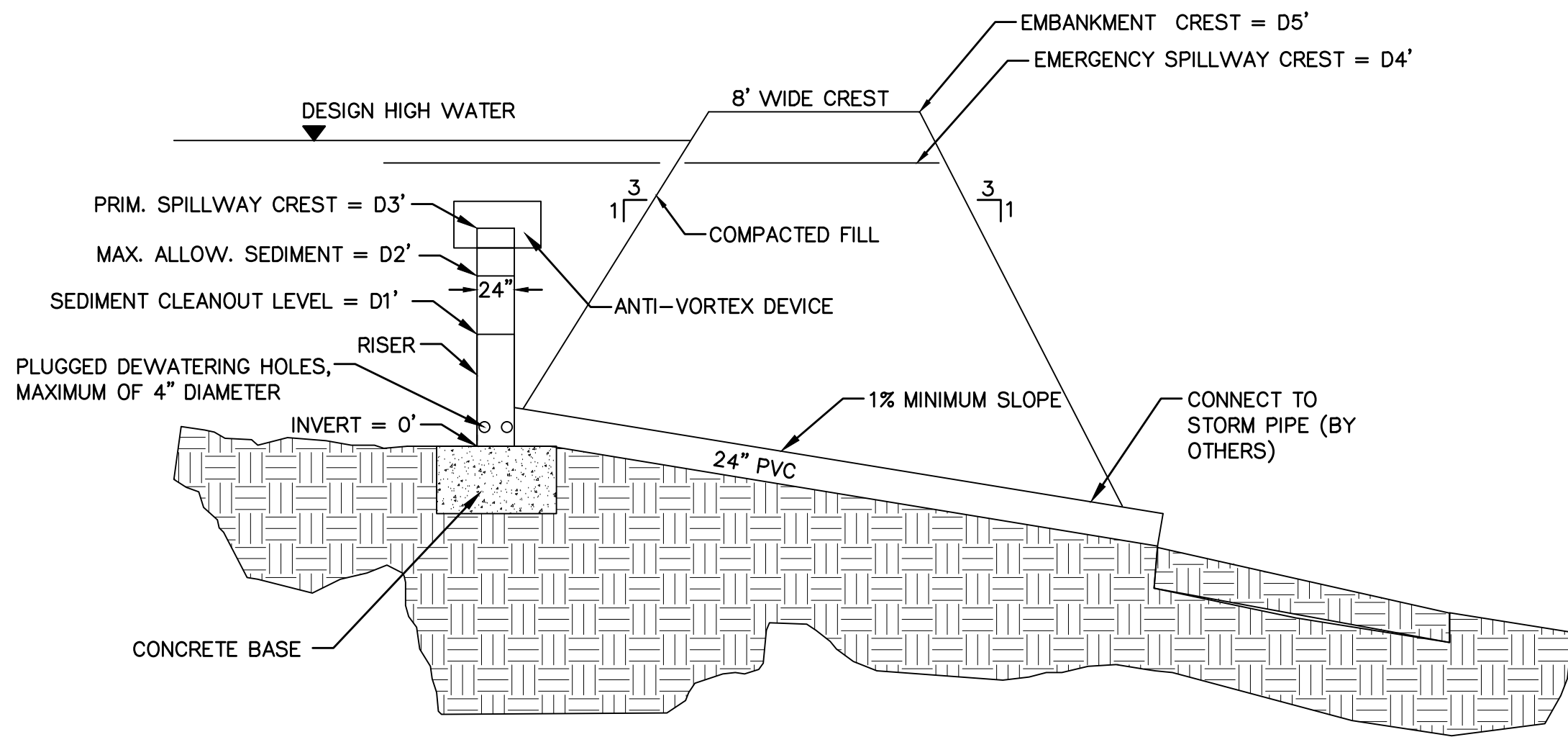
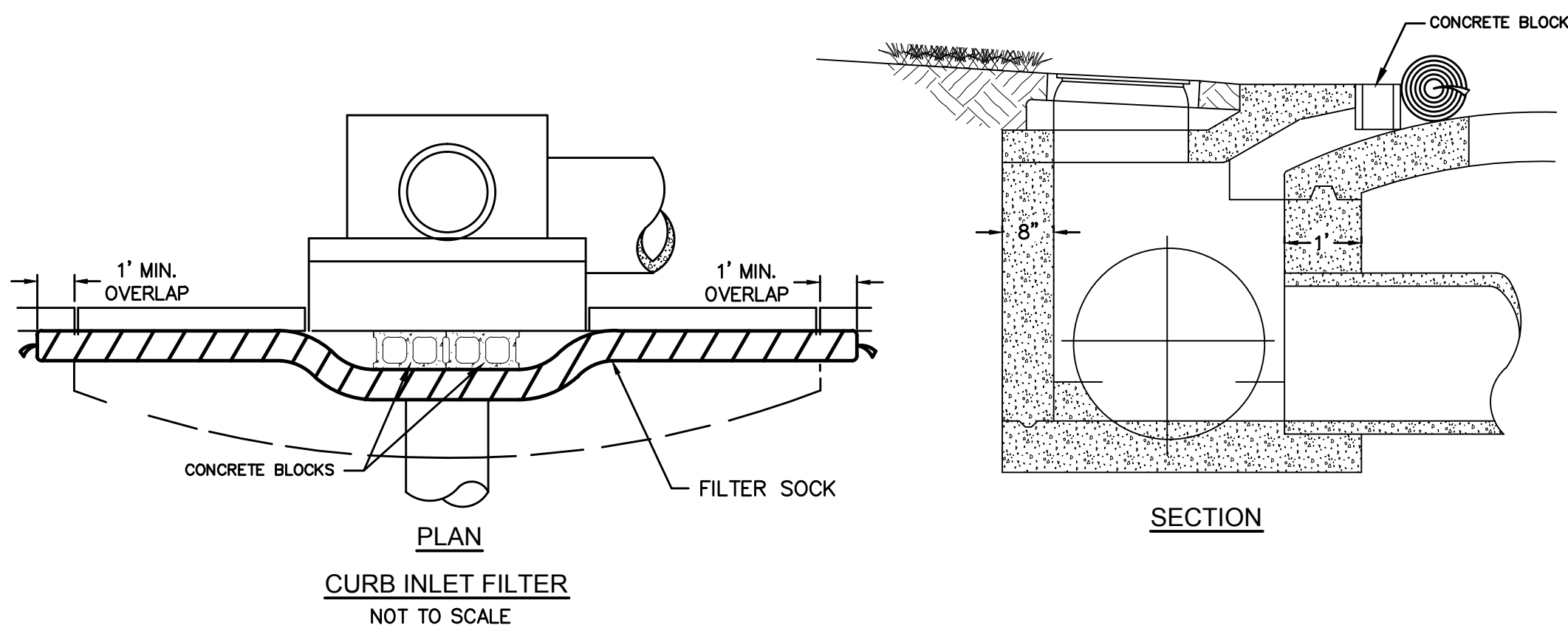


REVISIONS	
REV. NO.	DESCRIPTION
1	SITELAYOUT REVISIONS

EROSION CONTROL PLAN	
88 EAST LAKE FLATS	
LINCOLN, NE	
2014	

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

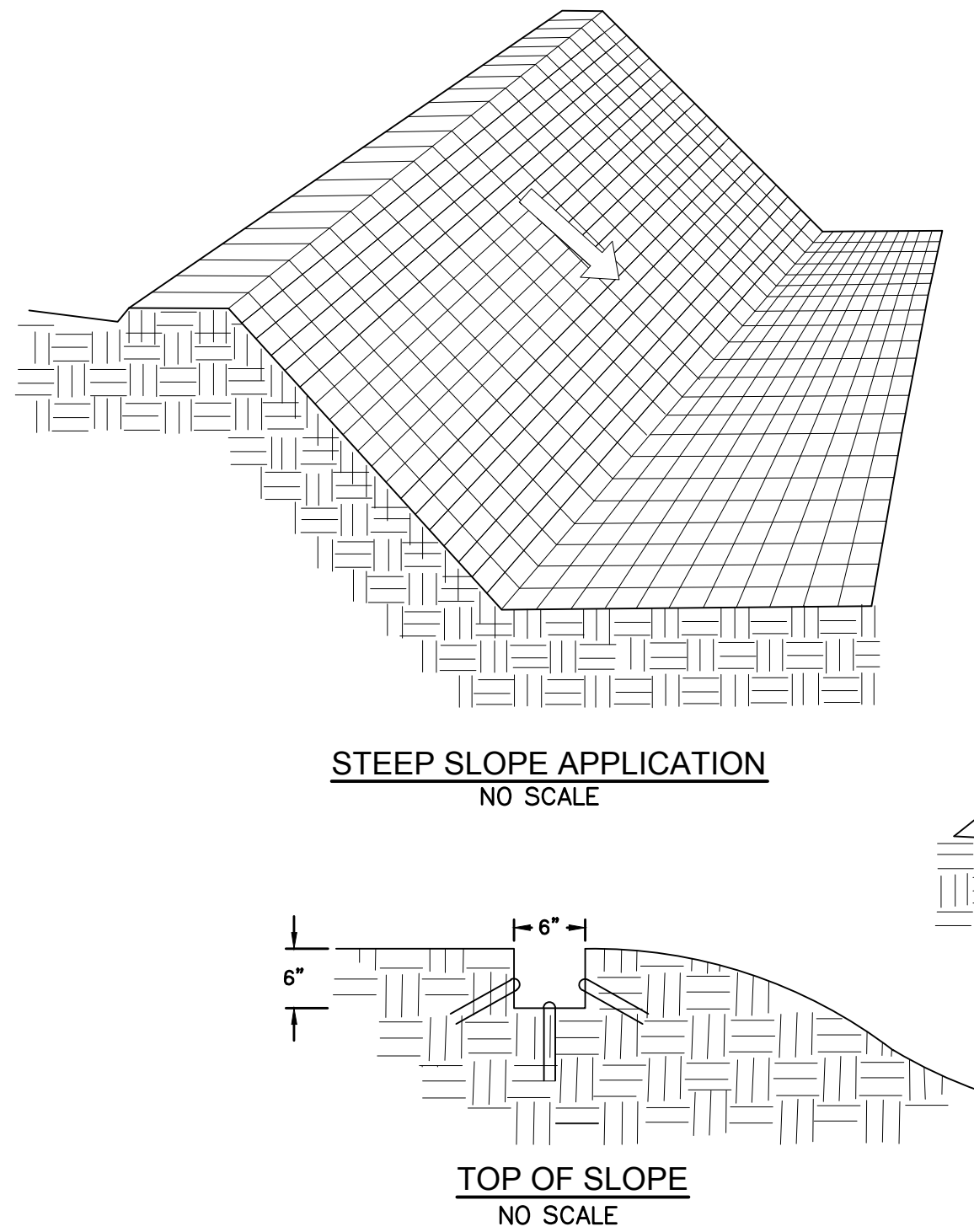
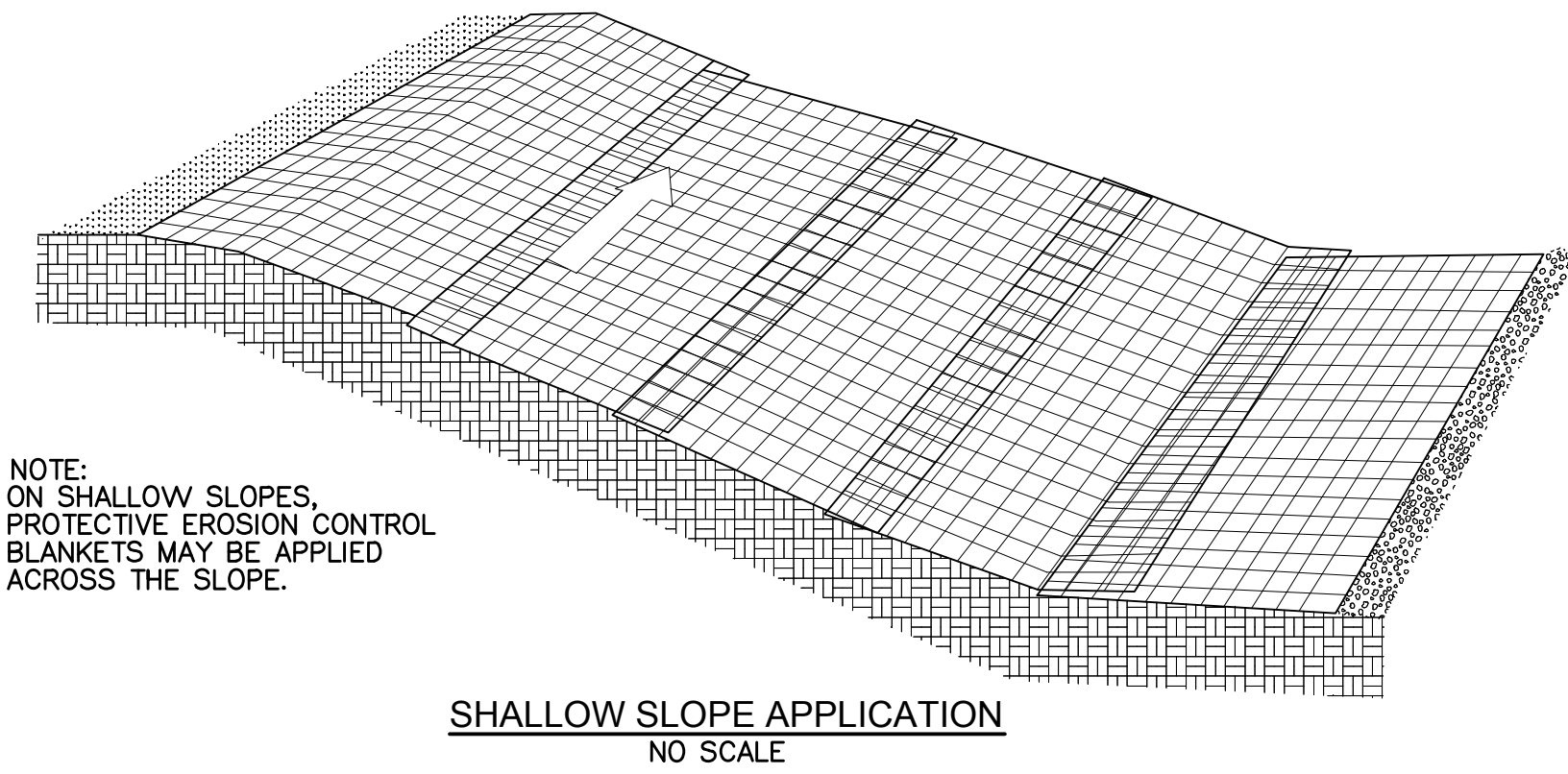
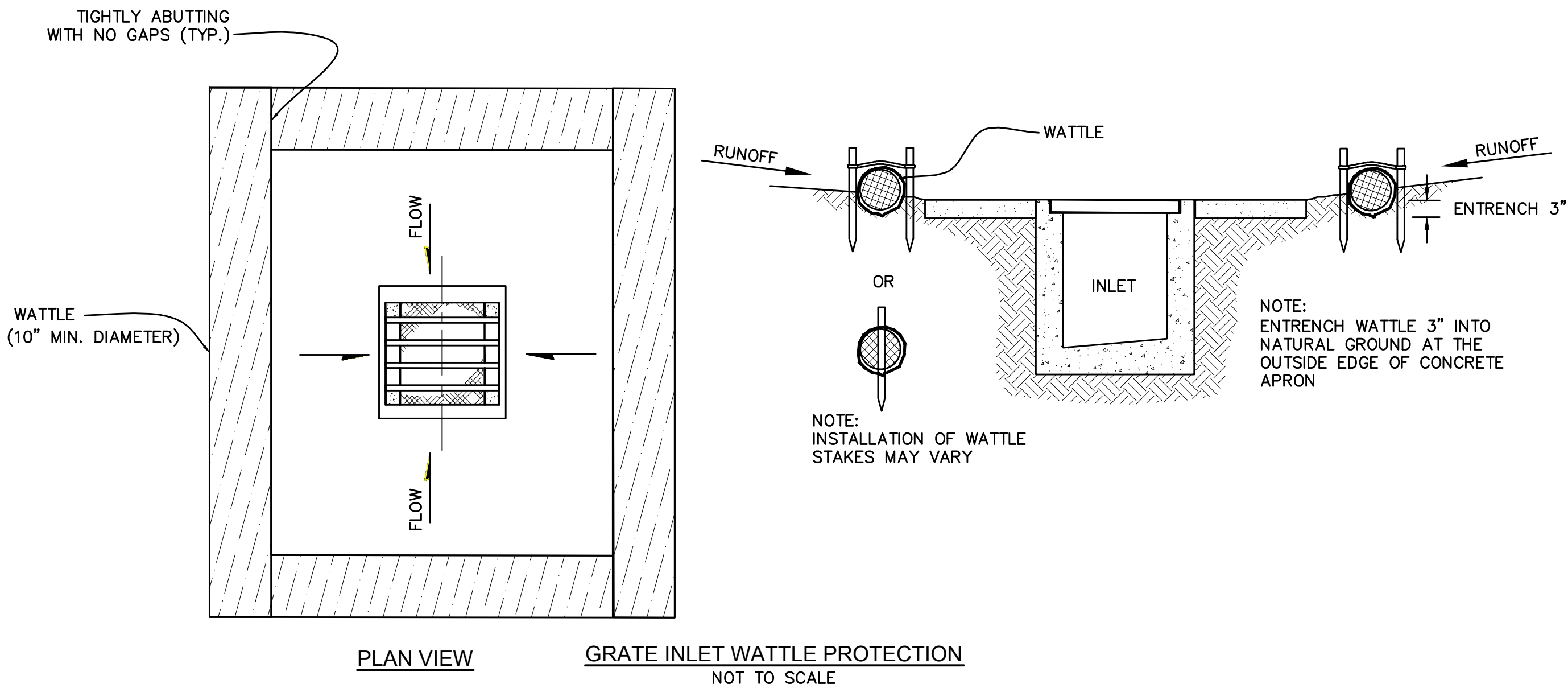
88 EAST LAKE FLATS
EROSION CONTROL DETAILS



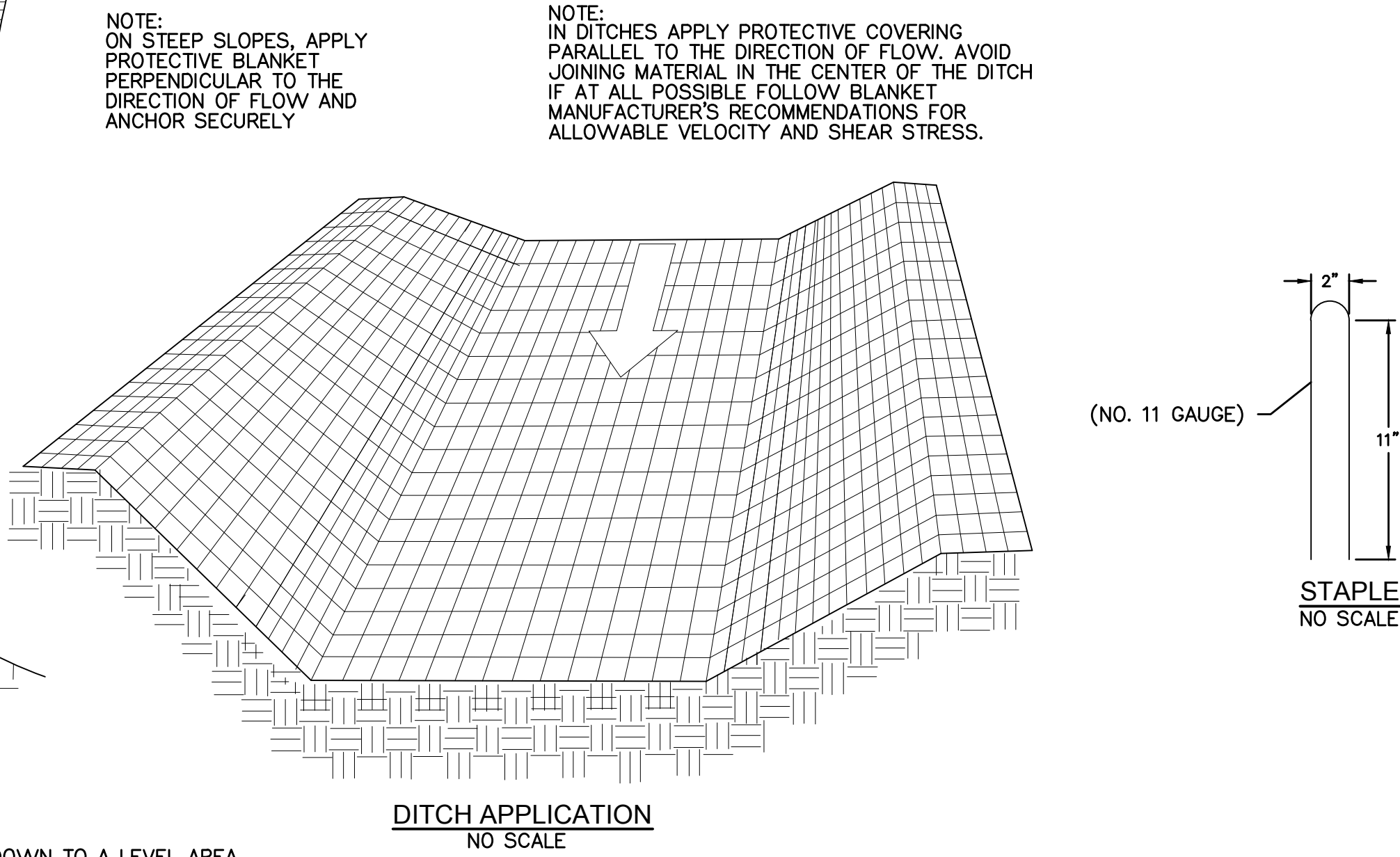
TEMPORARY SEDIMENT BASIN
OUTLET/RISER STRUCTURE DETAIL
NOT TO SCALE

TEMPORARY SEDIMENT BASIN SCHEDULE

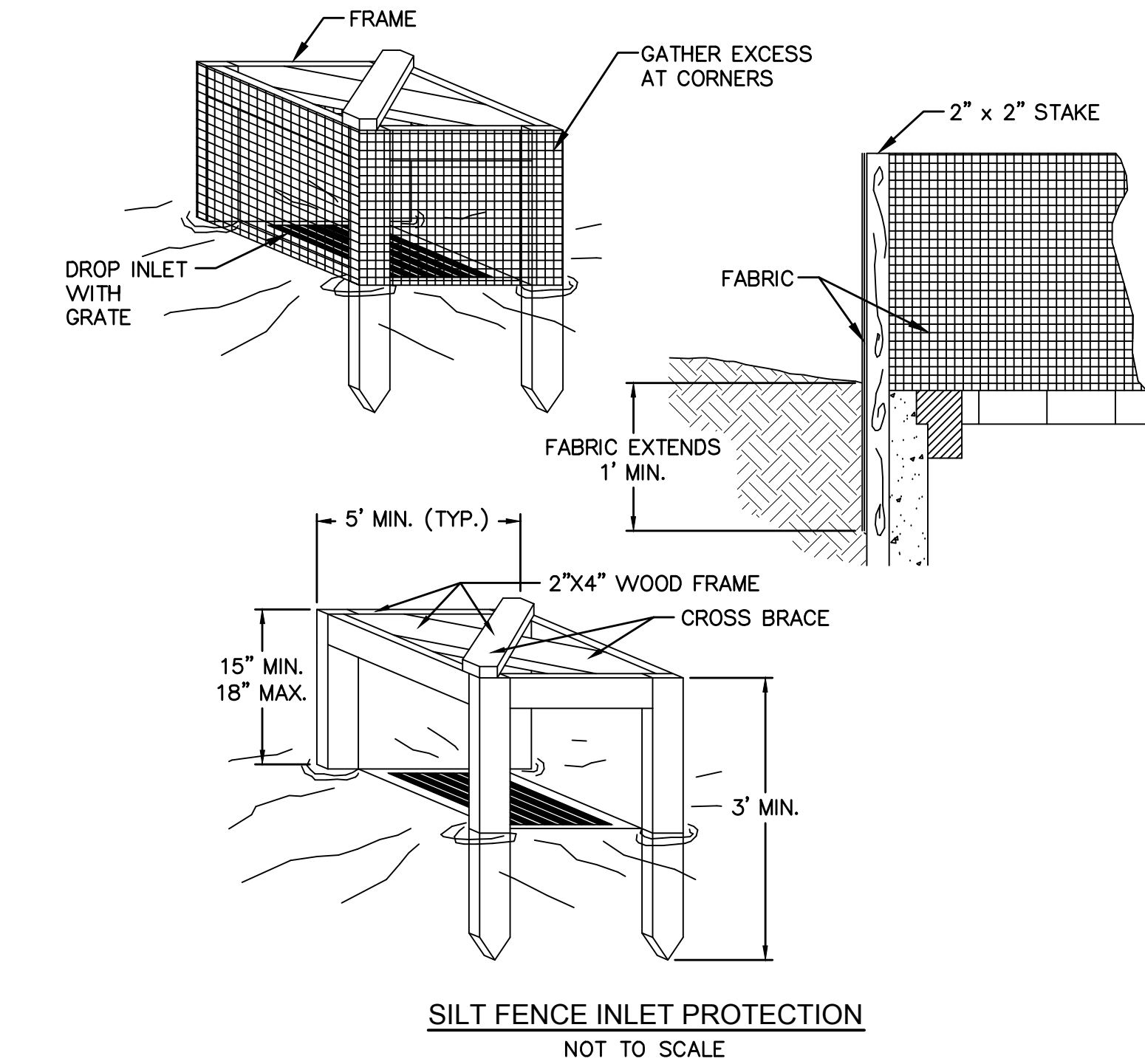
BASIN	DRAINAGE AREA (AC)	REQD. SEDIMENT VOL. (CY)	LENGTH (FT)	WIDTH (FT)	D1 (FT)	D2 (FT)	D3 (FT)	D4 (FT)	D5 (FT)	AVAIL. SEDIMENT VOL. (CY)
1	10	670	100	60	1406	1407	1408	1410	1411	692



NOTE:
BRING MATERIAL DOWN TO A LEVEL AREA
BEFORE TERMINATING THE INSTALLATION



TURF REINFORCEMENT ROLLED EROSION CONTROL



SILT FENCE INLET PROTECTION
NOT TO SCALE

REV	NO.	DATE	REVISIONS DESCRIPTION
1	1	6.17.14	SITELAYOUT REVISIONS

2014

EROSION CONTROL DETAILS
88 EAST LAKE FLATS

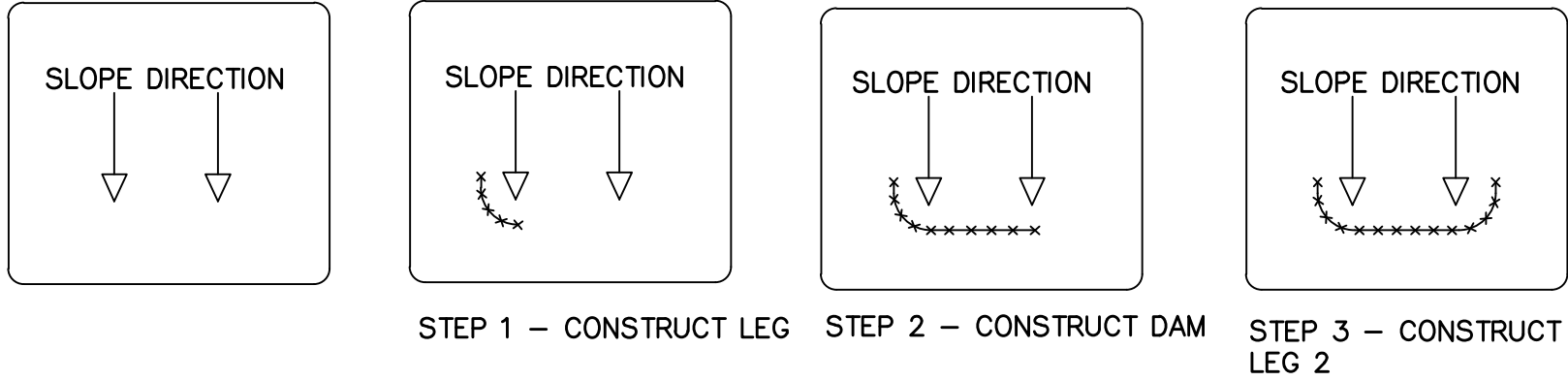
LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

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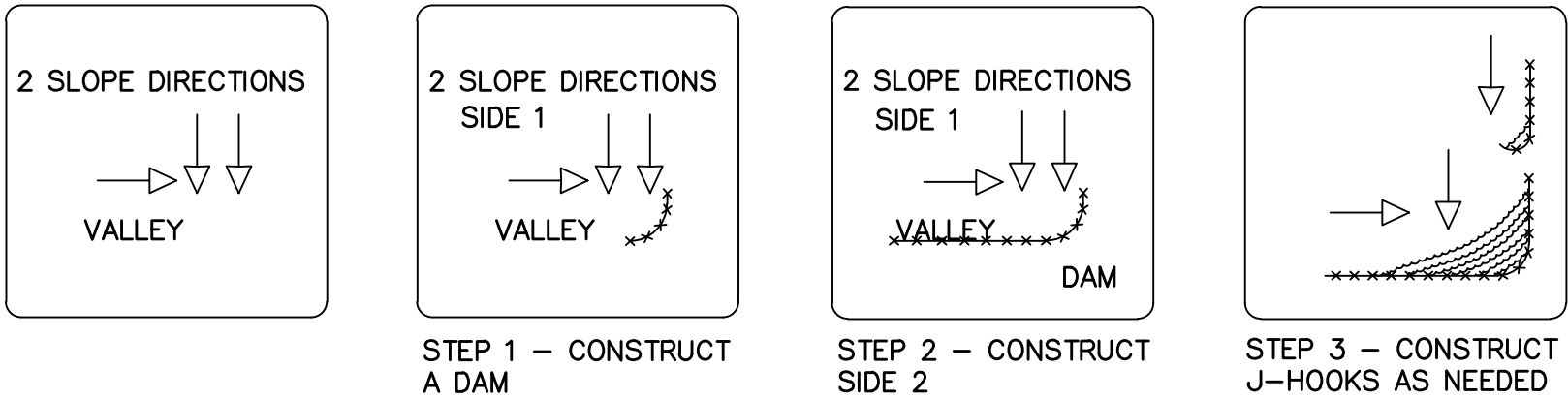
SILT FENCE PLACEMENT/ONE SLOPE

INSTALLATION WITH J-HOOKS OR 'SMILES' INCREASE SILT FENCE EFFICIENCY.

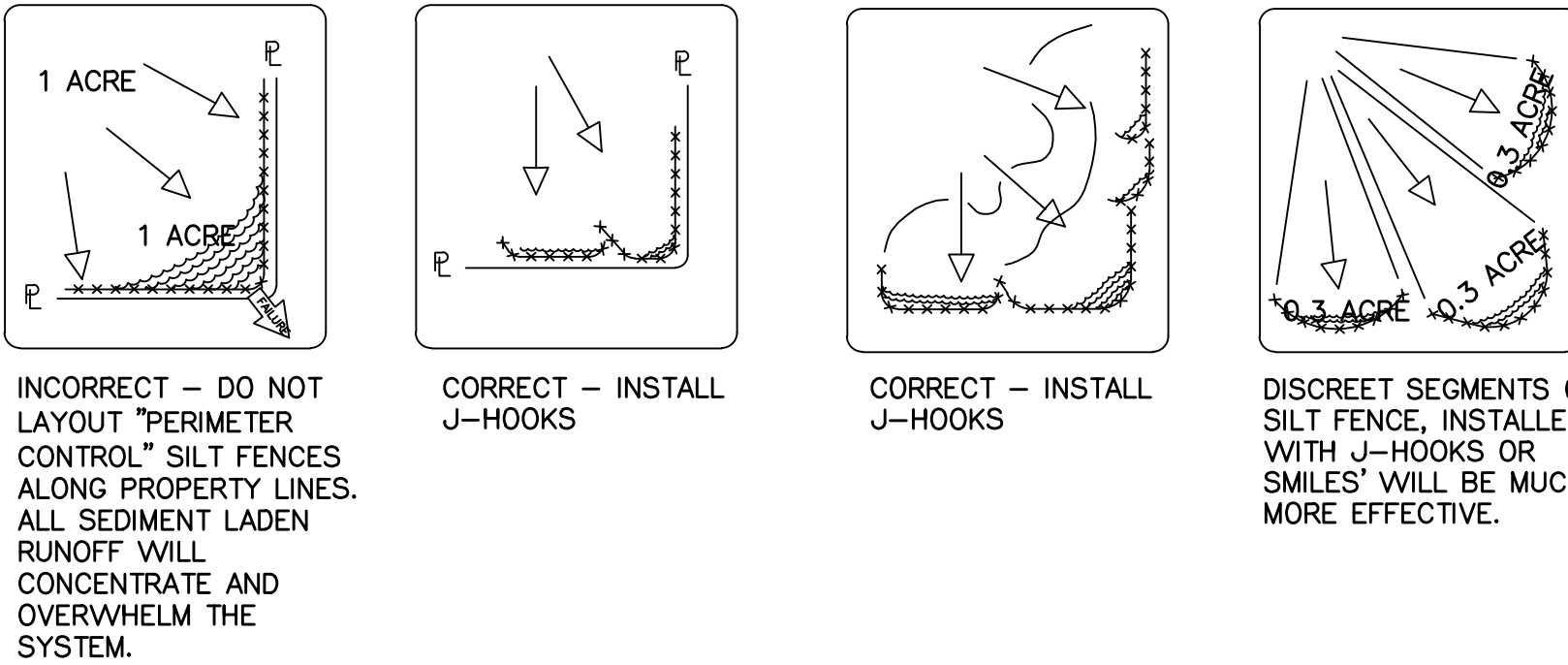


SILT FENCE PLACEMENT/TWO SLOPES

INSTALLATION WITH J-HOOKS WILL INCREASE SILT FENCE EFFICIENCY AND REDUCE EROSION—CAUSING FAILURES.



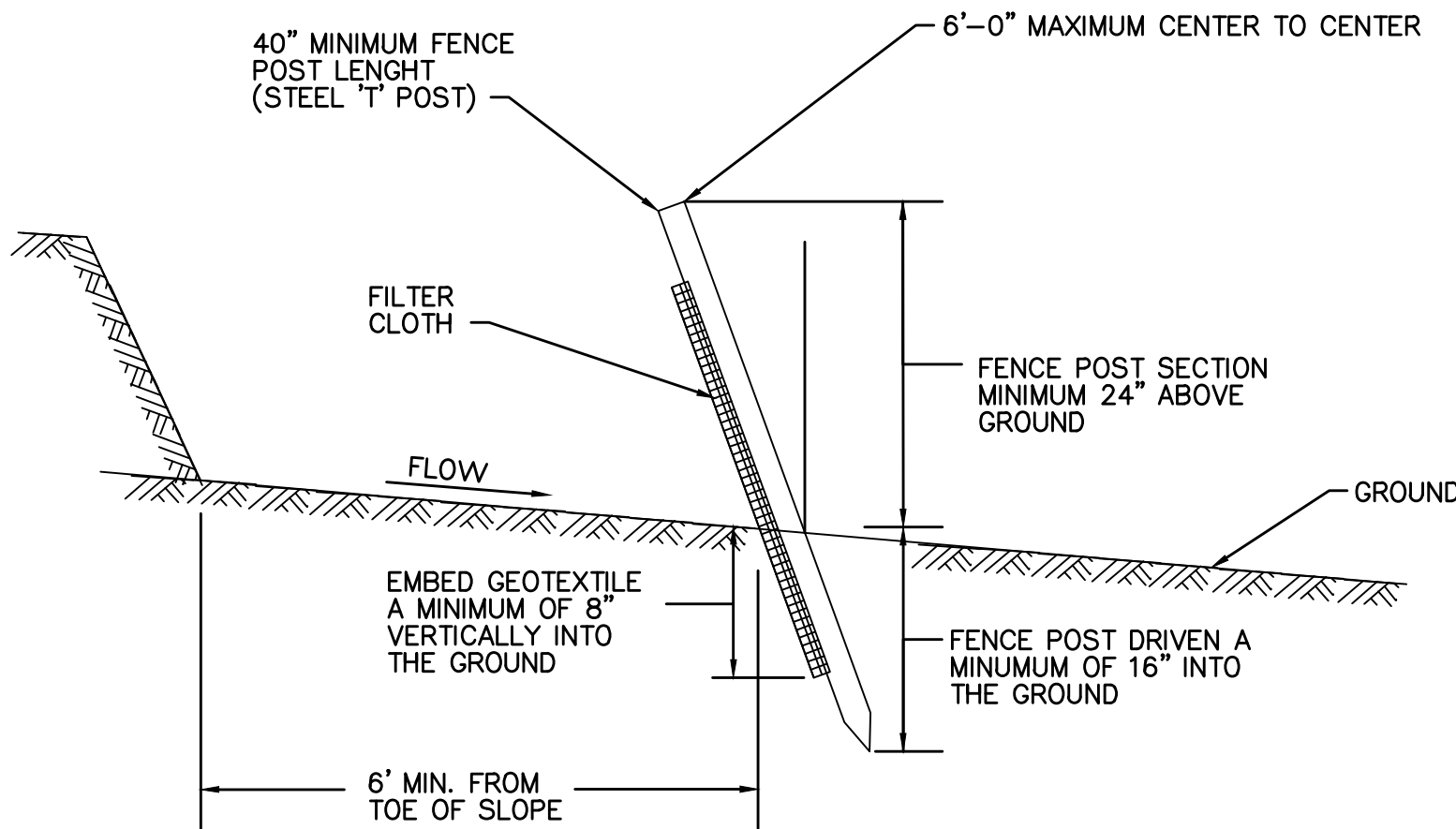
SILT FENCE PLACEMENT/PERIMETER CONTROL



NOTE:
 REFER TO CHAPTER 8 AND 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION ON SEDIMENT AND EROSION CONTROL MEASURES

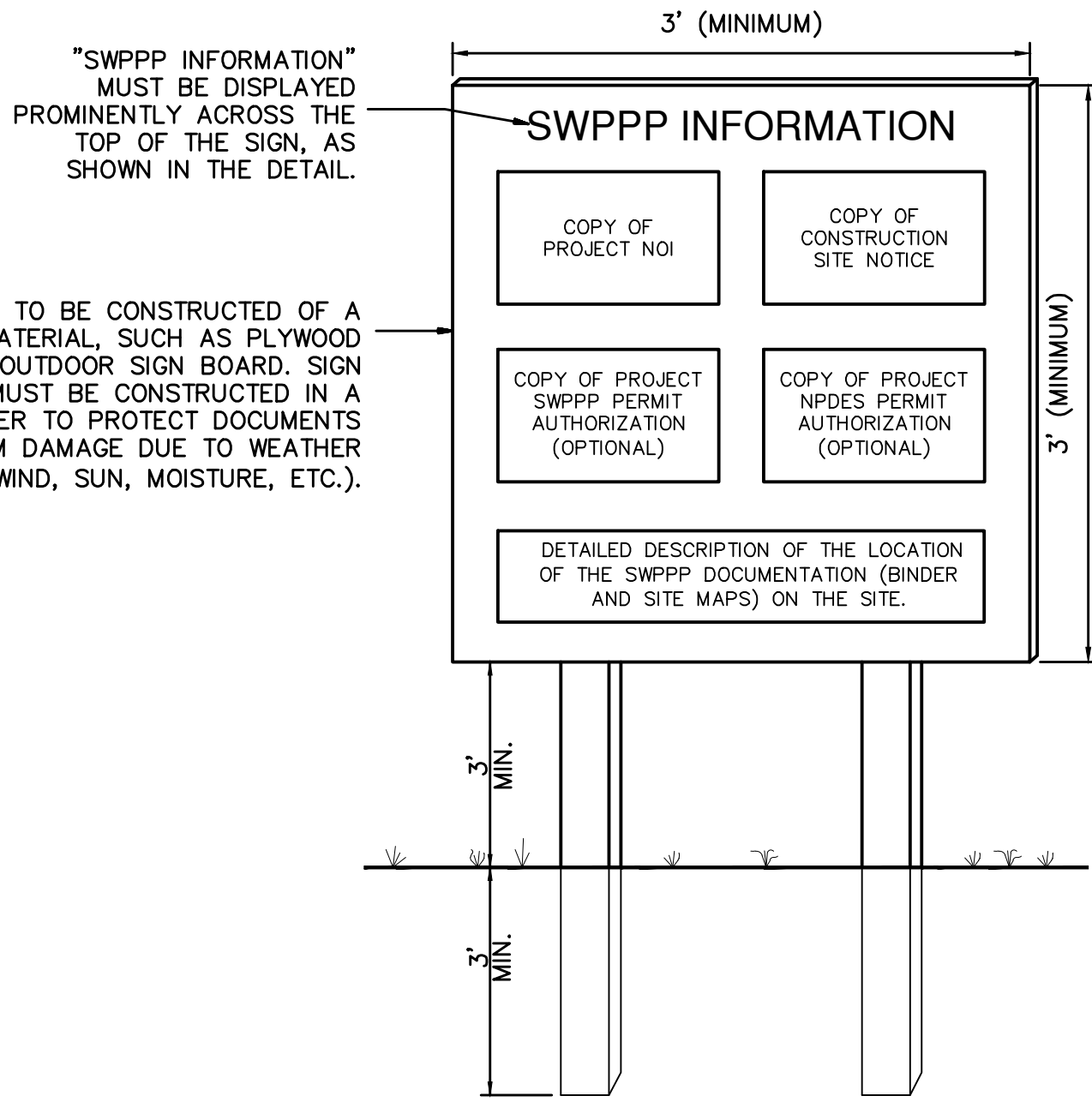
SILT FENCE DETAIL

NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE

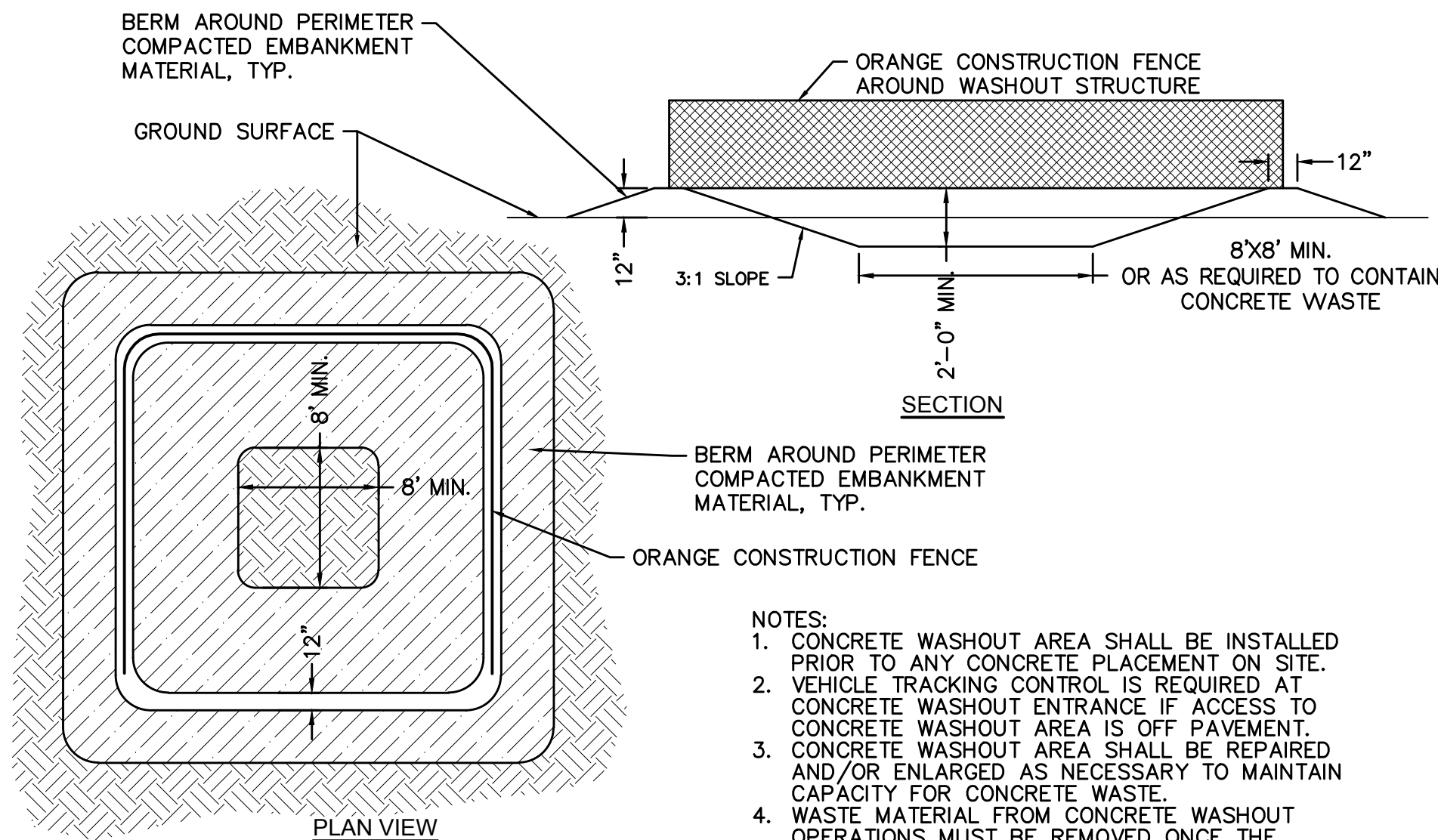


SIGN TO BE CONSTRUCTED OF A RIGID MATERIAL, SUCH AS PLYWOOD OR OUTDOOR SIGN BOARD. SIGN MUST BE CONSTRUCTED IN A MANNER TO PROTECT DOCUMENTS FROM DAMAGE DUE TO WEATHER (WIND, SUN, MOISTURE, ETC.).

- NOTES:**
1. THE SWPPP INFORMATION SIGN MUST BE LOCATED NEAR THE ENTRANCE/EXIT OF THE SITE, SUCH THAT IT IS ACCESSIBLE/VIEWABLE BY THE GENERAL PUBLIC, BUT NOT OBSTRUCTING VIEWS AS TO CAUSE A SAFETY HAZARD.
 2. ALL POSTED DOCUMENTS MUST BE MAINTAINED IN A CLEARLY READABLE CONDITION AT ALL TIMES THROUGHOUT CONSTRUCTION AND UNTIL THE NOTICE-OF-TERMINATION (NOT) IS FILED FOR THE PERMIT.
 3. CONTRACTOR SHALL POST OTHER STORM WATER AND/OR EROSION AND SEDIMENT CONTROL RELATED PERMITS ON THE SIGN AS REQUIRED BY THE LOCAL AGENCY.
 4. SIGN SHALL BE LOCATED OUTSIDE OF PUBLIC RIGHT-OF-WAY AND EASEMENTS UNLESS APPROVED BY THE GOVERNING AGENCY.
 5. CONTRACTOR IS RESPONSIBLE FOR ENSURING STABILITY OF THIS SWPPP INFORMATION SIGN.

SWPPP INFORMATION SIGN

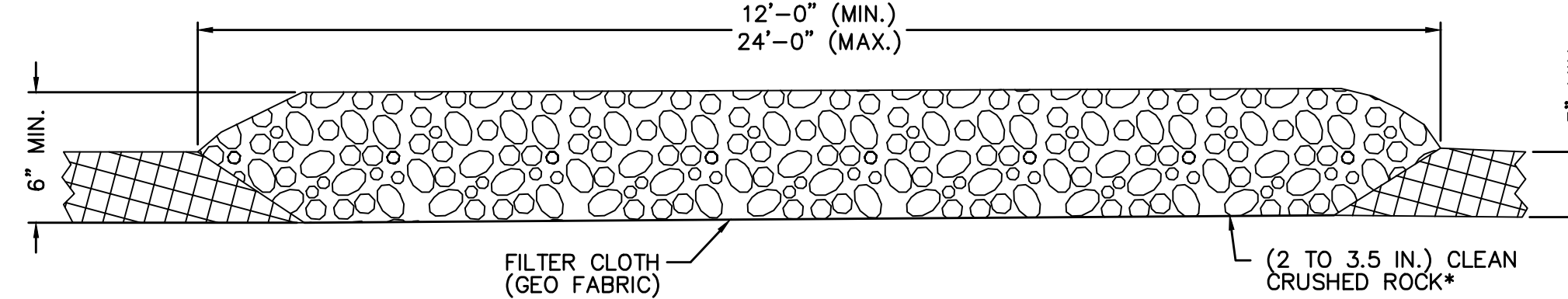
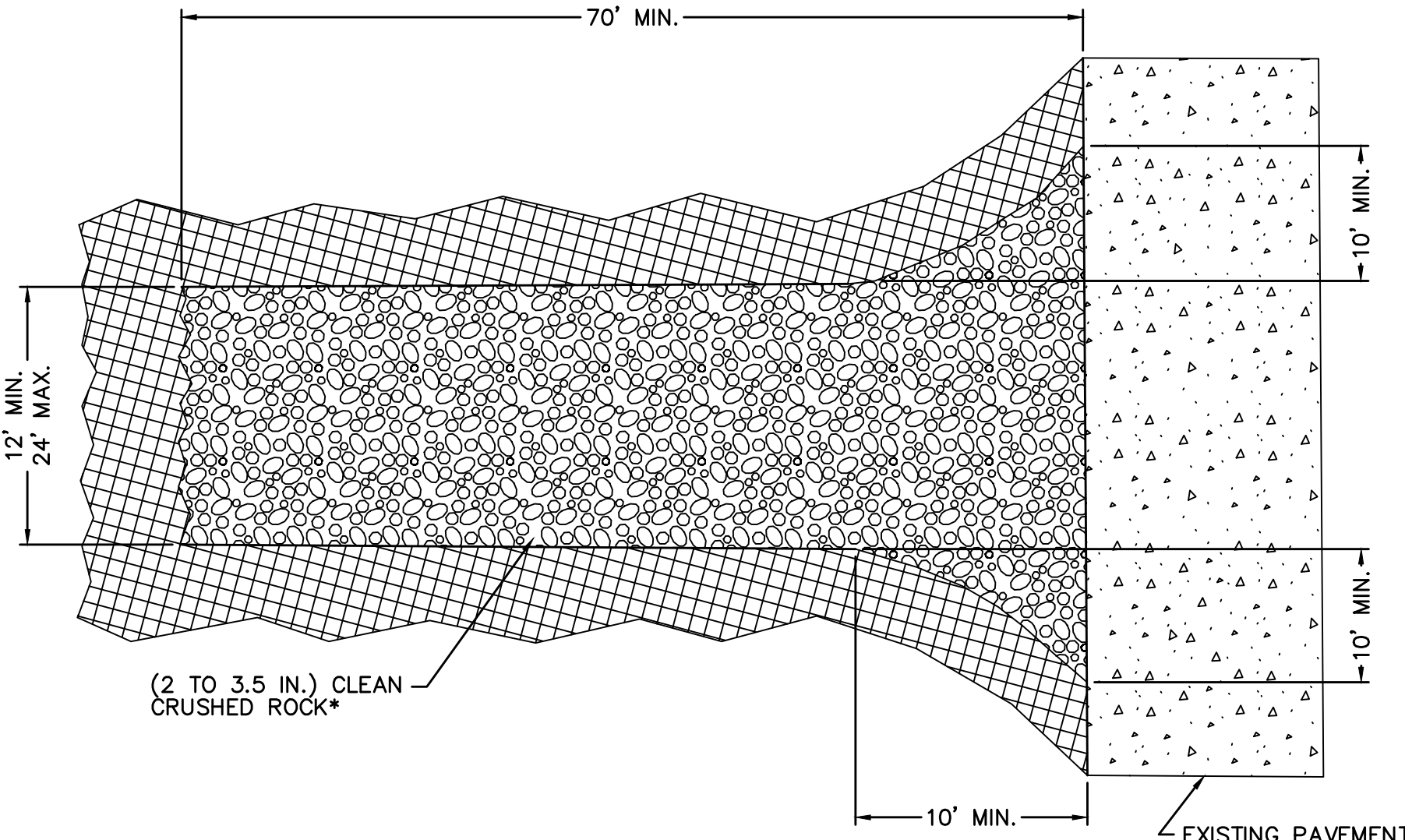
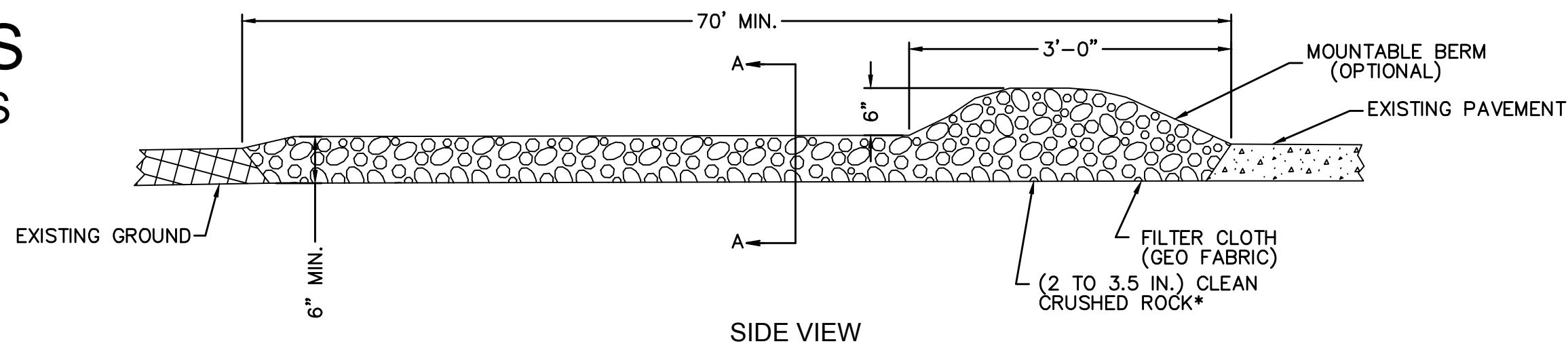
NOT TO SCALE



- NOTES:**
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 2. VEHICLE TRACKING CONTROL IS REQUIRED AT CONCRETE WASHOUT ENTRANCE IF ACCESS TO CONCRETE WASHOUT AREA IS OFF PAVEMENT.
 3. CONCRETE WASHOUT AREA SHALL BE REPAIRED AND/OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE.
 4. WASTE MATERIAL FROM CONCRETE WASHOUT OPERATIONS MUST BE REMOVED ONCE THE MATERIAL HAS REACHED A DEPTH OF 1'.
 5. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT AN APPROVED WASTE SITE.
 6. WHEN CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MAULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.

CONCRETE WASHOUT AREA DETAIL

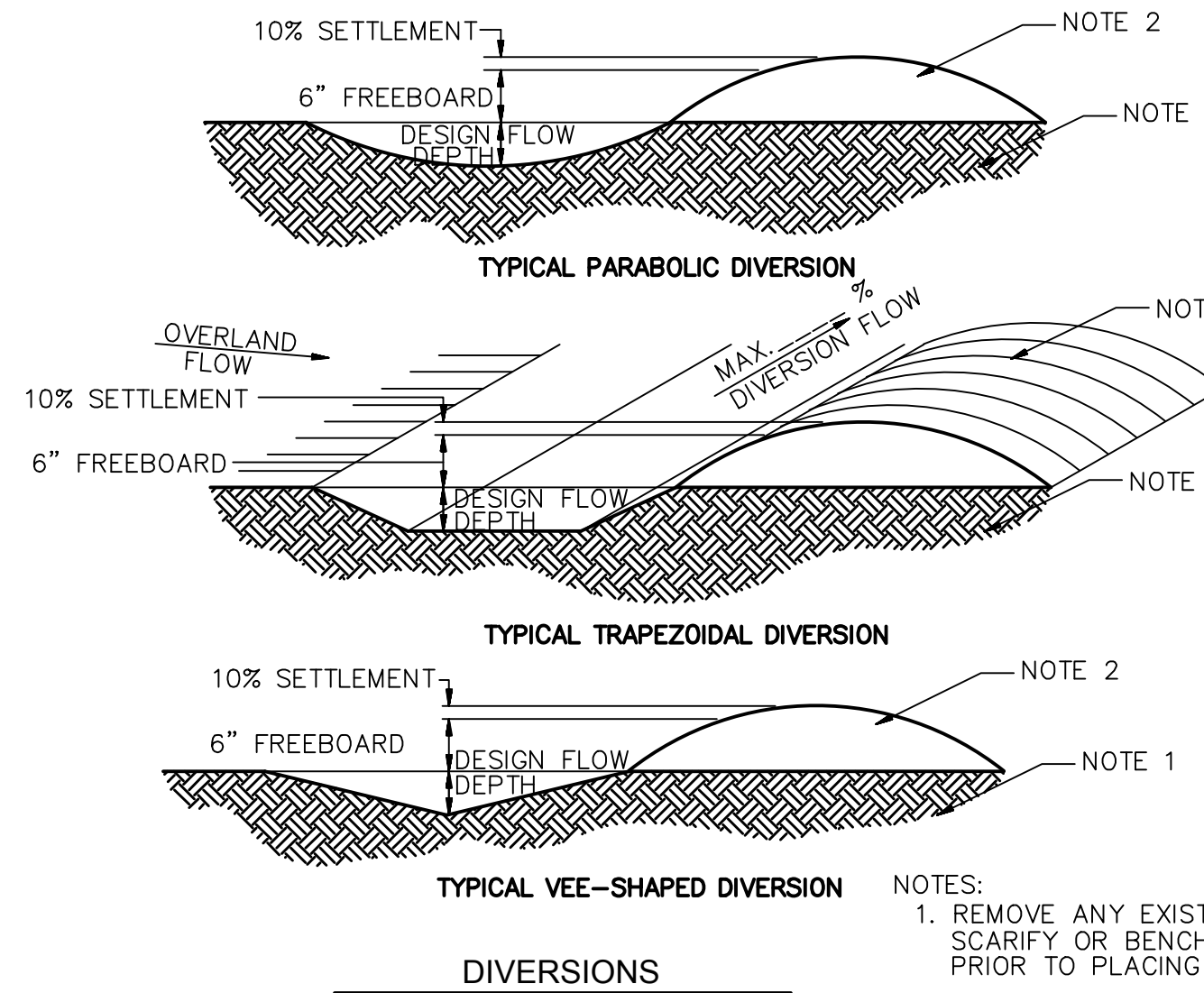
NOT TO SCALE



- NOTE:**
1. * MUST EXTEND THE FULL WIDTH AND LENGTH OF THE CONSTRUCTION ENTRANCE
 2. THE 24'-0" WIDTH IS REQUIRED WHEN THE INGRESS AND THE EGRESS ARE THE SAME
 3. REFER TO CHAPTER 8 AND 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION OF SEDIMENT AND EROSION CONTROL MEASURES
 4. FOR ROCK DIMENSIONS AND SPECIFICATIONS SEE TABLE ON LINCOLN STANDARD PLAN NO. 177

CONSTRUCTION ENTRANCE DETAIL

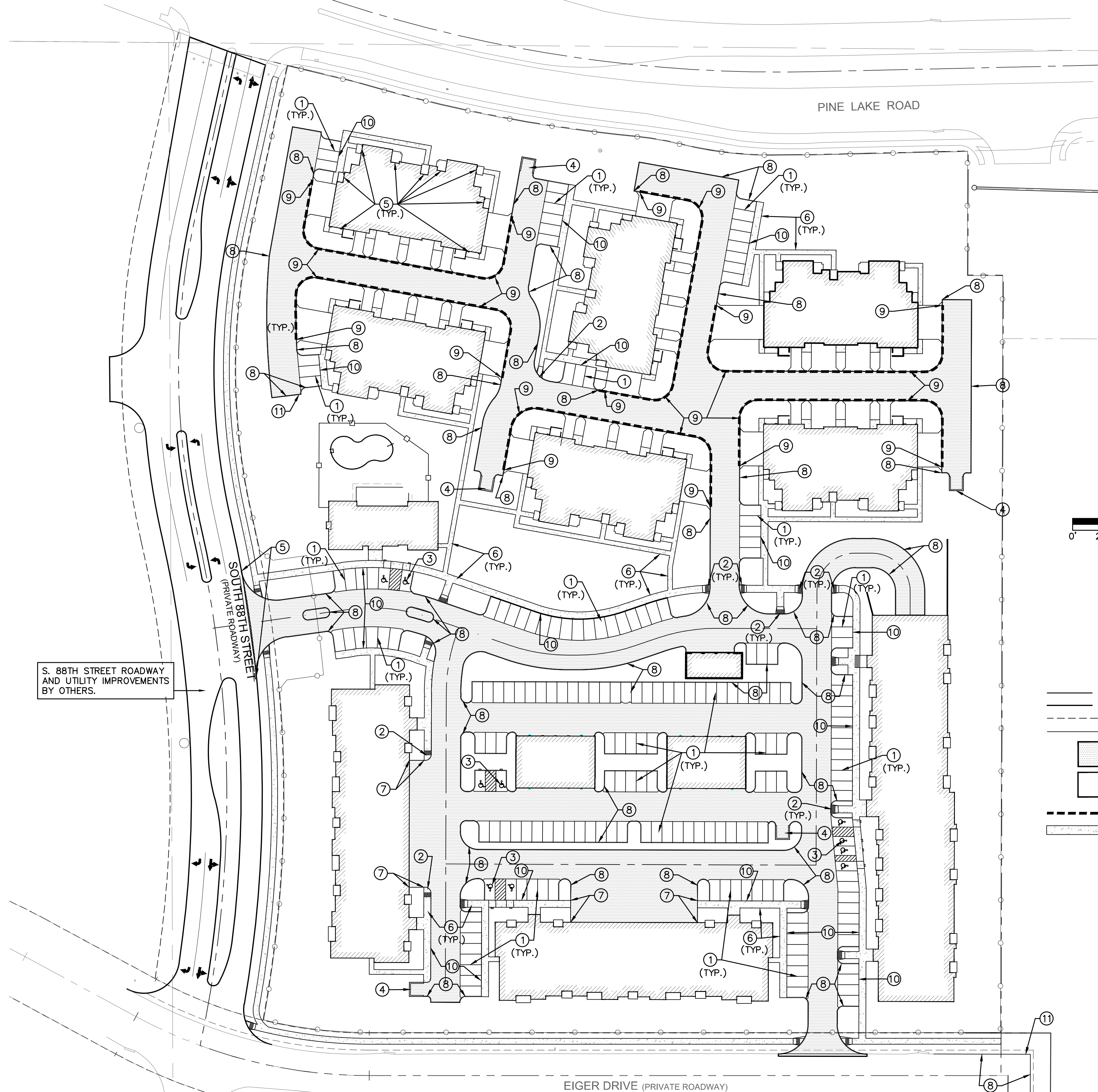
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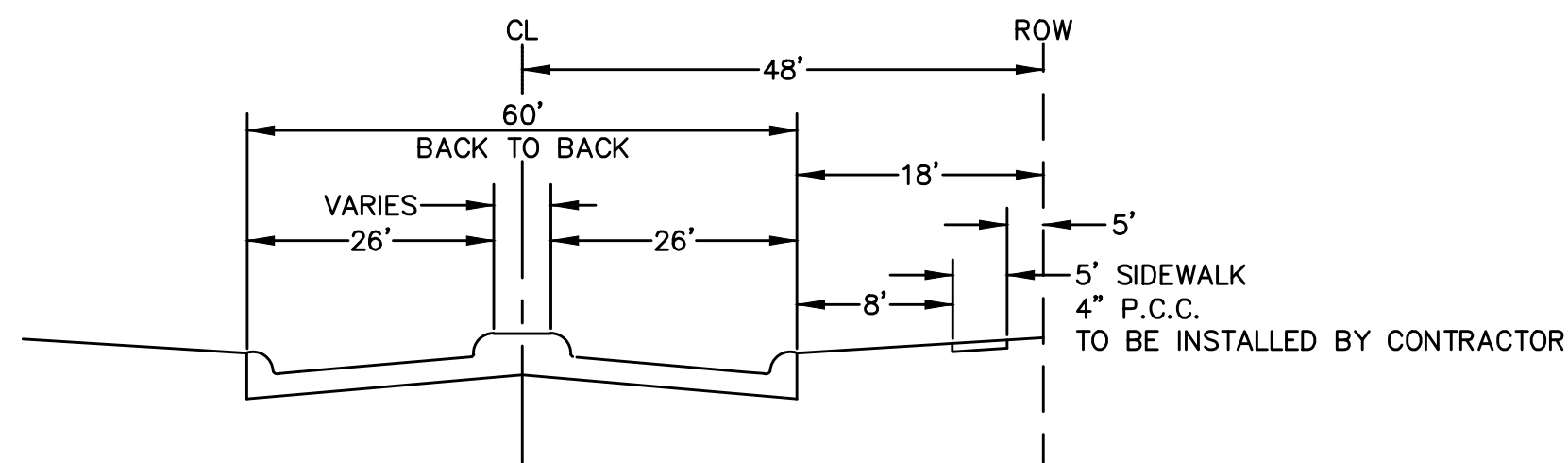
- NOTES:**
1. REMOVE ANY EXISTING VEGETATION AND SCARIFY OR BENCH ADJACENT SOILS PRIOR TO PLACING BERM.
 2. BERM MATERIALS MUST BE ADEQUATELY COMPACTED AND STABILIZED.

REV.	NO.	DATE	REVISIONS DESCRIPTION
1	1	6.17.14	SITE LAYOUT REVISIONS

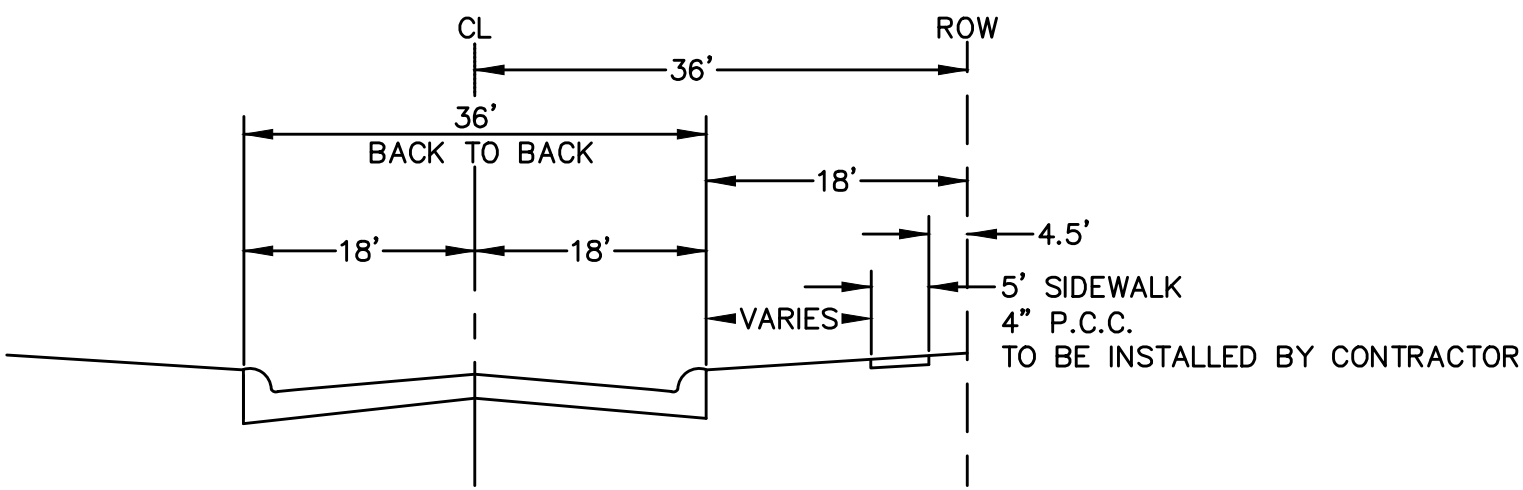
88 EAST LAKE FLATS
PAVING IMPROVEMENTS



S. 88TH STREET ROADWAY
AND UTILITY IMPROVEMENTS
BY OTHERS.



SOUTH 88TH STREET
TYPICAL CROSS SECTION
NOT TO SCALE



EIGER DRIVE
TYPICAL CROSS SECTION
NOT TO SCALE

FLAG NOTES

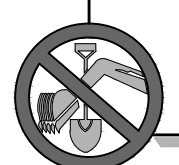
- 1 CONTRACTOR TO PAINT 4" WHITE STRIPE FOR PARKING STALLS
- 2 CURB RAMP PER DETAIL SHEET
- 3 CONTRACTOR TO INSTALL ADA ACCESSIBLE PAVEMENT MARKINGS PER LOCAL CODE, SEE DETAIL SHEET
- 4 TRASH ENCLOSURE, REFERENCE ARCHITECTURAL PLANS
- 5 CONTRACTOR SHALL TIE INTO PROPOSED PAVEMENT (BY OTHERS)
- 6 4" THICK P.C.C. SIDEWALK, 2% MAX CROSS SLOPE, SEE DETAIL SHEET
- 7 DROP CURB, TC=TS
- 8 PROPOSED 6" INTEGRAL CURB AND GUTTER, SEE DETAIL SHEET
- 9 PROPOSED 4" ROLL OVER CURB AND GUTTER, SEE DETAIL SHEET
- 10 PROPOSED 6" BARRIER CURB, SEE DETAIL SHEET
- 11 PROPOSED 2' CURB DROP, SEE DETAIL SHEET

LEGEND

- PROPERTY LINE
- ROAD RIGHT-OF-WAY
- EASEMENT LINE
- ROADWAY CENTERLINE
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED STANDARD DUTY CONCRETE PAVEMENT
- 4" ROLL OVER CURB CONCRETE SIDEWALK

NOTE:
THE CONTOURS SHOWN REPRESENT THE FINISHED GROUND SURFACE. THE CONTRACTOR SHALL ADJUST GRADING IN PAVEMENT AND BUILDING AREAS TO ACCOMMODATE PAVING AND BUILDING SLAB THICKNESS. THE CONTRACTOR SHALL COORDINATE WITH THE BUILDING CONTRACTOR FOR FINAL BUILDING SLAB.

NOTE:
DIAL BEFORE YOU DIG. CALL 1-800-331-5666 FOR LOCATION OF UNDERGROUND TELEPHONE, ELECTRIC, GAS MAINS, CABLE TELEVISION AND CITY OF LINCOLN UTILITIES.

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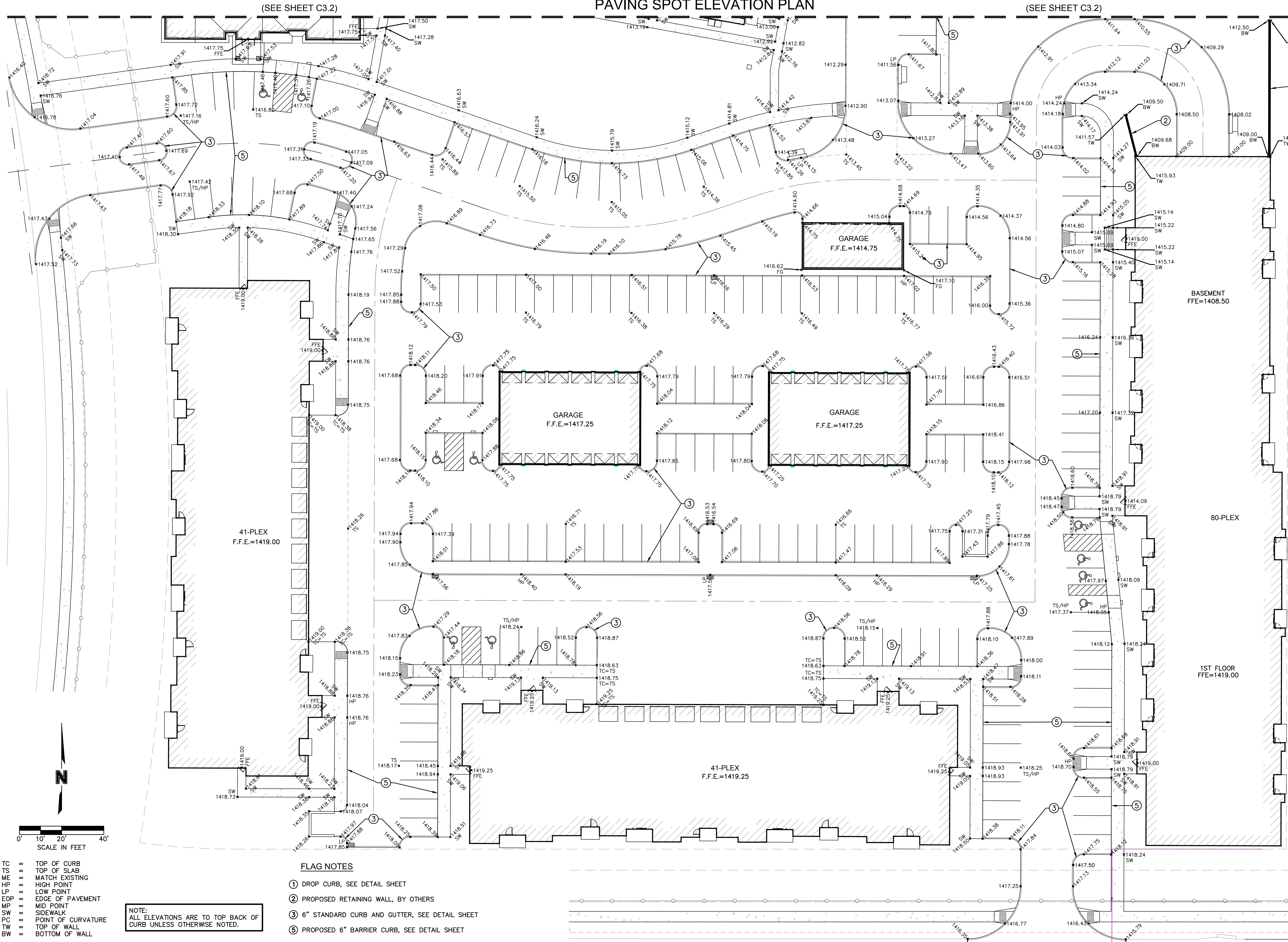


REVISIONS	
REV. NO.	DESCRIPTION
1	SITELAYOUT REVISION

PAVING IMPROVEMENTS	
88 EAST LAKE FLATS	
LINCOLN, NE	
2014	

drawn by:	BRW
checked by:	BJM
approved by:	BJM
QA/QC by:	BJM
project no.:	014-0600
drawing no.:	
date:	5.20.14

88 EAST LAKE FLATS
PAVING SPOT ELEVATION PLAN



NOTE:
ALL ELEVATIONS ARE TO TOP BACK OF
CURB UNLESS OTHERWISE NOTED.

FLAG NOTES

- ① DROP CURB, SEE DETAIL SHEET
- ② PROPOSED RETAINING WALL, BY OTHERS
- ③ 6" STANDARD CURB AND GUTTER, SEE DETAIL SHEET
- ⑤ PROPOSED 6" BARRIER CURB, SEE DETAIL SHEET

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P.O. Box 1111
Lincoln, NE 68501-4008
TEL 402.474.6311
FAX 402.474.5160
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REVISIONS		
REV. NO.	DATE	REVISIONS DESCRIPTION
1	6/17/14	SPOT ELEVATION PLAN ADDED

PAVING SPOT ELEVATION PLAN

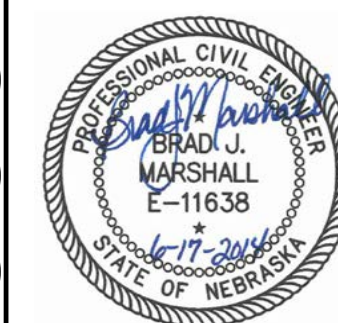
EAST LAKE FLATS

LINCOLN, NE

2014

SHEET C3.1

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 6/17/14

[illegible]

2014

LINCOLN, NE

PAVING SPOT ELEVATION PLAN

EAST LAKE FLATS

drawn by:	BRW
checked by:	BJM
approved by:	BJM
QA/QC by:	BJM
project no.:	014-0600
drawing no.:	-
date:	6.17.14

SHEET
C3.2

88 EAST LAKE FLATS

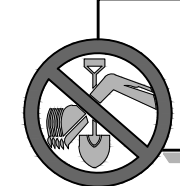
PAVING SPOT ELEVATION PLAN

FLAG NOTES

- ① DROP CURB, SEE DETAIL SHEET
- ③ 6" STANDARD CURB AND GUTTER, SEE DETAIL SHEET
- ④ 4" ROLL-OVER CURB, SEE DETAIL SHEET
- ⑤ PROPOSED 6" BARRIER CURB, SEE DETAIL SHEET
- ⑥ CURB DROP OPENING, SEE DETAIL SHEET

NOTE:
ALL ELEVATIONS ARE TO TOP BACK OF
CURB UNLESS OTHERWISE NOTED.

TC	=	TOP OF CURB
TS	=	TOP OF SLAB
ME	=	MATCH EXISTING
HP	=	HIGH POINT
LP	=	LOW POINT
EOP	=	EDGE OF PAVEMENT
MP	=	MID POINT
SW	=	SIDEWALK
PC	=	POINT OF CURVATURE
TW	=	TOP OF WALL
BW	=	BOTTOM OF WALL
FL	=	FLOW LINE



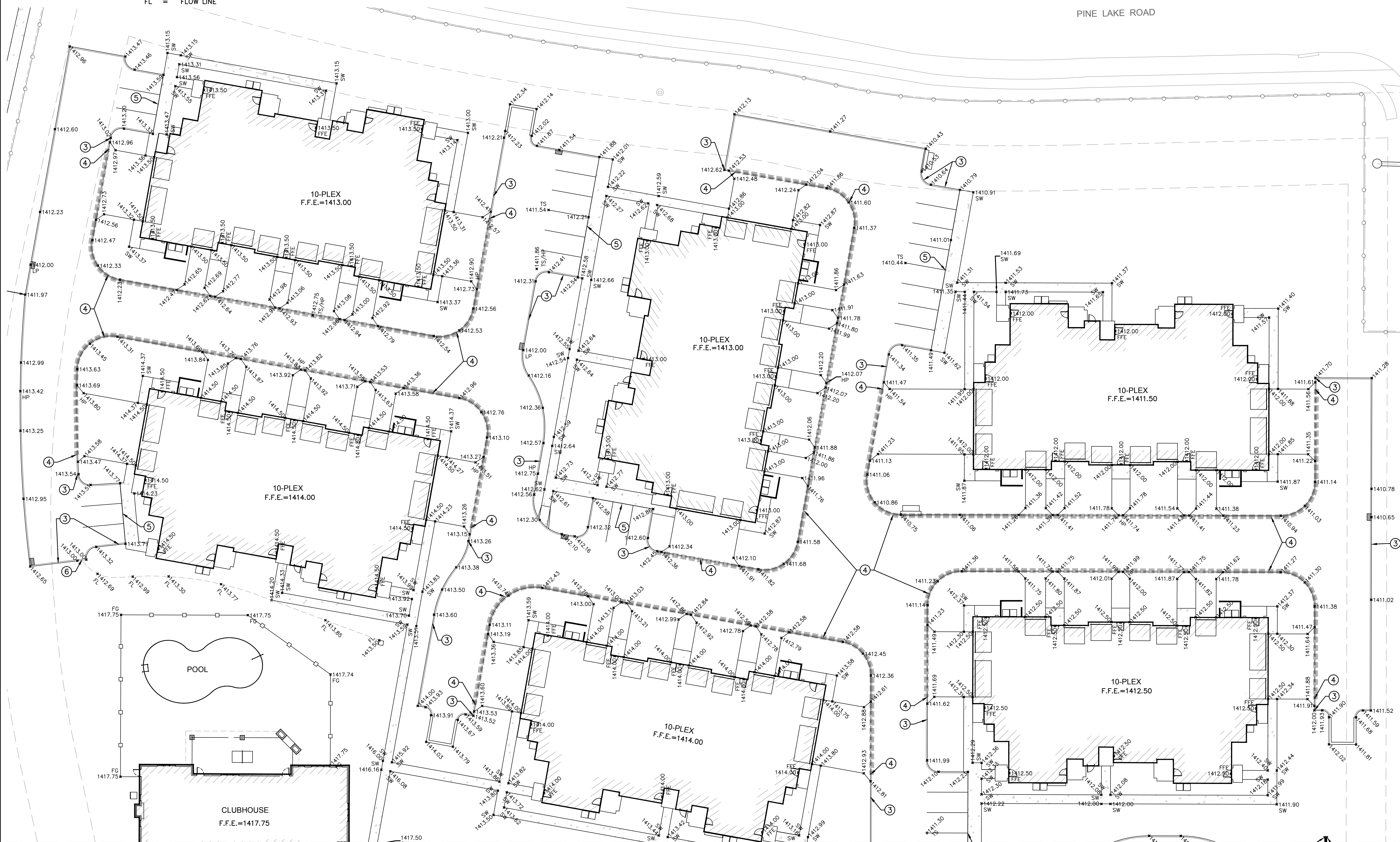
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LEGEND

PROPERTY LINE
EASEMENT LINE
ROADWAY CENTERLINE
4" ROLL OVER CURB



(SEE SHEET C3.1)

DWG: F:\Projects\014-0800\LDVP\Final_Plans\140600_PAV-SPOT.dwg USER: bwiken
DATE: Jun 18, 2014 2:00pm XREFS: 140600_PBASE 140600_XBASE 140600_LB 140600_PBASE(BY OTHERS)

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DATE: Jun 18,

88 EAST LAKE FLATS
PAVING SPOT GEOMETRICS PLAN

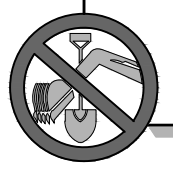
(SEE SHEET C3.4)

SOUTH 88TH STREET
(PRIVATE ROADWAY)

NOTE:
ALL ELEVATIONS ARE TO TOP BACK OF CURB UNLESS OTHERWISE NOTED. DEDUCT 0.5' TO GET TOP OF SLAB ELEVATIONS.

- BC BACK OF CURB
- TS TOP OF SLAB
- ME MATCH EXISTING
- HP HIGH POINT
- LP LOW POINT
- EOP EDGE OF PAVEMENT
- MP MID POINT
- SW SIDEWALK
- PC POINT OF CURVATURE
- TW TOP OF WALL
- BW BOTTOM OF WALL

0' 10' 20' 40'
SCALE IN FEET



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REV. NO. DATE REVISIONS DESCRIPTION

1 6.17.14 SITELAYOUT REVISION

PAVING SPOT GEOMETRICS PLAN

88 EAST LAKE FLATS

2014

LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

SHEET
C3.3

A

88 EAST LAKE FLATS PAVING SPOT GEOMETRICS PLAN

NOTE:
ALL ELEVATIONS ARE TO TOP BACK OF
CURB UNLESS OTHERWISE NOTED. DEDUCT
0.5' TO GET TOP OF SLAB ELEVATIONS.

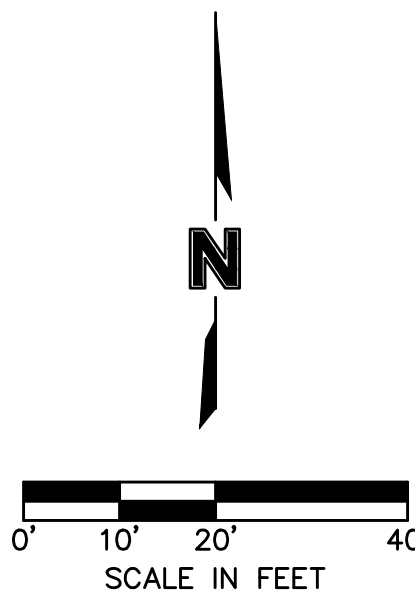
- BC == BACK OF CURB
- TS == TOP OF SLAB
- ME == MATCH EXISTING
- HP == HIGH POINT
- LP == LOW POINT
- EOP == EDGE OF PAVEMENT
- MP == MID POINT
- SW == SIDEWALK
- PC == POINT OF CURVATURE
- TW == TOP OF WALL
- BW == BOTTOM OF WALL



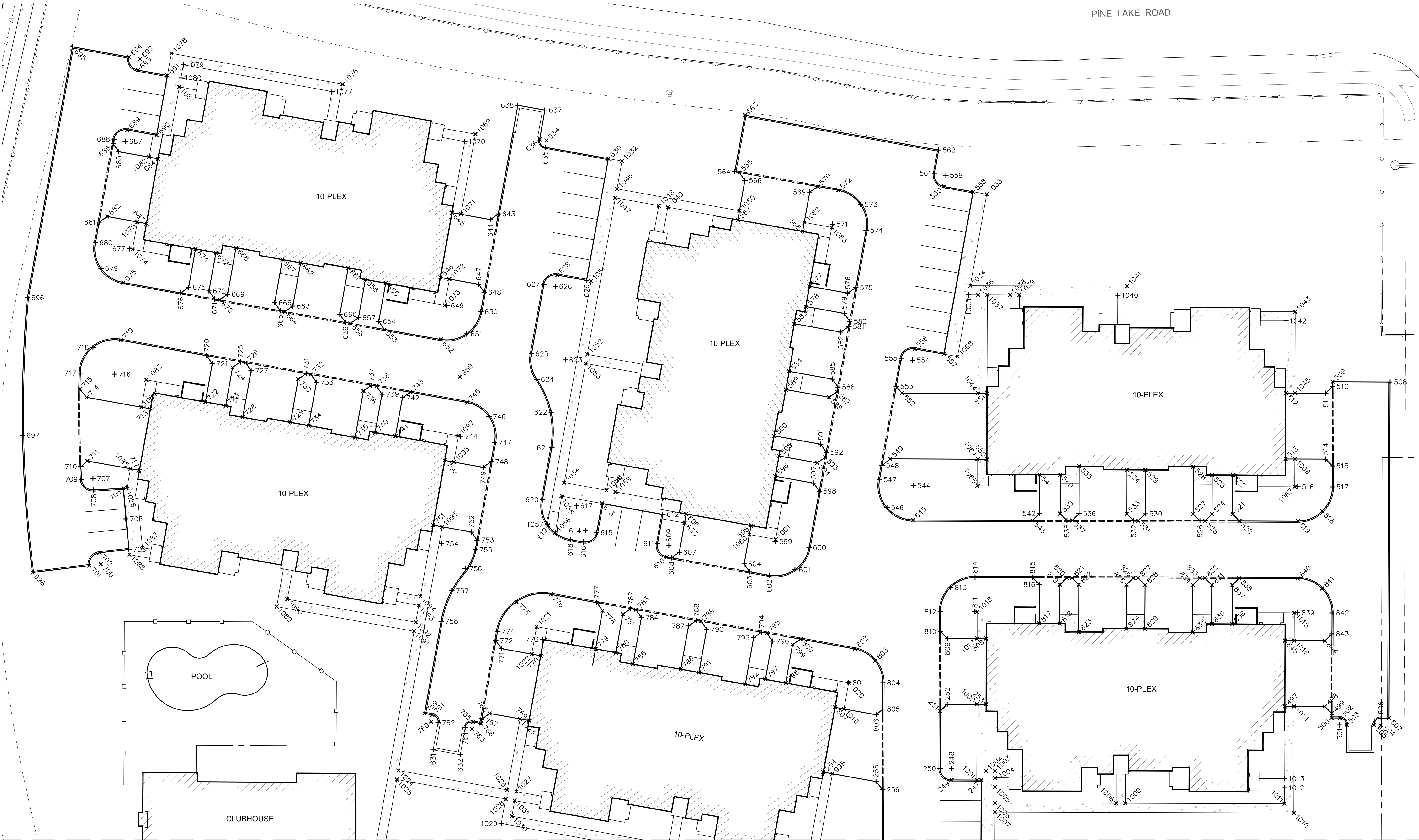
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DNW: F:\Projects\01-0600-LDVP\Files\Plans\140600_PAVING.dwg USER: bwiller
DATE: Jun 18, 2014 11:12am XREFS: 140600_PBASE 140600_XBASE 140600_PBASE(BY OTHERS) 140600_LB



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REVISIONS		REVISIONS DESCRIPTION	
REV. NO.	DATE	NO.	DESCRIPTION
1	6/17/14	1	SITELAYOUT REVISION

PAVING SPOT GEOMETRICS PLAN		REVISIONS	
88 EAST LAKE FLATS		2014	
LINCOLN, NE			

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5/20/14

SHEET
C3.4

A

\\NW- F:\Projects\01-14-0600-LD\PA Final\140600_PA_CED.dwg USER: bmlen DATE: Jun 18, 2014 8:14am XREFS: 140600_PBASE 140600_XBASE 140600_LB

POINT TABLE			
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102	178294.64	188171.83	BC / MP
104	178305.43	188225.21	5RP
105	178310.38	188224.52	BC / PC
106	178306.11	188230.16	BC / PC
107	178305.78	188191.28	BC
108	178295.36	188247.35	PC
109	178293.23	188231.94	BC / PC
110	178296.41	188266.52	BC / MP
111	178294.28	188285.60	BC
112	178305.98	188292.99	5RP
113	178306.94	188288.09	PC
114	178310.85	188294.15	PC
115	178337.34	188317.52	BC / PC
116	178292.95	188302.06	15RP
117	178307.13	188306.95	BC / PC
118	178300.40	188315.08	BC / MP
119	178290.01	188316.77	BC / PC
120	178274.50	188314.45	BC / MP
121	178258.68	188313.63	BC / PC
122	178206.48	188308.47	5RP
123	178206.46	188313.47	BC / PC
124	178201.48	188308.45	BC / PC
125	178201.52	188294.95	BC
126	178094.15	188294.63	BC
127	178089.11	188308.12	5RP
128	178094.11	188308.13	BC / PC
129	178089.09	188313.12	BC / PC
130	178016.70	188309.90	3RP
131	178016.70	188312.90	BC / PC
132	178013.70	188309.89	BC
133	177998.70	188309.85	3RP
134	178001.70	188309.85	BC / PC
135	177998.70	188312.84	BC / PC
136	177996.70	188312.84	BC
137	177960.59	188624.77	BC / MP
138	177996.61	188342.84	5RP
139	177996.62	188337.84	BC / PC
140	178001.61	188342.85	BC / PC
141	178001.57	188355.85	BC
142	178073.57	188356.07	BC
143	178078.61	188343.09	5RP
144	178073.61	188343.07	BC / PC
145	178078.62	188338.09	BC / PC
146	178086.24	188353.11	15RP
147	178086.29	188338.11	BC / PC
148	178096.88	188342.53	BC / MP
149	178101.24	188353.15	BC / PC
150	178096.24	188353.89	5RP
151	178101.24	188353.91	BC / PC
152	178096.23	188358.39	BC / PC
153	178083.23	188358.35	BC
154	178083.04	188421.35	BC
155	178096.02	188426.39	5RP
156	178096.04	188421.39	BC / PC
157	178101.02	188426.41	BC / PC
158	177978.31	188607.13	25RP
159	178096.01	188431.39	BC / PC
160	178064.51	188431.30	BC
161	178064.18	188538.66	BC
162	178095.67	188543.76	5RP
163	178095.68	188538.76	BC / PC
164	178100.67	188543.77	BC / PC
165	177953.31	188607.09	PC
166	178095.65	188548.76	BC / PC
167	178082.65	188548.72	BC

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
168	178082.46	188611.72	BC
169	178095.45	188616.76	5RP
170	178095.46	188611.76	BC / PC
171	178100.45	188616.77	BC / PC
172	178085.45	188617.44	15RP
173	178100.45	188617.49	BC / PC
174	178096.02	188628.08	BC / MP
175	178085.40	188632.44	BC / PC
176	178077.75	188627.42	5RP
177	178077.74	188632.42	BC / PC
178	178072.75	188627.40	BC / PC
179	178072.79	188614.40	BC
180	178000.79	188614.19	BC
181	177995.75	188627.17	5RP
182	178000.75	188627.19	BC / PC
183	177995.74	188632.17	BC
184	177978.23	188632.13	PC
185	177978.22	188657.13	PC
186	177988.31	188662.16	5RP
187	177988.33	188657.16	BC / PC
188	177993.31	188662.18	BC / PC
189	177993.27	188675.18	BC
190	178029.69	188675.29	BC
191	178034.73	188662.30	5RP
192	178029.73	188662.29	BC / PC
193	178034.74	188657.30	BC / PC
194	178038.73	188662.31	5RP
195	178038.74	188657.31	BC / PC
196	178043.73	188662.33	BC / PC
197	178043.69	188675.33	BC
198	178092.94	188675.48	BC
199	178153.04	188669.74	BC
200	178158.08	188656.67	5RP
201	178153.08	188656.66	BC / PC
202	178158.10	188651.67	BC / PC
203	178162.08	188656.68	5RP
204	178162.10	188651.68	BC / PC
205	178167.08	188656.70	BC / PC
206	178167.04	188669.70	BC
207	178274.04	188670.02	BC
208	178279.08	188657.04	5RP
209	178274.08	188657.02	BC / PC
210	178279.09	188652.04	BC / PC
211	178291.41	188657.07	5RP
212	178291.43	188652.07	BC / PC
213	178296.41	188657.09	BC / PC
214	178296.37	188670.09	BC
215	178323.37	188670.17	BC
216	178328.41	188657.18	5RP
217	178323.41	188657.17	BC / PC
218	178328.43	188652.18	BC / PC
219	178344.28	188672.23	20RP
220	178344.34	188652.23	BC / PC
221	178358.47	188658.13	BC / MP
222	178364.28	188672.29	BC / PC
223	178344.24	188686.15	20RP
224	178364.24	188686.21	BC / PC
225	178358.34	188700.33	BC / MP
226	178344.18	188706.15	BC / PC
227	178324.52	188706.09	BC
228	178324.44	188731.09	BC
229	178344.11	188731.15	BC / PC
230	178375.97	188718.06	BC / MP
231	178389.24	188686.28	BC / PC
232	178389.28	188672.37	BC / PC
233	178376.20	188640.51	BC / MP
234	178344.42	188627.23	BC / PC

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
235	178340.46	188612.21	15RP
236	178340.42	188627.21	BC / PC
237	178329.83	188622.78	BC / MP
238	178325.46	188612.16	BC / PC
239	178350.50	188599.18	15RP
240	178325.50	188599.10	BC / PC
241	178332.88	188581.45	BC / MP
242	178350.58	188574.18	BC / PC
243	178367.53	188579.23	5RP
244	178367.55	188574.23	BC / PC
245	178372.53	188579.24	BC / PC
246	178372.49	188592.24	BC
247	178417.49	188592.38	BC
248	178422.53	188579.39	5RP
249	178417.53	188579.38	BC / PC
250	178422.55	188574.39	BC / PC
251	178447.59	188574.47	BC
252	178450.58	188577.48	BC
253	178450.53	188594.48	BC
254	178420.95	188523.49	BC
255	178416.83	188546.42	BC
256	178413.30	188549.37	BC
257	178348.25	188524.17	20RP
258	178348.18	188549.17	BC / PC
259	178332.01	188543.18	BC / MP
260	178323.57	188528.15	BC / PC
261	178327.37	188521.07	5RP
262	178322.47	188522.05	BC / PC
263	178326.24	188516.20	BC / PC
264	178338.98	188513.25	BC
265	177978.14	188682.13	25RP
266	178334.07	188496.00	BC / PC
267	178327.32	188476.11	BC / PC
268	178322.64	188457.54	BC
269	178320.99	188438.47	BC
270	178322.76	188419.40	BC / MP
271	178327.55	188400.86	BC / PC
272	178340.36	188363.84	BC
273	178329.70	188354.87	5RP
274	178328.07	188359.59	BC / PC
275	178324.98	188353.23	BC / PC
276	178347.22	188301.09	5RP
277	178342.34	188299.99	BC / PC
278	178348.18	188296.19	BC / PC
279	178361.01	188298.71	PC
280	178361.63	188230.12	BC
281	178362.72	188238.04	BC / PC
282	178337.43	188186.51	BC
283	178348.07	188226.95	5RP
284	178348.75	188231.90	BC / PC
285	178343.11	188227.63	BC / PC
286	178367.14	188182.40	30RP
287	178364.39	188268.44	BC / MP
288	178342.80	188164.87	BC / MP
289	178361.62	188152.91	BC
290	178320.44	188209.67	BC
291	178326.37	188223.32	4RP
292	178322.40	188223.86	BC
293	178330.33	188222.77	BC
294	178324.40	188209.12	4RP
295	178328.36	188208.58	BC
296	178322.91	188295.65	BC / PC
297	177953.14	188682.06	PC
298	178322.61	188311.15	4RP
299	178326.39	188312.45	BC
300	178323.85	188205.16	BC / MP
301	178321.30	188314.93	BC / MP

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
302	178318.83	188309.85	BC / PC
303	177960.52	188664.40	BC / MP
304	178326.81	188296.57	4RP
305	178330.70	188297.48	BC / PC
306	178327.48	188292.62	BC / MP
307	178294.64	188525.74	3RP
308	178294.63	188528.74	BC
309	178297.57	188525.11	BC
310	178293.35	188509.82	BC / PC
311	178286.60	188489.93	BC / PC
312	178280.12	188463.94	BC / MP
313	178277.99	188437.23	BC / PC
314	178278.02	188428.64	BC / PC
315	178280.30	188401.95	BC / MP
316	178286.95	188376.00	BC / PC
317	178278.41	188355.30	15RP
318	178292.42	188360.18	BC / PC
319	178291.13	188347.61	BC / MP
320	178280.70	188340.48	BC
321	178269.69	188339.11	BC / MP
322	178258.61	188338.63	BC / PC
323	178255.27	188343.62	5RP
324	178255.29	188338.62	BC / PC
325	178326.91	188227.28	BC / MP
326	178250.27	188343.60	BC / MP
327	178255.26	188348.62	BC / PC
328	178268.26	188348.66	BC
329	178001.75	188294.85	BC
330	178013.75	188294.89	BC
331	178020.54	188260.95	SW
337	178267.45	188616.99	BC
338	178254.43	188621.95	5RP
339	178254.45	188616.95	BC / PC
340	178249.43	188621.93	BC / MP
342	178254.42	188626.95	BC / PC
343	178285.46	188612.04	15RP
344	178285.42	188627.04	BC / PC
345	178296.04	188622.68	BC / MP
346	178300.46	188612.09	BC / PC
347	178295.47	188611.79	5RP
348	178300.47	188611.76	BC
349	178295.48	188606.74	BC / PC
350	178282.48	188606.70	BC
351	178282.56	188579.70	BC
352	178297.57	188576.74	3RP
353	178297.56	188579.74	BC / PC
354	178300.57	188576.75	BC / PC
355	178295.58	188575.05	5RP
356	178300.58	188575.06	BC
357	178295.59	188570.05	BC / PC
358	178292.98	188570.04	BC
359	178179.46	188614.47	BC / PC
360	178192.46	188614.51	BC
361	178192.54	188587.51	BC
362	178179.55	188582.47	5RP
363	178179.54	188587.47	BC / PC
364	178174.55	188582.46	BC / MP
365	178177.55	188582.47	3RP
367	178177.56	188579.47	BC / PC
368	178221.55	188582.60	3RP
369	178221.56	188579.60	BC / PC
371	178219.55	188582.59	5RP
372	178224.55	188582.61	BC / MP
373	178219.54	188587.59	BC / PC
374	178206.54	188587.55	BC
375	178206.46	188614.55	BC
376	178219.44	188619.59	5RP

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DWG: F:\Projects\014-0600-LDVP\Final_Plan\140600_PA_CEO.dwg USER: bwillen DATE: Jun 18, 2014 6:54am 140600_XBASE 140600_PBASE(BY OTHERS) 140600_LB

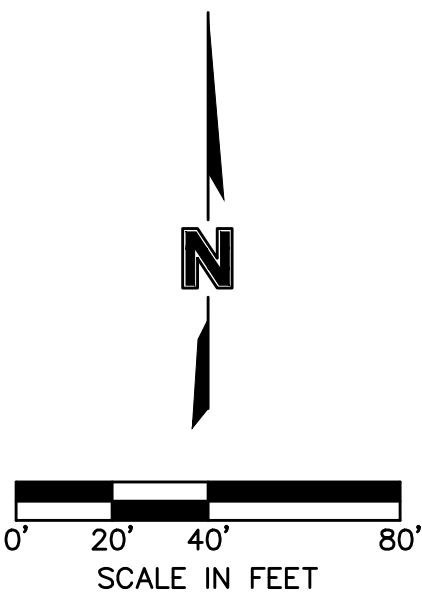
POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
607	178516.93	188460.65	BC
608	178514.51	188457.17	BC
609	178519.78	188456.08	5RP
610	178514.86	188455.20	BC / PC
611	178520.66	188451.16	BC / PC
612	178533.46	188453.46	BC
613	178538.23	188426.88	BC
614	178526.32	188419.67	5RP
615	178525.43	188424.59	BC / PC
616	178521.39	188418.78	BC / PC
617	178537.18	188415.73	15RP
618	178522.42	188413.08	BC / PC
619	178528.61	188403.42	BC / MP
620	178539.83	188400.97	BC / PC
621	178562.55	188405.04	BC / PC
622	178578.10	188404.76	BC / MP
623	178600.90	188410.91	15RP
624	178592.36	188398.57	BC / PC
625	178603.55	188396.14	BC / PC
626	178632.99	188406.51	5RP
627	178633.87	188401.59	BC / PC
628	178637.91	188407.39	BC / PC
629	178635.61	188420.19	BC
630	178688.76	188429.72	BC
631	178430.66	188353.27	BC
632	178428.54	188365.08	BC
633	178529.73	188462.95	SW
634	178696.66	188402.69	3RP
635	178693.71	188402.16	BC / PC
636	178697.19	188399.74	BC / PC
637	178709.92	188402.02	BC
638	178712.04	188390.21	BC
643	178664.58	188381.70	BC
644	178662.16	188378.21	BC
645	178665.16	188361.48	BC
646	178636.88	188356.41	BC
647	178633.88	188373.14	BC
648	178630.40	188375.56	BC
649	178624.54	188359.27	15RP
650	178621.89	188374.04	BC / PC
651	178612.23	188367.84	BC / MP
652	178609.77	188356.62	BC / PC
653	178614.20	188331.98	BC
654	178617.68	188329.55	BC
655	178634.41	188332.56	BC
656	178636.00	188323.70	BC
657	178619.27	188320.70	BC
658	178616.85	188317.21	BC
659	178617.24	188315.00	BC
660	178620.73	188312.58	BC
661	178641.07	188316.23	BC
662	178643.27	188295.46	BC
663	178624.40	188292.08	BC
664	178621.98	188288.60	BC
665	178622.35	188286.56	BC
666	178625.83	188284.14	BC
667	178644.69	188287.52	BC
668	178649.86	188267.25	BC
669	178629.51	188263.60	BC
670	178627.09	188260.12	BC
671	178627.49	188257.90	BC
672	178630.97	188255.48	BC
673	178647.70	188258.48	BC
674	178649.29	188249.62	BC
675	178632.56	188246.62	BC
676	178630.14	188243.14	BC
677	178649.40	188220.72	15RP
678	178634.63	188218.07	BC / PC
679	178640.83	188208.41	BC / MP
680	178652.05	188205.96	BC / PC

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
681	178661.05	188207.57	BC
682	178663.47	188211.06	BC
683	178660.40	188228.21	BC
684	178688.67	188233.28	BC
685	178691.75	188216.13	BC
686	178695.23	188213.71	BC
687	178696.32	188218.98	5RP
688	178697.20	188214.06	BC / PC
689	178701.24	188219.86	BC / PC
690	178698.94	188232.66	BC
691	178725.03	188237.34	BC
692	178732.25	188225.43	5RP
693	178727.32	188224.54	BC / PC
694	178733.13	188220.51	BC
695	178737.54	188195.90	BC
696	178628.05	188176.25	BC
697	178568.00	188174.16	BC / MP
698	178508.07	188178.47	BC
700	178511.70	188208.25	5RP
701	178511.10	188203.28	BC
702	178516.67	188207.68	BC / PC
703	178518.12	188220.56	BC
705	178531.48	188219.18	BC / MP
706	178544.88	188218.14	BC
707	178549.08	188204.87	5RP
708	178544.09	188205.17	BC / PC
709	178548.81	188199.88	BC
710	178554.29	188199.60	BC
711	178556.76	188202.43	BC
712	178552.68	188225.14	BC
713	178579.52	188229.95	BC
714	178584.53	188202.06	BC
715	178588.06	188199.15	BC
716	178594.67	188214.32	15RP
717	178595.14	188199.32	BC
718	178606.32	188204.87	BC / MP
719	178609.43	188216.97	BC / PC
720	178602.70	188254.47	BC
721	178599.22	188256.90	BC
722	178582.49	188253.89	BC
723	178580.90	188262.75	BC
724	178597.63	188265.75	BC
725	178600.06	188269.24	BC
726	178599.66	188271.45	BC
727	178596.18	188273.87	BC
728	178575.83	188270.22	BC
729	178573.62	188291.03	BC
730	178592.49	188294.41	BC
731	178594.91	188297.89	BC
732	178594.55	188299.93	BC
733	178591.07	188302.35	BC
734	178572.20	188298.97	BC
735	178567.05	188319.20	BC
736	178587.39	188322.85	BC
737	178589.81	188326.33	BC
738	178589.41	188328.55	BC
739	178585.93	188330.97	BC
740	178569.20	188327.97	BC
741	178567.61	188336.83	BC
742	178584.34	188339.83	BC
743	178586.76	188343.31	BC
744	178567.58	188365.31	15RP
745	178582.34	188367.96	BC / PC
746	178576.14	188377.62	BC / MP
747	178564.93	188380.07	BC / PC
748	178556.42	188378.54	BC
749	178554.00	188375.06	BC
750	178557.00	188358.33	BC
751	178528.72	188353.26	BC
752	178525.72	188369.99	BC
753	178522.24	188372.41	BC

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
754	178520.64	188356.89	15RP
755	178517.99	188371.65	BC / PC
756	178509.79	188367.25	BC / PC
757	178500.16	188361.39	BC / MP
758	178486.81	188356.74	BC / PC
759	178446.58	188349.52	BC
760	178443.01	188352.43	3RP
761	178445.96	188352.96	BC / PC
762	178442.48	188355.38	BC
763	178439.83	188370.15	3RP
764	178440.36	188367.20	BC
765	178442.78	188370.68	BC / PC
766	178442.16	188374.12	BC
767	178444.13	188374.48	BC
768	178446.55	188377.96	BC
769	178443.48	188395.11	BC
770	178471.75	188400.19	BC
771	178474.83	188383.03	BC
772	178478.31	188380.61	BC
773	178478.86	188401.03	20RP
774	178482.39	188381.34	BC / PC
775	178495.28	188389.61	BC / MP
776	178498.55	188404.56	BC / PC
777	178494.93	188424.70	BC
778	178491.45	188427.13	BC
779	178474.72	188424.13	BC
780	178473.13	188432.98	BC
781	178489.86	188435.99	BC
782	178492.28	188439.47	BC
783	178491.89	188441.68	BC
784	178488.40	188444.11	BC
785	178468.06	188440.46	BC
786	178465.85	188461.26	BC
787	178484.72	188464.64	BC
788	178487.14	188468.13	BC
789	178486.78	188470.16	BC
790	178483.29	188472.58	BC
791	178464.43	188469.20	BC
792	178459.27	188489.43	BC
793	178479.62	188493.08	BC
794	178482.04	188496.57	BC
795	178481.64	188498.78	BC
796	178478.16	188501.20	BC
797	178461.43	188498.20	BC
798	178459.84	188507.06	BC
799	178476.57	188510.06	BC
800	178478.99	188513.54	BC
801	178459.99	188534.51	15RP
802	178474.76	188537.15	BC / PC
803	178469.60	188546.03	BC / MP
804	178459.95	188549.51	BC / PC
805	178448.48	188549.47	BC
806	178446.01	188546.51	BC
807	178449.23	188528.56	BC
808	178479.26	188594.56	BC
809	178479.31	188577.56	BC
810	178482.32	188574.57	BC
811	178490.92	188589.60	15RP
812	178490.96	188574.60	BC / PC
813	178501.56	188579.02	BC / MP
814	178505.92	188589.64	BC / PC
815	178505.84	188614.68	BC
816	178502.83	188617.67	BC
817	178485.83	188617.62	BC
818	178485.81	188626.62	BC
819	178502.81	188626.67	BC
820	178505.80	188629.68	BC
821	178505.79	188631.93	BC
822	178502.78	188634.92	BC
823	178482.12	188634.86	BC

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
824	178483.55	188655.69	BC
825	178502.72	188655.75	BC
826	178505.71	188658.76	BC
827	178505.70	188660.82	BC
828	178502.70	188663.82	BC
829	178483.53	188663.76	BC
830	178485.61	188692.88	BC
831	178502.61	188692.93	BC
832	178505.62	188689.94	BC
833	178505.62	188687.69	BC
834	178502.63	188684.68	BC
835	178481.97	188684.62	BC
836	178485.58	188701.88	BC
837	178502.58	188701.93	BC
838	178505.57	188704.94	BC
839	178490.50	188730.36	15RP
840	178505.50	188730.41	BC / PC
841	178501.07	188741.00	BC / MP
842	178490.45	188745.36	BC / PC
843	178481.30	188745.33	BC
844	178478.31	188742.32	BC
845	178478.37	188724.90	BC
860	178024.53	188264.96	SW
861	178020.40	188306.91	SW
862	178024.40	188306.92	SW
863	178058.23	188307.02	SW
864	178068.57	188307.05	SW
865	178035.26	188361.96	SW
866	178031.26	188361.94	SW
871	178030.52	188608.28	SW
872	178034.52	188608.29	SW
873	178076.47	188608.41	SW
874	178076.46	188614.41	SW
875	178076.58	188574.58	SW
876	178076.61	188564.25	SW
877	178076.68	188538.70	SW
878	178082.68	188538.72	SW
879	178083.01	188431.35	SW
880	178077.01	188431.33	SW
881	178077.08	188405.75	SW
882	178077.11	188395.41	SW
883	178077.21	188362.08	SW
884	178077.17	188383.06	

88 EAST LAKE FLATS
UTILITY PLAN



LEGEND	
	BOUNDARY LINE
	PROPERTY LINE
	UTILITY EASEMENT
	BOUNDARY SETBACK
	UTILITY EASEMENT
	ROAD CENTERLINE
	CONCRETE PAVEMENT
	CONCRETE CURB AND GUTTER
	EXISTING UNDERGROUND ELECTRIC
	EXISTING COMMUNICATIONS LINE
	PROPOSED UNDERGROUND ELECTRIC
	BUILDING ENVELOPE
	CONCRETE SIDEWALK
	ELECTRICAL TRANSFORMER

FLAG NOTES

- ① UTILITY CROSSING – CONTRACTOR TO MAINTAIN 2' CLEAR SPACE SEPARATION
- ② MULTIMETER CENTER LOCATION, SEE MEP FOR CONTINUATION INTO BUILDING.
- ③ PROPOSED METER LOCATION, SEE MEP FOR CONTINUATION INTO BUILDING
- ④ PROPOSED ELECTRICAL TRANSFORMER, CONTRACTOR TO CORRDINATE WITH LES FOR EXACT SIZE AND LOCATION.
- ⑤ PROPOSED UNDERGROUND ELECTRICAL SERVICE. CONTRACTOR TO COORDINATE WITH LES FOR EXACT CONDUIT SIZE AND LOCATION.



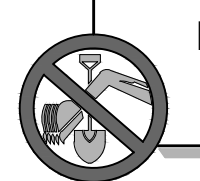
REVISIONS	
REV. NO.	DESCRIPTION
1	SITELAYOUT REVISION

REVISIONS	
REV. NO.	DESCRIPTION
1	SITELAYOUT REVISION



LEGEND

---	BOUNDARY LINE
---	PROPERTY LINE
---	UTILITY EASEMENT
---	BOUNDARY SETBACK
---	UTILITY EASEMENT
---	ROAD CENTERLINE
---	CONCRETE PAVEMENT
---	CONCRETE CURB AND GUTTER
---	EXISTING UNDERGROUND ELECTRIC
---	EXISTING COMMUNICATIONS LINE
---	EXISTING 12" WATER
---	PROPOSED 8" SANITARY SEWER
---	PROPOSED 6" SANITARY SEWER
---	PROPOSED PRIVATE WATER
---	PROPOSED PUBLIC WATER
---	BUILDING ENVELOPE
---	CONCRETE SIDEWALK

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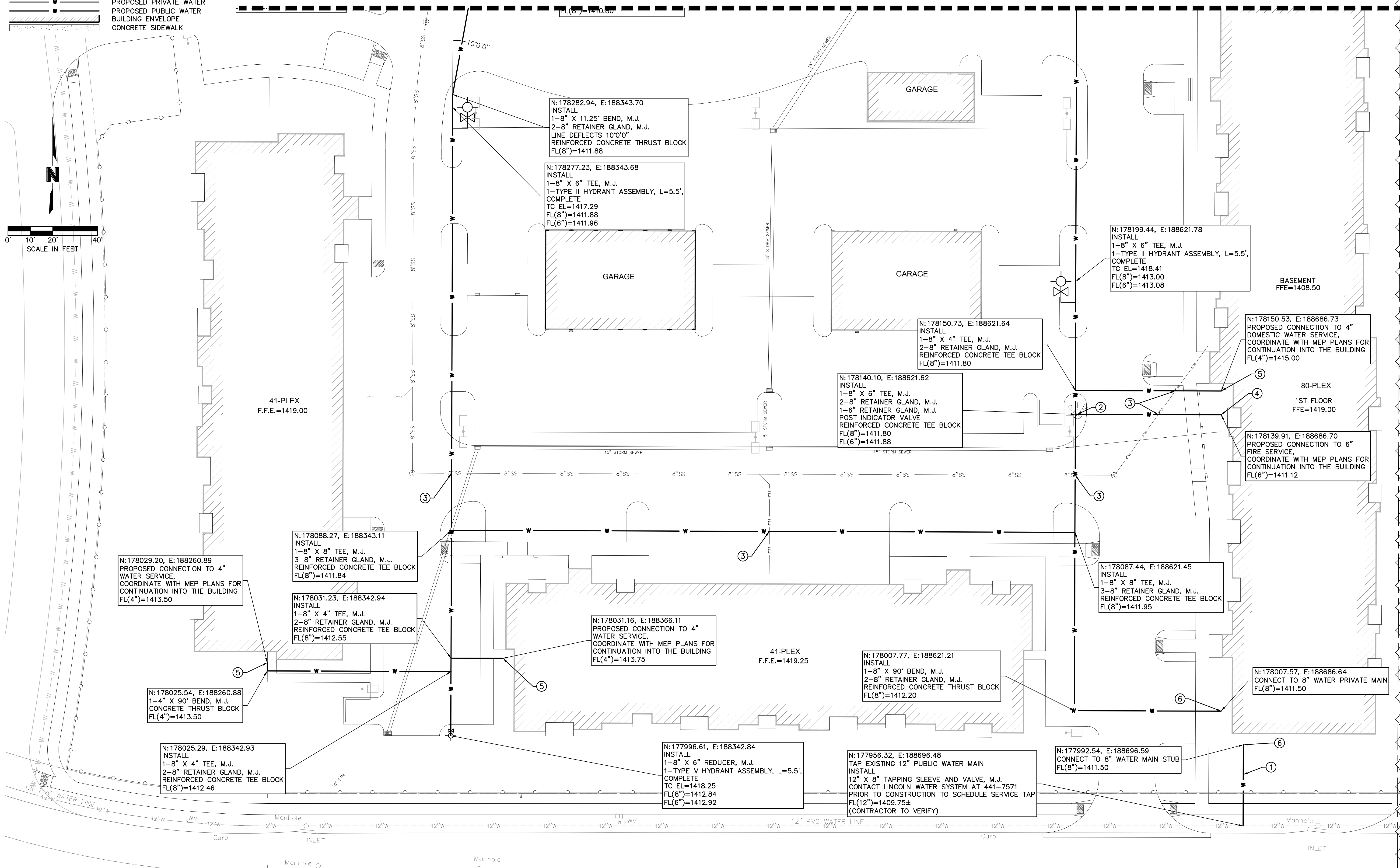
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88 EAST LAKE FLATS
PRIVATE WATER MAIN PLAN

FLAG NOTES

- 1 PROPOSED 8" WATER SERVICE
- 2 PROPOSED MUELLER - POST INDICATOR VALVE, WITH TAMPER SWITCH ,PER LOCAL CODE. REFERENCE MEP PLANS FOR WIRING OF TAMPER SWITCH (PIV)
- 3 UTILITY CROSSING MINIMUM VERTICAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND ANY OTHER UTILITY PIPING IS 18" MINIMUM DEPTH OF WATER MAIN IS 5' FROM FINISHED GROUND TO TOP OF PIPE.
- 4 PROPOSED 6" FIRE SERVICE CONNECTION, SEE MEP FOR CONTINUATION INTO BUILDING.
- 5 PROPOSED CONNECTION TO DOMESTIC WATER SERVICE 5' OUTSIDE BUILDING COORDINATE WITH MEP PLANS FOR CONSTRUCTION AND CONTINUATION INTO THE BUILDING
- 6 PROPOSED CONNECTION TO 8" PRIVATE WATER MAIN 5' OUTSIDE BUILDING COORDINATE WITH MEP PLANS FOR CONSTRUCTION AND CONTINUATION INTO THE BUILDING

MATCH LINE SEE SHEET C4.2



REV. NO.	DATE	REVISIONS DESCRIPTION
1	6.17.14	SITE LAYOUT REVISION

2014

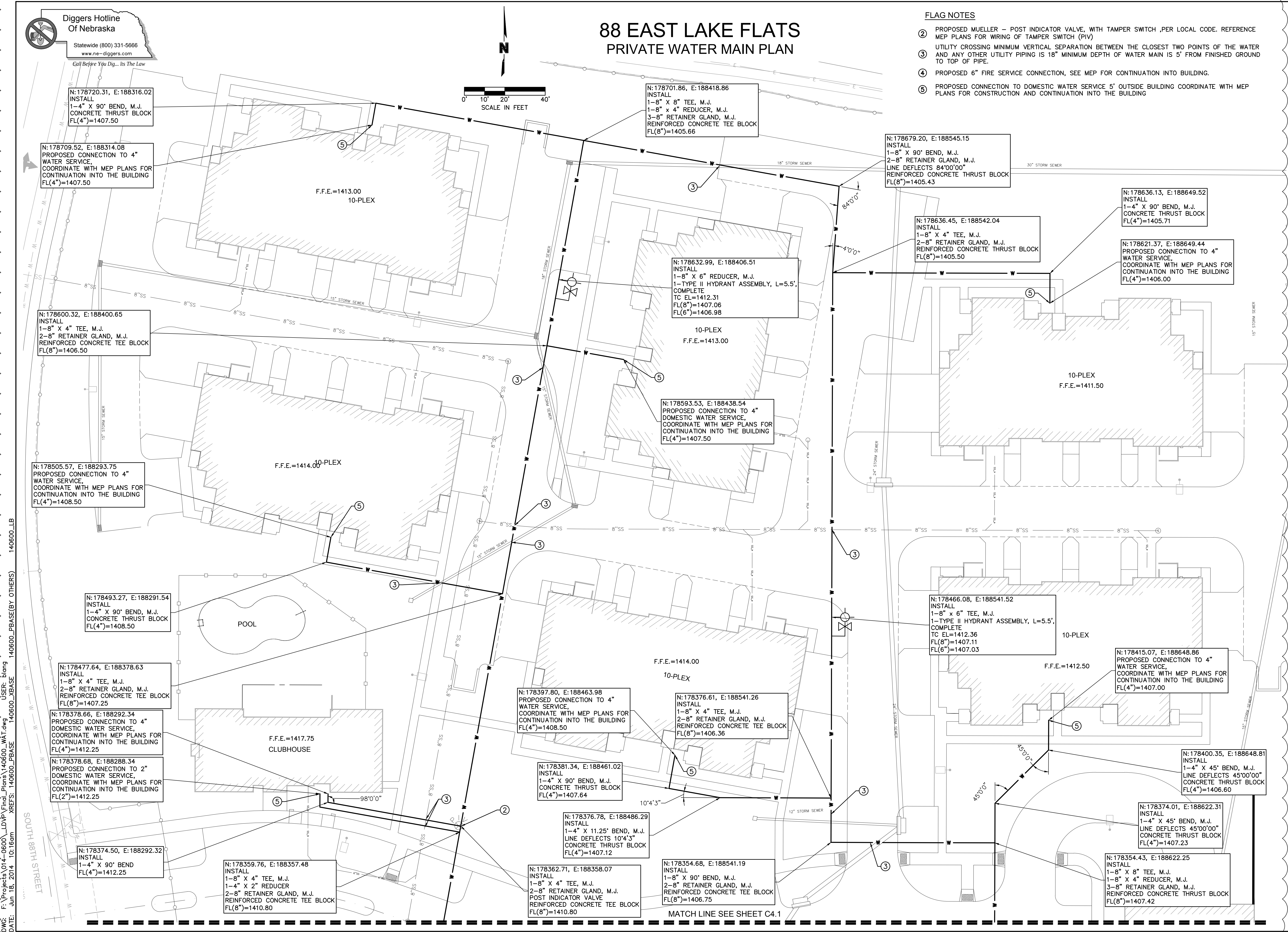
PRIVATE WATER MAIN PLAN

88 EAST LAKE FLATS

LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5/20/14

SHEET
C4.1



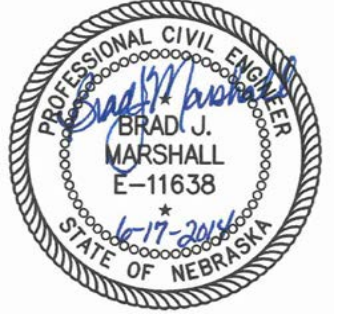
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DATE: Jun 18, 2014 10:16am XREFS: 140600_PBASE 140600_XBASE 140600_PBASE(BY OTHERS) 140600_LB

- FLAG NOTES**
- ② PROPOSED MUELLER – POST INDICATOR VALVE, WITH TAMPER SWITCH ,PER LOCAL CODE. REFERENCE MEP PLANS FOR WIRING OF TAMPER SWITCH (PIV)
 - ③ UTILITY CROSSING MINIMUM VERTICAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND ANY OTHER UTILITY PIPING IS 18" MINIMUM DEPTH OF WATER MAIN IS 5' FROM FINISHED GROUND TO TOP OF PIPE.
 - ④ PROPOSED 6" FIRE SERVICE CONNECTION, SEE MEP FOR CONTINUATION INTO BUILDING.
 - ⑤ PROPOSED CONNECTION TO DOMESTIC WATER SERVICE 5' OUTSIDE BUILDING COORDINATE WITH MEP PLANS FOR CONSTRUCTION AND CONTINUATION INTO THE BUILDING



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REV	NO.	DATE	REVISIONS DESCRIPTION
1	1	6/17/14	SITELAYOUT REVISION

REV	NO.	DATE	REVISIONS
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PRIVATE WATER MAIN PLAN

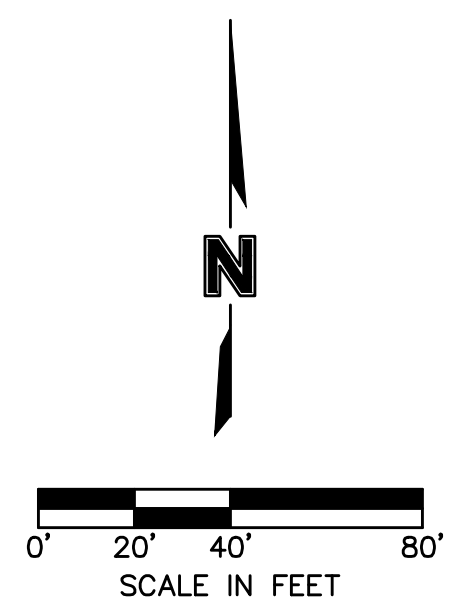
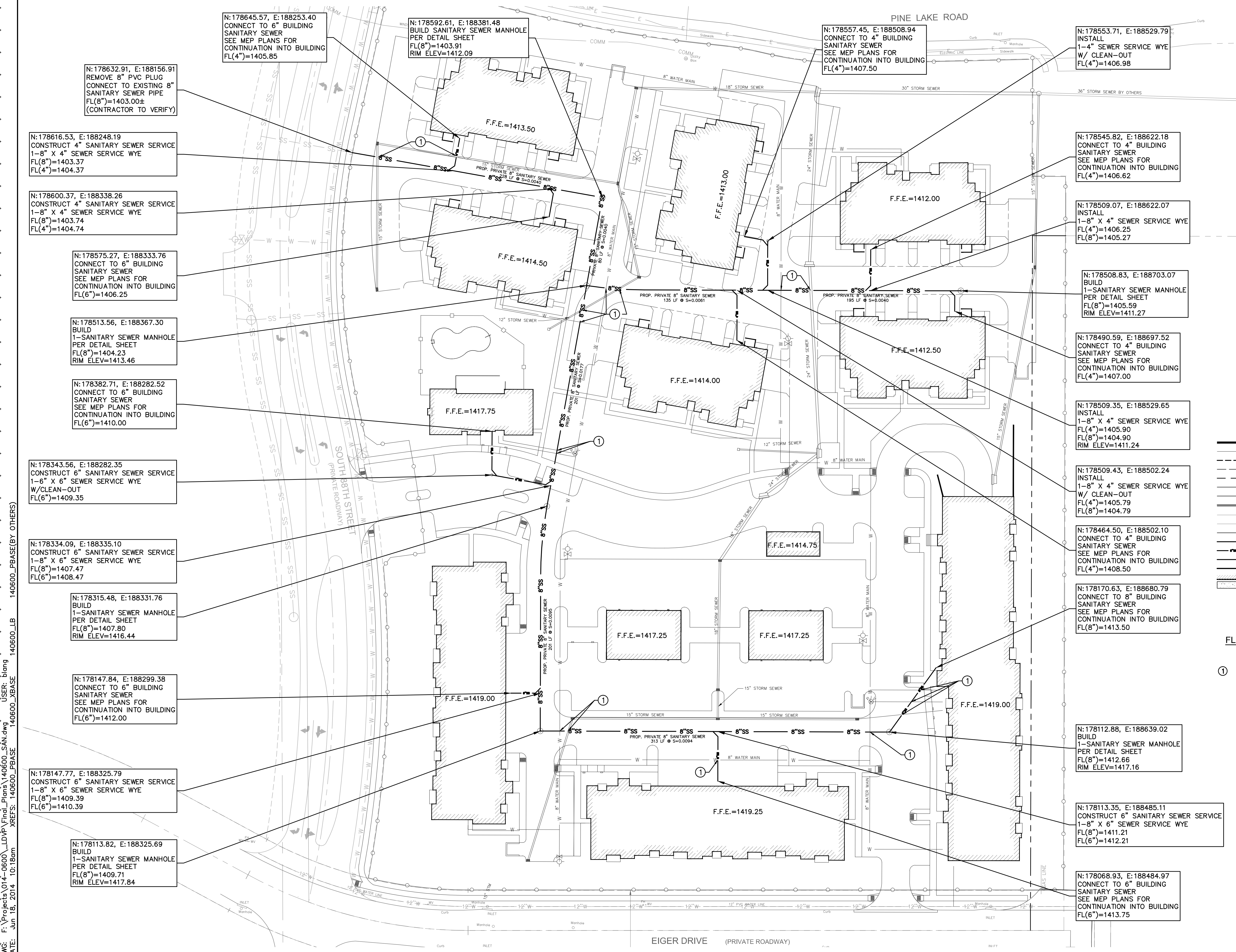
88 EAST LAKE FLATS

LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5/20/14

SHEET
C4.2

88 EAST LAKE FLATS
SANITARY SEWER PLAN



LEGEND	
---	BOUNDARY LINE
---	PROPERTY LINE
---	UTILITY EASEMENT
---	BOUNDARY SETBACK
---	UTILITY EASEMENT
---	ROAD CENTERLINE
---	CONCRETE PAVEMENT
---	CONCRETE CURB AND GUTTER
---	EXISTING UNDERGROUND ELECTRIC
---	EXISTING COMMUNICATIONS LINE
---	EXISTING 12" WATER
---	PROPOSED 8" SANITARY SEWER
---	PROPOSED 6" SANITARY SEWER
---	PROPOSED PRIVATE WATER
---	PROPOSED PUBLIC WATER
---	BUILDING ENVELOPE
---	CONCRETE SIDEWALK

FLAG NOTES

UTILITY CROSSING MINIMUM VERTICAL SEPARATION BETWEEN THE CLOSEST TWO POINTS OF THE WATER AND ANY OTHER UTILITY PIPING IS 18" MINIMUM DEPTH OF WATER MAIN IS 5' FROM FINISHED GROUND TO TOP OF PIPE.

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REVISIONS

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1	1	6/17/14	SITELAYOUT REVISION

SANITARY SEWER PLAN

88 EAST LAKE FLATS

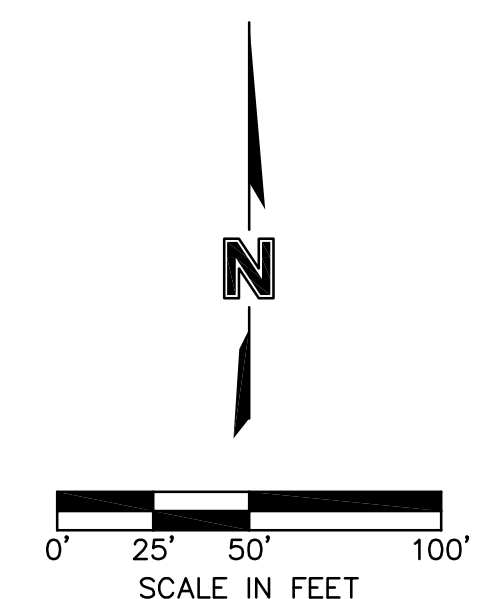
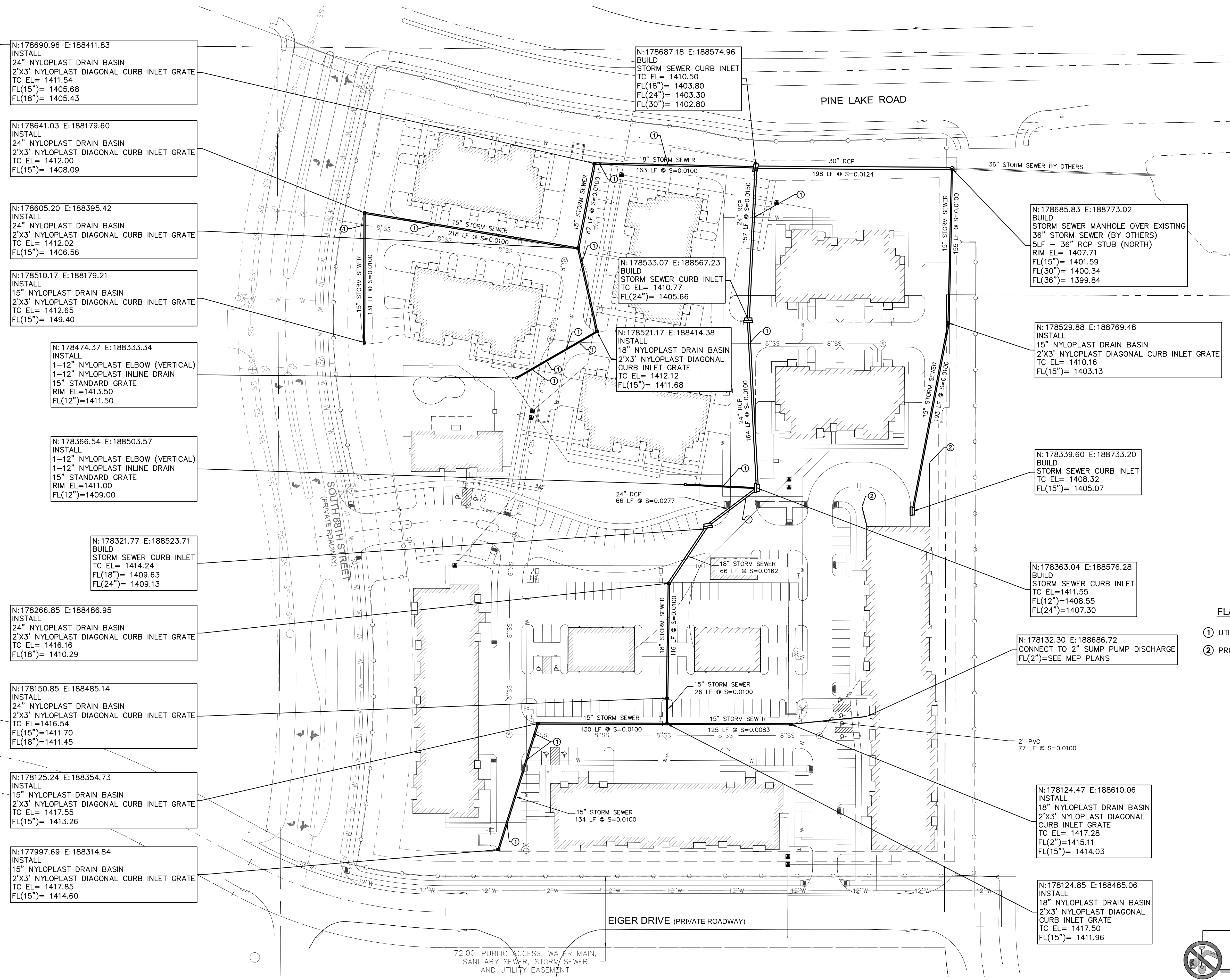
LINCOLN, NE

2014

drawn by: BRW
checked by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.: 520.14

SHEET
C4.3

88 EAST LAKE FLATS
STORM SEWER PLAN



- FLAG NOTES**
- ① UTILITY CROSSING
 - ② PROPOSED RETAINING WALL

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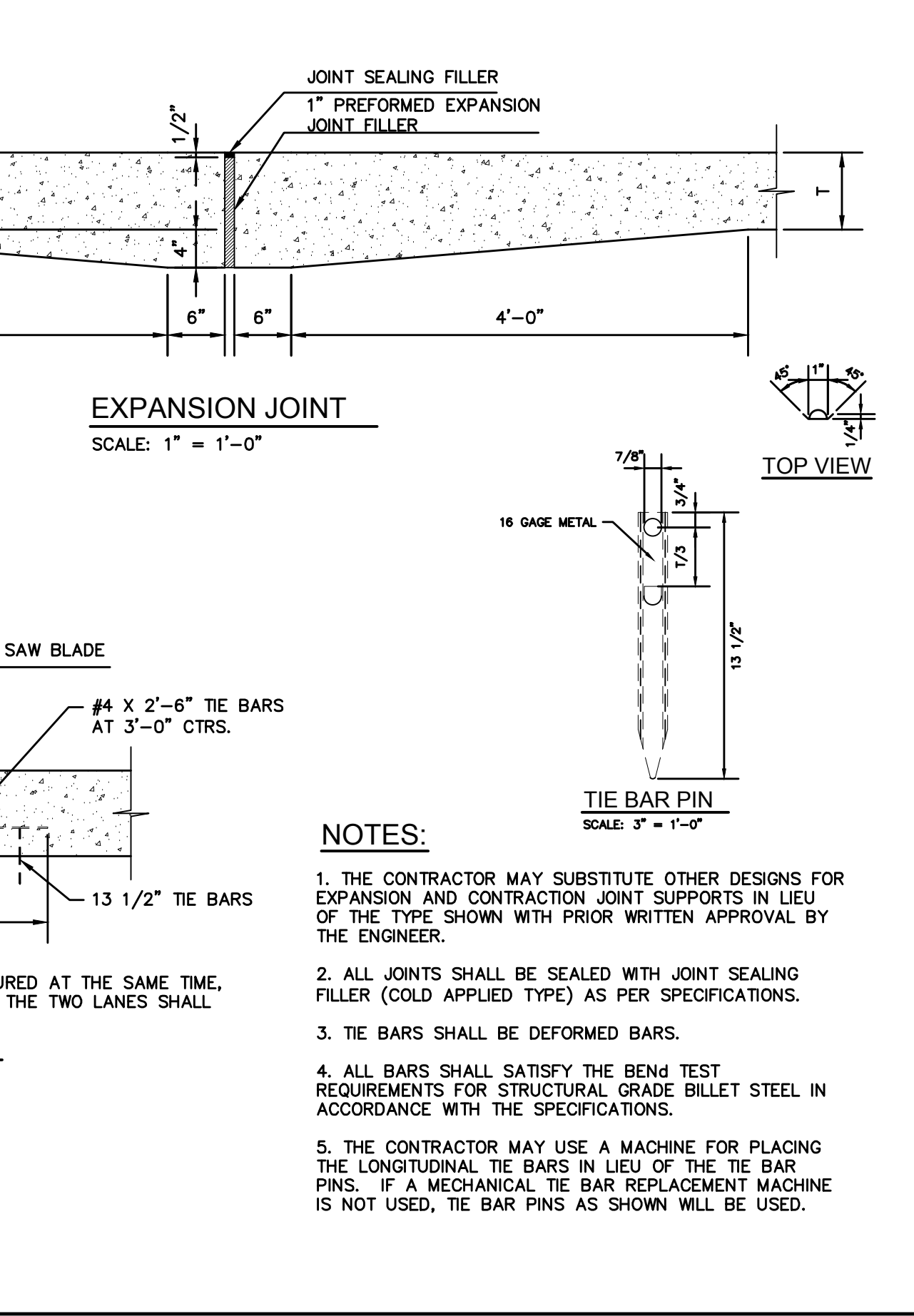
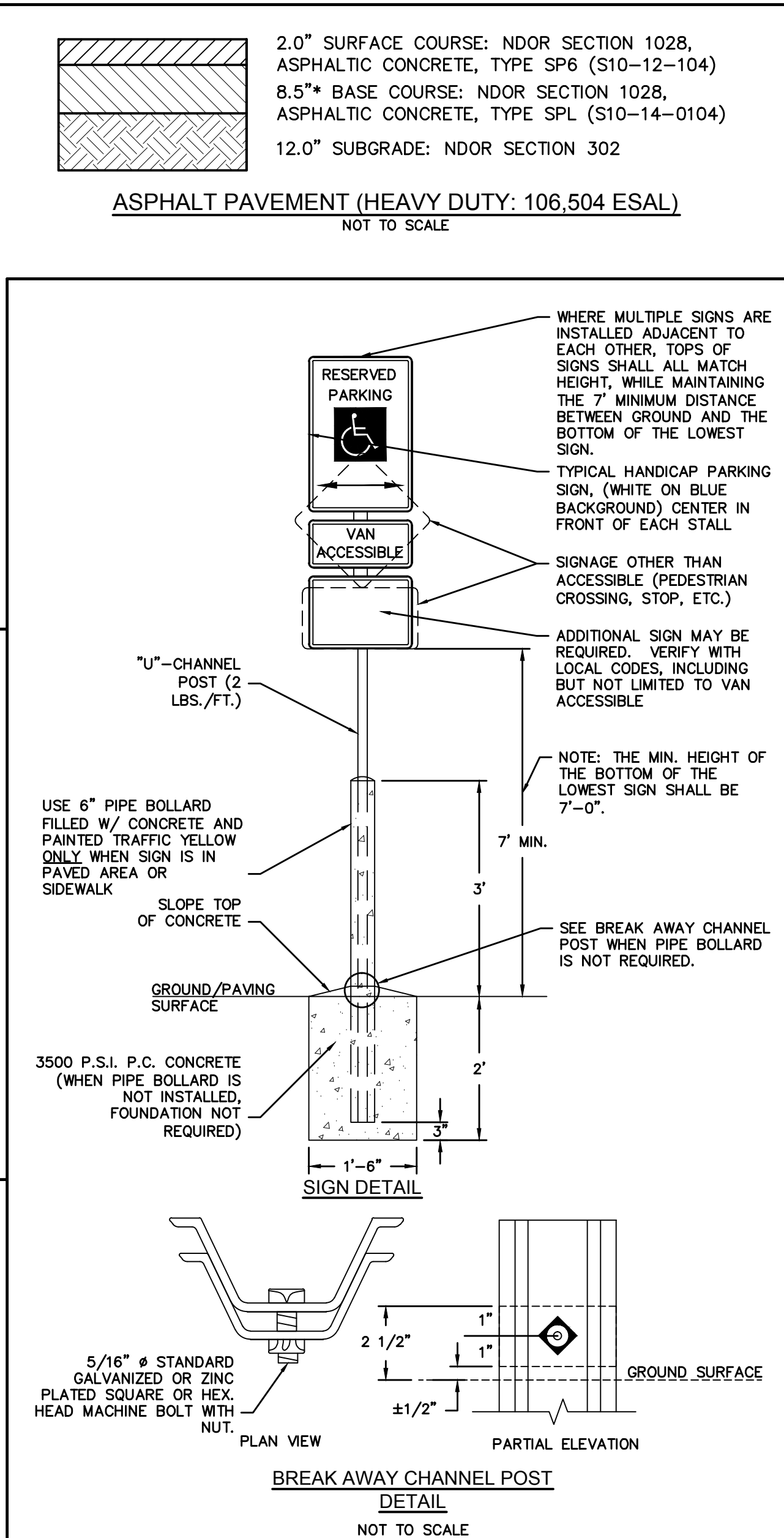
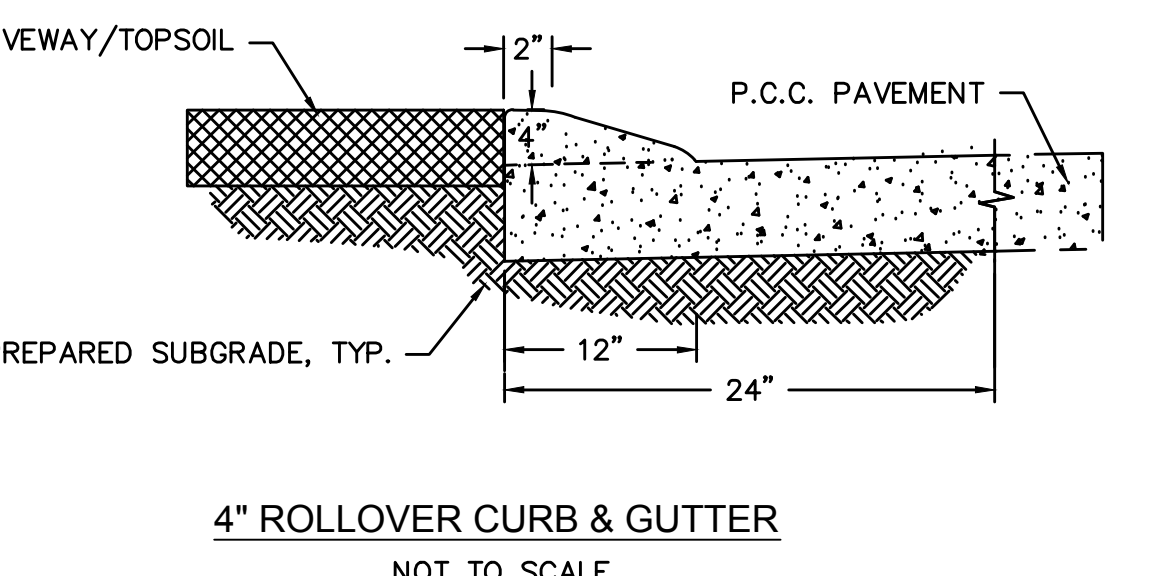
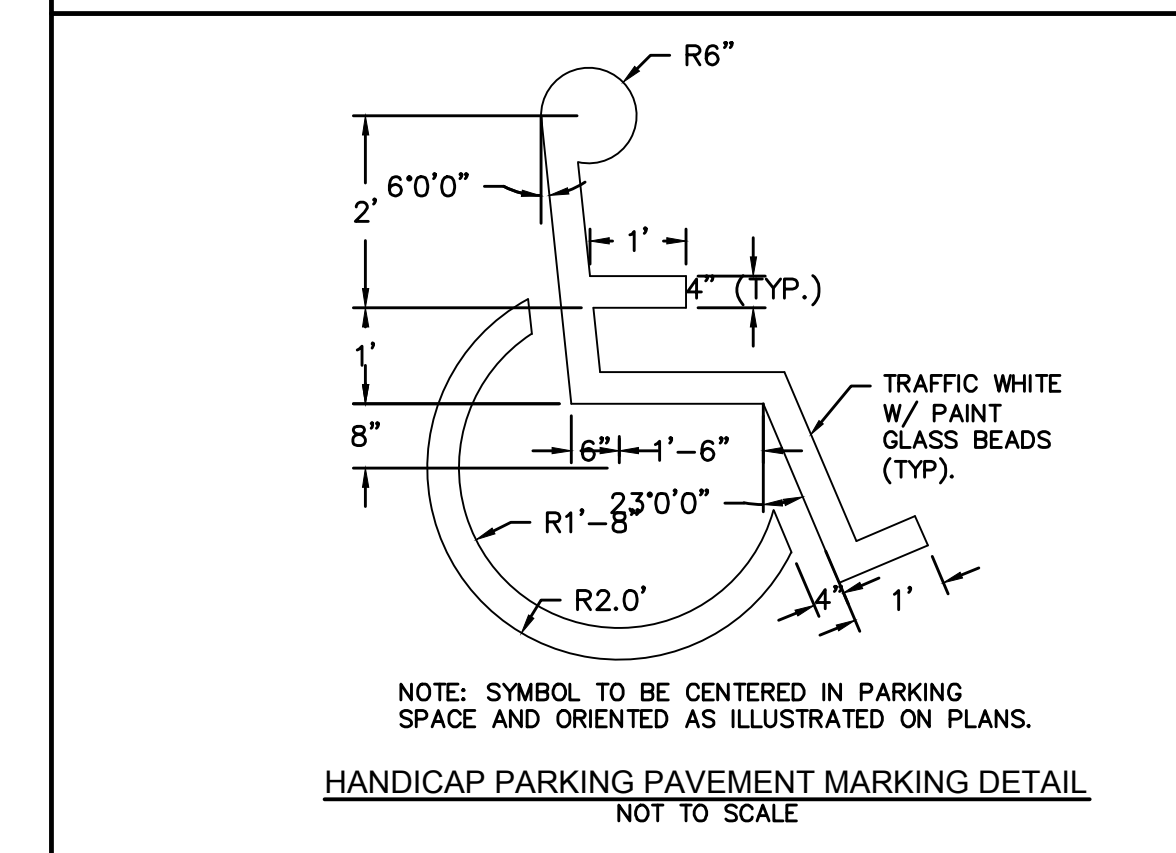
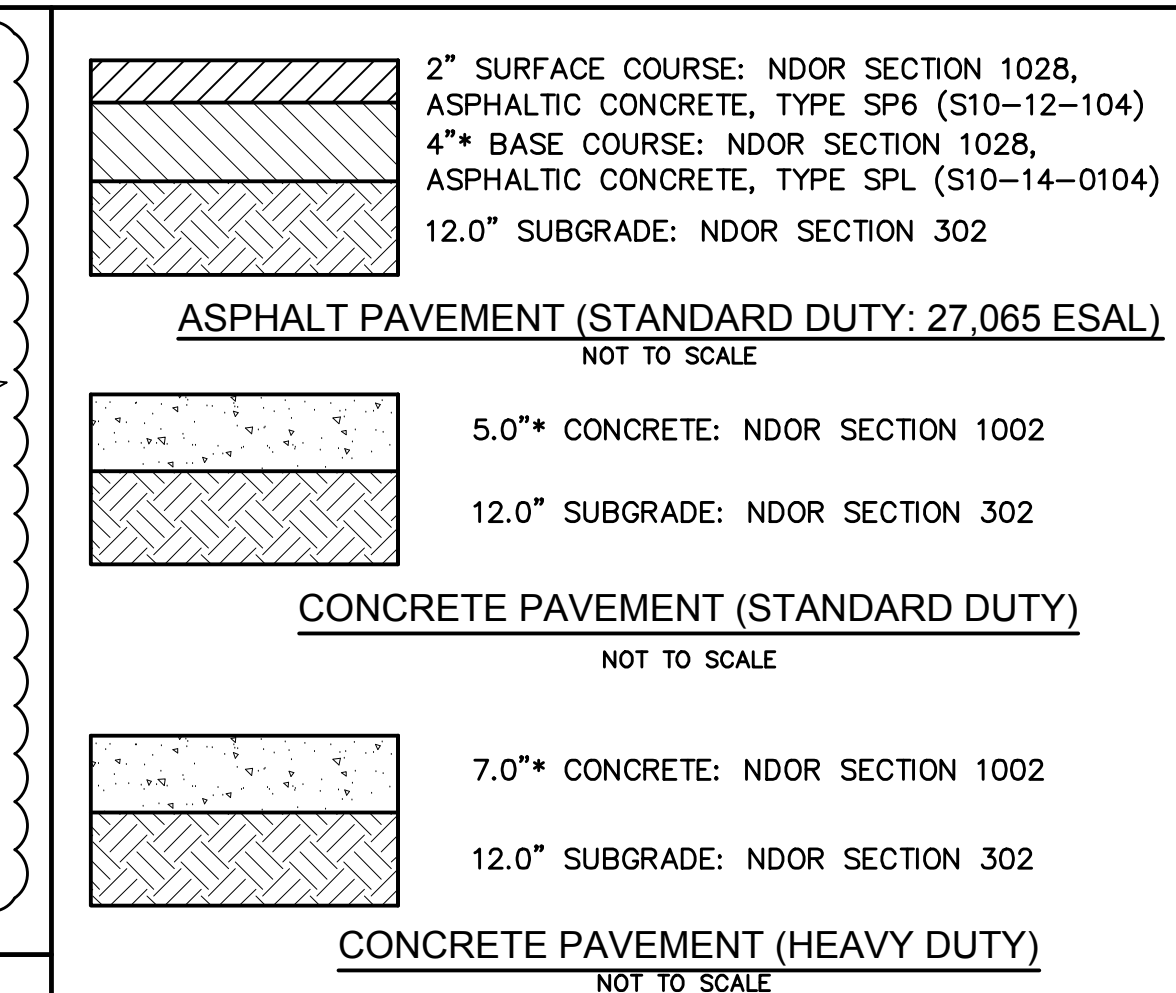
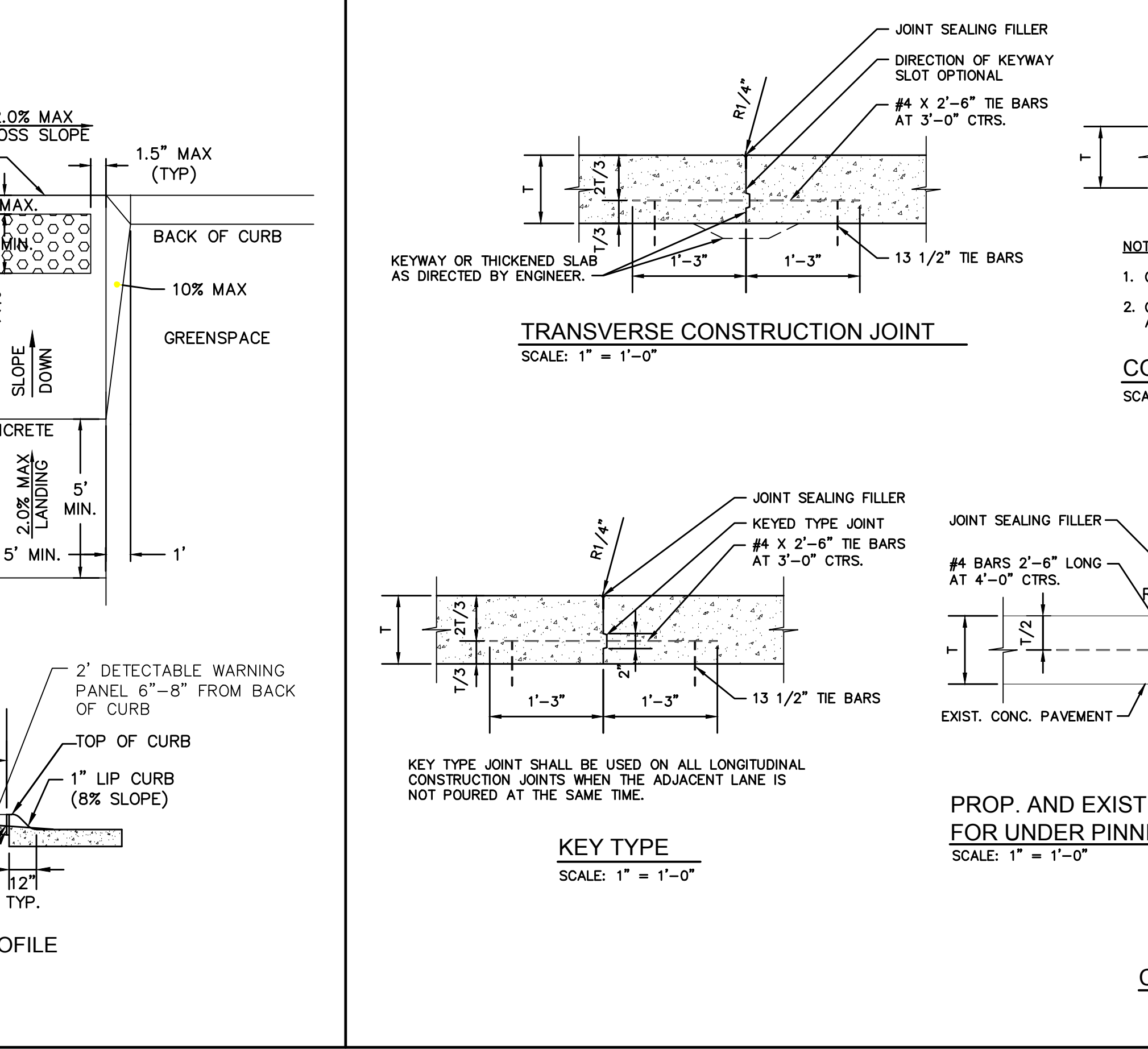
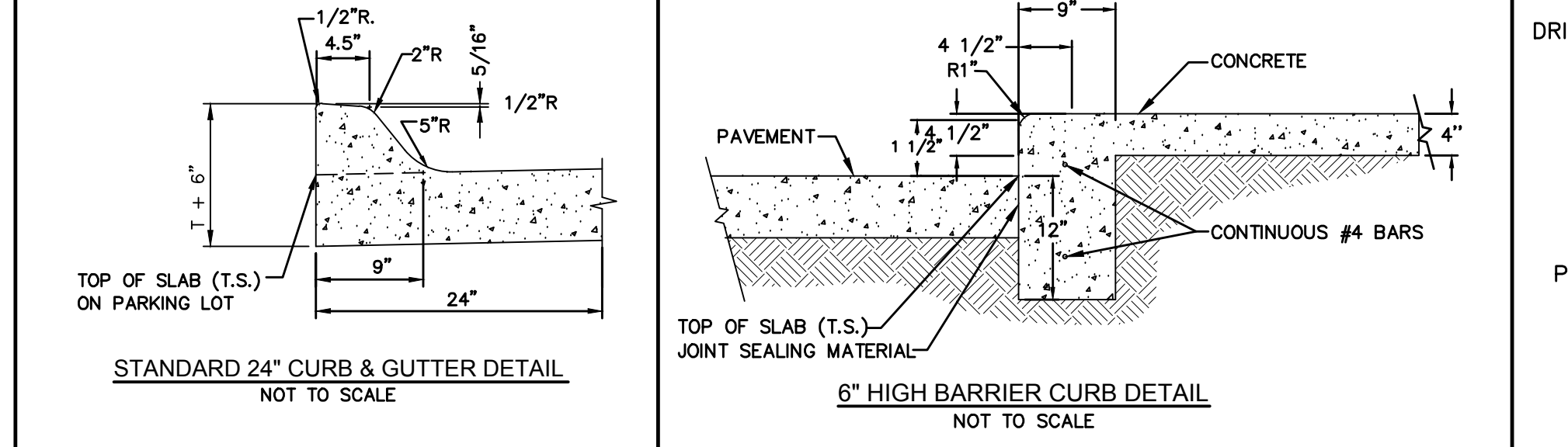
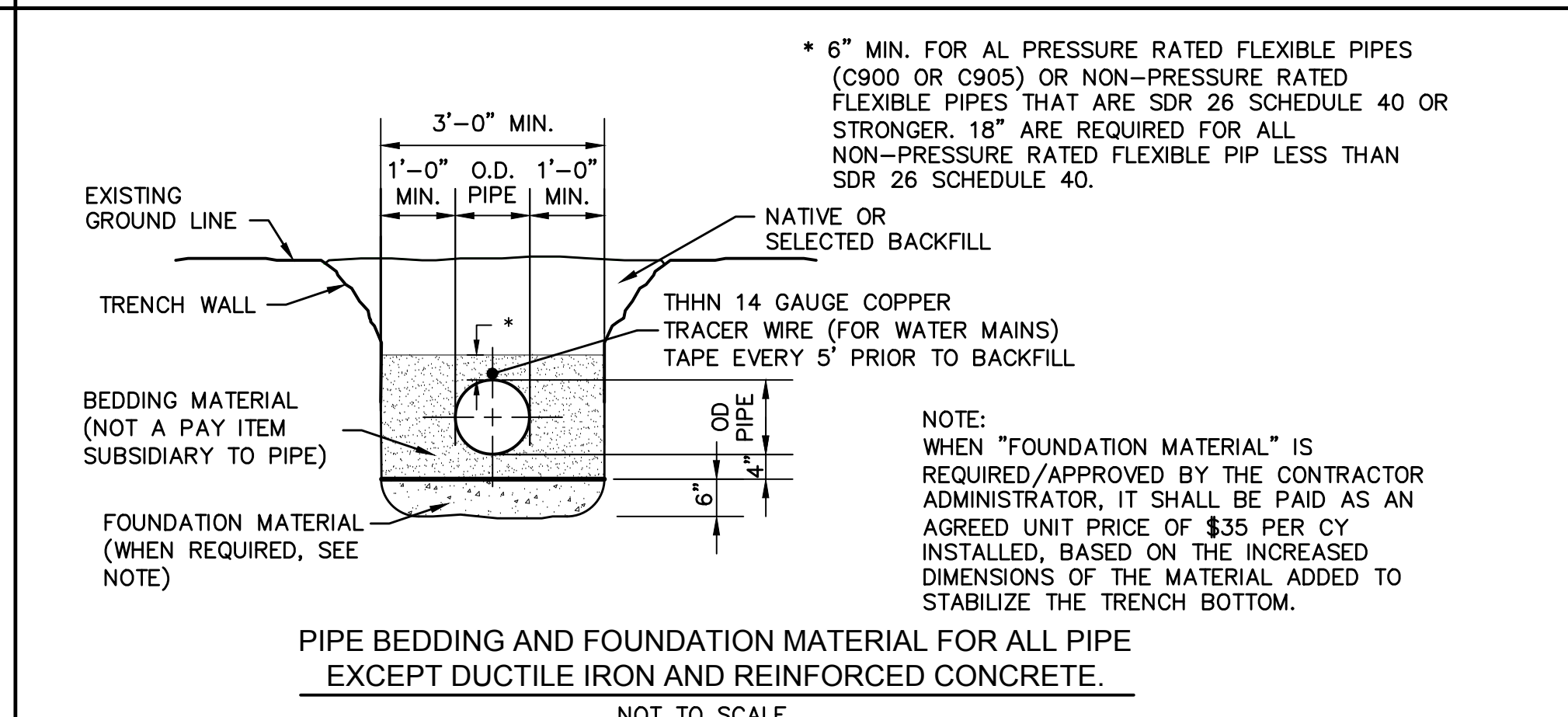
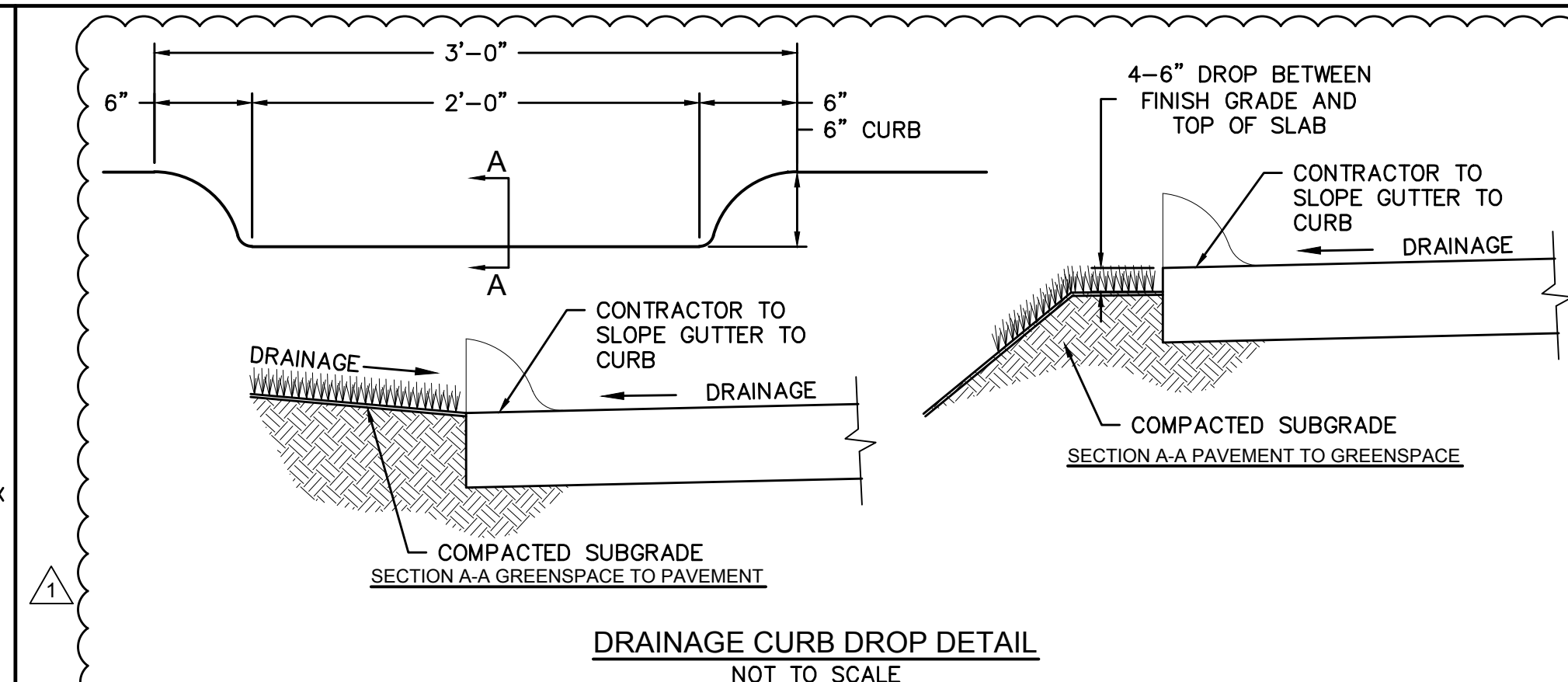
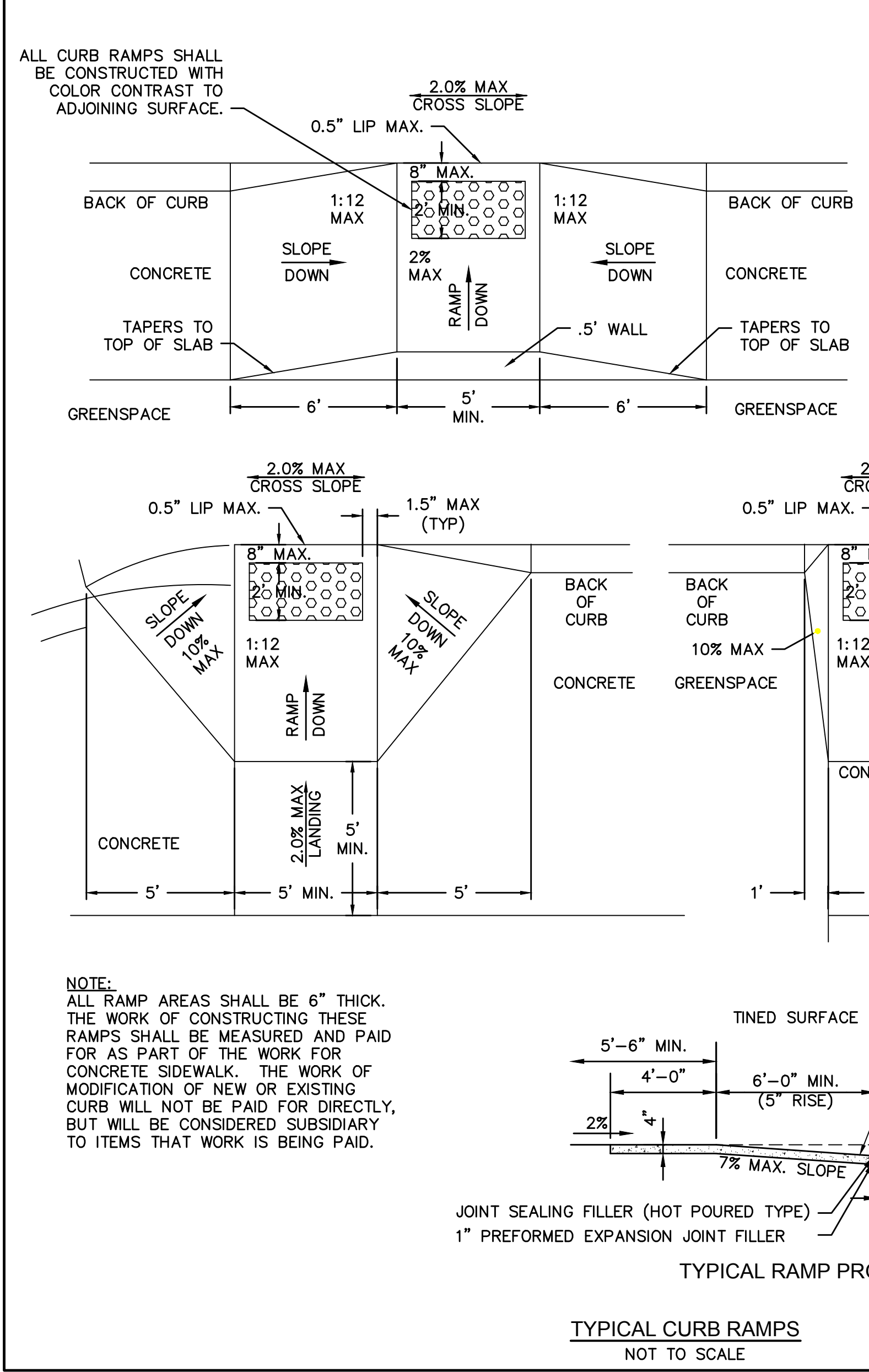
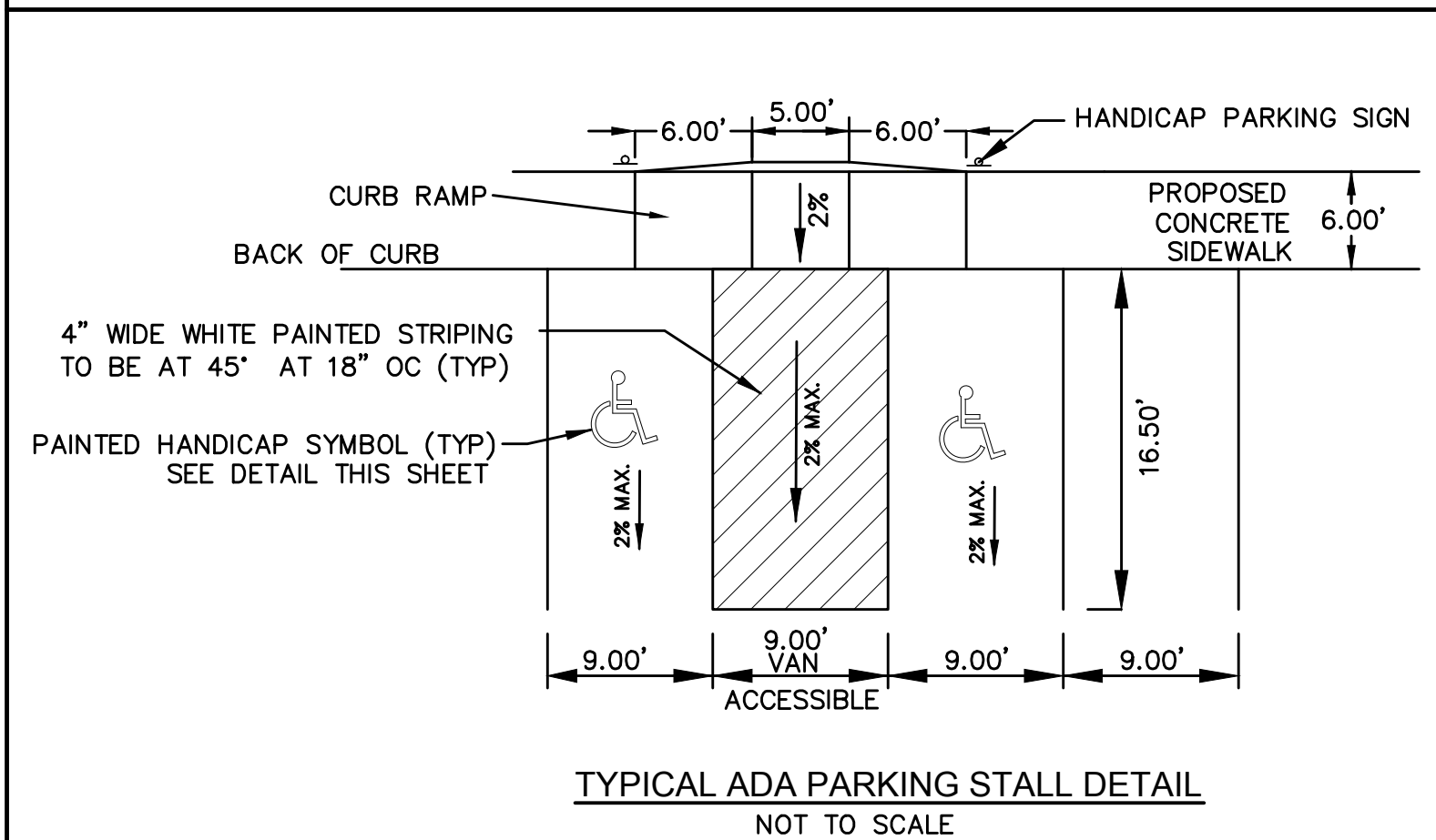
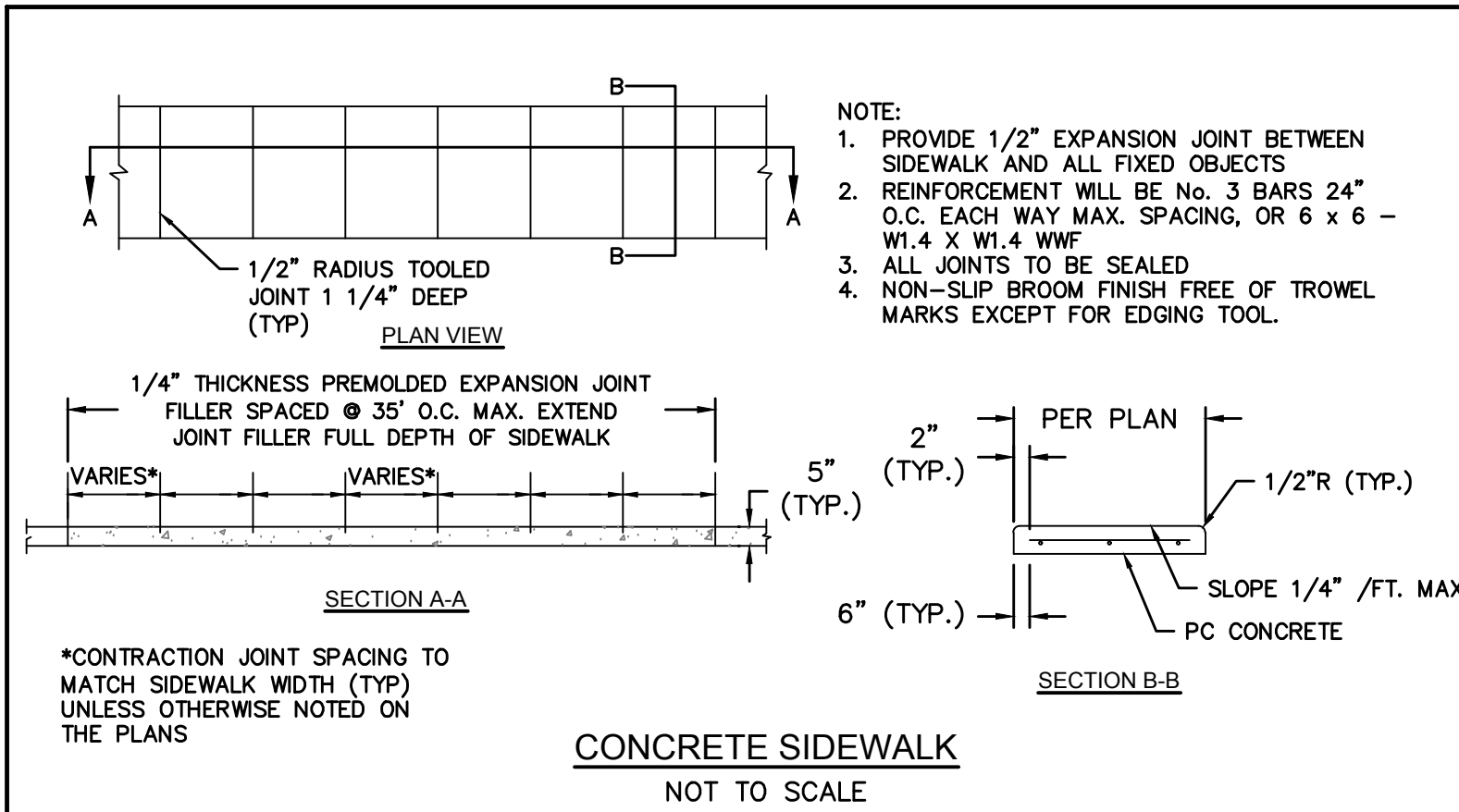
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1111 Lincoln Blvd., Suite 111
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REVISIONS		REVISIONS DESCRIPTION	
REV. NO.	DATE	DESCRIPTION	BY
1	6.17.14	SITE LAYOUT REVISION	

STORM SEWER PLAN		88 EAST LAKE FLATS	
LINCOLN, NE		2014	

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5-20-14



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1111 Lincoln Plaza, Suite 111
P.O. Box 111
Lincoln, NE 68501-4808
TEL: 402.474.6311
FAX: 402.474.5160
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STATE OF NEBRASKA
REGISTERED PROFESSIONAL CIVIL ENGINEER
BRAD J. MARSHALL
E-11638
EXPIRATION DATE 12/31/2014

REV.	NO.	DATE	REVISIONS DESCRIPTION
1	1	6.17.14	ADD DETAILS

DETAIL SHEET

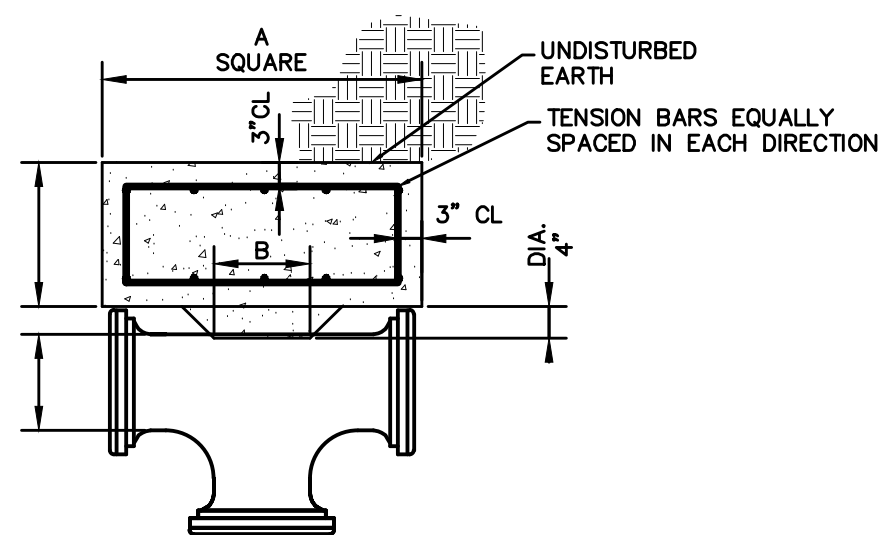
88 EAST LAKE FLATS

2014

LINCOLN, NE

drawn by: BRW
checked by: BJM
approved by: BJM
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project no.: 014-0600
drawing no.:
date: 5.20.14

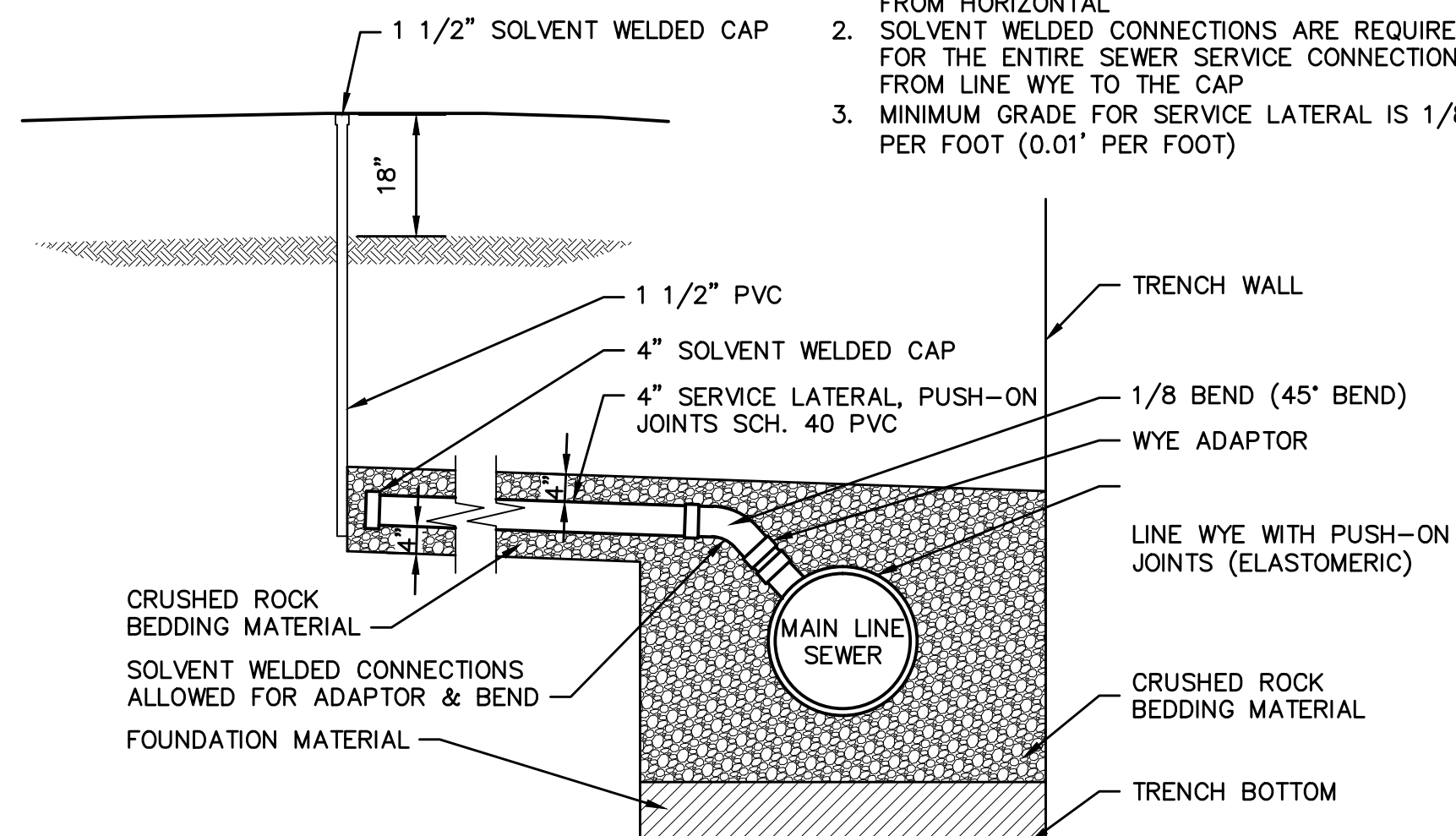
SHEET
C5.0



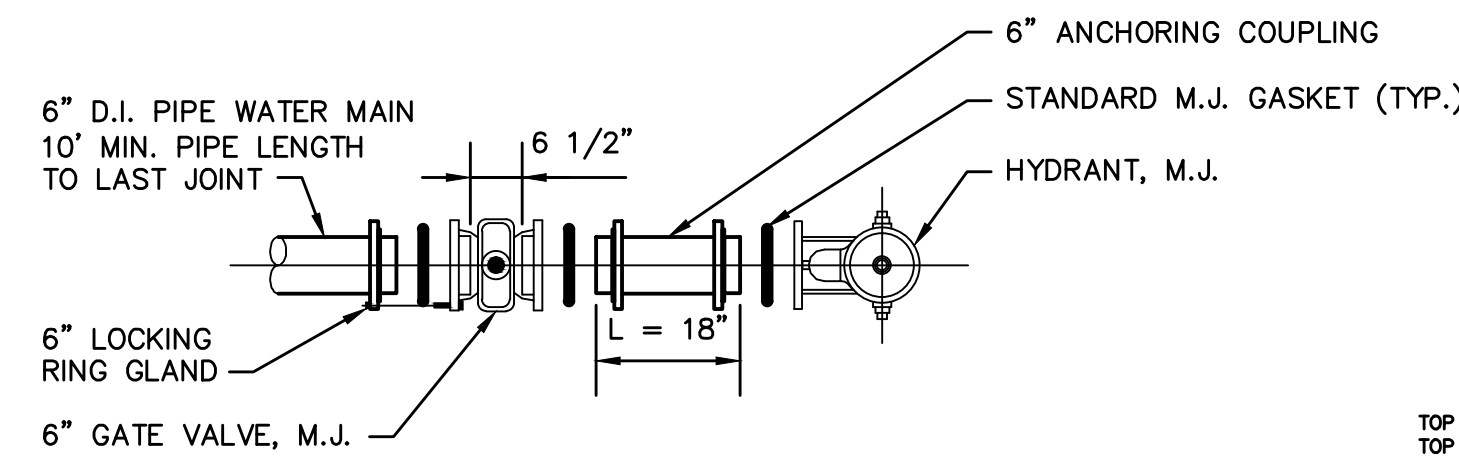
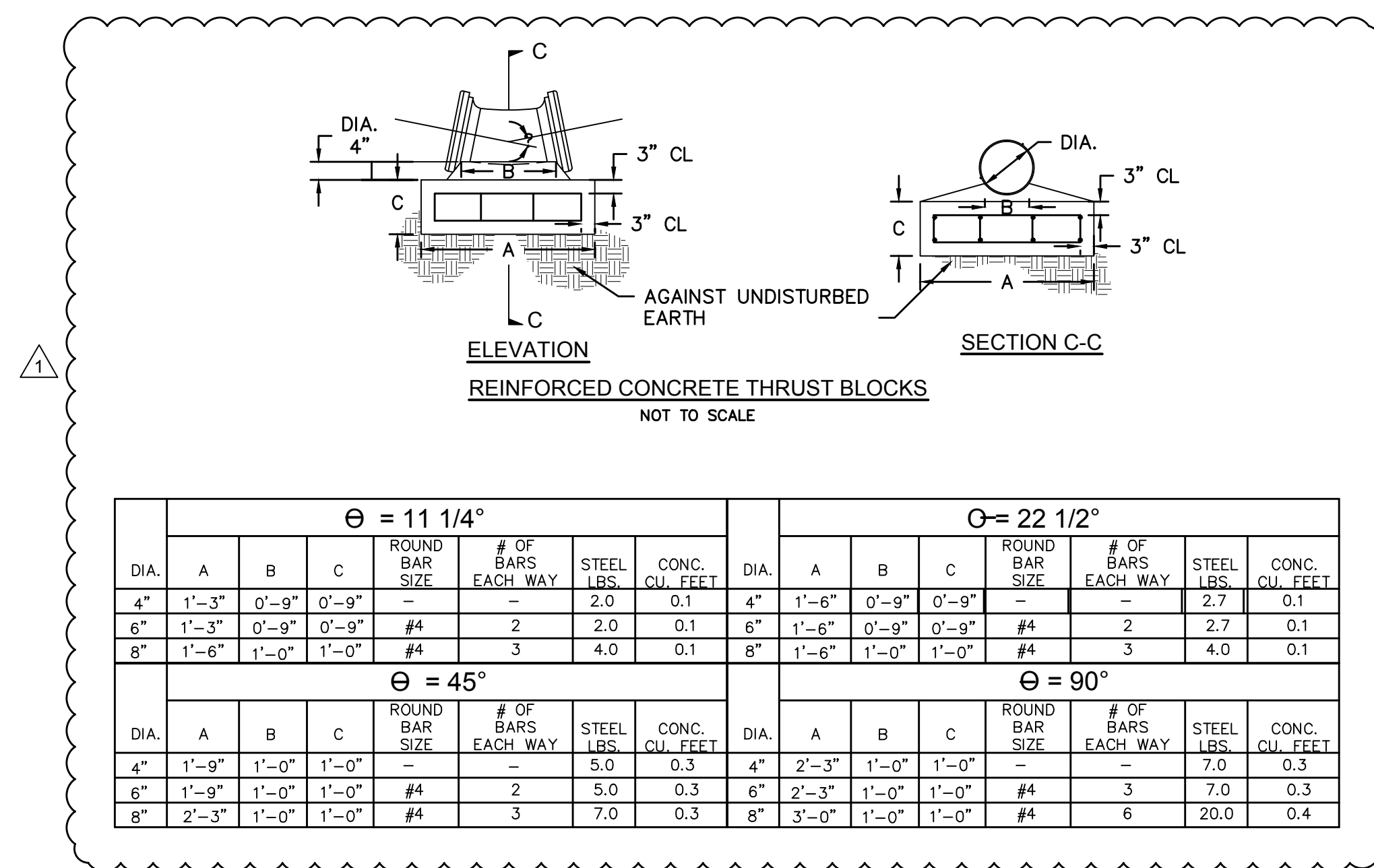
REINFORCED CONCRETE TEE & PLUG THRUST BLOCKS
NOT TO SCALE

DIA.	A	B	C	ROUND BAR SIZE	# OF BARS EACH WAY	STEEL LBS.	CONC. CU. FEET
6"	1'-9"	0'-6"	0'-6"	#4	2	3.4	0.1
8"	2'-3"	0'-9"	0'-9"	#4	3	10.0	0.2
12"	3'-4"	1'-0"	1'-0"	#4	6	22.7	0.4

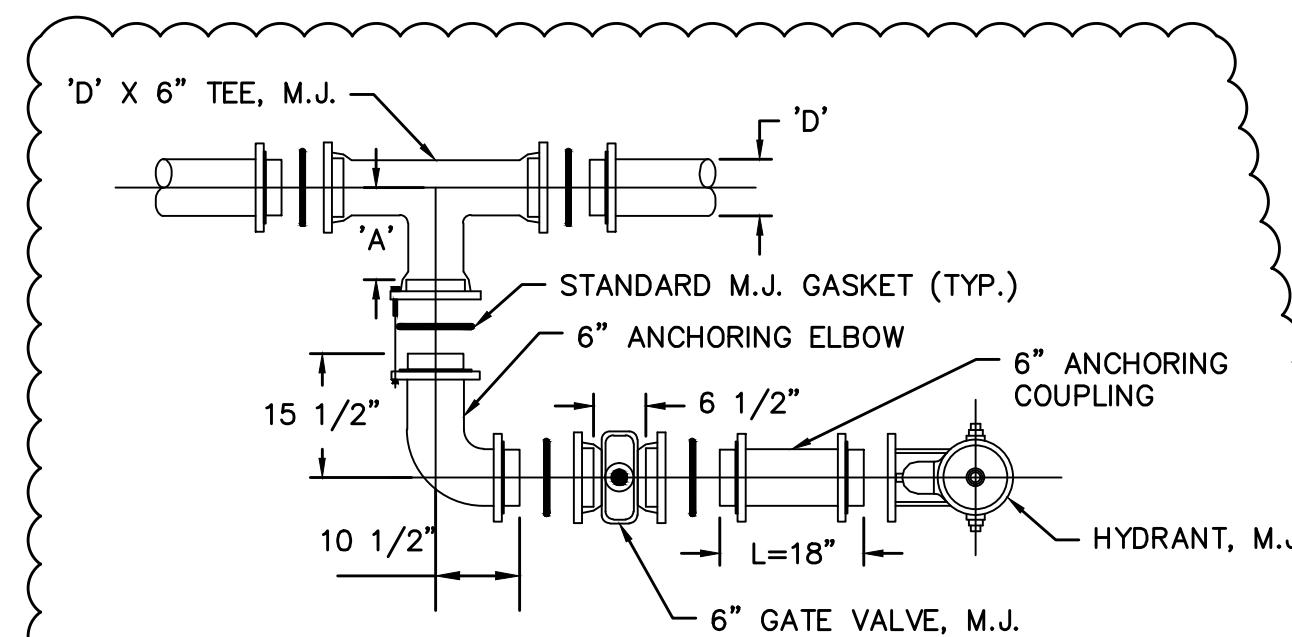
- NOTES:
1. THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED EARTH.
 2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.
 3. ALL CONCRETE SHALL BE NDOOR CLASS 47B-3,500
 4. MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL TO BE AS NOTED.
 5. ALL REINFORCING STEEL SHALL BE EPOXY COATED.



SEWER SERVICE CONNECTION
NOT TO SCALE

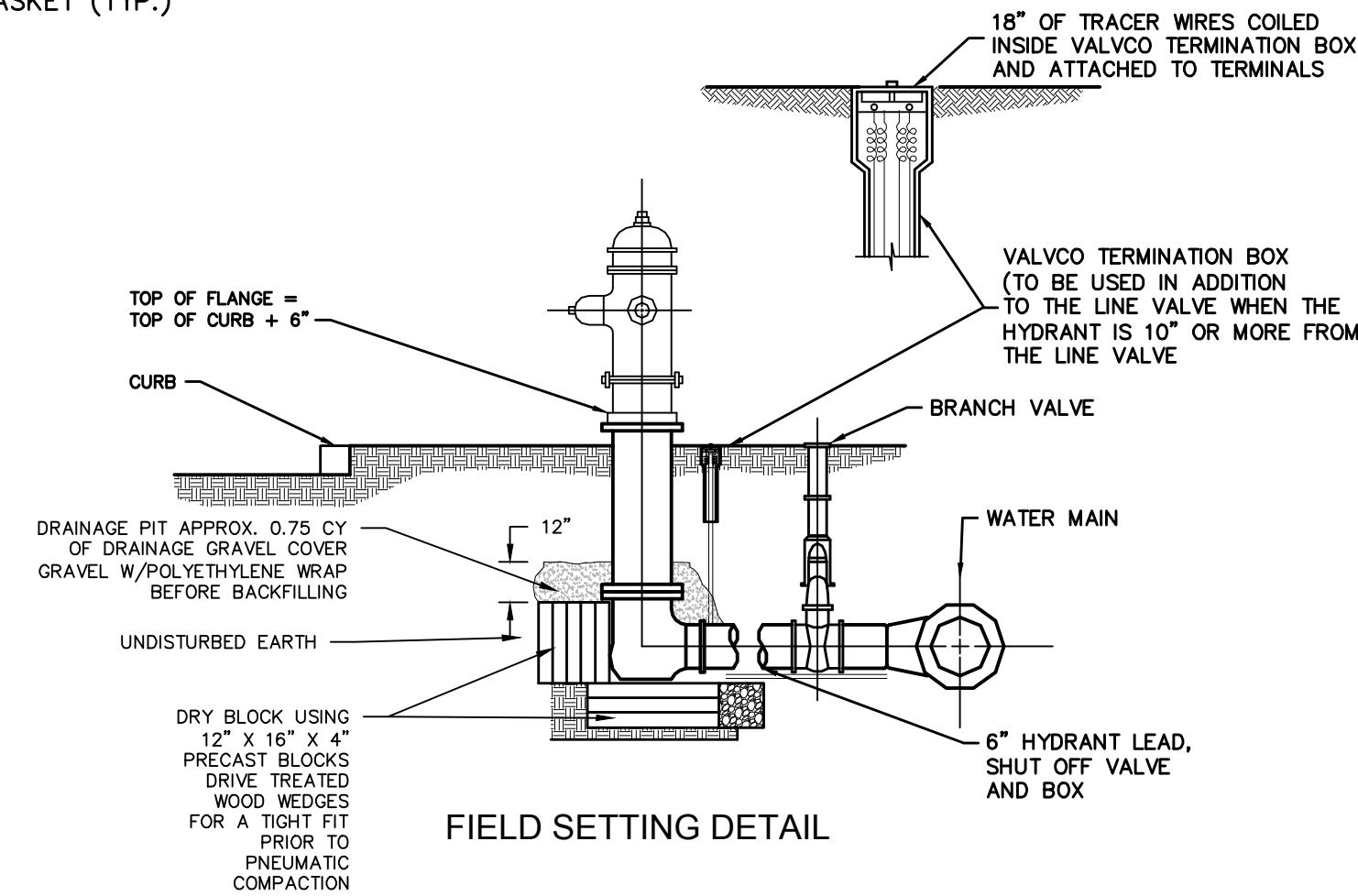


TYPE V



TYPE II

TEE CONNECTION DIMENSIONS			
MAIN RUN SIZE (INCHES) 'D'	BRANCH SIZE (INCHES)	BRANCH LENGTH SWIVEL TEE (INCHES) 'A'	BRANCH LENGTH (INCHES) 'A'
6	6	10.5	8
8	6	11.5	9



FIELD SETTING DETAIL

- NOTES:
1. ALL ANCHORING COUPLINGS SHALL BE 18" IN LENGTH UNLESS PLANS SHOW OTHERWISE.
 2. ALL ANCHORING COUPLINGS AND ANCHORING ELBOWS SHALL BE CAST WITH AN INTEGRAL M.J. GLAND ON ONE END AND A DUCTILE IRON ROTATABLE M.J. GLAND ON THE OTHER END.
 3. A LOCKING RING GLAND SHALL BE SUBSTITUTED FOR ONE OF THE STANDARD GLANDS ON THE 6" GATE VALVE FOR THE TYPE V AND TYPE VI INSTALLATIONS.
 4. BACKFILL OF HYDRANTS SHALL BE PNEUMATICALLY COMPACTED.

TYPICAL HYDRANT INSTALLATIONS
NOT TO SCALE

GENERAL NOTES:

MANHOLES MAY BE CONSTRUCTED OF BRICK OR CONCRETE.

ALL MANHOLES ARE TO BE CONSTRUCTED CIRCULAR IN PLAN
SIMILAR TO DRAWING.

ALL CONCRETE SHALL BE CLASS 47B-3,500.

ALL JOINTS ON BRICK MANHOLES SHALL BE SHAVED,
CAREFULLY STRUCK WHEN LAID. THE OUTSIDE SHALL BE FILLED
WITH MORTAR, FLUSH WITH THE OUTSIDE OF THE BRICK.

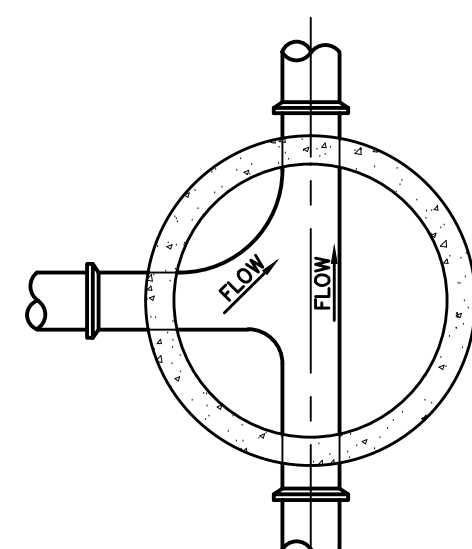
BRICK MANHOLES SHALL BE FINISHED WITH ONE HALF INCH PLASTER COAT ON THE OUTSIDE & INSIDE COMPOSED OF CEMENT MORTAR, ONE PART PORTLAND CEMENT AND THREE PARTS SAND BY VOLUME.

THE CAST IRON MANHOLE RING SHALL SET IN A BED OF MORTAR, AND CAREFULLY ADJUST TO PROPOSED GRADE.

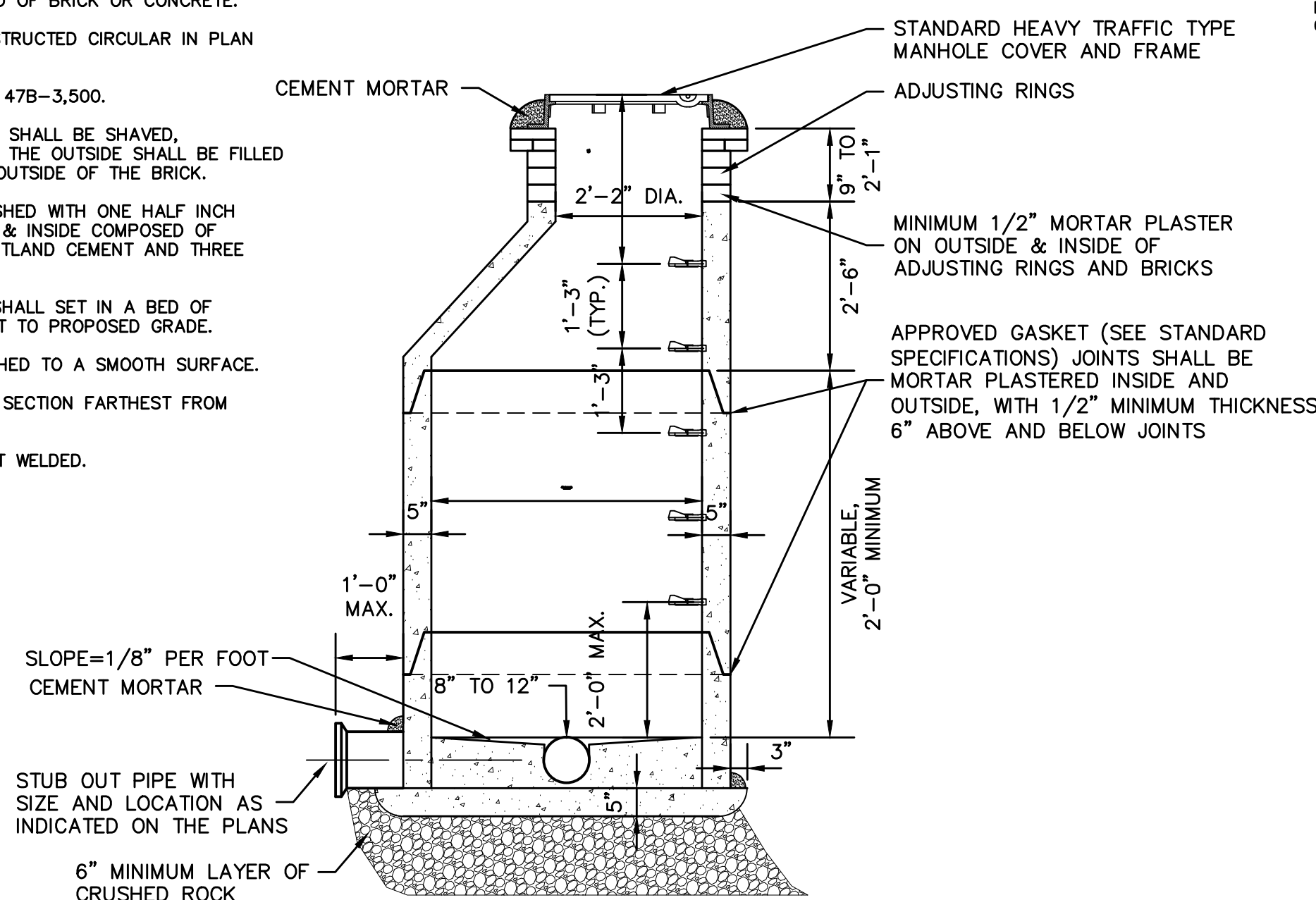
MANHOLE FLOOR SHALL BE FINISHED TO A SMOOTH SURFACE.

PLACE VERTICAL SIDE OF TAPER SECTION FARTHEST FROM
BACK OF CURB.

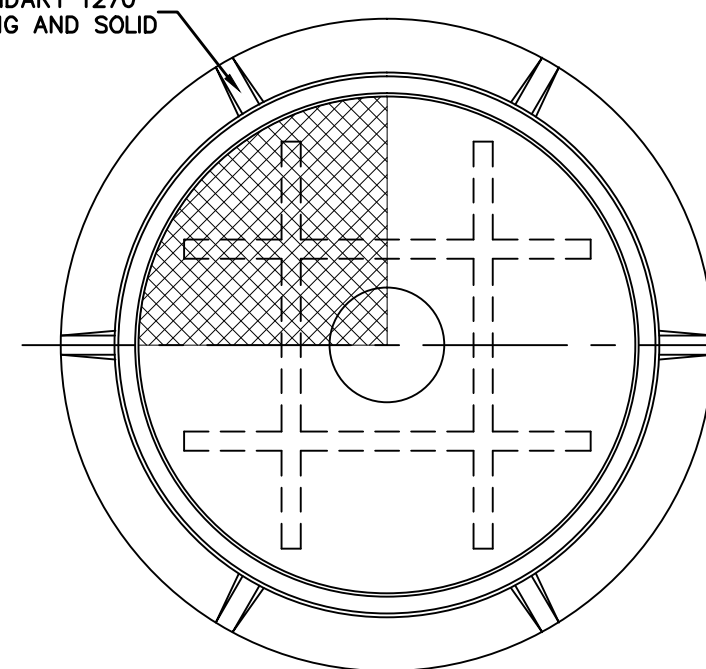
PIPE FITTINGS SHALL BE SOLVENT WELDED.



MANHOLE INVERT



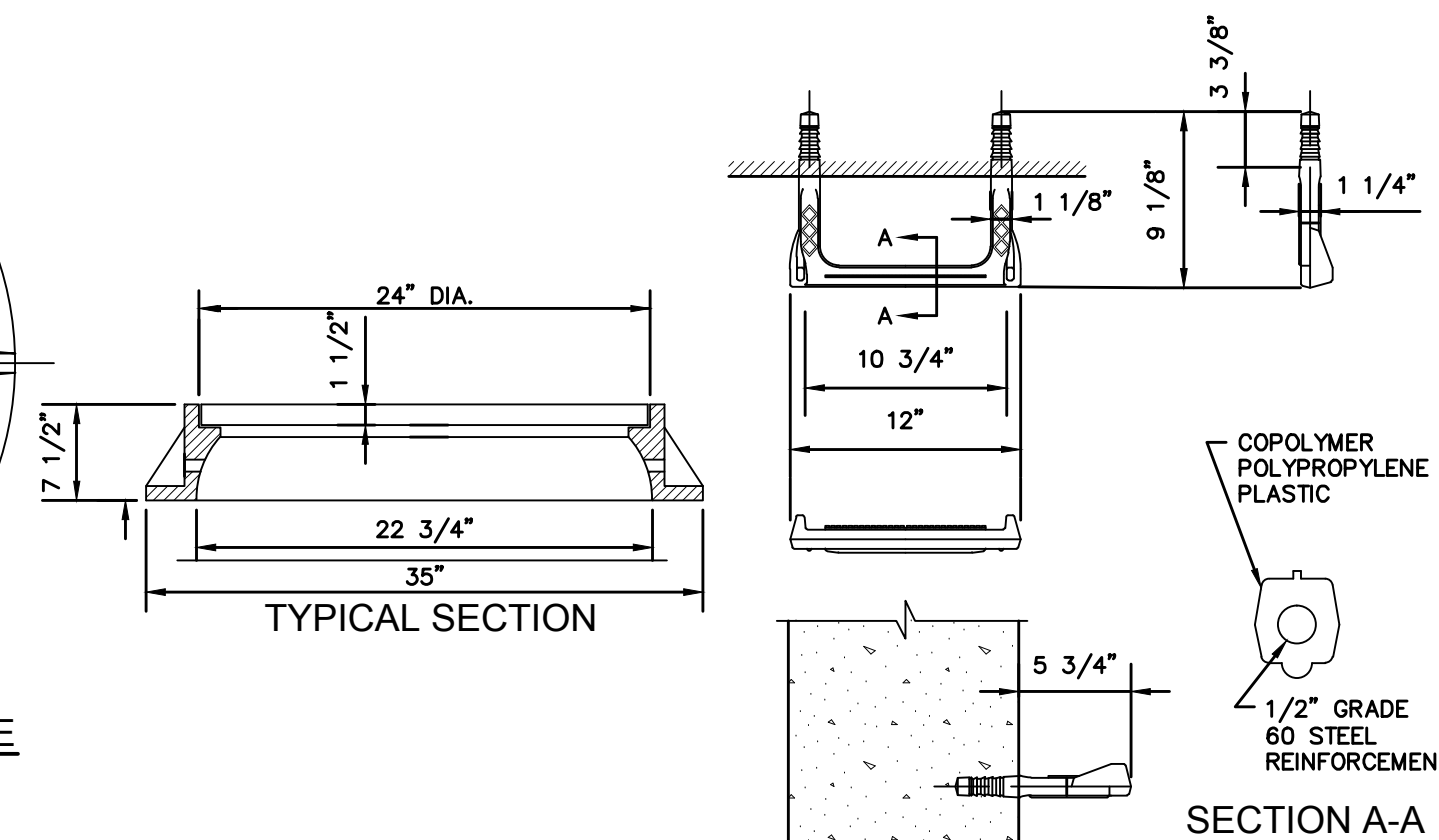
WASTEWATER MANHOLE
NOT TO SCALE



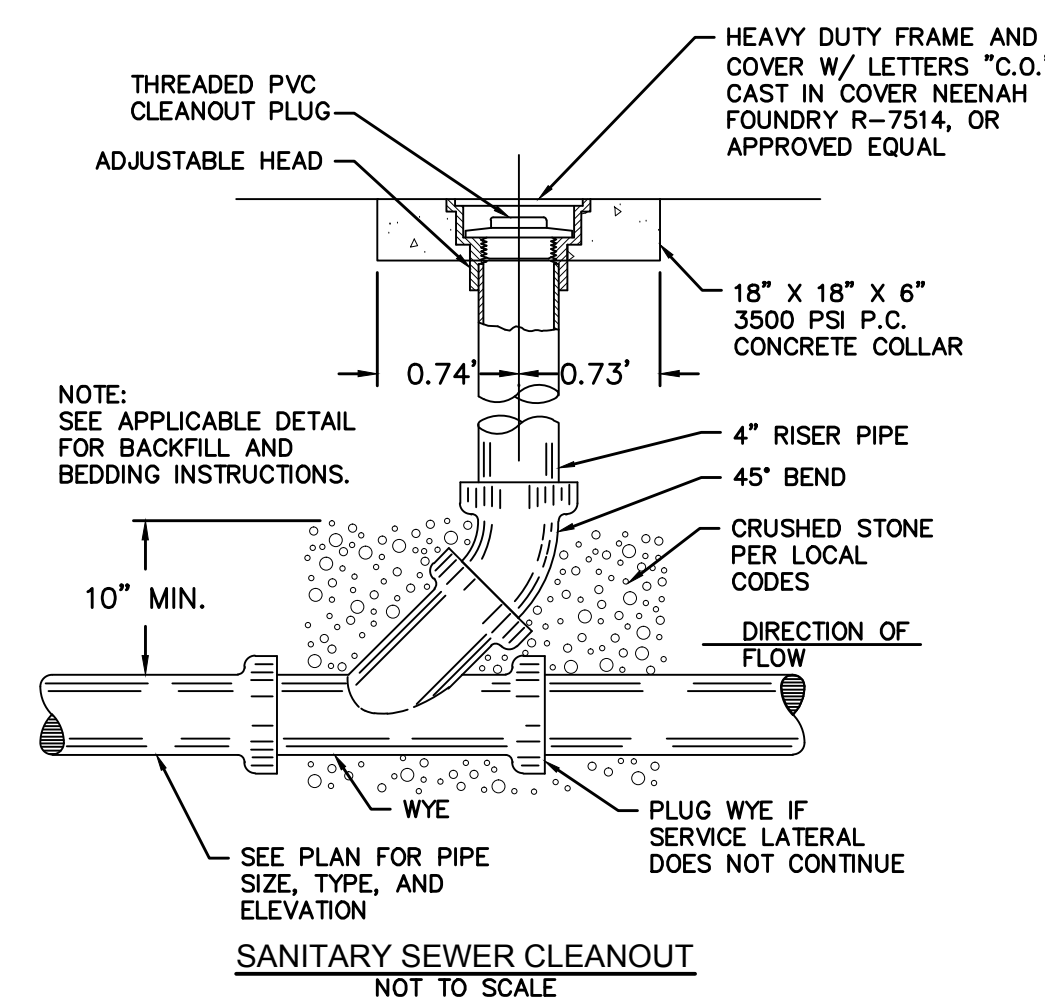
STANDARD HEAVY TRAFFIC TYPE
MANHOLE COVER AND FRAME

- NOTES:
1. CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF 'SPECIFICATIONS FOR GRAY IRON CASTINGS' IN ACCORDANCE WITH ASTM DESIGNATION A-48-83, CLASS 35B.
 2. CASTINGS ARE TO BE MANUFACTURED TRUE TO PATTERN AND WITH SATISFACTORY FIT OF COMPONENT PARTS. CASTINGS SHALL BE FREE OF DEFECTS. DIMENSIONS AS DETAILED ON PLAN SHALL NOT DEViate BY 1/16" PER FOOT.
 3. CASTINGS SHALL BE FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACES.
 4. CASTING SHALL BE RATED 'HEAVY DUTY' SUITABLE FOR H-20 TRAFFIC LOADING.

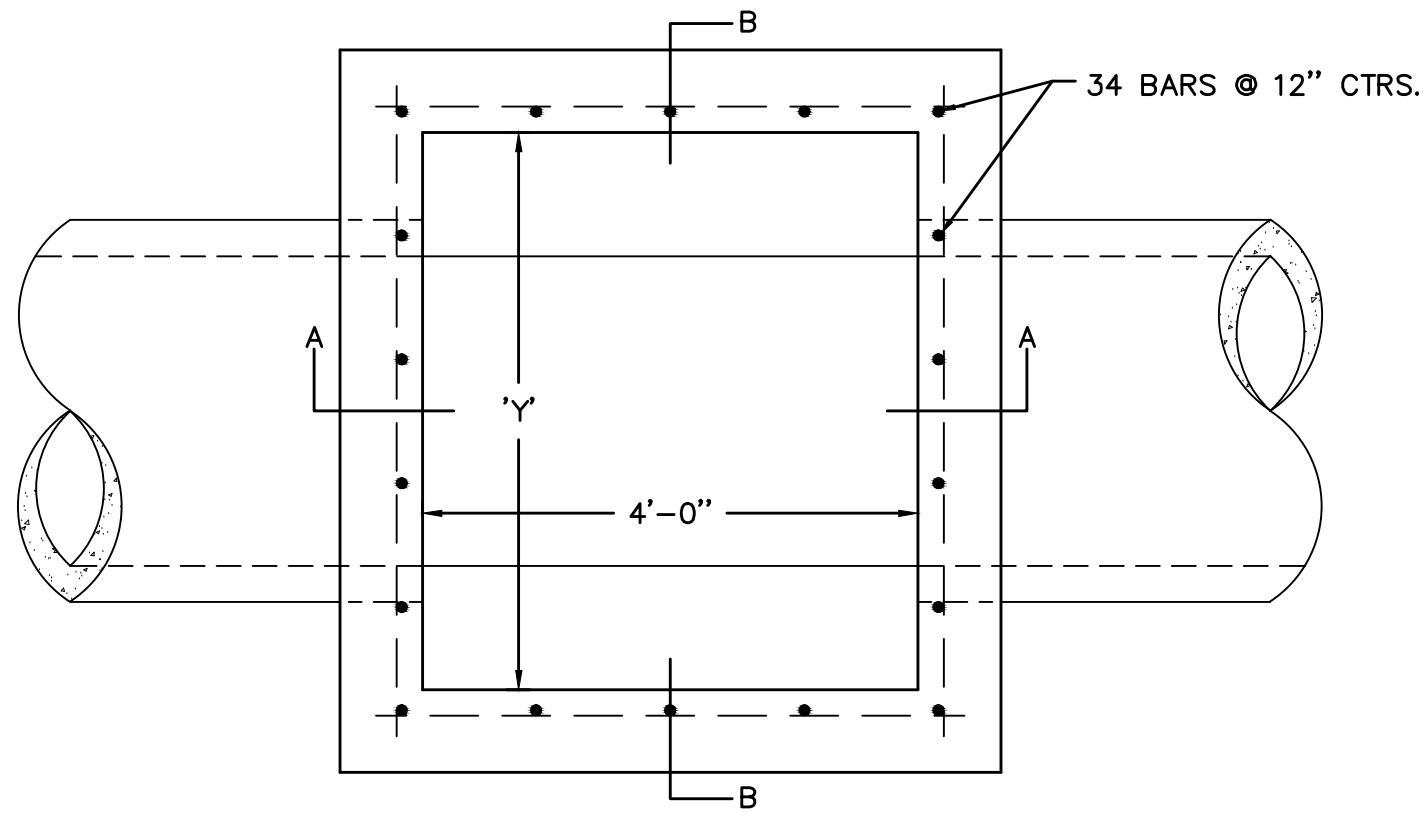
CAST IRON MANHOLE RING, COVER, AND STEPS
NOT TO SCALE



REINFORCED PLASTIC STEPS



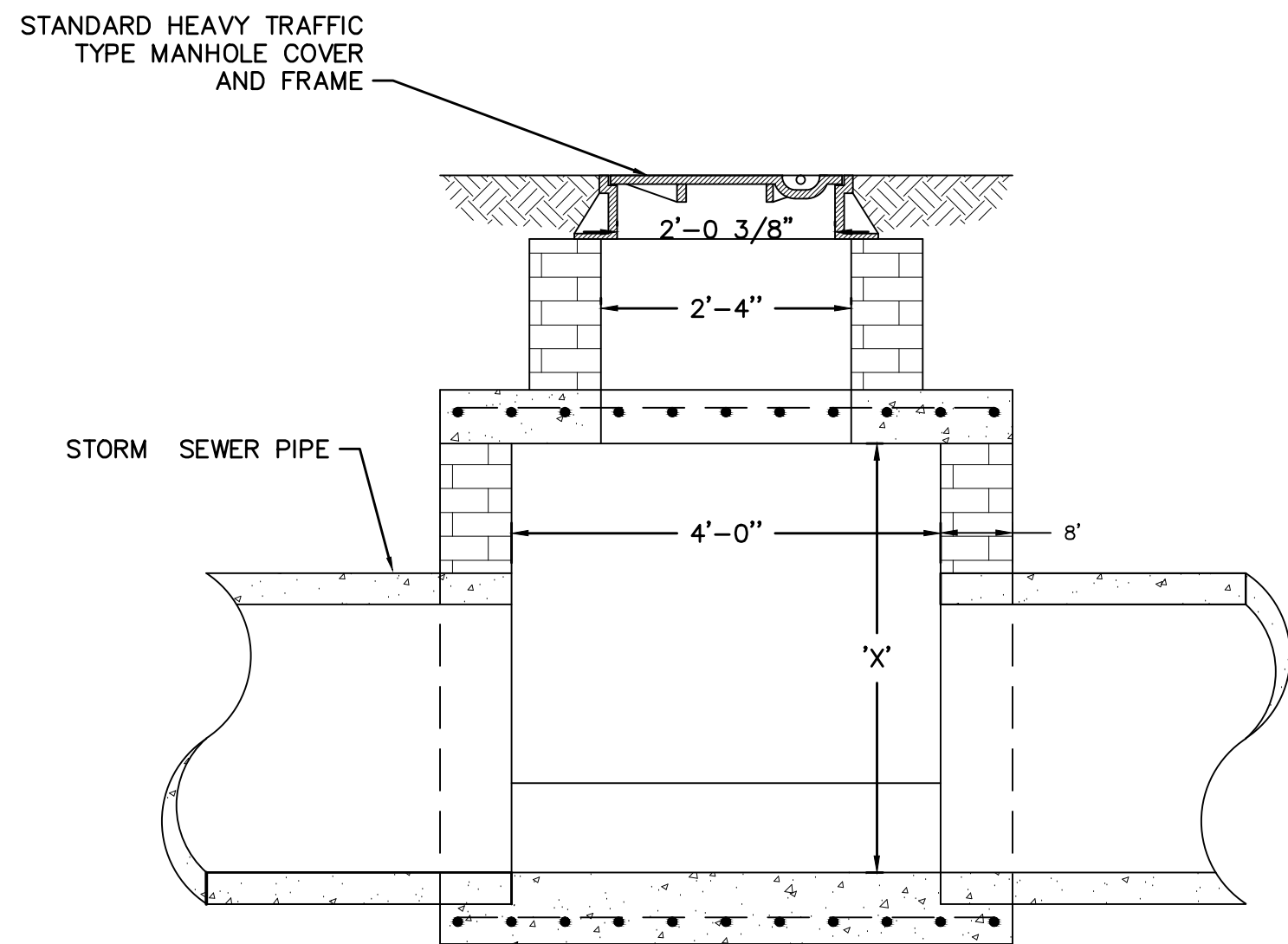
SANITARY SEWER CLEANOUT
NOT TO SCALE



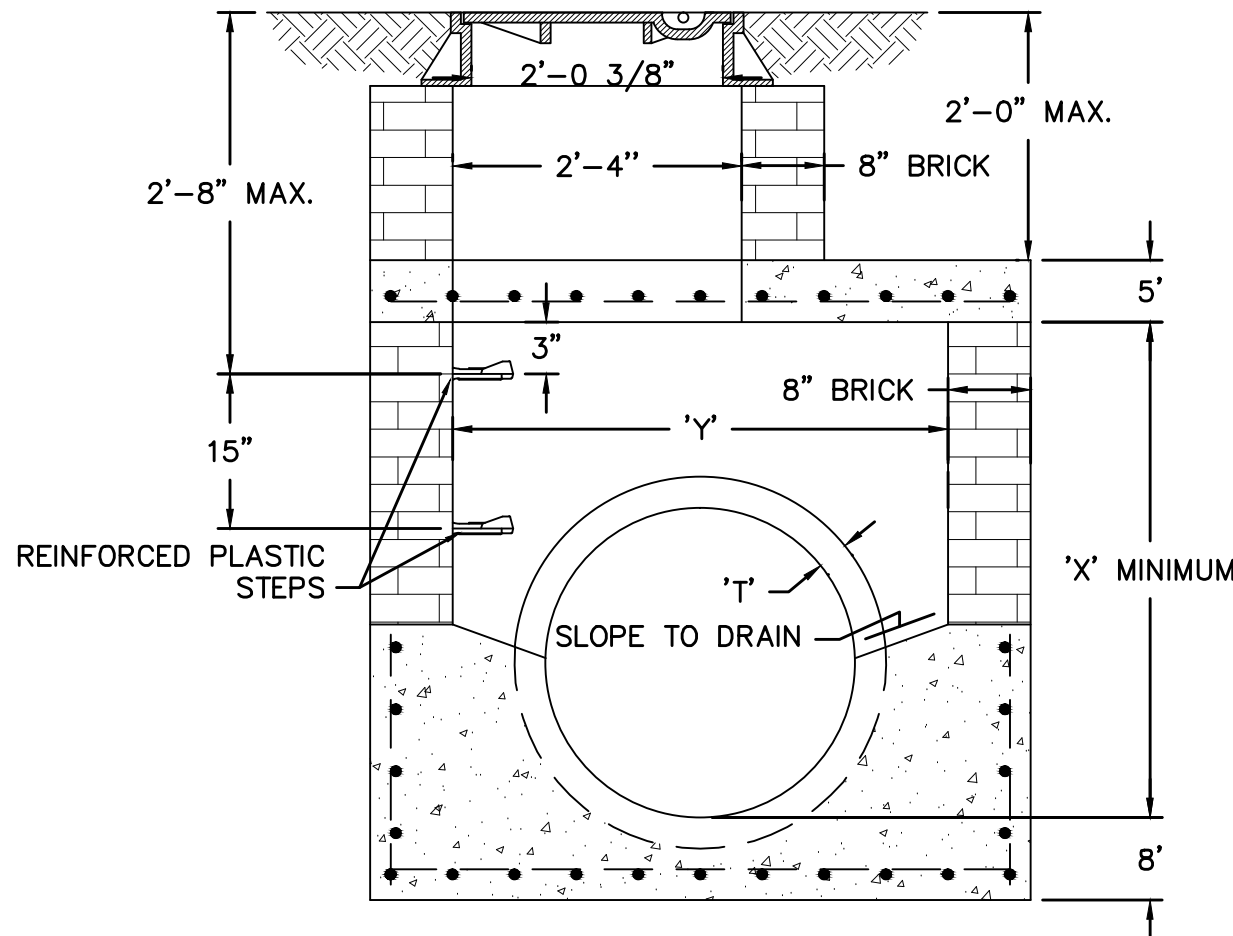
PIPE DIAMETER IN.	PIPE WALL THICKNESS- T	'X' (MINIMUM)	'Y'
15"-30" INC.	3 1/2"	3'-6"	4'-6"
15"-36" INC.	4"	3'-9"	5'-0"

STANDARD PROCEDURES:

FOR MANHOLES IN PAVEMENT, PLACE STEPS IN WALL FARTHEST FROM CUTTER. FOR MANHOLES BEHIND CURBS, PLACE STEPS FARTHEST FROM BACK OF CURB. EXCEPTIONS TO BE BUILT AS DIRECTED BY ENGINEER.

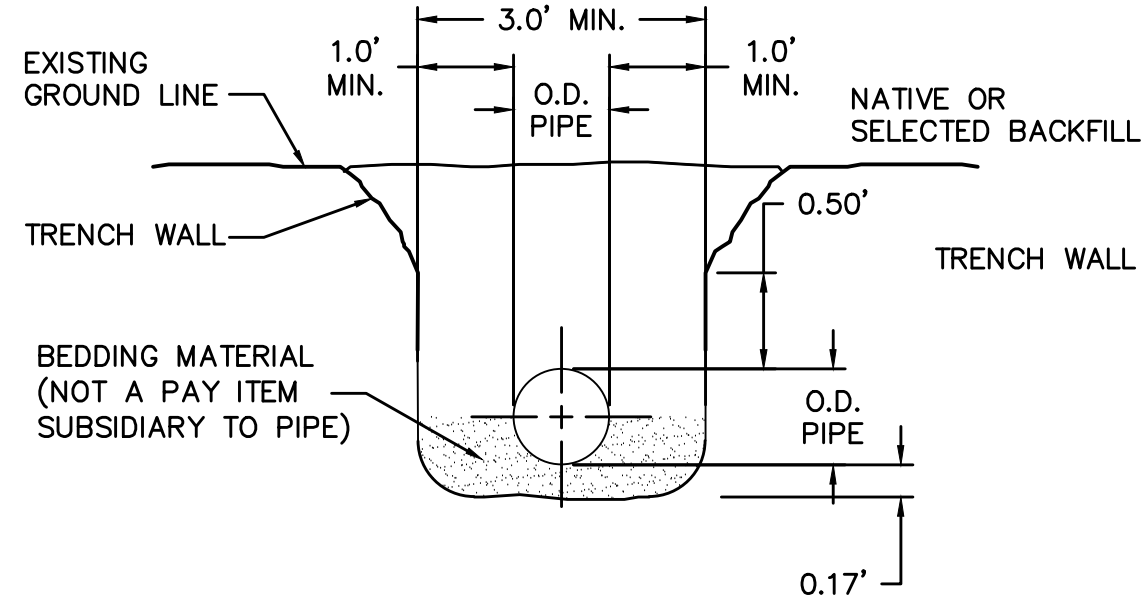


SECTION A-A

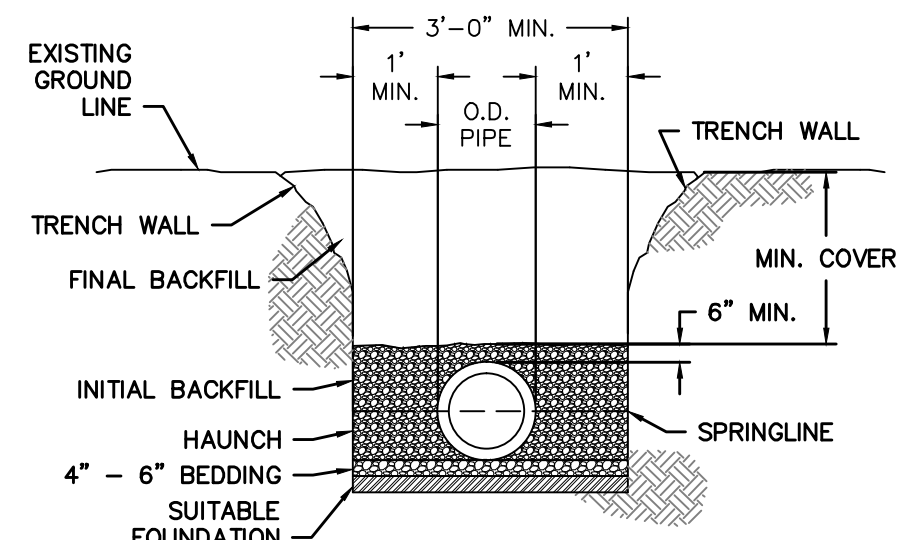


SECTION B-B

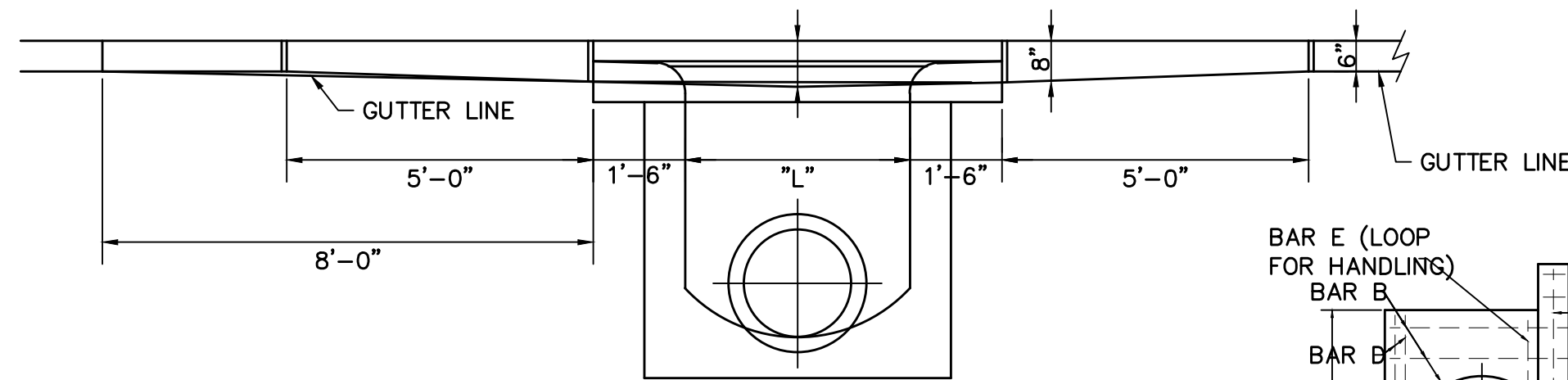
STORM SEWER MANHOLE
NOT TO SCALE



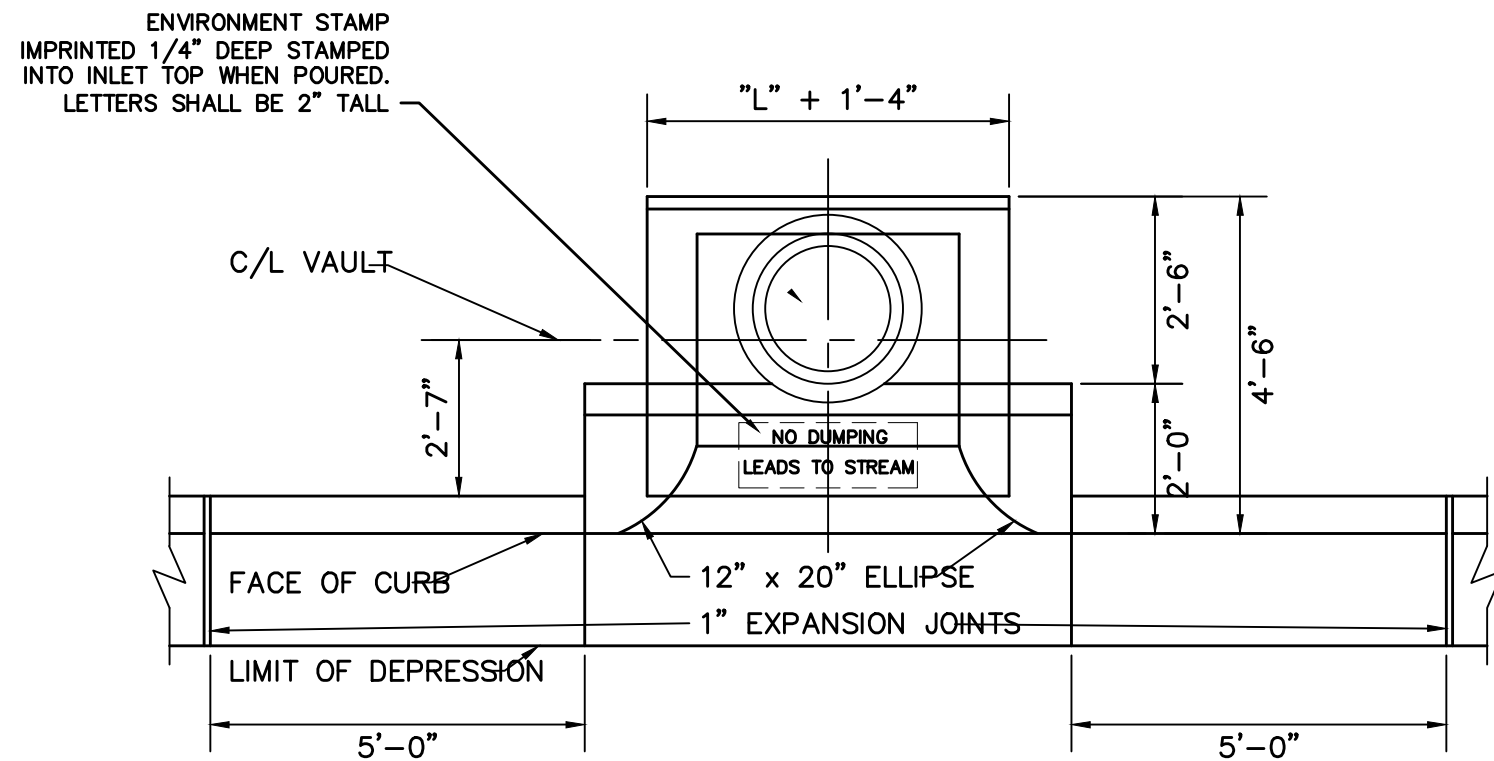
**PIPE BEDDING FOR DUCTILE IRON AND REINFORCED
CONCRETE PIPE 15" DIAMETER AND LARGER**
NOT TO SCALE



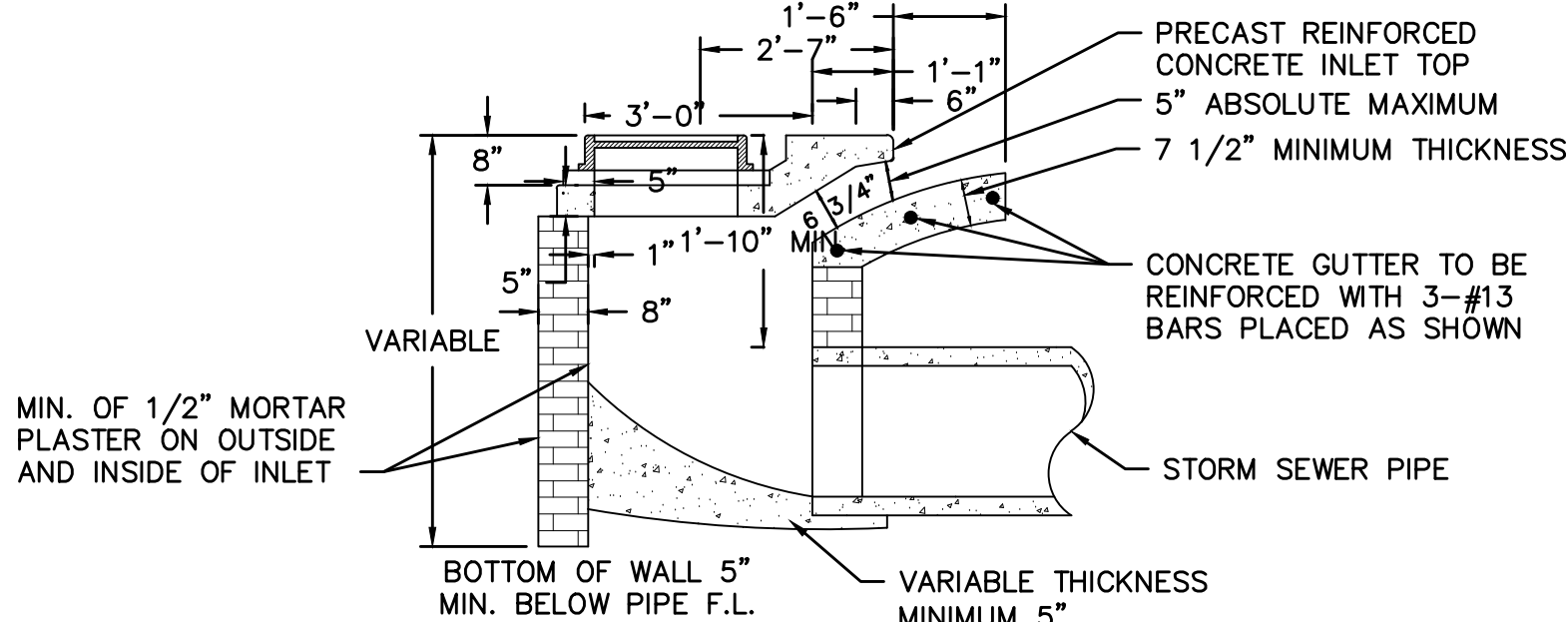
HDPE PIPE BEDDING DETAIL
NOT TO SCALE



GUTTER DEPRESSION AT FACE OF CURB



PLAN



SECTION

STORM SEWER CURB INLET
NOT TO SCALE

SCHEDULE OF REINFORCEMENT FOR PRECAST CONCRETE INLET TOP			
BAR	SHAPE	INLET OPENING = "L"	
		NO.	LENGTH
A	8" 1/2"	6	#4 1'-9 1/2"
B	8" 1/2"	10	#4 4'-6"
C	8" 1/2"	8	#4 8'-9"
D	8" 1/2"	2	#4 7'-0"
E	8" 1/2"	2	#4 3'-0"

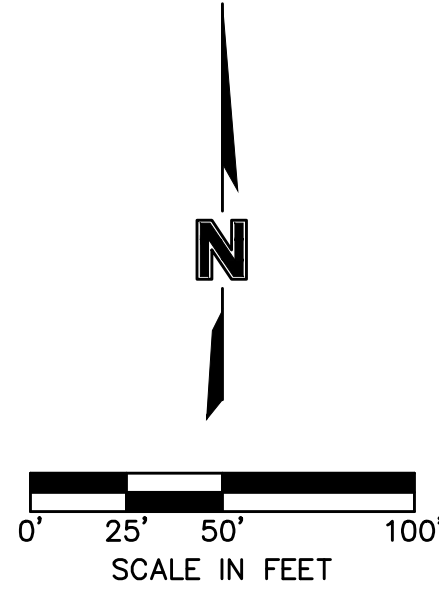
GENERAL NOTES:

- ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.
- MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.
- ALL CONCRETE SHALL BE CLASS 47B-3,500.
- EACH INLET SHALL INCLUDE A CAST IRON COVER AND FRAME.
- EACH INLET SHALL INCLUDE LENGTH OF CURB AS PER SPECIFICATIONS.
- ALL REINFORCING CONCRETE SHALL BE EPOXY COATED.



REVISIONS		DESCRIPTION	
REV.	NO.	DATE	ADD/DETAILS
1	1	6/17/14	

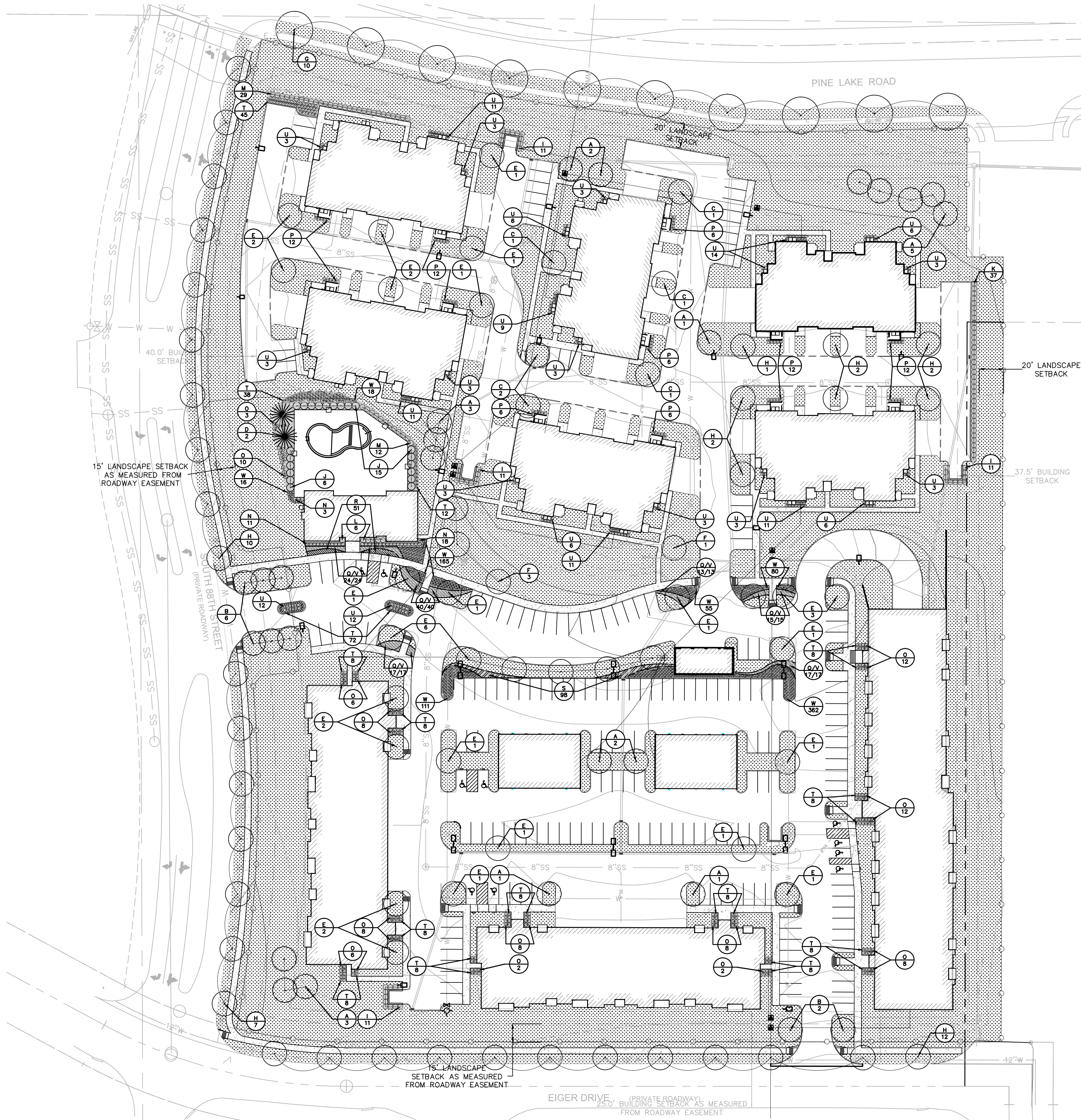
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DATE: Jun 18, 2014 10:48am XREFS: 140600_BORDER 140600_XBASE 140600_PLSC 140600_PCONT 140600_LB 140600_PBASE(BY OTHERS)



LEGEND

	BOUNDARY LINE
	PROPERTY LINE
	UTILITY EASEMENT
	BOUNDARY SETBACK
	UTILITY EASEMENT
	ROAD CENTERLINE
	CONCRETE PAVEMENT
	CONCRETE CURB AND GUTTER
	BUILDING ENVELOPE
	CONCRETE SIDEWALK
	HELENIUM 'HELBRO' MARDI GRAS PLANTED 2' O.C.
	KNAUTIA MACEDONICA PLANTED 2' O.C.
	SPOROBOLUS HETEROLEPIS AND DALEA PURPUREA PLANTED 1.5' O.C. ALTERNATING
	SOD
	4" SHREDDED HARDWOOD MULCH

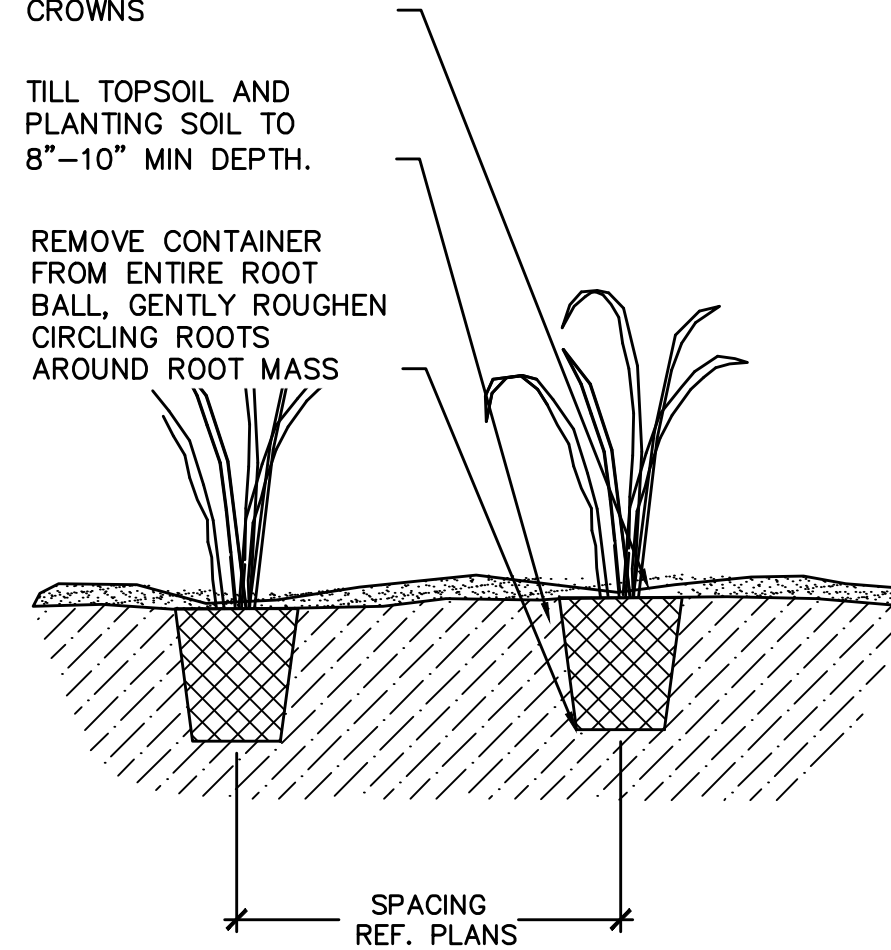
88 EAST LAKE FLATS
LANDSCAPE PLAN



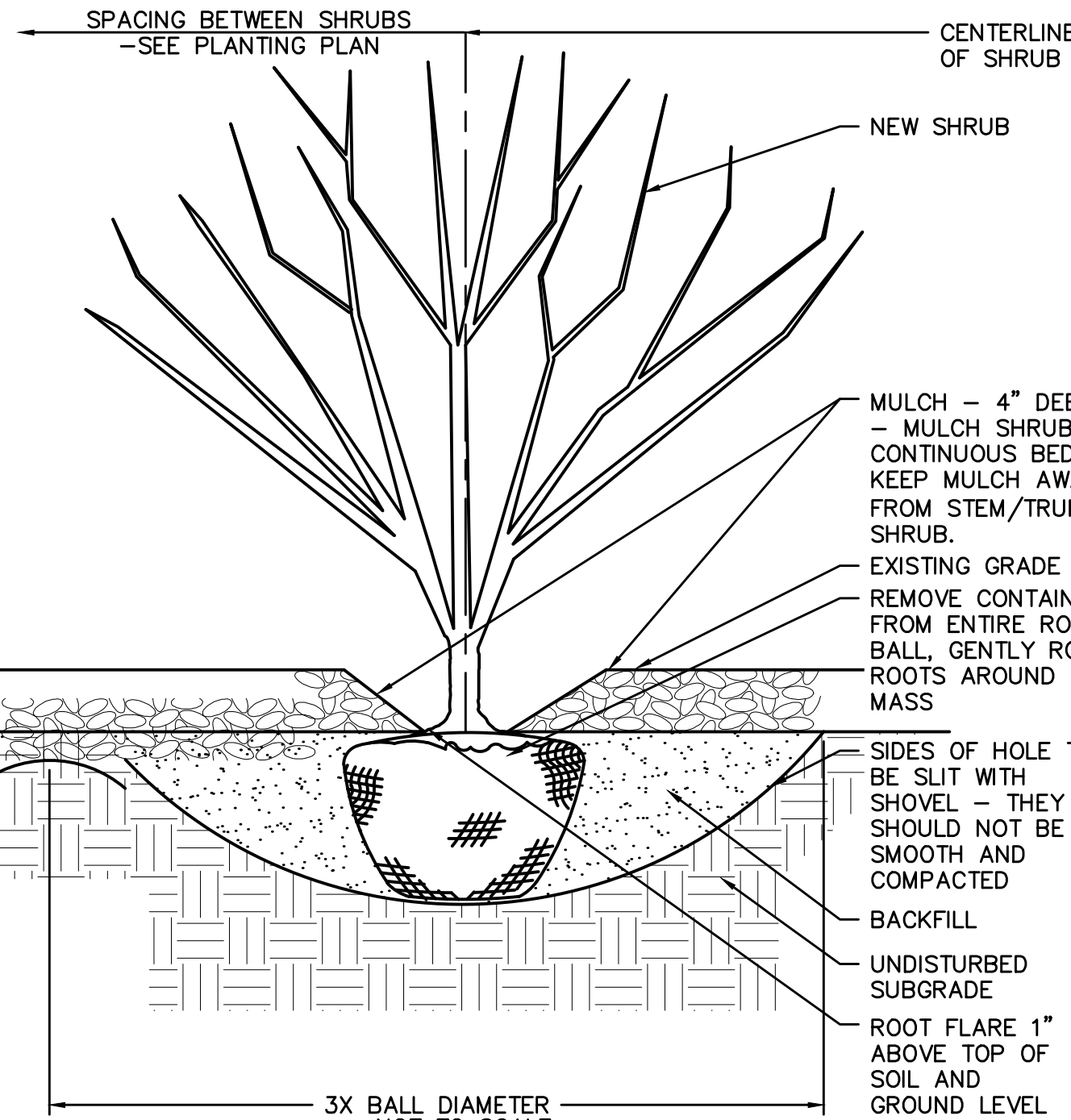
MULCH, 4" DEPTH DO NOT COVER PLANT CROWNS

TILL TOPSOIL AND PLANTING SOIL TO 8"-10" MIN DEPTH.

REMOVE CONTAINER FROM ENTIRE ROOT BALL, GENTLY ROUGHEN CIRCLING ROOTS AROUND ROOT MASS



PERENNIAL PLANTING DETAIL



TYPICAL SHRUB PLANTING DETAIL

ORIGINAL SOIL LINE, ROOT FLARE 1" ABOVE TOP OF SOIL AND GROUND LEVEL
REMOVE ALL BURLAP TO 3" BELOW SOIL SURFACE, MIN.
REMOVE ALL BURLAP IF TREATED (GREEN).

EXCAVATE TREE WELL 3 TIMES WIDTH OF ROOT BALL. SLOPE SIDES OF TREE WELL. BACKFILL WITH EXISTING SOIL; WATER SOIL TO REMOVE AIR POCKETS

ORIGINAL SOIL LINE

SET TREE STRAIGHT AND PLUMB
NO MULCH AT BASE OF STEM (ROOT FLARE)
4" DEPTH SHREDDED MULCH RING TO OUTER EDGE OF SAUCER
CUT AND REMOVE AS MUCH OF THE WIRE BASKET AS POSSIBLE WITHOUT DAMAGING THE ROOT STRUCTURE.

3" SOIL SAUCER AROUND TREE
FINISH GRADE

TREE PLANTING DETAIL
NOT TO SCALE

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	PLANTING METHOD	SIZE @ PLANTING	MATURE HEIGHT	MATURE SPREAD
A	18	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	B&B	6' CLUMP	20'	15'
B	8	KOELREUTERIA PANICULATA	GOLDEN RAIN TREE	B&B	2" CAL.	30'	30'
C	6	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	B&B	2" CAL.	30'	20'
D	2	PINUS BUNGEANA	LACEBARK PINE	B&B	2" CAL.	35'	20'
E	30	QUERCUS ACUTISSIMA	SAWTOOTH OAK	B&B	2" CAL.	50'	50'
F	4	TILIA TOMENTOSA	SILVER LINDEN	B&B	2" CAL.	50'	30'
G	10	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE AMERICAN ELM	B&B	2" CAL.	60'	50'
H	36	ULMUS 'FRONTIER'	FRONTIER ELM	B&B	2" CAL.	30'	20'
I	44	ARONIA ARBUTIFOLIA 'BRILLANTISSIMA'	RED CHOKEBERRY	CONT.	#5	7'	4'
J	21	VIBURNUM NUDUM 'WINTERHUR'	WINTERHUR VIBURNUM	CONT.	#5	8'	8'
K	37	AMELANCHIER ALNIFOLIA 'REGENT'	REGENT SERVICEBERRY	CONT.	#3	5'	5'
L	6	BUXUS X 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	CONT.	#3	4'	3'
M	39	CORNUS SERICEA 'ISANTI'	ISANTI DOGWOOD	CONT.	#3	4'	5'
N	32	ITEA VIRGINICA 'HENRY'S GARNET'	HENRY'S GARNET SWEETSPIRE	CONT.	#3	3'	4'
O	94	SPIRAEA FRITSCHIANA	KOREAN SPIREA	CONT.	#3	3'	3'
P	72	CALAMAGROSTIS ACUTIFLORA	FEATHER REED GRASS	CONT.	#1	3'	3'
Q	126	DALEA PURPUREA	PURPLE CONEFLOWER	CONT.	#1	3'	2'
R	51	HELENIUM 'HELBRO' MARDI GRAS	SNEEZEWEED	CONT.	#1	2.5'	2'
S	98	KNAUTIA MACEDONICA	KNAUTIA	CONT.	#1	1.5'	1.5'
T	253	SALVIA VERTICILLATA 'PURPLE RAIN'	LILAC SAGE	CONT.	#1	2'	2'
U	148	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	CONT.	#1	3'	2'
V	126	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	CONT.	#1	2.5'	2'
W	807	STACHYS OFFICINALIS 'HUMMELO'	BETONY	CONT.	#1	2'	2'

*DENOTES MULTI-STEM SPECIMEN

REV. NO.	DATE	REVISIONS DESCRIPTION
1	6.17.14	LANDSCAPE REVISION

REV. NO.	DATE	REVISIONS DESCRIPTION
1	6.17.14	LANDSCAPE REVISION

drawn by:	BRW
checked by:	BJM
approved by:	BJM
QA/QC by:	BJM
project no.:	014-0600
drawing no.:	1
date:	5.20.14

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140600_PBASE(BY OTHERS)

SECTION 02900 – LANDSCAPING
PART 1.00 GENERAL

1.01 SCOPE OF WORK

- A. THE WORK UNDER THESE ITEMS SHALL CONSIST OF FURNISHING, PLANTING, MULCHING AND GUARANTEEING TREES, SHRUBS, GROUNDCOVER PLANTS AND PERENNIAL PLANTS OF THE TYPE AND SIZE INDICATED ON THE PLANS OR SPECIAL PROVISIONS. IT SHALL ALSO INCLUDE ALL INCIDENTAL OPERATIONS, SUCH AS THE REPLACEMENT OF DEAD AND UNSATISFACTORY PLANTS OR UNSATISFACTORY MATERIALS BEFORE FINAL ACCEPTANCE OF THE CONTRACT, PLANT MAINTENANCE BY THE CONTRACTOR AFTER "INITIAL ACCEPTANCE", ETC.
- B. OTHER SPECIFICATION SECTIONS WHICH DIRECTLY RELATE TO THE WORK OF THIS SECTION INCLUDE, BUT ARE NOT LIMITED TO TURF SEEDING SPECIFICATIONS.
- C. ALL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES.

1.02 PLANTING LAYOUT

- A. BEFORE BEGINNING WORK, LOCATE AND FLAG ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DAMAGE TO UTILITIES OR OTHER SITE IMPROVEMENTS CAUSED BY CONTRACTOR WILL BE REPAIRED AT NO COST TO THE OWNER.
- B. THE LOCATIONS OF PLANT MATERIAL IS CRITICAL AND SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. STAKE LOCATION OF PLANT MATERIALS AND OBTAIN APPROVAL OF OWNER OR THEIR REPRESENTATIVE PRIOR TO INSTALLATION. DO NOT PLANT TREES OR SHRUBS IN SWALE AREAS UNLESS OTHERWISE STATED.
- C. DISCREPANCIES BETWEEN CONDITIONS EXISTING ON THE SITE AND CONDITIONS INDICATED ON THE DRAWINGS SHALL BE CALLED TO THE ATTENTION OF THE LANDSCAPE ARCHITECT BEFORE OR AT THE TIME PLANT LOCATIONS ARE STAKED OUT.
- D. IN THE EVENT OF A VARIATION BETWEEN THE PLANT LIST AND THE ACTUAL NUMBER OF PLANTS SHOWN ON THE PLANS, THE PLANS SHALL CONTROL.

1.03 HORTICULTURAL STANDARDS

- A. UNLESS OTHERWISE NOTED, PLANT MATERIAL, INCLUDING COLLECTED MATERIALS, SHALL BE GRADE NO. 1 OR BETTER AS OUTLINED UNDER GRADES AND STANDARDS FOR NURSERY PLANTS, AND SHALL ALSO CONFORM TO AMERICAN STANDARD FOR NURSERY STOCK, ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE, INC.) Z60.1-1996 AS APPROVED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- B. ALL PLANT NAMES SHALL AGREE WITH THE NOMENCLATURE OF "STANDARDIZED PLANT NAMES" AS ADOPTED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURE NOMENCLATURE, 1942, EDITION. SIZE AND GRADING STANDARDS SHALL CONFORM TO THOSE OF THE AMERICAN ASSOCIATION OF NURSERYMEN, "AMERICAN STANDARD FOR NURSERY STOCK", ANSI Z60.1-1996 (APPROVED 6 NOVEMBER 1996), UNLESS OTHERWISE SPECIFIED. NO SUBSTITUTION SHALL BE PERMITTED EXCEPT BY WRITTEN PERMISSION OF THE OWNER.

PART 2.00 NON-PLANT MATERIALS

2.01 SOIL BACKFILL

- A. SOIL BACKFILLING PLANTING AREAS AND PLANT PITS SHALL BE THE EXISTING SURFACE SOIL OR CLEAN SOIL SALVAGED FROM EXCAVATION OF THE PLANTING WELL UNLESS CONSIDERED UNACCEPTABLE BY THE LANDSCAPE ARCHITECT. EXCAVATED SOIL NOT SUITABLE FOR BACKFILL MATERIAL SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND REPLACED WITH TOPSOIL APPROVED BY THE OWNER. ALL BACKFILL SHALL HAVE A UNIFORM APPEARANCE AND SHALL BE LOSE, FREE FROM SUBSOIL, FRIABLE AND FREE OF HARD CLODS, CONSTRUCTION DEBRIS, CLUMPS OF GRASS, GARBAGE, AND ROCKS OVER 2 INCHES IN DIAMETER. PLANTING SOIL SHALL BE LOAM OR SILT LOAM, CONSISTING TYPICALLY OF 40% SAND OR PERLITE, 40% SILT, AND 20% CLAY AND ORGANIC MATTER.
- B. IF ADDITIONAL SOIL IS REQUIRED; IT SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL BE A NATURAL, FRIABLE SOIL REPRESENTATIVE OF PRODUCTIVE, WELL-DRAINED SOILS IN THE VICINITY. IT SHALL BE OBTAINED FROM WELL DRAINED AREAS WHICH HAVE NEVER BEEN STRIPPED BEFORE AND SHALL BE FREE OF AD MIXTURE OF SUBSOIL AND FOREIGN MATTER, STONES, TOXIC SUBSTANCES AND ANY MATERIAL OR SUBSTANCE THAT MAY BE HARMFUL TO PLANT GROWTH.

2.02 FERTILIZER

- A. COMMERCIAL FERTILIZER SHALL BE 14-14-14 FORMULATION OF OSMOCOTE BRAND, 3-4 MONTH RELEASE OF WHICH 60% OF THE NITROGEN IS IN UREA-FORMALDEHYDE FORM AND SHALL CONFORM TO THE APPLICABLE STATE FERTILIZER LAWS. FERTILIZER SHALL BE UNIFORM IN COMPOSITION, DRY AND FREE FLOWING.

2.03 PRE-EMERGENCE WEED CONTROL

- A. WEED CONTROL SHALL BE RONSTAR 2G AS MANUFACTURED BY RHODIA, INC., MONMOUTH JUNCTION, NEW JERSEY 08852 OR PRINCAP (SIMAZINE) AS MANUFACTURED BY GELGY AGRICULTURAL CHEMICALS, ARDSLEY, NEW YORK 10502, OR AN APPROVED EQUAL.

2.04 MULCH

- B. PROVIDE SHREDDED HARDWOOD BARK MULCH IN ALL PLANT SAUCERS TO A 4" MINIMUM DEPTH. SHREDDED MULCH SHALL BE SHREDDED, WOODY MATERIAL FREE OF INSECTS, DISEASE, DEBRIS AND SEEDS. THE CONTRACTOR SHALL APPLY A PRE-EMERGENT IN ALL TREE SAUCERS PRIOR TO MULCHING.

3.02 SIZE AND MEASUREMENTS (CONT.)

- A. SHRUBS. FOR PURPOSES OF SIMPLICITY, ONLY ONE SIZE PER "GRADE" WILL BE LISTED. THAT SIZE WILL BE THE MINIMUM SIZE ALLOWABLE FOR THAT GRADE, AND THE GRADE SHALL INCLUDE PLANTS FROM THAT SIZE UP TO, BUT NOT INCLUDING THE NEXT LARGER GRADE SIZE. A PLANT IS WELL GROWN WITH A SINGLE STEM, WELL SHAPED AND WEHY, AND HAS SUFFICIENT SIDE BRANCHES TO GIVE IT WEIGHT AND GOOD GUT QUALITIES. IT SHOULD BE AN ACCEPTABLE PLANT. A CANE SHALL BE CONSIDERED A PRIMARY STEM WHICH STARTS FROM THE GROUND OR CLOSE TO THE GROUND AT A POINT NOT HIGHER THAN ONE-FOURTH THE HEIGHT OF THE PLANT. BALL SIZES FOR BALLED AND BURLAPPED SHRUBS SHOULD ALWAYS BE OF A DIAMETER AND DEPTH TO ENCOMPASS ENOUGH OF THE FIBROUS AND FEEDING ROOT SYSTEM AS NECESSARY FOR THE FULL RECOVERY OF THE PLANT. ALL CONTAINER GROWN SHRUBS SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE GROWING. THEY SHALL HAVE TOPS OF GOOD QUALITY AND BE IN A HEALTHY GROWING CONDITION. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED.

3.03 SUBSTITUTIONS

- A. THE USE OF MATERIALS DIFFERING IN KIND, QUALITY OR SIZE FROM THOSE SPECIFIED WILL BE ALLOWED ONLY AFTER THE OWNER IS CONVINCED THAT ALL MEANS OF OBTAINING THE SPECIFIED MATERIALS HAVE BEEN EXHAUSTED.
- B. WHERE IT IS INDICATED THAT THE CONTRACTOR MAY FURNISH OR USE A SUBSTITUTE THAT IS EQUAL TO THE MATERIAL OR EQUIPMENT SPECIFIED AND IF THE CONTRACTOR IS TO FURNISH OR USE A PROPOSED SUBSTITUTE, HE SHALL, AFTER THE AWARD OF THE CONTRACT, MAKE WRITTEN APPLICATION TO THE OWNER FOR ACCEPTANCE OF SUCH A SUBSTITUTE. THE SUBSTITUTED PRODUCT OR METHOD SHALL BE EQUAL OR SUPERIOR IN ALL RESPECTS TO THE SPECIFIED PRODUCT OR METHOD, SHALL PERFORM ADEQUATELY THE DUTIES IMPOSED BY THE GENERAL DESIGN, SHALL BE COMPATIBLE WITH ALL OTHER ELEMENTS OF THE JOB, AND SHALL BE SUFFICIENT TO COMPLETE THE JOB. THE SUBSTITUTION SHALL NOT ADD COST TO THE CONTRACT. SHOULD IT BE NECESSARY TO ACCEPT A SUBSTITUTE OF A QUALITY LESS THAN SPECIFIED, THE UNIT PRICE SHALL BE USED TO ADJUST THE CONTRACT PRICE DOWNWARD ACCORDINGLY. NO SUBSTITUTION SHALL BE ORDERED OR INSTALLED WITHOUT THE WRITTEN PERMISSION OF THE OWNER AND GOVERNING MUNICIPALITY.

PART 4.00 PREPARATION, DELIVERY, STORAGE AND HANDLING

- A. IN PREPARING PLANT FOR MOVING, ALL PRECAUTIONS CUSTOMARY AND IN GOOD PRACTICE SHALL BE TAKEN, AND WORKMANSHIP THAT FAILS TO MEET THE HIGHEST STANDARDS SHALL BE REJECTED. ALL PLANTS SHALL BE DUG TO RETAIN AS MANY FIBROUS ROOTS AS POSSIBLE. THE SIZE OF THE BALL OF "BALLED & BURLAPPED" AND "BALLED AND PLATFORMED" PLANTS SHALL CONFORM TO THOSE OF THE AMERICAN ASSOCIATION OF NURSERYMEN, "AMERICAN STANDARD FOR NURSERY STOCK", ANSI Z60.1-1996 (APPROVED 6 NOVEMBER 1996), UNLESS OTHERWISE SPECIFIED. THE BALL SHALL BE A SOLID BALL OF EARTH SECURELY HELD IN PLACE BY BURLAP AND A STOUT ROPE. OVERSIZE, EXCEPTIONALLY HEAVY PLANTS ARE ACCEPTABLE IF THE SIZE OF BALL OR SPREAD OF THE ROOTS IS PROPORTIONATELY INCREASED. LOOSE, BROKEN OR FABRICATED BALLS OF EARTH WILL BE REJECTED. "BALLED AND PLATFORMED" PLANTS SHALL BE SECURELY TIED WITH A STOUT ROPE TO STURDY PLATFORMS EQUAL IN SIZE TO THE DIAMETER OF THE UPPER HALF OF THE BALL OF EARTH.
- B. FOR DELIVERY, ALL PLANTS SHALL BE PACKED, TRANSPORTED AND HANDLED WITH UTMOST CARE TO ENSURE PROTECTION AGAINST INJURY. PLANTS SHALL BE PLANTED THE SAME DAY THEY ARE DELIVERED TO THE PROJECT SITE. IF THIS CANNOT BE DONE, BALLED AND BURLAPPED PLANTS SHALL BE SET ON THE GROUND AND THE BALLS COVERED WITH MOIST SOIL, WOOD CHIPS AND/OR STRAW. UNTIL PLANTED, ALL PLANT MATERIAL SHALL BE PROPERLY MAINTAINED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.
- C. ALL PLANTS ARE SUBJECT TO INSPECTION AND APPROVAL AT POINT OF ORIGIN BEFORE AND/OR AFTER AWARD OF CONTRACT AND AT THE PROJECT SITE BEFORE AND/OR AFTER THEY ARE PLANTED. ANY PLANT MATERIAL REJECTED BY THE OWNER SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND REPLACED WITH ACCEPTABLE PLANT MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
- D. THE CONTRACTOR SHALL HAVE ALL UNDERGROUND UTILITIES (PUBLIC AND PRIVATE) MARKED ON THE GROUND PRIOR TO BEGINNING ANY PLANT PIT EXCAVATIONS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMMEDIATELY REPAIR ANY UTILITY DAMAGED DURING THE PLANTING OPERATIONS TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE AND AT NO ADDITIONAL COST TO THE OWNER.
- E. THE CONTRACTOR SHALL STAKE THE LOCATION OF THE PROPOSED TREES, SHRUBS AND GROUNDCOVER PLANTS UNLESS OTHERWISE STATED ON THE DRAWINGS AND HAVE THEIR LOCATIONS APPROVED BY THE OWNER PRIOR TO BEGINNING PLANT PIT EXCAVATION. TREES SHALL BE STAKED INDIVIDUALLY. AREAS FOR MULTIPLE SHRUB OR PERENNIAL PLANTINGS SHALL BE OUTLINED ON THE GROUND AND THE NUMBER OF PLANTS INDICATED IN SOME MANNER WITHOUT STAKING THE LOCATION OF INDIVIDUAL SHRUB OR PERENNIAL PLANTS. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST FORTY EIGHT (48) HOURS IN ADVANCE TO THE CONTRACTOR WANTING TO BEGIN PLANTING IN A PARTICULAR AREA.

88 EAST LAKE FLATS

LANDSCAPE DETAILS

SECTION 02926 – SODDING

- 1.1 THIS SECTION SHALL INCLUDE PREPARATION OF TOPSOIL TO RECEIVE SOD, FERTILIZING AND SOD INSTALLATION.

- 1.2 WEED HERBICIDES SHALL BE USED IN ACCORD WITH THE SPECIFICATIONS OF THE PREVAILING PUBLIC HEALTH AUTHORITY. APPLY PESTICIDES AND OTHER CHEMICAL PRODUCTS AND BIOLOGICAL CONTROL AGENTS IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION AND MANUFACTURER'S WRITTEN RECOMMENDATIONS. COORDINATE AND NOTIFY OWNER BEFORE EACH APPLICATION IS PERFORMED.

- 1.3 MAINTENANCE INSTRUCTIONS. MAINTAIN AND ESTABLISH TURF BY WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING, REPLANTING, AND PERFORMING OTHER OPERATIONS AS REQUIRED TO ESTABLISH HEALTHY, VIABLE TURF. ROLL, REGRADE, AND REPLANT BARE OR ERODED AREAS AND REMULCH TO PRODUCE A UNIFORMLY SMOOTH TURF. PROVIDE MATERIALS AND INSTALLATION THE SAME AS THOSE USED IN THE ORIGINAL INSTALLATION. MOW TURF IN DESIGNATED AREAS AS SOON AS TOP GROWTH IS TALL ENOUGH TO CUT AT A 3 INCH HEIGHT. REPEAT MOWING TO MAINTAIN SPECIFIED HEIGHT WITHOUT CUTTING MORE THAN 1/3 OF GRASS HEIGHT. REMOVE NO MORE THAN 1/3 OF GRASS-LEAF GROWTH IN INITIAL OR SUBSEQUENT MOWINGS. FOR SEED MIXTURES, BASE SELECTION ON PREDOMINANT SPECIES TO BE ESTABLISHED. SUBMIT FULL AND COMPLETE WRITTEN MAINTENANCE INSTRUCTIONS FOR PROPER CARE AND DEVELOPMENT OF THE LAWN AREAS TO THE OWNER PRIOR TO COMPLETION.

- 1.4 SOD SHALL BE ROLLED OR FOLDED PRIOR TO LIFTING. HANDLING OF SOD SHALL BE DONE IN A MANNER THAT WILL PREVENT TEARING, BREAKING, DRYING AND OTHER DAMAGE. DO NOT LAY SOD IF DORMANT OR IF GROUND IS FROZEN OR MUDDY. DELIVER SOD ON PALLETS. PROTECT EXPOSED ROOTS FROM DEHYDRATION. DO NOT DELIVER MORE SOD THAN CAN BE LAID WITHIN 24 HOURS. LAY SOD WITHIN 24 HOURS OF HARVESTING.

- 1.5 THE CONTRACTOR SHALL WARRANTY WORK COVERED BY THIS SPECIFICATION TO THE EXTENT THAT ALL LAWN AREAS SHALL BE FIRMLY ROOTED, AND THAT THE ENTIRE LAWN AREA SHALL BE UNIFORM IN COLOR AND QUALITY, AND SHALL BE REASONABLY FREE OF WEEDS, DISEASES AND OTHER VISIBLE IMPERFECTIONS AT COMPLETION OF THE PROJECT.

- 1.6 SODDING SHALL BE COMPLETED BETWEEN AUGUST 15 AND OCTOBER 15, OR BETWEEN APRIL 1 AND MAY 15, WEATHER PERMITTING, AND WITH WATER AVAILABLE FOR FULL IRRIGATION OF SODDED AREAS.

- 2.1 GRASS SOD SHALL BE NEBRASKA CERTIFIED TURFGRASS SOD. IT SHALL BE VIGOROUS, WELL-ROOTED, HEALTHY BLEND OF 4 TURF TYPE FESCUES CULTIVARS AND KENTUCKY BLUE GRASS, FREE FROM DISEASE, INSECT PESTS, WEEDS, OTHER GRASSES, STONE, AND OTHER HARMFUL AND DELETERIOUS MATTER. SOD SHALL BE MACHINE STRIPPED AT A UNIFORM SOIL THICKNESS OF APPROXIMATELY ONE INCH (PLUS OR MINUS 1/4-INCH). THE MINIMUM SOIL THICKNESS SHALL BE 3/4-INCH. THE MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH, AND SHALL BE DETERMINED AT THE TIME OF CUTTING IN THE FIELD. WITHIN 1 HOUR AFTER BEING CUT, SOD SHALL BE ROLLED WITH THE TOP INSIDE. PRECAUTIONS SHALL BE TAKEN TO PREVENT DRYING AND HEATING. SOD DAMAGED BY HEAT AND DRY CONDITIONS, AND SOD CUT MORE THAN 18 HOURS BEFORE BEING INCORPORATED INTO THE WORK SHALL NOT BE USED.

- 2.2 FERTILIZER SHALL BE 20-10-5 COMMERCIAL FERTILIZER. A. FERTILIZER SHALL BE OF THE GRADE, TYPE, AND FORM SPECIFIED AND SHALL COMPLY WITH THE RULES OF THE STATE OF NEBRASKA DEPARTMENT OF AGRICULTURE. FERTILIZER SHALL BE IDENTIFIED ACCORDING TO THE PERCENT NITROGEN (N), PERCENT AVAILABLE PHOSPHORIC ACID (P2O5), AND PERCENT WATER-SOLUBLE POTASSIUM (K2O), IN THAT ORDER.

- 2.3 WOOD PEGS SHALL BE USED TO ANCHOR SOD ON SLOPES EXCEEDING 1:6 SPACED AS RECOMMENDED BY SOD MANUFACTURER BUT NOT LESS THAN 2 ANCHORS PER SOD STRIP AND MADE OF SOFTWOOD, SUFFICIENT SIZE AND LENGTH TO ENSURE ANCHORAGE OF SOD ON SLOPE AND SWALE AREAS. LAY SOD ACROSS ANGLE OF SLOPES EXCEEDING 1:3.

- 3.1 FINE GRADE AND RAKE AREAS TO A FIRM EVEN SURFACE, FREE FROM LUMPS, STONES, CLUMPS, STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER ONE INCH OR MORE IN ANY DIMENSION. MAKE CHANGES IN GRADE GRADUAL, CONTINUOUS AND SMOOTH. MAINTAIN LINES, LEVELS, PROFILES, AND CONTOURS TO BLEND SLOPES INTO LEVEL AREAS. ENSURE ALL SWALES DRAIN READILY. GRADE ELEVATION PRIOR TO INSTALLATION OF SOD AND SEED, SHALL BE 1-INCH BELOW THE TOP OF SIDEWALKS, CURBS, ADJACENT EXISTING ESTABLISHED TURF AREAS, ETC. INSTALLATION OF LAWN MAY BE DONE IMMEDIATELY AFTER FINISH GRADING, PROVIDED THE BED HAS REMAINED IN A GOOD CONDITION AND HAS NOT BECOME MUDDY OR HARD. PREPARE SUBSOIL A MINIMUM DEPTH OF 4 INCHES TO ELIMINATE UNEVEN AREAS AND LOW SPOTS AND APPLY FERTILIZER DIRECTLY TO SUBGRADE BEFORE LOOSENING. RAKE SOIL, SMOOGE TO COMPLETELY SCARIFY SUBSOIL TO A DEPTH OF 2 INCHES AND REMOVE SOLID CRUST NO MORE THAN ONE DAY PRIOR TO LAYING SOD.

- 3.2 FERTILIZATION OF AREAS TO BE SODDED

- 1.FERTILIZE AREAS TO BE SODDED WITH A 20-10-5 COMMERCIAL FERTILIZER, APPLIED AT A UNIFORM RATE ONE POUND OF NITROGEN PER 1000 S.F.
- 2.HARROW OR RAKE FERTILIZER IN THE TOP 1-1/2 – 2 INCHES OF TOPSOIL.

- 3.3 MOISTEN PREPARED SURFACE IMMEDIATELY PRIOR TO LAYING SOD. WATER THOROUGHLY AND ALLOW SURFACE TO DRY BEFORE INSTALLING SOD. UPON SOD INSTALLATION SATURATE SOD WITH FINE WATER SPRAY WITHIN TWO HOURS OF PLANTING. DURING FIRST WEEK AFTER PLANTING, WATER DAILY OR MORE FREQUENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A MINIMUM DEPTH OF 1-1/2 INCHES BELOW SOD.

- 3.4 LAY SOD PARALLEL TO THE DIRECTION OF THE SLOPE AND IN A MANNER WHICH WILL PERMIT JOINTS TO ALTERNATE AND STAGGER THE JOINTS. FIT SOD PIECES TO FORM A SOLID MASS WITH TIGHTLY FITTED JOINTS, INCLUDING WHERE NEW SOD MEETS EXISTING SOD, AND TAMP SOD FIRMLY AND EVENLY BY HAND. BUTT ENDS AND SIDES OF SOD; DO NOT STRETCH OR OVERLAP. WORK SIFTED SOIL INTO MINOR CRACKS BETWEEN PIECES OF SOD; REMOVE EXCESS SOIL AND OVERLAPPING LAYERS OF SOD TO AVOID SMOTHERING OF ADJACENT SOD, INCLUDING WHERE NEW SOD MEETS EXISTING SOD. STAKE WHERE NECESSARY TO HOLD IN PLACE ON STEEP SLOPES. ALL SODDED AREAS SHALL BE WATERED IMMEDIATELY AFTER FINAL ROLLING WITH A FINE SPRAY. AFTER SOD AREAS HAVE DRIED, ROLL TO ENSURE GOOD BOND BETWEEN SOD AND SOIL.

- 3.5 WATER, REMOVE WEEDS, AND RESOD UNTIL COMPLETION OF PROJECT.

- 3.6 INSTALL AND MAINTAIN TEMPORARY PROTECTION FENCES, BARRIERS, AND SIGNS WHERE DEEMED NECESSARY.

- 3.7 REPAIR AREAS DAMAGED, DUE TO CIRCUMSTANCES WHICH ARE BEYOND CONTRACTOR'S CONTROL, AFTER SUBMITTING A REQUEST OF A CHANGE ORDER AND OBTAINING APPROVAL FOR SAME FROM THE OWNER'S REPRESENTATIVE.

- 3.8 MOWING. AT THE TIME OF THE FIRST CUTTING, MOWER BLADES SHALL BE SET TO PRODUCE A 2-1/2-INCH MOWED HEIGHT. LAWN AREAS SHALL RECEIVE AT LEAST 2 MOWINGS BEFORE COMPLETION OF PROJECT.

SECTION 02812 – IRRIGATION

PART 1.00 – GENERAL

- 1.01 IRRIGATION DESIGN TO BE PREPARED BY IRRIGATION CONTRACTOR AND PROVIDED TO THE OWNER OR THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION. THE IRRIGATION DESIGN SHALL BE PREPARED BY AN IRRIGATION DESIGNER WITH A MINIMUM OF FIVE (5) YEARS OF DESIGN EXPERIENCE.
- 1.02 IRRIGATION TAP(S) LOCATIONS TO BE COORDINATED WITH AIRPORT, CITY, AND LANDSCAPE ARCHITECT. INSTALL IRRIGATION TAP(S), METER(S) AND BACKFLOW PREVENTION DEVICE(S) AS REQUIRED BY THE CITY. IRRIGATION TAP(S), METER(S) AND BACKFLOW PREVENTER(S) SIZE TO BE DETERMINED BY IRRIGATION CONTRACTOR AND SHALL BE LISTED ON THE IRRIGATION PLANS.
- 1.03 IRRIGATION CONTRACTOR TO DETERMINE AVAILABLE WATER PRESSURE AND FLOW AT TAP LOCATION(S). IRRIGATION CONTRACTOR TO DESIGN IRRIGATION SYSTEM BASED ON THIS INFORMATION. IRRIGATION CONTRACTOR TO PROVIDE ALL DESIGN CALCULATIONS FOR REVIEW BY THE OWNER OR OWNER'S REPRESENTATIVE INCLUDING FLOW RATES AND PRESSURE LOSSES CALCULATIONS OF THE SYSTEM.
- 1.04 IRRIGATION CONTROLLER SHALL BE A MODULAR SYSTEM EXPANDABLE IN EITHER 4 OR 8 STATION MODULES. THE IRRIGATION CONTROLLER SHALL HAVE A MANUAL RESET FEATURE. THE IRRIGATION CONTROLLER SHALL HAVE A 365 DAY CALENDAR, EVEN, ODD, ODD 31, CYCLICAL, CUSTOM AND MANUALS WATER DAY SCHEDULES. THE CONTROLLER TO HAVE MINIMUM SEASONAL ADJUST CAPABILITY OF 10% – 150%. THE IRRIGATION CONTROLLER TO BE INSTALLED IN A LOCKABLE, METAL PEDESTAL IN LOCATION APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE. THE IRRIGATION CONTROLLER SHALL BE MANUFACTURED BY HUNTER INDUSTRIES,RAIN BIRD CORPORATION, OR TORO AND INSTALLED PER MANUFACTURERS SPECIFICATIONS. THE IRRIGATION CONTROLLER SHALL HAVE A MANUFACTURERS FIVE (5) YEAR WARRANTY.
- 1.05 THE IRRIGATION SYSTEM DESIGN SHALL INCLUDE A WIRELESS RAIN SENSOR. INSTALL RAIN SENSOR IN LOCATION APPROVED BY THE OWNER AND PER THE MANUFACTURER SPECIFICATIONS. THE WIRELESS RAIN SENSOR SHALL BE MANUFACTURED BY HUNTER INDUSTRIES, RAIN BIRD CORPORATION, OR TORO.
- 1.06 IRRIGATION CONTROL VALVES ARE TO BE PLASTIC GLOBE VALVE CONFIGURATIONS WITH PRESSURE RATING OF 15 – 150 PSI AND FLOW RANGE FROM 2 – 150 GPM. THE SOLENOID SHALL BE HEAVY DUTY ONE PIECE CONSTRUCTION. THE CONTROL VALVES SHALL HAVE THE ABILITY TO ADJUST AND REGULATE PRESSURE FROM 20 –100 PSI. THE CONTROL VALVE SIZE SHALL BE 1", 1.5"AND 2" CONFIGURATIONS. THE CONTROL VALVES SHALL HAVE A MANUFACTURERS THREE (3) YEAR WARRANTY.
- 1.07 ALL SHRUB BEDS ARE TO BE IRRIGATED USING DRIP LINE. TURF AREAS SHALL BE IRRIGATED USING TURF SPRAY HEADS. THE IRRIGATION SPRAY BODY SHALL BE UV-RESISTANT PLASTIC WITH A CO-MOLDED OR RUBBER SEALS AND HEAVY DUTY SPRING. THE SPRAY BODY SHALL HAVE A BOTH A BOTTOM AND SIDE IN-LET FEATURE. SPRAY NOZZLES SHALL BE VARIABLE ARC SPRAY NOZZLES. THE IRRIGATION DESIGN SHALL BE PREPARED TO PROVIDE A 50% SPACING OR HEAD TO HEAD LAYOUT. THE SPRAY BODIES AND NOZZLES SHALL BE MANUFACTURED BY HUNTER INDUSTRIES, TORO, OR RAIN BIRD CORPORATION AND SHALL HAVE A MINIMUM FIVE (5) YEAR WARRANTY.
- 1.08 ALL IRRIGATION MAINLINE AND LATERAL PIPES SHALL BE PVC CLASS 200 IPS PLASTIC PIPE. ALL PIPE SHALL BE SIZED TO NOT EXCEED A VELOCITY OF FIVE (5) FEET PER SECOND.
- 1.09 ALL IRRIGATION PIPE OR WIRE SHALL BE INSTALLED IN SLEEVES BELOW ANY PAVEMENT OR HARD SURFACE. ALL IRRIGATION SLEEVES SHALL BE PVC SCHEDULE 40. ALL SLEEVES ARE TO EXTEND 24" BEYOND AND SIZED TWO (2) TIMES THE DIAMETER OF THE MAINLINE OR LATERAL.

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STATE OF NEBRASKA

1111 Lincoln Blvd, Suite 111

P.O. Box 64698

Lincoln, NE 68511-4608

TEL 402.474.6311

FAX 402.474.5160

www.olsonassociates.com

REVISIONS

REV	NO.	DATE	REVISIONS DESCRIPTION
1		6.17.14	LANDSCAPE REVISION

2014

LANDSCAPE DETAILS

EAST LAKE FLATS

LINCOLN, NE

SHEET
L1.1

drawn by: BRW

checked by: BJM

approved by: BJM

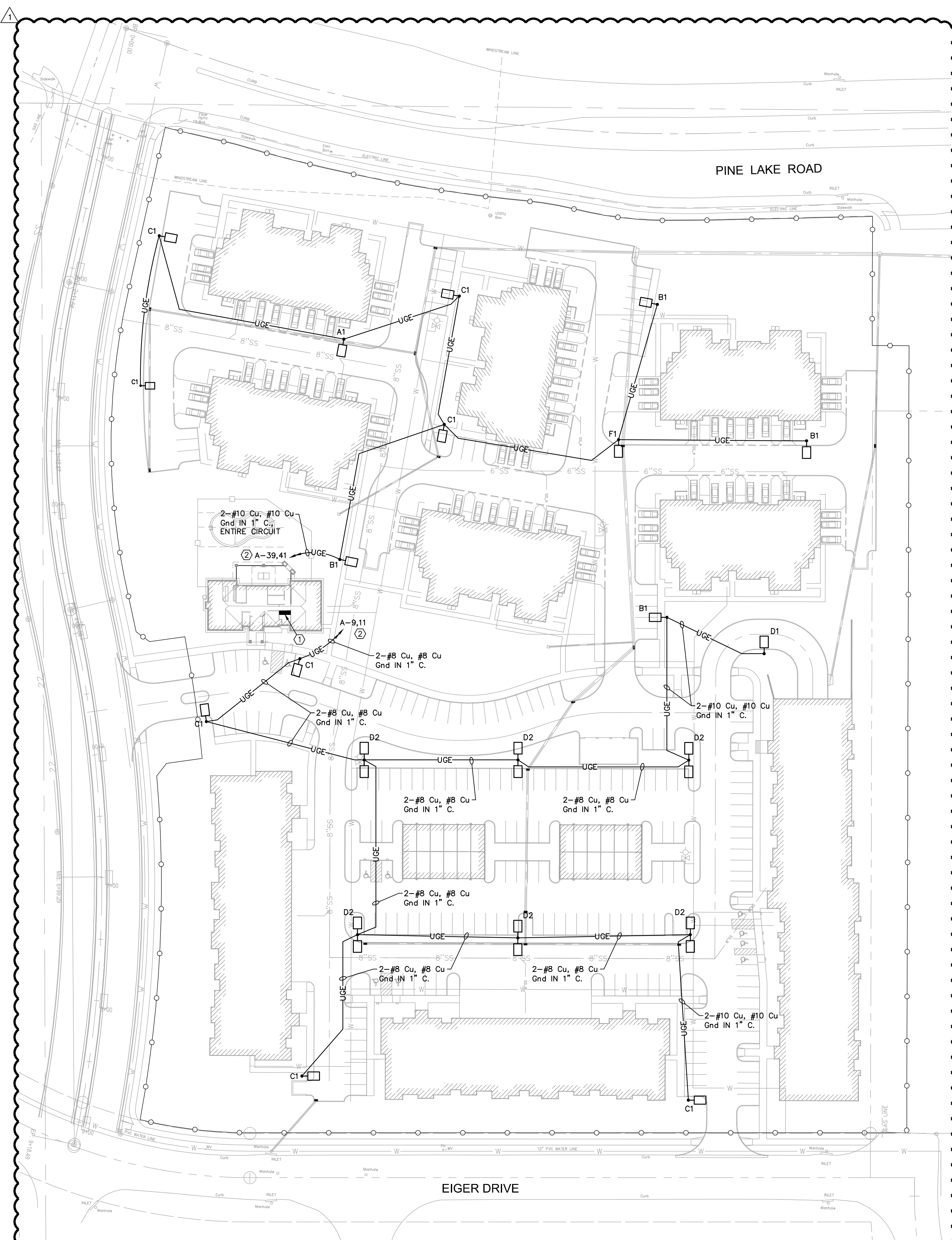
QA/QC by: BJM

project no.: 014-0600

drawing no.: L1

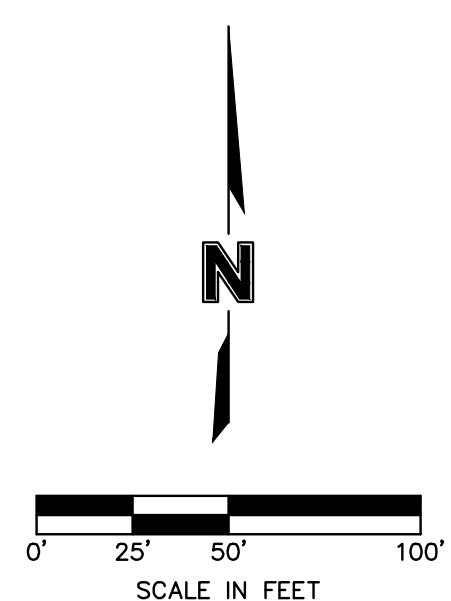
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EAST LAKE APARTMENTS
SITE LIGHTING PLAN



ELECTRICAL SYMBOLS

- A1 SINGLE ARM MOUNT AREA LIGHT, LETTER INDICATES FIXTURE TYPE
- C2 DUAL ARM MOUNT AREA LIGHT, LETTER INDICATES FIXTURE TYPE
- SURFACE MOUNTED POWER PANEL
- UGE UNDERGROUND ELECTRICAL
- A AMPERE
- C CONDUIT
- P POLE
- W WIRE
- AFG ABOVE FINISHED GRADE



ELECTRICAL SPECIFICATIONS

RULES AND REGULATIONS
ALL WORK, MATERIALS, AND MANNER OF PLACING MATERIAL OF THIS CONTRACT SHALL BE IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (SEE PARTICULARLY PAMPHLETS 101, 70, AND 90A) AND WITH THE MUNICIPAL AND STATE LAWS AND ORDINANCES RELATING TO THIS WORK.

ELECTRICAL MATERIALS USED IN THIS WORK SHALL BE APPROVED BY THE UNDERWRITER'S LABORATORIES AND SHALL BEAR THEIR LABEL OF APPROVAL. IN EVENT OF CONFLICT BETWEEN THE PLANS AND/OR SPECIFICATIONS AND GOVERNING LAWS OR ORDINANCES, THE LATER SHALL SUPERSEDE.

PERMITS, LICENSES, AND FEES
THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL REQUIREMENTS AS TO PERMITS, LICENSES, FEES, CODES, AND ORDINANCES AND ARRANGE TO COMPLY WITH THEM. ALL PERMITS, LICENSES, FEES, AND INSPECTIONS REQUIRED FOR THE WORK UNDER THIS CONTRACT SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.

METHOD OF WIRING
ALL WIRING SHALL BE INSTALLED IN CONDUIT RACEWAYS UNLESS OTHERWISE INDICATED HEREIN. ALL CONDUIT RUNS SHOWN ARE DIAGRAMMATIC. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD. ALL RACEWAYS SHALL BE SIZED PER THE N.E.C. NO CONDUIT SMALLER THAN 3/4" SHALL BE PERMITTED FOR POWER DISTRIBUTION WIRING. ALL WIRING INSTALLED BELOW CONCRETE SLABS ON GRADE, ALL ABOVE GRADE EXTERIOR WIRING AND ALL WIRING EXPOSED TO MOISTURE OR PHYSICAL DAMAGE SHALL BE INSTALLED IN RIGID STEEL CONDUIT. ALL EXTERIOR UNDERGROUND WIRING TO BE INSTALLED IN RIGID P.V.C. CONDUIT UNLESS OTHERWISE NOTED. ALL OTHER WIRING MAY BE INSTALLED IN THINWALL CONDUIT (E.M.T.), UNLESS OTHERWISE SHOWN, ALL CIRCUITS ARE #12 THWN.

GUARANTEE
THE CONTRACTOR SHALL GUARANTEE ALL MATERIAL AND WORKMANSHIP UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM RECEIPT OF WRITTEN FINAL ACCEPTANCE. HE SHALL REPAIR OR REPLACE, FREE OF CHARGE, ANY APPARATUS WHICH SHALL BE DEFECTIVE DURING THAT PERIOD OF TIME, WHICH IS DEFECTIVE DUE TO FAULTY MATERIAL OR WORKMANSHIP.

GROUNDING
ALL NEUTRAL CONDUCTORS, CONDUIT SYSTEMS, CABINETS, EQUIPMENT, MOTOR FRAMES, AND OTHER ELECTRICAL EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH THE N.E.C. AND MUNICIPAL CODES AND ORDINANCES.

CONDUCTORS
ALL WIRE AND CABLE SHALL BE SOFT DRAWN, COPPER WIRE WITH 600 VOLT INSULATION, WIRE AND CABLE SHALL BE TYPE THWN UNLESS OTHERWISE NOTED.

PARKING LOT LUMINAIRES
A. FURNISH AND INSTALL A COMPLETE PARKING LOT LIGHTING SYSTEM. WHICH INCLUDES BUT IS NOT LIMITED TO ANCHOR BASE FOUNDATIONS, POLES, LUMINAIRES, MOUNTING HARDWARE, CONDUIT, WIRING SYSTEM, AND ELECTRICAL CONNECTIONS.

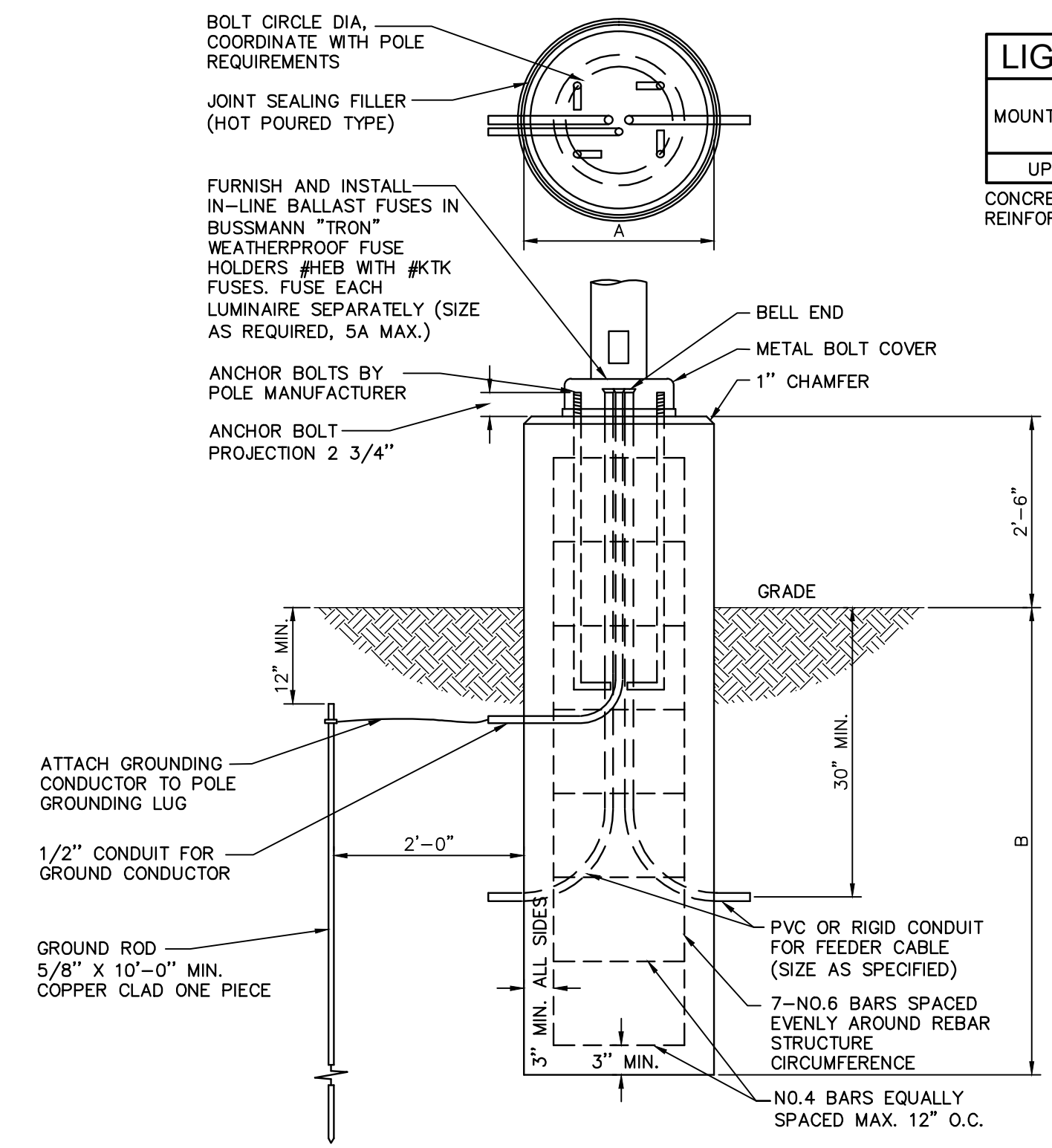
B. POLES SHALL BE ANCHOR BASE TYPE FABRICATED OF HIGH STRENGTH STEEL OR ALUMINUM WITH A 4" x 6" GASKETED HAND HOLE AT BASE OF POLE. FACTORY FINISH SHALL BE ELECTROSTATICALLY APPLIED POWDER COAT FINISH, DARK BRONZE COLOR.

C. LUMINAIRES SHALL BE AS SPECIFIED IN LIGHTING FIXTURE SCHEDULE.

NO SUBSTITUTIONS PERMITTED WITHOUT PRIOR APPROVAL.

SHOP DRAWINGS
THE CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS TO THE ARCHITECT-ENGINEER FOR APPROVAL. TITLE EACH SUBMITTAL WITH PROJECT NAME AND NUMBER.

CONTRACTOR AND SUPPLIER SHALL REVIEW, STAMP, AND SIGN SUBMITTALS PRIOR TO TRANSMITTAL.
SUBMITTALS SHALL INCLUDE THE FOLLOWING ITEMS.
1. LUMINAIRES/POLES



LIGHTING FOUNDATION DATA

MOUNTING HEIGHT	A	B	STEEL	CONCRETE
UP TO 30'	2'-0"	5'-0"	70 lb.	0.81 CU. YDS.

CONCRETE CLASS "47B-3000"
REINFORCING STEEL: GRADE 60

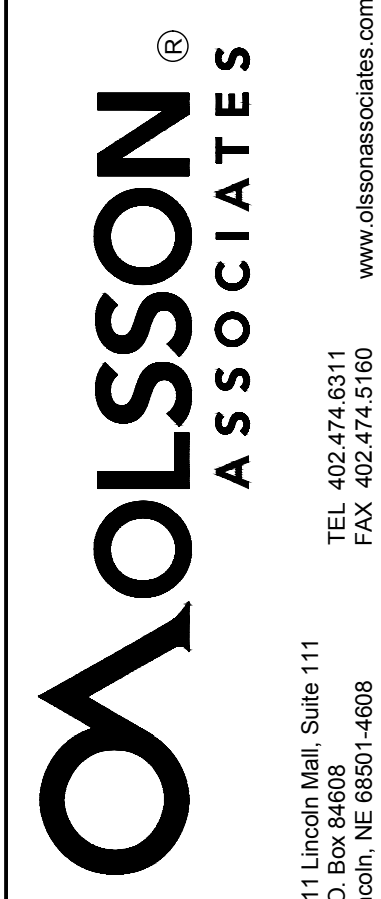
1 RAISED CONCRETE FOUNDATION
SL1.1 NOT TO SCALE

GENERAL NOTES:

- INSTALL UNDERGROUND CONDUITS 24" DEEP (MINIMUM) UNLESS NOTED OTHERWISE.
- USE #10 AWG CU FROM POLE BASE TO LUMINAIRE. CONDUCTORS BETWEEN POLES SHALL BE AS SHOWN.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE NEC. CONTRACTOR IS RESPONSIBLE FOR ALL FEES, LICENSES AND PERMITS.
- SITE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR MAKING ALL FINAL CONNECTIONS TO THE ELECTRICAL PANEL.
- ALL BURIED CONDUITS SHALL BE PVC SCHEDULE 40 PVC. PROVIDE LONG SWEEP ELBOWS FOR TURNS. NO CONDUITS SHALL BE EXPOSED.
- CONDUIT ROUTING ARE INDICATED DIAGRAMMATICALLY. MINOR ADJUSTMENTS SHALL BE MADE IN THE FIELD.
- INSTALL A DEDICATED EQUIPMENT GROUNDING CONDUCTOR WITH ALL BRANCH CIRCUITS. SIZE IN ACCORDANCE WITH THE NEC.

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

- 120/208V, 3ø, 4W PANEL "A" PROVIDED BY BUILDING ELECTRICAL CONTRACTOR IN BUILDING CONTRACT.
- CONNECT TO 20A/2P BREAKER PROVIDED IN PANEL INDICATED.



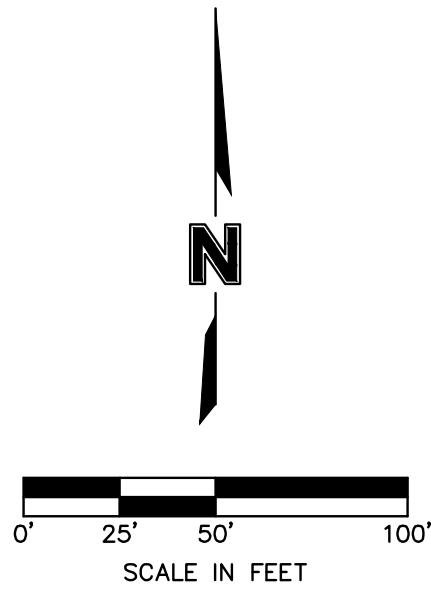
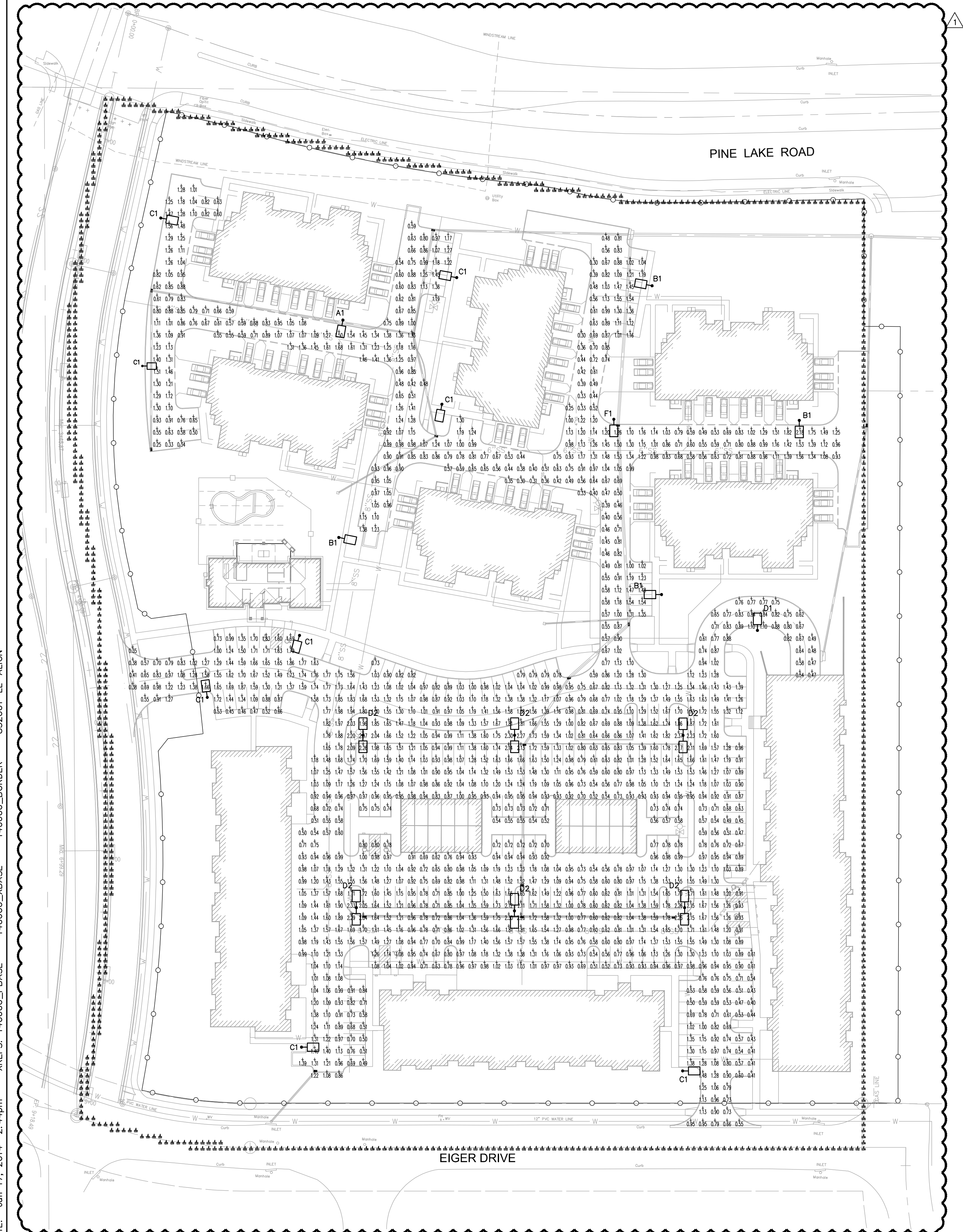
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		1	6.17.14
1	6.17.14	SITE PLAN REVISIONS	

SITE LIGHTING PLAN	
EAST LAKE FLATS	
LINCOLN, NE	2014

drawn by: BRW
checked by: BJM
approved by: BJM
QA/QC by: BJM
project no.: 014-0600
drawing no.:
date: 5.20.14

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EAST LAKE APARTMENTS SITE LIGHTING PHOTOMETRIC PLAN



LIGHTING FIXTURE SCHEDULE

ID	DESCRIPTION	MANUFACTURER	CATALOG NO.	LAMPS	LOAD	VOLTAGE	MOUNTING	COMMENTS
A1	SINGLE AREA LIGHT, TYPE II DISTRIBUTION WITH SPILL CONTROL, BRONZE FINISH, PHOTOCONTROL, 700 MA DRIVER	COOPER	GLEON-AE-03-LED-E1-SL2-BZ-7030-700-R-OA/RA1016	3000K LED'S	105	208	SINGLE ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER
B1	SINGLE AREA LIGHT, TYPE III DISTRIBUTION WITH SPILL CONTROL, BRONZE FINISH, PHOTOCONTROL, 700 MA DIMMER	COOPER	GLEON-AE-03-LED-E1-SL3-BZ-7030-700-R-OA/RA1016	3000K LED'S	105	208	SINGLE ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER
C1	SINGLE AREA LIGHT, TYPE IV DISTRIBUTION WITH SPILL CONTROL, BRONZE FINISH, PHOTOCONTROL, 700 MA DIMMER	COOPER	GLEON-AE-03-LED-E1-SL4-BZ-7030-700-R-OA/RA1016	3000K LED'S	105	208	SINGLE ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER
D1	SINGLE AREA LIGHT, TYPE V SQUARE MEDIUM DISTRIBUTION, BRONZE FINISH, PHOTOCONTROL, 700 MA DRIVER	COOPER	GLEON-AE-03-LED-E1-5MQ-BZ-7030-700-R-OA/RA1016	3000K LED'S	105	208	SINGLE ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER
D2	DUAL AREA LIGHT, TYPE V SQUARE MEDIUM DISTRIBUTION, BRONZE FINISH, PHOTOCONTROL, 700 MA DRIVER	COOPER	GLEON-AE-03-LED-E1-5MQ-BZ-7030-700-R-OA/RA1016	3000K LED'S/FIXTURE	210	208	DUAL ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER
F1	SINGLE AREA LIGHT, TYPE III DISTRIBUTION, BRONZE FINISH, PHOTOCONTROL, 700 MA DRIVER	COOPER	GLEON-AE-03-LED-E1-T3-BZ-7030-700-R-OA/RA1016	3000K LED'S	105	208	SINGLE ARM MOUNT ON 25'-0" TAPERED STEEL POLE WITH 2'-6" AFG CONCRETE BASE	POLE SHALL BE BY FIXTURE MANUFACTURER

CALCULATIONS LUMINAIRE SCHEDULE

SYMBOLS	LABEL	CATALOG NUMBER	DESCRIPTION	LAMP	FILE	LUMENS	LLF	WATTS
	A1	GLEON-AE-03-LED-E1-SL2-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S	GLEON-AE-03-LED-E1-SL2-7030-700.IES	10,864	0.90	105
	B1	GLEON-AE-03-LED-E1-SL3-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S	GLEON-AE-03-LED-E1-SL3-7030-700.IES	10,840	0.90	105
	C1	GLEON-AE-03-LED-E1-SL4-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S	GLEON-AE-03-LED-E1-SL4-7030-700.IES	10,035	0.90	105
	D1	GLEON-AE-03-LED-E1-SL4-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S/FIXTURE	GLEON-AE-03-LED-E1-SL4-7030-700.IES	10,035/FIXTURE	0.90	105/FIXTURE
	D2	GLEON-AE-03-LED-E1-5MQ-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S/FIXTURE	GLEON-AE-03-LED-E1-5MQ-7030-700.IES	10,583/FIXTURE	0.90	105/FIXTURE
	F1	GLEON-AE-03-LED-E1-T3-BZ-7030-700-R-OA/RA1016	COOPER	3000K LED'S	GLEON-AE-03-LED-E1-T3-7030-700.IES	10,194	0.90	105

VERTICAL LIGHTING CALCULATIONS

AREA	SYMBOL	MAXIMUM
NORTH PROPERTY LINE	#	0.85
EAST PROPERTY LINE	#	1.96
SOUTH PROPERTY LINE	#	0.45
WEST PROPERTY LINE	#	0.10

NOTES:
1. CALCULATION VALUES ARE IN FOOTCANDLES.
2. CALCULATIONS INCLUDE PAD AREA LIGHTING LUMINAIRES ONLY. EXTERIOR BUILDING LIGHTING NOT INCLUDED.
3. CALCULATION POINTS ARE TAKEN 5'-0" ABOVE GRADE ON THE VERTICAL PLANE.
4. CALCULATIONS READINGS AT CENTERLINE OF ROAD WHERE ADJACENT PROPERTY LINES UNKNOWN.

HORIZONTAL LIGHTING CALCULATIONS

AREA	SYMBOL	MAXIMUM	MINIMUM	AVERAGE
PARKING	+	2.57	0.25	1.08

NOTES:
1. CALCULATION VALUES ARE IN FOOTCANDLES.
2. CALCULATIONS INCLUDE PARKING LOT LIGHTING LUMINAIRES ONLY. EXTERIOR BUILDING LIGHTING NOT INCLUDED.
3. CALCULATION POINTS ARE AT GRADE ON THE HORIZONTAL PLANE.



REVISIONS DESCRIPTION		DATE	REV.
SITE PLAN REVISIONS		6/17/14	1