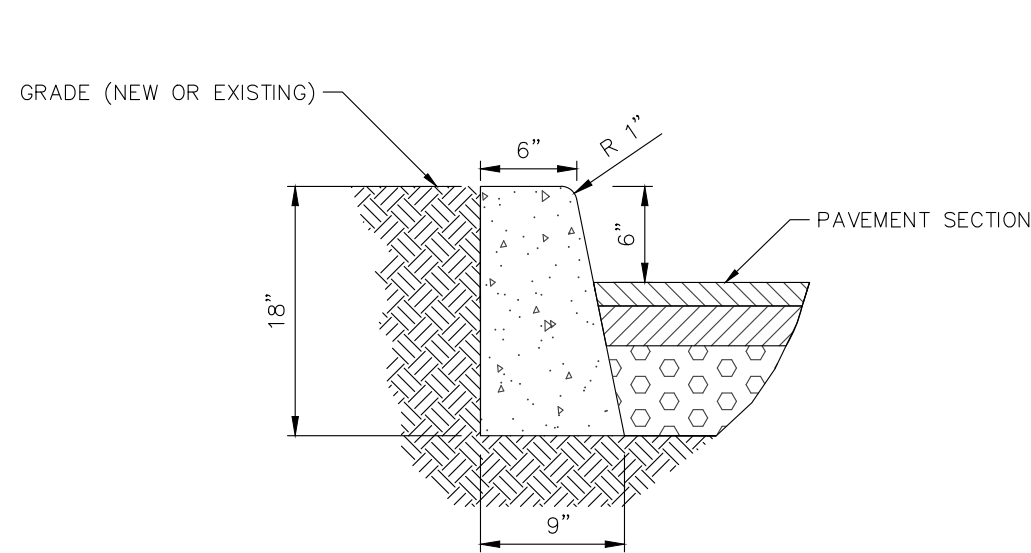


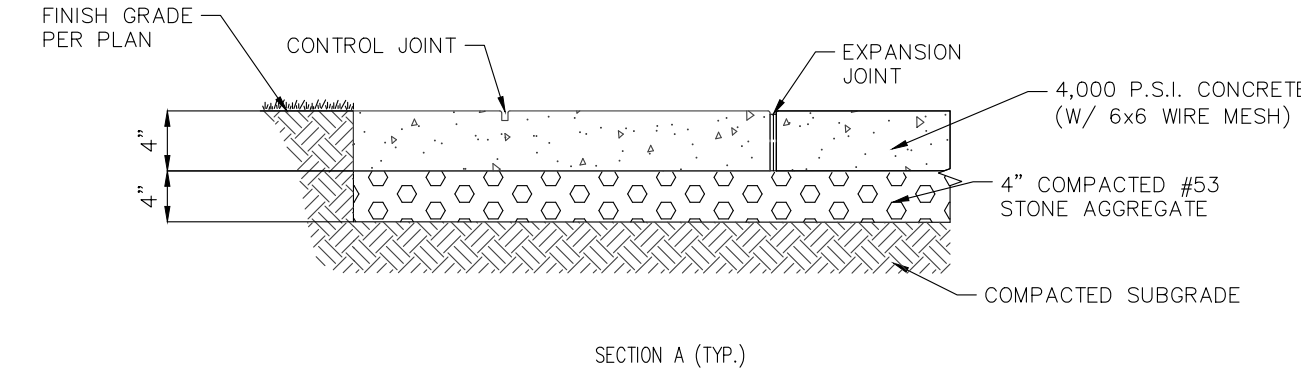
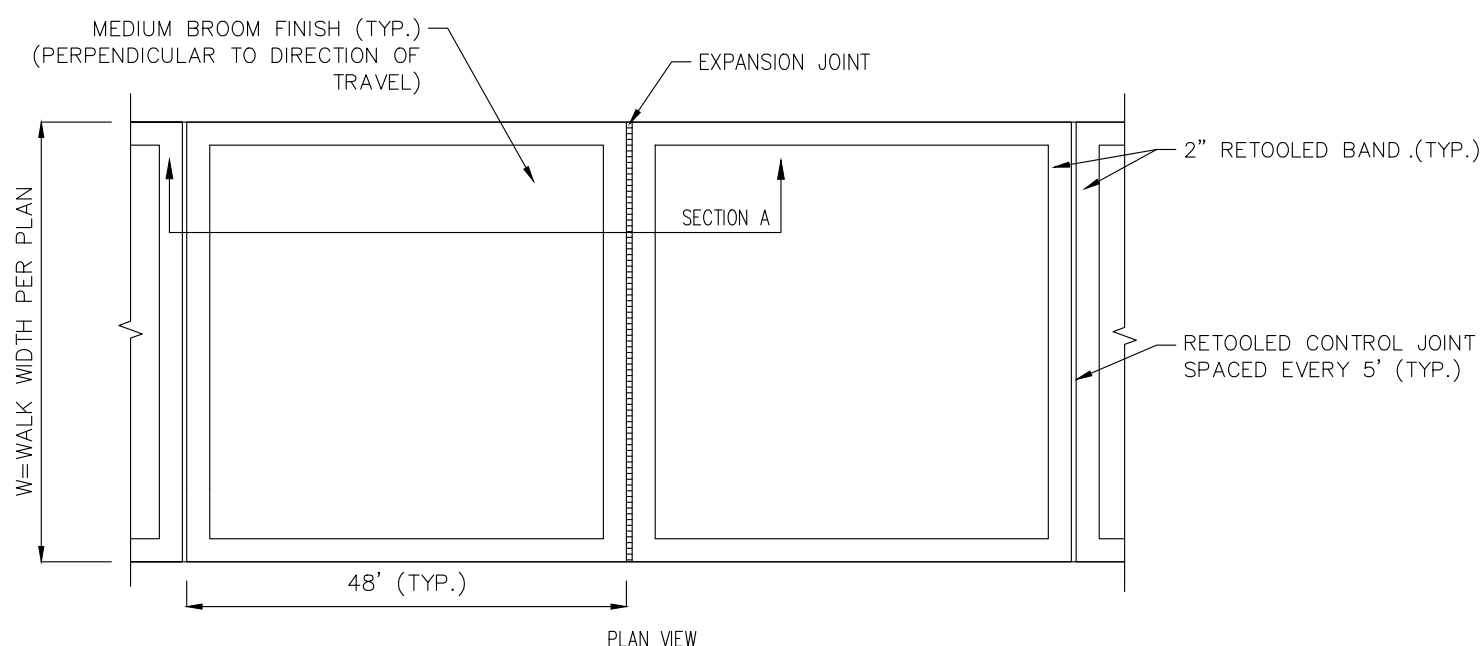
<div><div>SITE NAME</div><div>The area scheduled for construction is known as "Franklin Flats" (hereinafter referred to as the "Project")</div><div>PROJECT LOCATION</div><div>The property is located approximately 400 feet east of the intersection of Hamilton Avenue and Upper Shelbyville Road in Franklin, Indiana, at a latitude of 39°29'22" N and a longitude of 86°02'21" W.</div><div>OWNER'S INFORMATION</div><div><div>Name: Franklin Flats Apartment Partners, LLC</div><div>Address: 10 W. Carmel Drive, Suite 100, Carmel, IN 46032</div><div>Contact: Ryan Thomas</div><div>Title: Vice President, Construction</div><div>Telephone: 317-848-6500</div><div>Email: rthomas@lauth.net</div></div><div>OPERATOR'S INFORMATION</div><div><div>Name: Lauth Group</div><div>Address: 10 W. Carmel Drive, Suite 100, Carmel, IN 46032</div><div>Contact: Ryan Thomas</div><div>Title: Vice President, Construction</div><div>Telephone: 317-848-6500</div><div>Email: rthomas@lauth.net</div></div><div>NOTICE OF INTENT</div><div>All parties defined as owners must submit a Notice of Intent (NOI) at least 48 hours prior to commencement of on-site construction activities. Submittal of late NOIs is not prohibited; however, authorization under the construction general permit is only for discharges that occur after permit coverage is granted. Unpermitted discharges may be subject to enforcement actions by the EPA. For the purposes of this permit, an owner is defined as any party meeting either of the following requirements: 1) The party has operational control over the construction plans and specifications, including the ability to make modifications to those plans and specifications. 2) The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other permit conditions.</div><div>A2 11" x 17" PLAT</div><div>Refer to the Site Layout Plan.</div><div>A3 PROJECT NARRATIVE</div><div>The project consists of the construction of six (6) ±11,900 square foot multifamily apartment buildings, asphalt parking lots and drives, and associated utility infrastructure. There will be a total of 150 units. A wet detention pond will also be constructed for stormwater management.</div><div>A4 VICINITY MAP</div><div>Refer to the Cover Sheet</div><div>A5 LEGAL DESCRIPTION OF THE PROJECT SITE</div><div><div>Section: 13</div><div>Township: 12N</div><div>Range: 4E</div></div><div>A6 LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS</div><div>The site is not subdivided into lots; therefore, all proposed site improvements are shown on the included plans.</div><div>A7 HYDROLOGIC UNIT CODE (HUC)</div><div>05120204090050</div><div>A8 STATE AND FEDERAL WATER QUALITY PERMITS</div><div>Indiana Department of Environmental Management (IDEM) Rule 15</div><div>A9 SPECIFIC POINTS WHERE STORMWATER DISCHARGE WILL LEAVE THE SITE</div><div>Stormwater drainage from the site will be conveyed via sheet flow and storm sewer and outlet to an on-site detention pond that will discharge into Hurricane Creek.</div><div>A10 LOCATION AND NAME OF ALL WETLANDS, LAKES, AND WATERCOURSES ON AND ADJACENT TO THE SITE</div><div>Hurricane Creek is located along the southern boundary of the property.</div><div>A 11 IDENTIFICATION OF ALL RECEIVING WATERS</div><div>Hurricane Creek is the ultimate receiving water for this project</div><div>A12 IDENTIFICATION OF ALL POTENTIAL DISCHARGES TO GROUNDWATER</div><div>There are no locations on site where surface water may be discharged into groundwater.</div><div>A13 100 YEAR FLOODPLAINS, FLOODWAYS, AND FLOODWAY FRINGES</div><div>The project site is located within Zone AE as indicated on the Johnson County, IN Flood Insurance Rate Map 18081C0231E dated 1/29/21. A portion of the adjacent floodway also encroaches into the site.</div><div>A14 PRE-CONSTRUCTION AND POST CONSTRUCTION ESTIMATE OF PEAK DISCHARGE</div><div><div>Pre-Construction 10-year discharge = 35.1 cfs</div><div>Post-Construction 10-year discharge = 18.08 cfs</div></div><div>A15 ADJACENT LAND USE</div><div><div>North: Agricultural</div><div>South: Single-Family</div><div>East: Agricultural</div><div>West: Religious/Church</div></div><div>A16 LOCATIONS AND APPROXIMATE BOUNDARIES OF ALL DISTURBED AREAS</div><div>Approximate boundaries of disturbed areas are as identified on the Erosion Control Plan.</div><div>A17 IDENTIFICATION OF EXISTING VEGETATIVE COVER</div><div>Approximate areas of existing vegetative cover are as shown on the Existing Conditions Plan or Topographic Survey.</div><div>A18 SOILS MAP INCLUDING SOIL DESCRIPTION AND LIMITATIONS</div><div><div>The Natural Resources Conservation Service (NRCS) Web Soil Survey of Johnson County, Indiana indicates Oakley loam (ObaA), Rensselaer silty clay loam (Re), Steeth loam (Sk), Oakley loam-Urban Land Complex (YobA), and Rensselaer silty clay loam-Urban Land Complex (YreA) are located on the site.</div><div>The on-site soil will be treated as recommended by the geotechnical engineer if the conditions are unsuitable for the proposed construction.</div></div><div>A19 LOCATIONS, SIZE, AND DIMENSIONS FOR THE PROPOSED STORMWATER SYSTEMS</div><div><div>Locations of stormwater systems: Refer to the Site Utility Plan</div><div>Size of storm sewers: Refer to the Site Utility Plan or Storm Sewer Profiles</div><div>Details of storm inlets and manholes: Refer to the Construction Details</div></div><div>A20 PLANS FOR ANY OFF-SITE CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT</div><div>Aphalt trail and drive construction within the right-of-way.</div><div>A21 LOCATIONS OF PROPOSED SOIL STOCKPILES AND/OR BORROW/DISPOSAL</div><div>Excess soil shall be immediately stockpiled, surrounded with silt fence, and seeded and/or removed from the project site in accordance with all applicable laws. If topsoil stockpiles are anticipated for this project, they are shown on the Erosion Control Plan.</div><div>A22 EXISTING SITE TOPOGRAPHY</div><div>Refer to the Existing Conditions Plan or Topographic Survey</div><div>A23 PROPOSED FINAL SITE TOPOGRAPHY</div><div>Refer to the Site Grading Plan</div><div>B1 DESCRIPTION OF POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES</div><div><div>The following potential pollutant sources may be associated with construction activities on site: 1. Material storage areas 2. Construction waste material 3. Fuel storage areas and fueling stations 4. Exposed soils 5. Leaking vehicles and equipment 6. Sanitary waste from temporary toilet facilities 7. Litter 8. Windblown dust 9. Soil tracking off site from construction equipment</div><div>The following materials may be staged or stored on site at various points during construction: 1. Structural fill 2. Pavement base stone 3. HDPE, PVC, RCP, or Ductile Iron Pipe 4. Precast concrete, HDPE, or PVC drainage and sanitary structures 5. Riprap</div></div><div>B2 SEQUENCE DESCRIBING STORMWATER QUALITY MEASURE IMPLEMENTATION RELATIVE TO LAND-DISTURBING ACTIVITIES</div><div><div>Pre-construction Activities 1. The exact locations of all existing utilities within the project limits are to be verified prior to construction. 2. Schedule pre-construction meeting with local stormwater authority 48 hours prior to start of construction. 3. Install protection fencing for existing trees to remain in place within the project limits</div><div>Construction Site Access 1. Install gravel construction entrance 2. Post the NOI and contact information at the construction entrance. NOI to remain posted for duration of the project. 3. Install construction staging pads, fueling station, material storage areas, concrete washout, construction parking areas, and stabilize construction routes</div><div>Perimeter Controls 1. Utilize the gravel construction entrance for installation of the perimeter silt fence. Add stone if needed.</div><div>Initial Land Clearing and Grading Activities 1. Add protection measures to existing inlets. 2. Strip the topsoil and stabilize the topsoil stockpile.</div><div>Secondary Land Grading Activities 1. Begin site grading/construction of detention basins (if applicable) and stabilize any soil stockpiles that will be left dormant for more than 10 days. 2. Complete the cut and fill on the site. Final grade and seed the pond slopes (if applicable). Stabilize slopes with erosion control blanket. 3. Install storm sewer system and install inlet protection immediately upon complete of the inlet and install rip-rap outlet protection prior to installing outlets.</div><div>Surface Stabilization 1. Apply temporary seeding and stabilize slopes in areas where rough grading has been completed. 2. Apply permanent seeding and stabilize slopes in areas where final grading has been completed.</div><div>Building Construction 1. Prior to building construction install stone surface for paved areas. 2. Building pads left dormant for more than 10 days, must be temporarily seeded. 3. Start building construction. Install staging area for building materials and stabilize.</div><div>Final Shaping/Landscaping 1. Utilize topsoil salvage in applicable areas and apply permanent seeding. 2. Apply permanent seeding around the perimeter of the site. 3. Complete utility installation, curbs, paving, and building construction. 4. Install landscaping plant material and stabilize all disturbed areas. 5. Remove all erosion and sediment control practices when areas have a uniform grass cover.</div></div><div>B3 STABLE CONSTRUCTION ENTRANCE LOCATIONS AND SPECIFICATIONS</div><div>Construction entrances will be in place prior to any site construction or demolition. Entrances are shown on the Erosion Control Plan. Refer to the Erosion Control Details for details.</div><div>B4 SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS</div><div>Sheet flow areas will be protected by seed and mulch or hydroseeding. Erosion control blankets will be installed on sloped areas where the slope exceeds 4:1 (horizontal to vertical). Silt fencing will be utilized to prevent sedimentation from leaving the site. Refer to the Erosion Control Plan for locations and the Erosion Control Details for details.</div><div>B5 SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS</div><div>Proposed swales will be stabilized with erosion control blankets. Straw bales and silt fences will not be allowed as concentrated flow protection measures. Refer to the Erosion Control Plan for locations and the Erosion Control Details for details.</div><div>B6 STORM SEWER INLET PROTECTION MEASURE LOCATIONS AND SPECIFICATIONS</div><div>The contractor shall install appropriate inlet protection measures at each inlet. Refer to the Erosion Control Plan for locations and the Erosion Control Details for details. Straw bales will not be allowed as inlet protection measures. These inlet protection measures should be installed as soon as the inlets are installed or shortly thereafter.</div><div>B7 RUNOFF CONTROL MEASURES</div><div>N/A</div><div>B8 STORMWATER OUTLET PROTECTION MEASURES</div><div>Riprap aprons will be utilized for protection at stormwater outlet points.</div><div>B9 GRADE STABILIZATION STRUCTURE LOCATIONS</div><div>N/A</div><div>B10 LOCATION, DIMENSIONS, SPECIFICATIONS, AND CONSTRUCTION DETAILS OF EACH STORMWATER QUALITY MEASURE</div><div>Refer to the Erosion Control Plan for locations of each stormwater quality measure and the Erosion Control Details and Site Construction Details.</div><div>B11 TEMPORARY SURFACE STABILIZATION METHODS APPROPRIATE FOR EACH SEASON</div><div>Surface stabilization is required on any bare or thinly vegetated areas that is scheduled or likely to remain inactive for a period of 10 days or more. Refer to the Temporary Seeding Detail within the Erosion Control Details for specifics on soil amendments, seed mixtures, and mulching. The surface stabilization for the lots needs to be established as soon as possible to prevent dirt wash-out into the streets. If this is not possible, then silt fencing will need to be installed along the back of curbs.</div><div>B12 PERMANENT SURFACE STABILIZATION SPECIFICATIONS</div><div><div>1) Loosen lawn area to a minimum depth of 6 inches. Mix soil amendments and fertilizers with topsoil at rates specified. Organic soil amendments such as peat, compost, or manure shall be applied at 2" depth evenly over soil and incorporated into the top 6" of topsoil. Provide fertilizer with percentage of nitrogen required to provide not less than 1 pound of actual nitrogen per 1,000 square feet of lawn area and not less than 4 percent phosphoric acid and 2 percent potassium. At least 50 percent of nitrogen to be organic form. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.</div><div>2) Fertilizer for lawns: provide a fast release fertilizer with a composition of 1 lb per 1,000 square feet of actual nitrogen, 4 percent phosphorous, and 2 percent potassium by weight.</div><div>3) Slow-release fertilizer for trees and shrubs: granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorous and potassium made up of a composition by weight of 5 percent.</div><div>4) Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Limit fine grading to areas that can be planted within immediate future. Remove trash, debris, stones larger than 1 inch diameter, and other objects that may interfere with planting or maintenance operations. Sow seed using a spreader of seeding machine. Do not seed when wind velocity exceeds 5 miles per hour.</div><div>5) Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.</div><div>6) Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with a fine spray.</div><div>7) Install erosion control blankets as indicated on the Erosion Control Plan.</div><div>8) Protect seeded areas against erosion by spreading clean, seed-free straw mulch after completion of seeding operations. Spread uniformly to form a continuous blanket not less than 1-1/2 inches loose measurements over seeded areas.</div><div>9) Water newly planted lawn areas and keep moist until new grass is established. Immediately repair any lawn areas disturbed by construction activities including tree and shrub installation.</div><div>10) Refer to the Permanent Seeding Details within the Erosion Control Detail Sheet, for timing of permanent seeding, grass seed specifications and mulching specifications.</div></div><div>B13 MATERIAL HANDLING AND SPILL PREVENTION PLAN</div><div><div>Solid Waste Disposal No solid material, including building materials, is permitted to be discharged to surface waters or buried on site. All solid waste materials, including disposable materials incidental to construction activity, must be collected in containers or closed dumpsters. The collection containers must be emptied periodically and the collected material hauled to a landfill permitted by the State and/or appropriate local municipality to accept the waste for disposal.</div><div>A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper solid waste procedures.</div><div>Hazardous Waste Whenever possible, minimize the use of hazardous materials and generation of hazardous wastes. All hazardous waste materials will be disposed in the manner specified by federal, state, or local regulations or by the manufacturer.</div><div>Use containment berms in fueling and maintenance areas and where potential for spills is high.</div><div>A foreman or supervisor should be designated in writing to oversee, enforce, and instruct construction workers on proper hazardous waste procedures. The location of any hazardous waste storage areas should be indicated on the stormwater pollution prevention plan by the operator following on-site location of the facility.</div><div>Dust Control/Off-Site Vehicle Tracking During construction, water trucks should be used, as needed, by each contractor or subcontractor to reduce dust. After construction, the site should be stabilized to reduce dust.</div><div>Construction traffic should enter and exit the site at a Construction Entrance with a rock pad or equivalent device. The purpose of the rock pad is to minimize the amount of soil and mud that is tracked onto existing street. If sediment escapes the construction site, off-site accumulations of sediment must be removed a frequency sufficient to minimize off-site impacts.</div><div>Sanitary/Septic Contractors and subcontractors must comply with all state and local sanitary sewer, portable toilet, or septic system regulations. Sanitary facilities shall be provided at the site by each contractor or subcontractor throughout construction activities. The sanitary facilities should be utilized by all construction personnel and be serviced regularly. All expenses associated with providing sanitary facilities are the responsibility of the contractors and subcontractors. The location of any sanitary facilities should be indicated on the stormwater pollution prevention plan by the operator following on-site location of said facilities.</div><div>Water</div></div></div>
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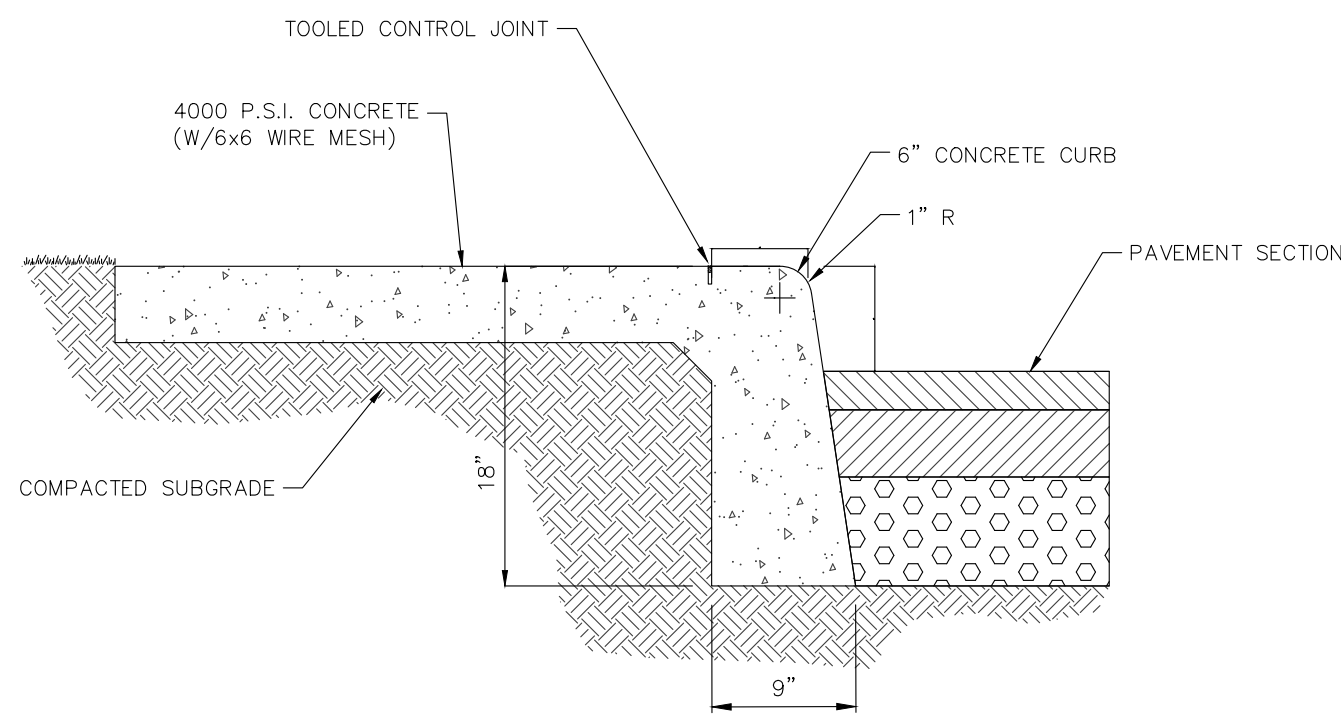
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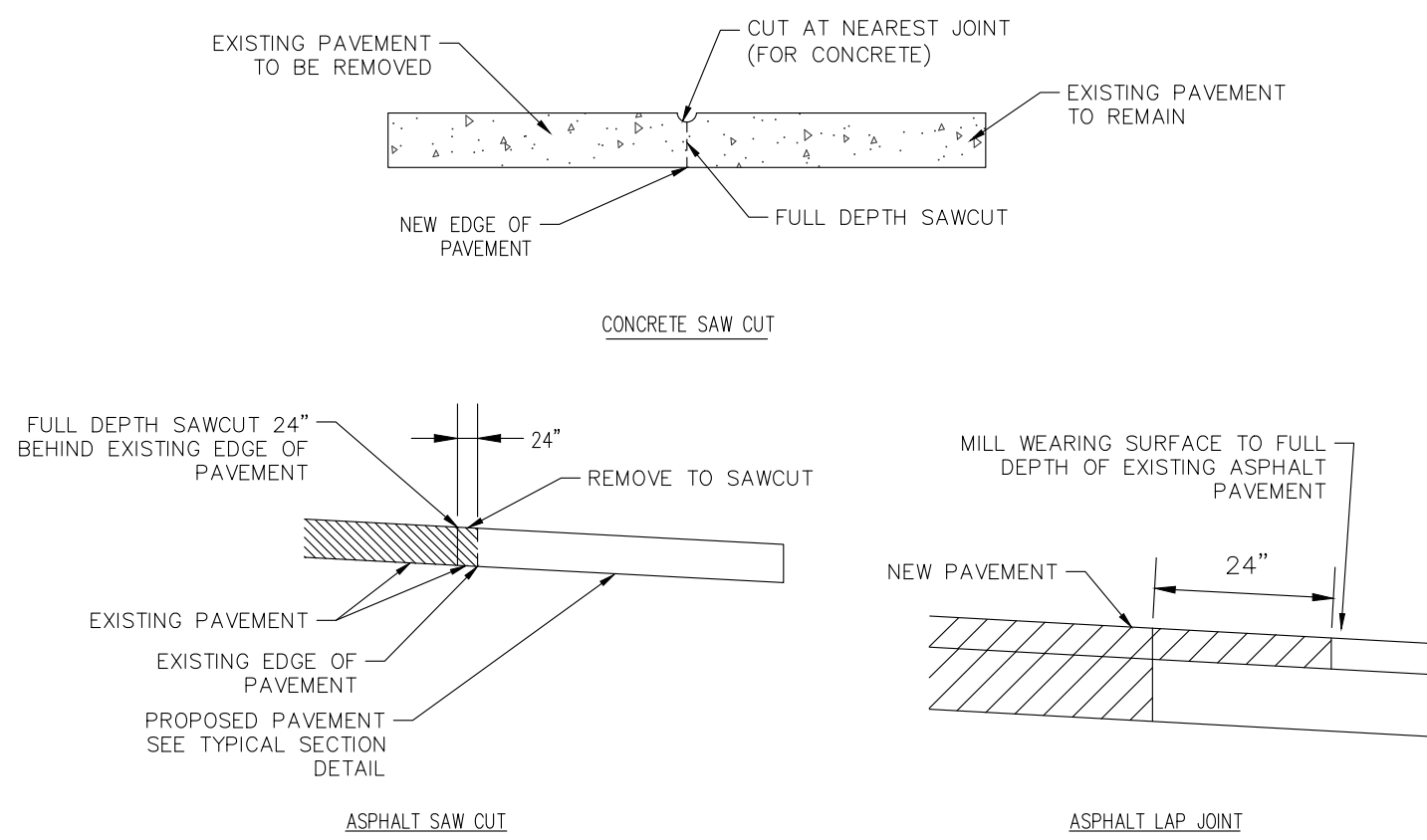
6" CONCRETE CURB
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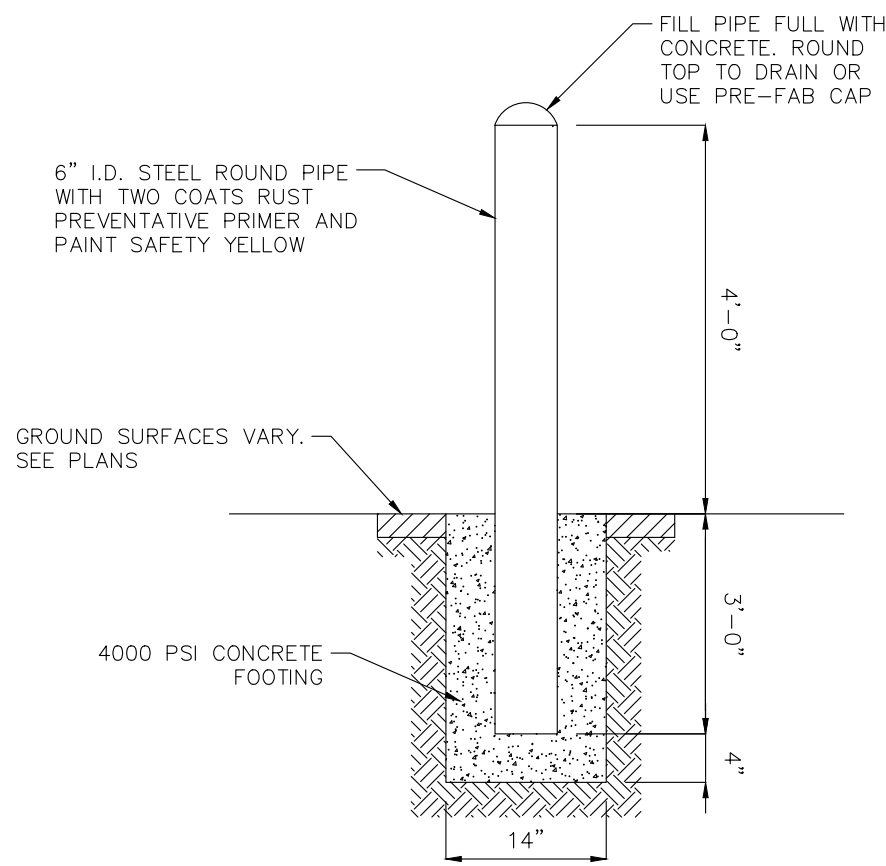
CONCRETE SIDEWALK DETAIL
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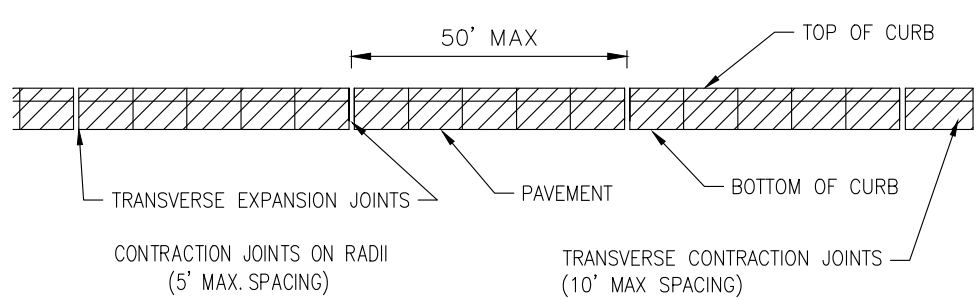
INTEGRAL CURB AND SIDEWALK DETAIL
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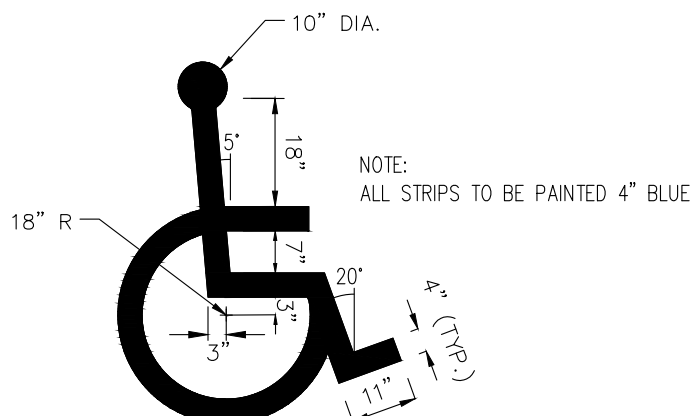
SAW CUT/LAP JOINT DETAIL
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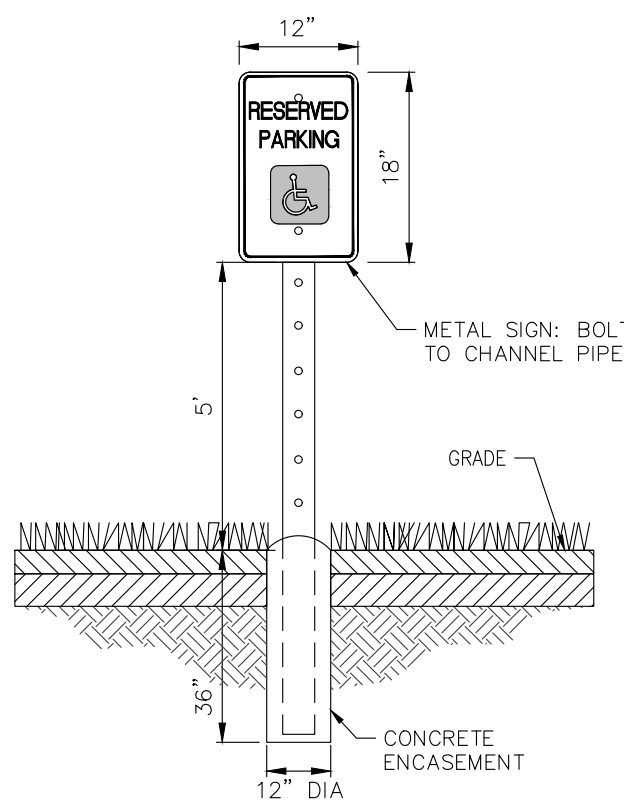
EXTERIOR BOLLARD DETAIL
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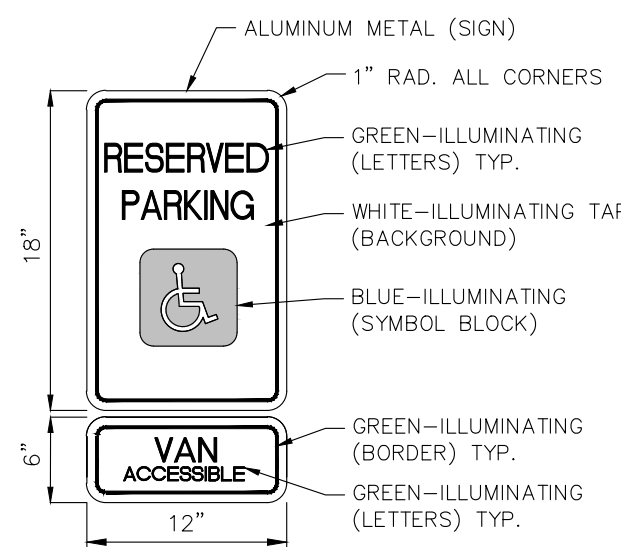
CURB JOINT DETAIL
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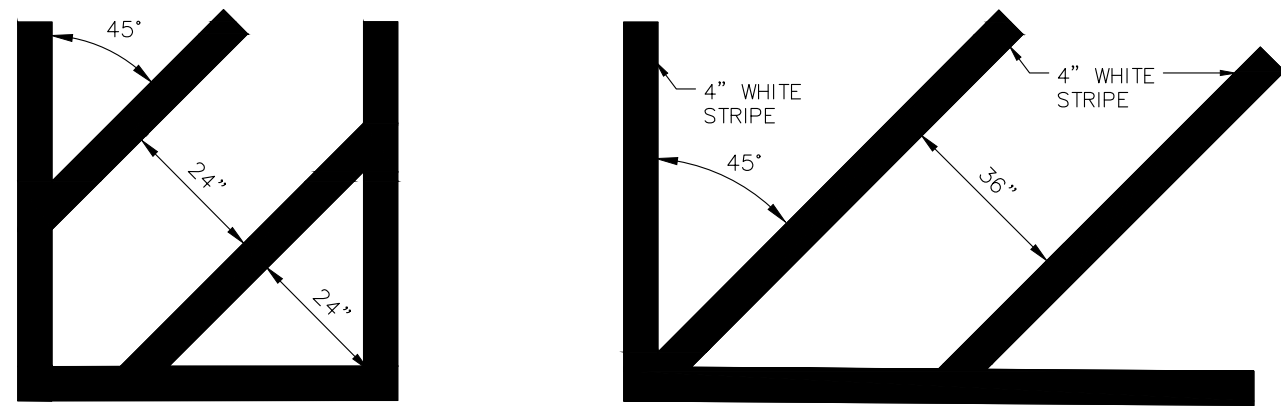
ADA PARKING SYMBOL DETAIL
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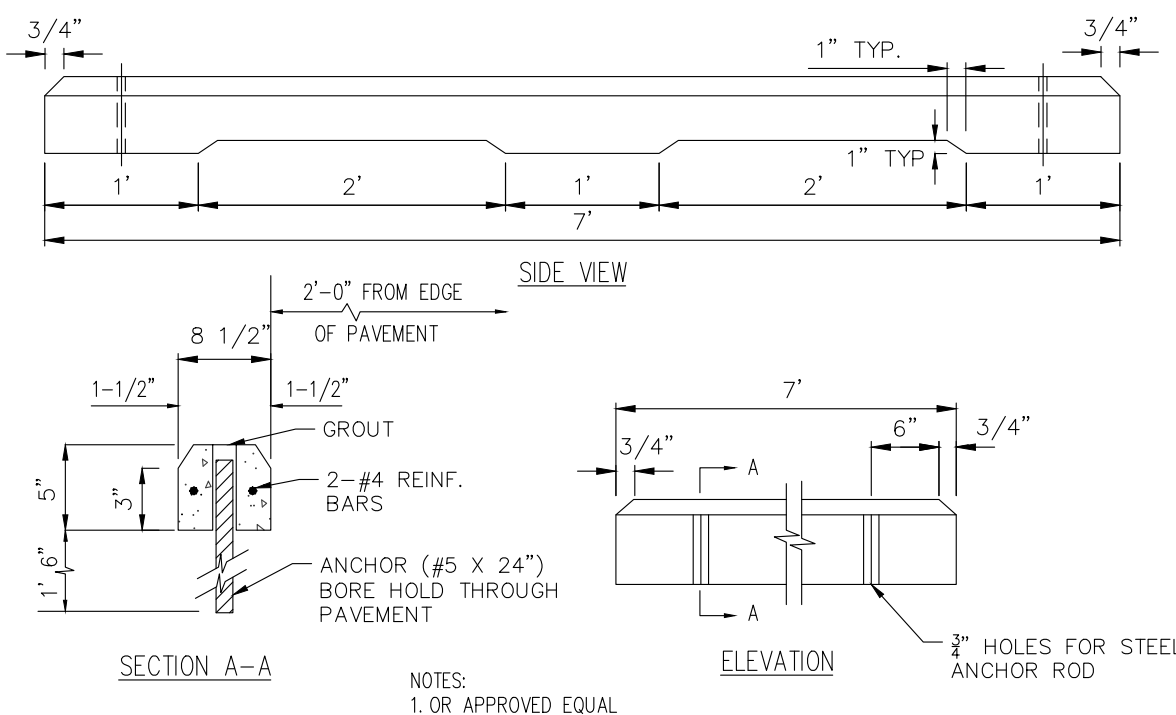
ADA PARKING SIGN DETAIL
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ADA PARKING SIGN DETAIL
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PAVEMENT STRIPING DETAIL
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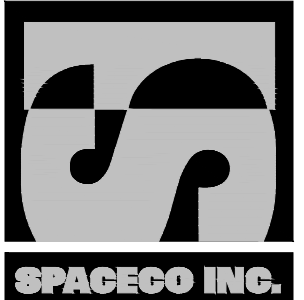


PRECAST CONCRETE WHEELSTOP
NOT TO SCALE

NOT FOR CONSTRUCTION

DETAILS - 1
FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS
Indianapolis
Indiana
Phone: (317) 792184



FILENAME:
11582DET
DATE:
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11582
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CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-33



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-70



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-71



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-40



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-73



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-72



CITY OF FRANKLIN - STANDARD SPECIFICATIONS

1-76



FORCEMAIN DISCHARGE TO GRAVITY MANHOLE

[illegible]

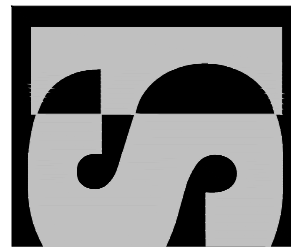
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CONSTRUCTION

DETAILS - 2

FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS

Indianapolis
Indiana
Phone: (317) 779-2194

**SPACECO INC.**

FILENAME:
11582DET

DATE:
08/10/2021

JOB NO.
11582

SHEET

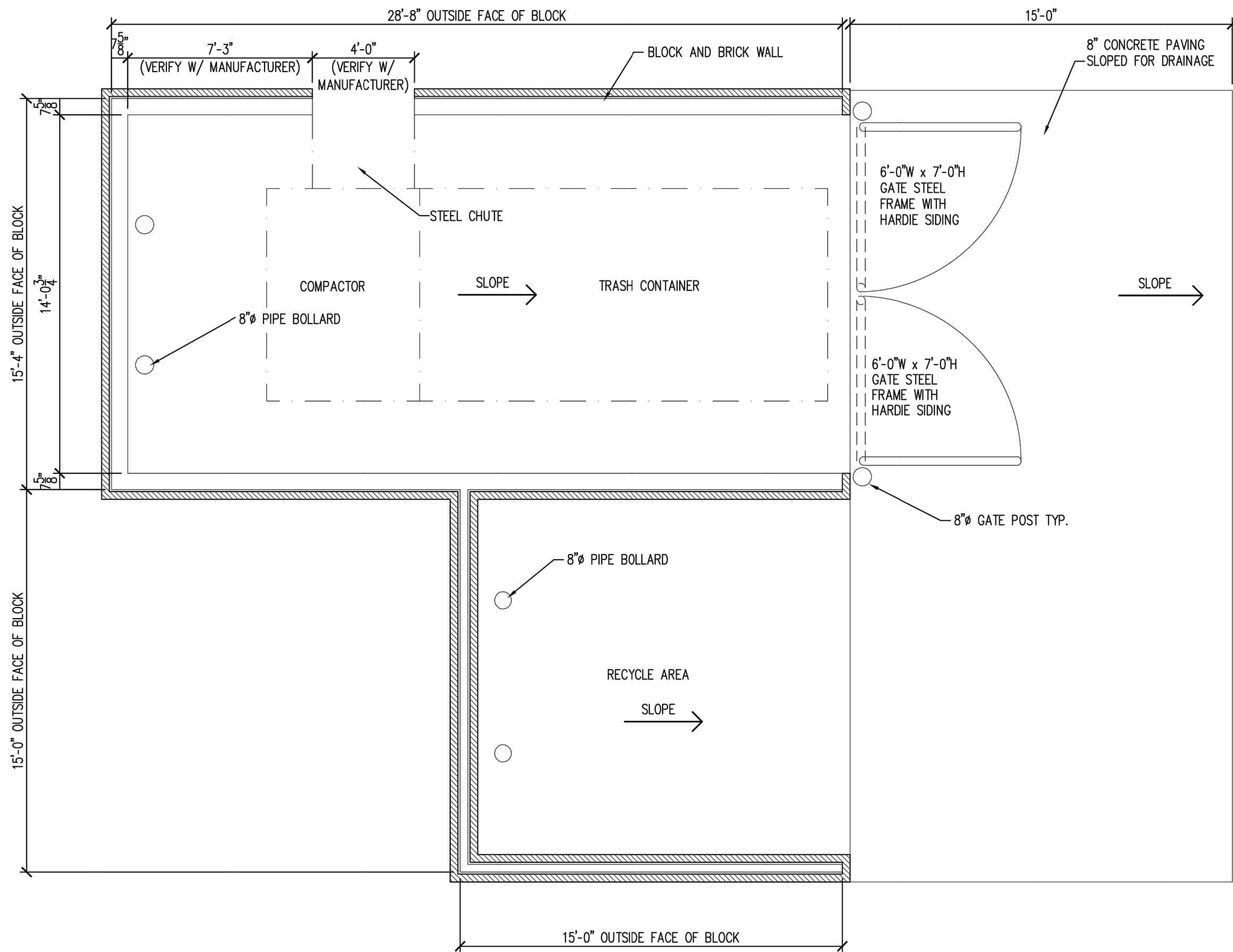
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TRASH COMPACTOR
MODEL: WASTEQUIP 265XP PRECISION SERIES
35 YARD COMPACTOR

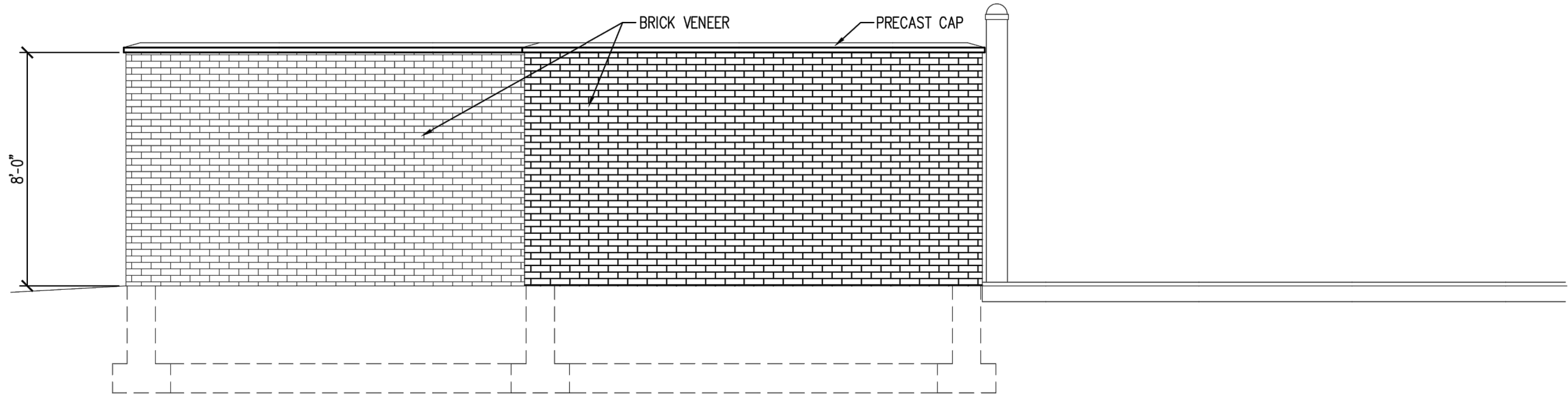
FEATURES:
- GUARDIAN CONTROL SYSTEM WITH AUTOMATIC
 MAINTENANCE SCHEDULER
- MULTI-CYCLE TIMER
- PRECISION GUIDED RAM
- ALL TEMP OIL
- UL LISTED PANEL
- E STOP, KEY START, AND USER FRIENDLY
 CONTROLS ON REMOTE
- FULLY GASKETED DOOR
- 80% AND 100% FULL LIGHT
- SIDE FEED THROUGH THE WALL CHUTE
- 15' GUIDE ISLANDS WITH STOPS
- PRESSURE GAUGE
- HOPPER SIZE: 40" x 60"
- PAINTED STANDARD COLOR SELECTED BY OWNER

OPTION:
- AUTO START OPTION TIED INTO MAGNETIC
 INTERLOCK SET TO AUTO START ON NUMBER OF
 TIMES (1-3) DOOR IS OPENED / CLOSED

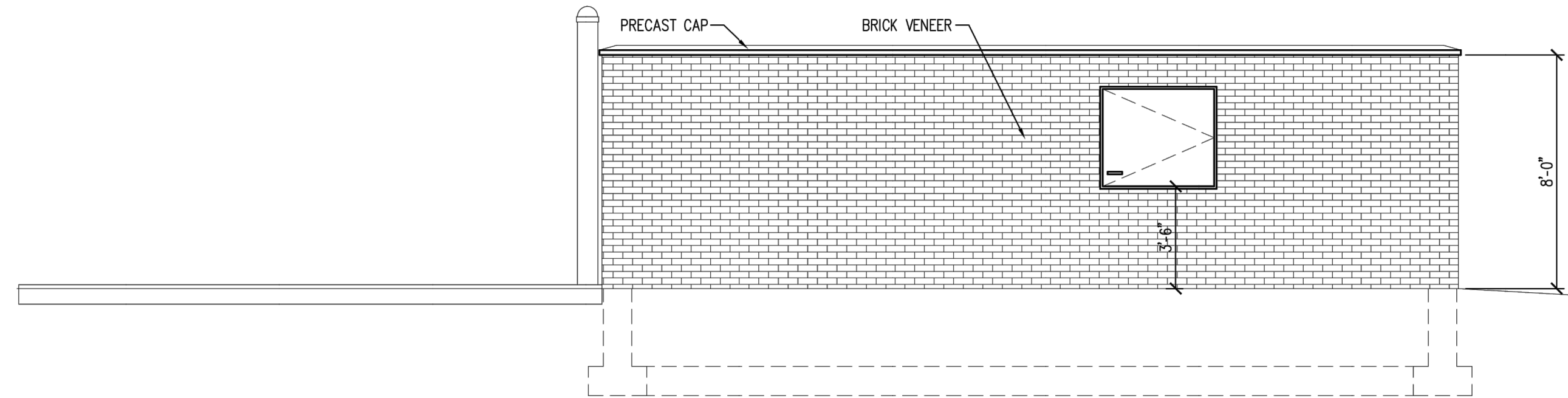


2 COMPACTOR ENCLOSURE PLAN VIEW
SCALE: 1/4" = 1'-0"

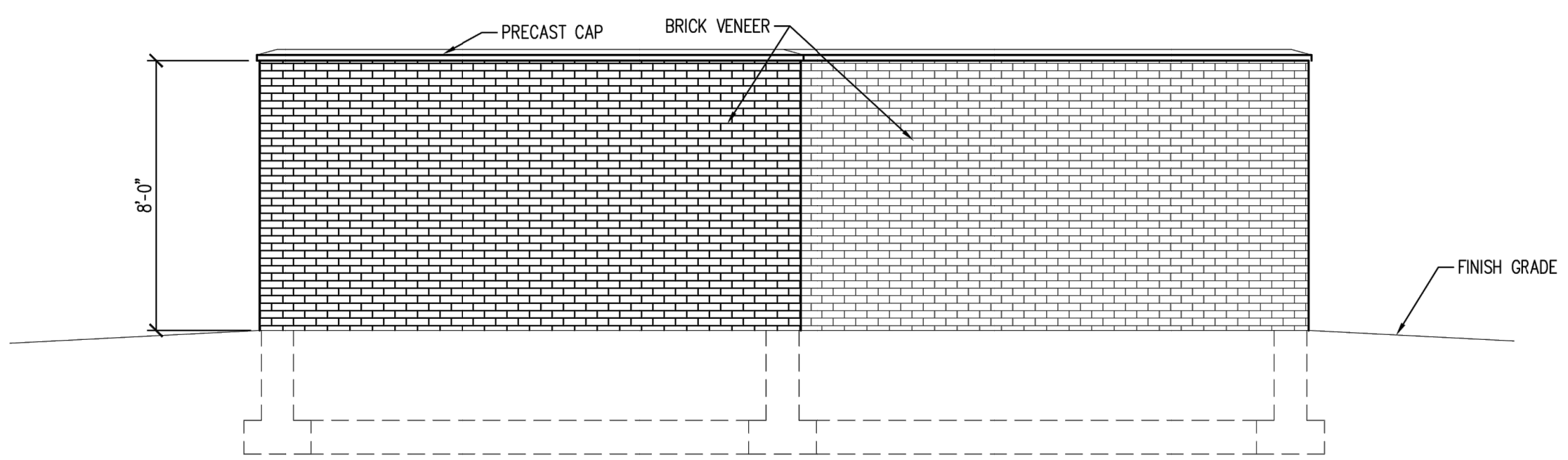
VERIFY ALL LAYOUT AND DIMENSIONS WITH COMPACTOR SUPPLIER



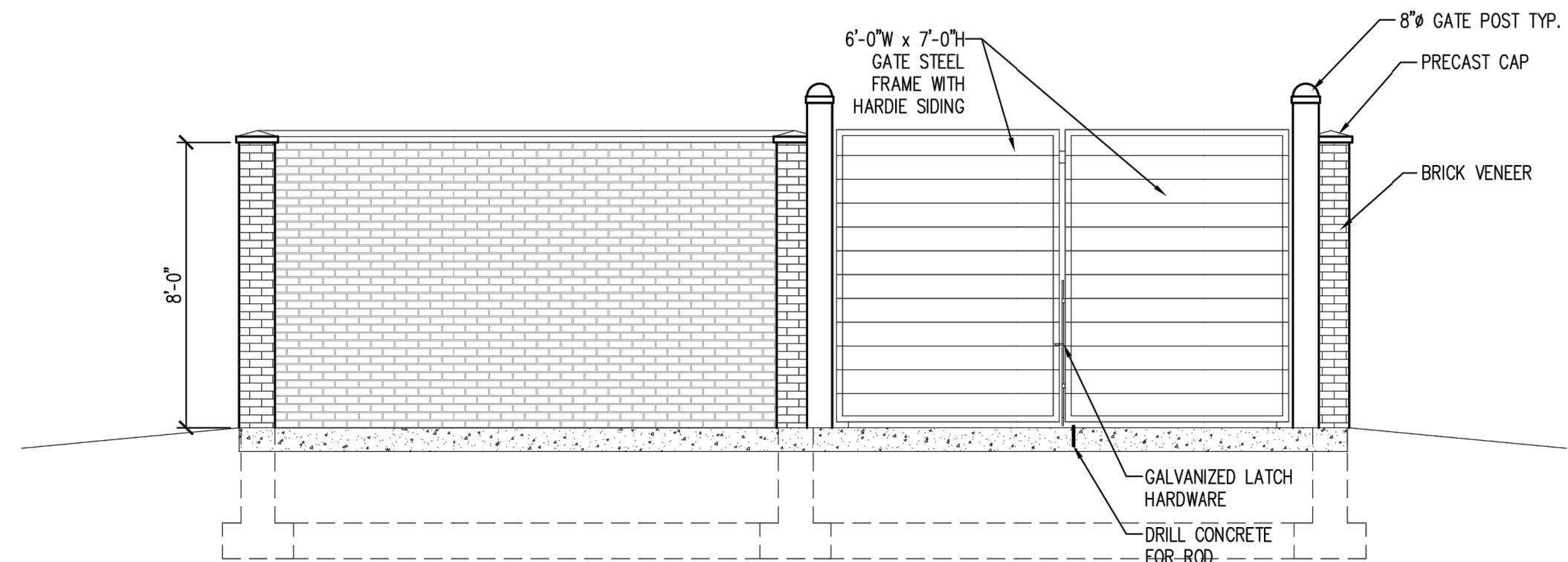
4 COMPACTOR ENCLOSURE SIDE ELEVATION VIEW
SCALE: 1/4" = 1'-0"



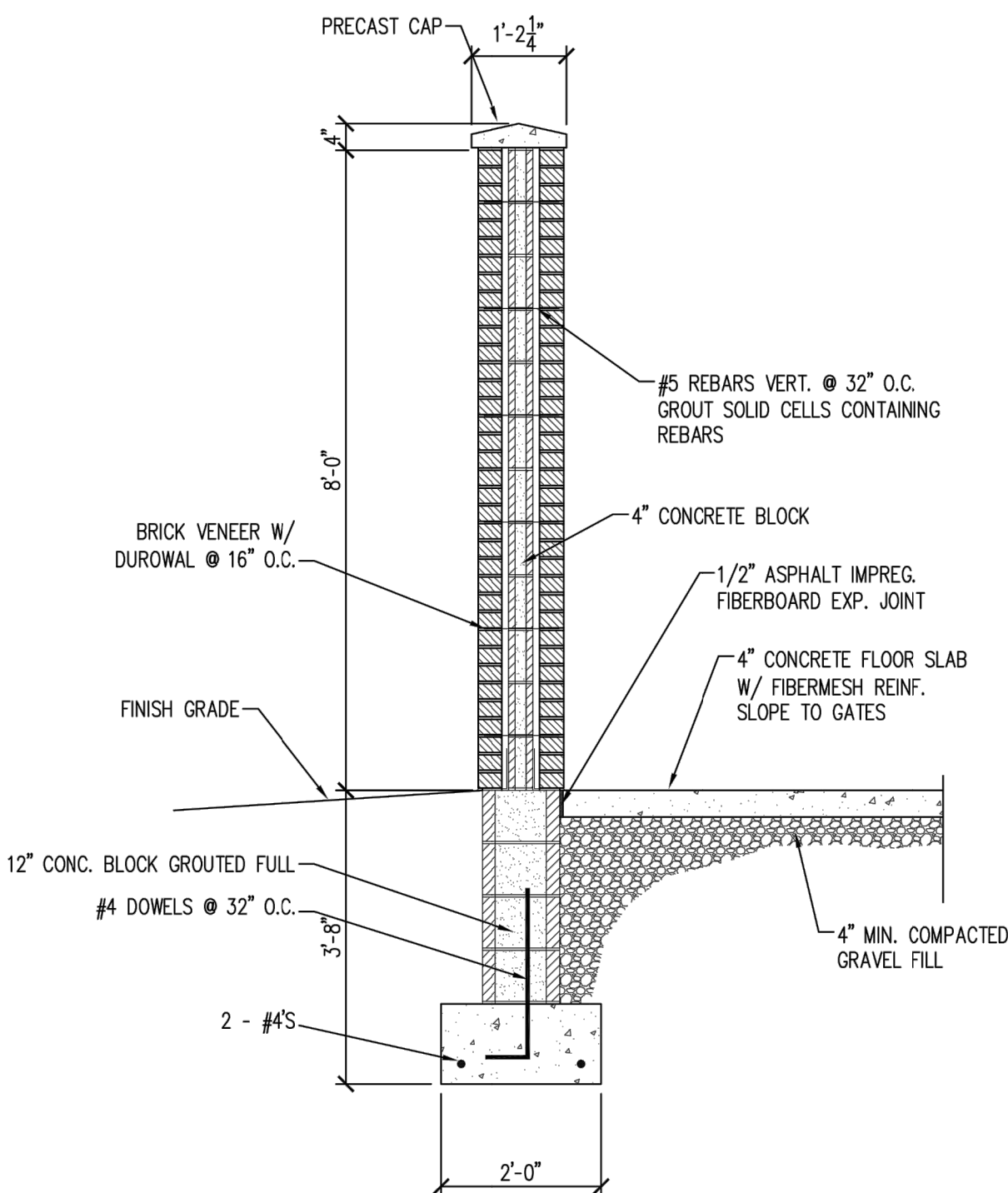
3 COMPACTOR ENCLOSURE SIDE ELEVATION VIEW
SCALE: 1/4" = 1'-0"



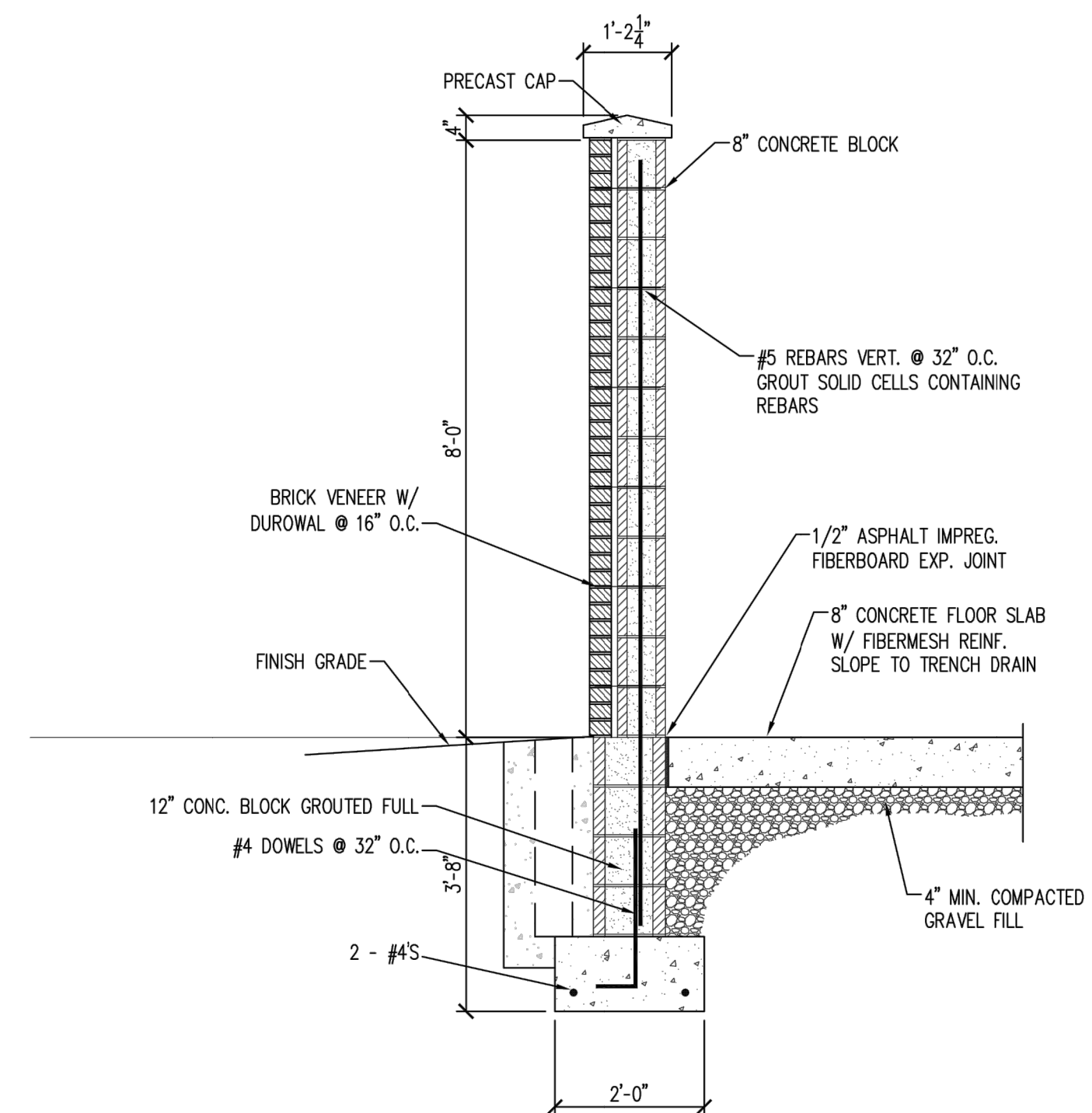
6 COMPACTOR ENCLOSURE END ELEVATION VIEW
SCALE: 1/4" = 1'-0"



5 COMPACTOR ENCLOSURE GATE END ELEVATION VIEW
SCALE: 1/4" = 1'-0"



1A ENCLOSURE WALL SECTION
SCALE: 1/2" = 1'-0"



1 COMPACTOR ENCLOSURE WALL SECTION
SCALE: 1/2" = 1'-0"

GENERAL NOTE:

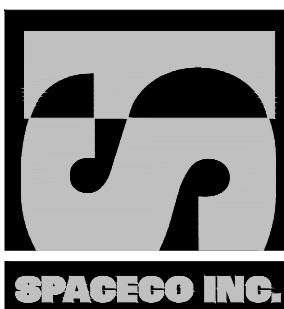
CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL COMPACTOR AND COMPACTOR ENCLOSURE DIMENSIONS WITH MANUFACTURER OF COMPACTOR TO BE INSTALLED.

NO.	DATE	REMARKS

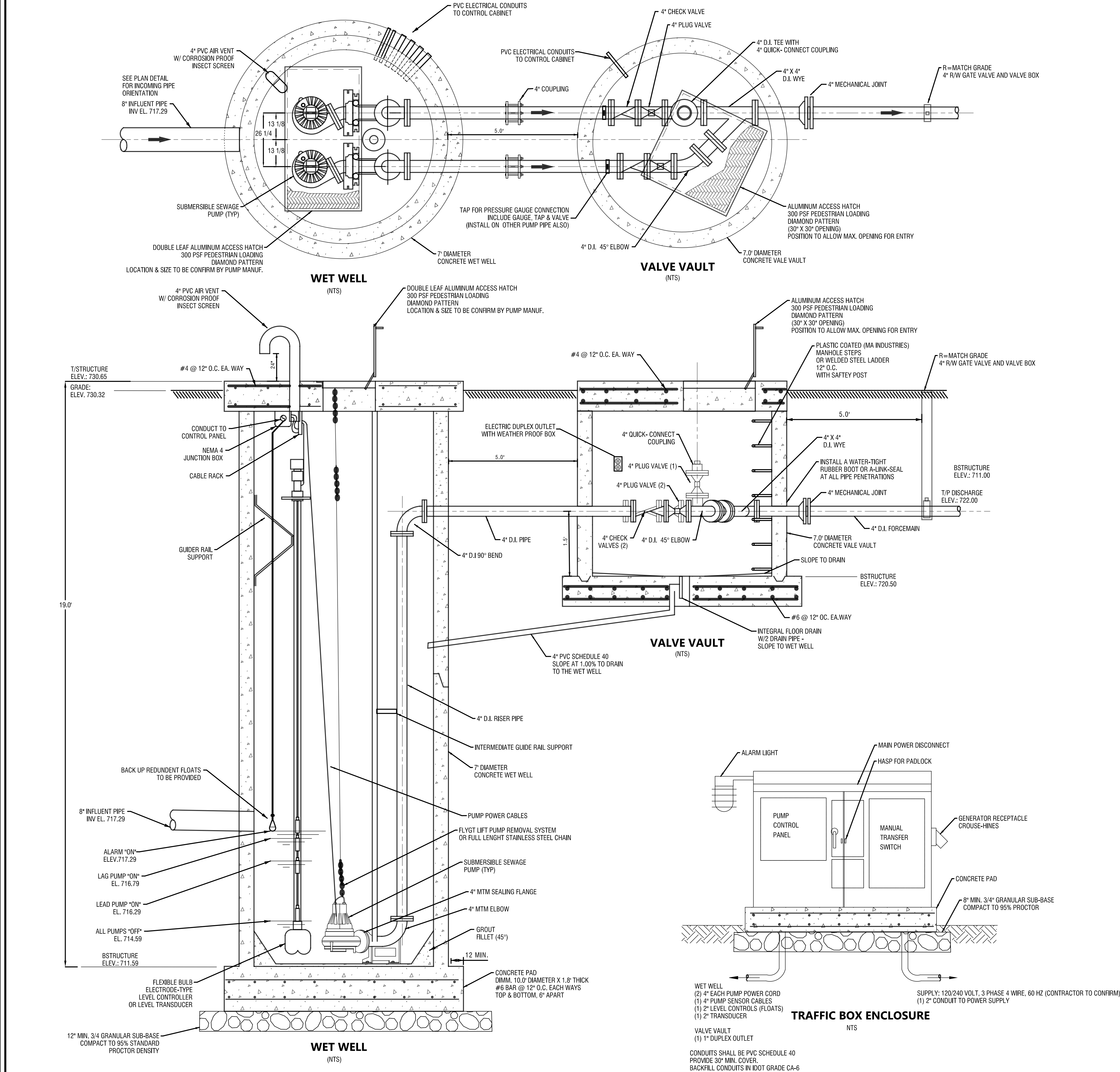
NOT FOR
CONSTRUCTION

DETAILS - 4
FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS
Indianapolis
Indiana
Phone: (317) 792184

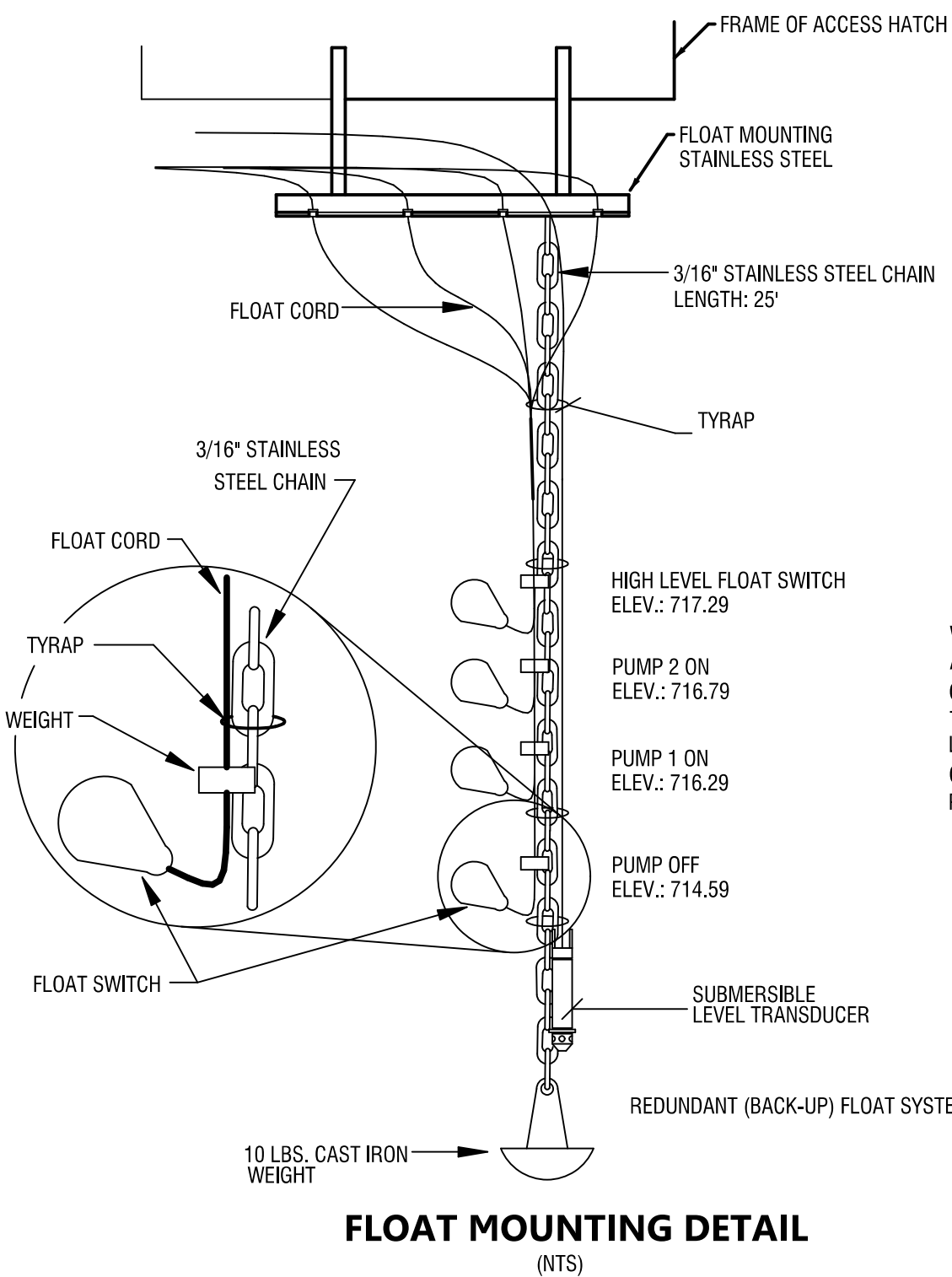
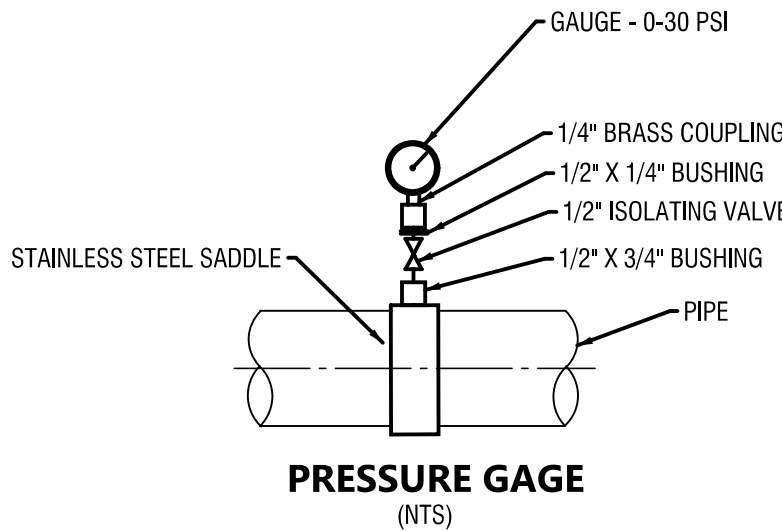


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NOTES:

- LIFT STATION TO BE INSTALLED BY AN EXPERIENCED AND QUALIFIED CONTRACTOR.
- ALL CONCRETE WORK IS THE RESPONSIBILITY OF THE CONTRACTOR. PC CONCRETE MIX DESIGN 28 DAY AT 4000 PSI.
- CONTRACTOR TO VERIFY ALL DIMENSIONS, ELEVATIONS, PIPING LAYOUT, AND ORIENTATION OF INLET(S), DISCHARGE AND CONDUIT(S).
- ALL PIPING & VALVES, STRUCTURES, ELECTRIC, ETC. ARE TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
- ALL CABLE IN THE WET WELL SHALL BE SUPPORTED FROM THE HATCH COVER FRAME WITH STAINLESS STEEL, OPEN WEAVE, MESH TYPE, KEELLESS (OR EQUAL) CABLE GRIPS.
- CONTRACTOR TO ORDER CONTROL AND POWER CORDS OF SUFFICIENT LENGTH TO REACH CONTROL PANEL FROM POINT OF ORIGIN ON PUMPS WITHOUT SPLICING.
- ALL FASTENERS, BOLTS, ETC. WITHIN THE WET WELL SHALL BE 304 OR 316 STAINLESS STEEL.
- ALL ELECTRICAL EQUIPMENT IN WET WELL SHALL CONFORM TO NE REQUIREMENTS FOR CLASS 1, DIVISION 1, GROUP D HAZARDOUS AREA.
- ELECTRICAL CONDUITS ARE AS FOLLOWS:
 - (1) 4" FOR EACH PUMP POWER CORD
 - (1) 4" PUMP SENSORS CABLES
 - (1) 2" TRANSDUCER CABLE
 - (1) 2" BACK-UP FLOAT CABLES
 - (1) 1" VALVE SUMP PUMP POWER
- ALL CONDUITS TO BE SCHEDULE 40 PVC, PROVIDED WITH SEAL TIGHT CONNECTORS.
- COAT OUTSIDE SURFACE OF CONCRETE STRUCTURES WITH AN EMULSION WATER PROOF COATING.
- CONCRETE WET WELL AND VALVE VAULT STRUCTURAL DESIGN BY SUPPLIER. PLANS STAMPED BY A ILLINOIS REGISTERED LICENSED PROFESSIONAL ENGINEER SHALL BE PROVIDED. CONCRETE LIDS FOR BOTH STRUCTURES SHALL BE DESIGNED TO SUPPORT VEHICLE LOADING. CONTRACTOR SHALL CONFIRM ALL VAULT AND PIPE DIMENSIONS PRIOR TO ORDERING. PROVIDE SHOP DRAWING FOR REVIEW AND APPROVAL.
- INSTALL TWO (2) 10 FOOT LONG 1#2" DIAMETER COPPER, OR COPPER CLAD STEEL, DRIVEN GROUND ROD WITH A #6 BARE COPPER MAIN GROUNDING WIRE CONNECTED FROM IT TO THE BONDED NEUTRAL LUG IN THE MAIN SERVICE ENCLOSURE.
- ALL CONDUITS, WHERE THEY ENTER THE OPEN BOTTOM OF THE CONTROL ENCLOSURE, SHALL HAVE AN INSULATED THROAT GROUNDING BUSHING THAT IS BONDED TO GROUND WITH A #6 COPPER WIRE.
- LIFT STATION PIPE SHALL BE BITUMINOUS COATED, CEMENT LINED DUCTILE IRON PIPE, CLASS 53 OR PRESSURE CLASS 350, CONFORMING TO ANSI A-21.10 (AWWA C150) AND ANSI A-21.51 (AWWA C151). CEMENT MORTAR LINING SHALL CONFORM TO ANSI A-21.4 (AWWA C-104). JOINTS SHALL BE FLANGED (ANSI CL 150) DIP CONFORMING TO ANSI A-21.11 (AWWA C-110).
- LIFT STATION FITTINGS SHALL BE FLANGED (ANSI CL 150) DIP, DUCTILE IRON WITH CEMENT MORTAR LINING CONFORMING TO ANSI A-21.10 (AWWA C-110).
- USE LINK SEALS AT ALL PIPE WALL PENETRATIONS.
- THE HATCH SUPPLIER IS TO BE CONTACTED AT THE TIME THE WET WELL AND VALVE VAULT HATCH LOCATIONS ARE CAST TO CONFIRM EXACT HATCH LOCATIONS.
- THE LIFT STATION PUMP SUPPLIER SHALL PROVIDE OPERATIONAL CONTROL SPECIFICATIONS AND DESIGN, WHICH WILL BE SUBMITTED AS A SHOP DRAWING FOR APPROVAL AS PART OF THEIR CONTRACT.
- THE CONTRACTOR SHALL CONFIRM THE AVAILABLE POWER SUPPLY TO THE LIFT STATION PRIOR TO ORDERING EQUIPMENT.
- THE CONTRACTOR SHALL COORDINATE ALL UTILITY INSTALLATION AS REQUIRED FOR THE LIFT STATION INSTALLATION.



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CONSTRUCTION

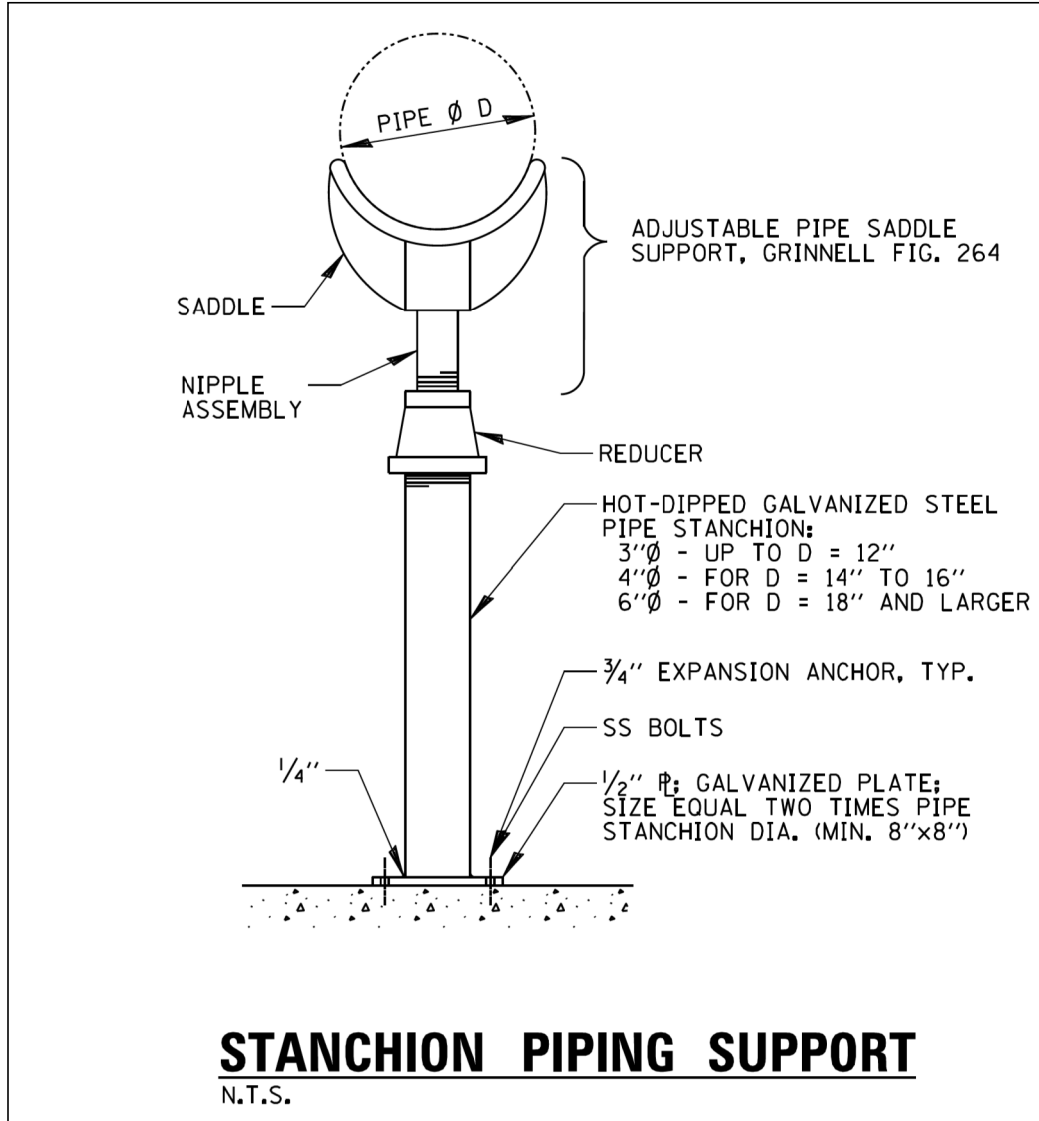
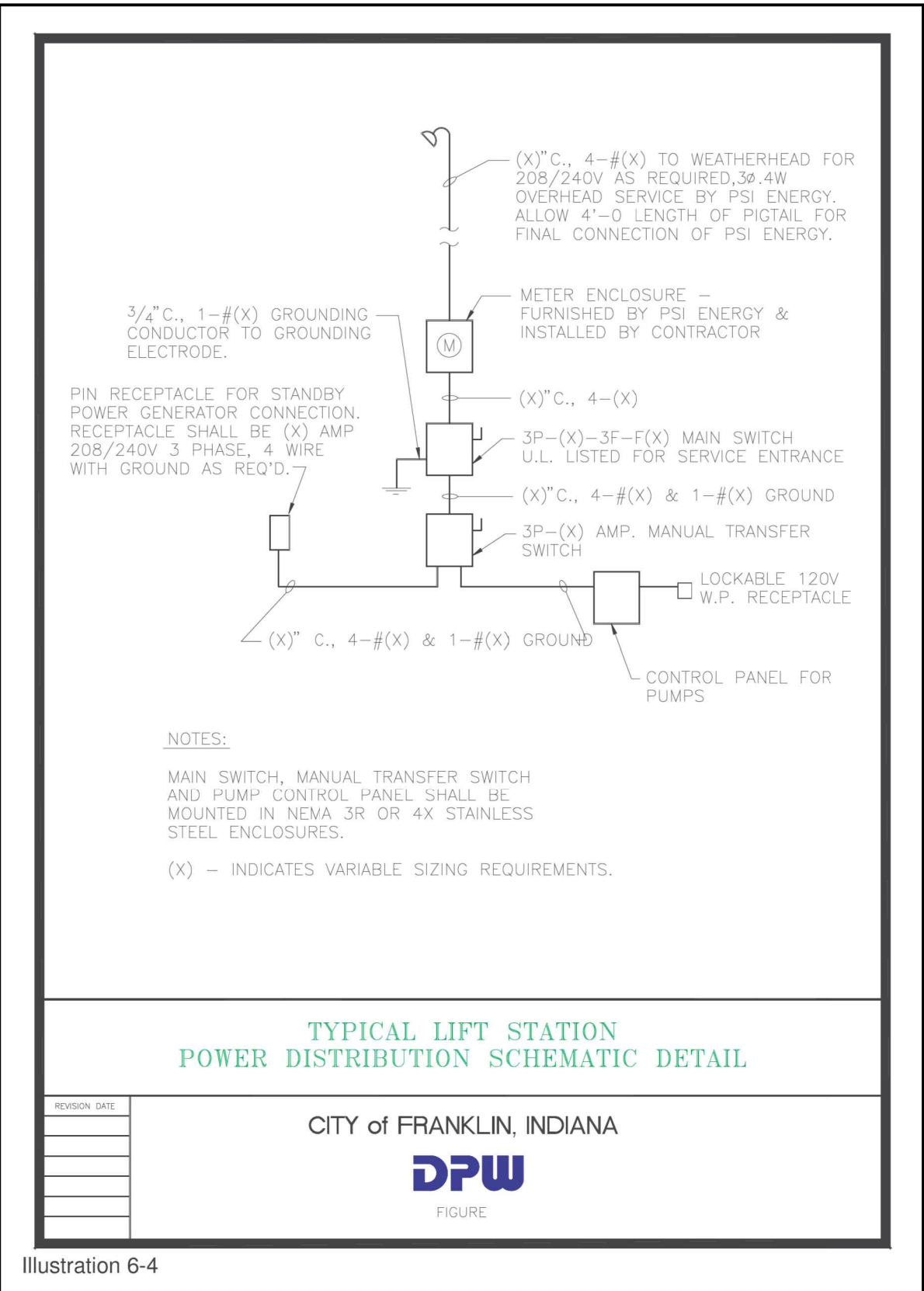
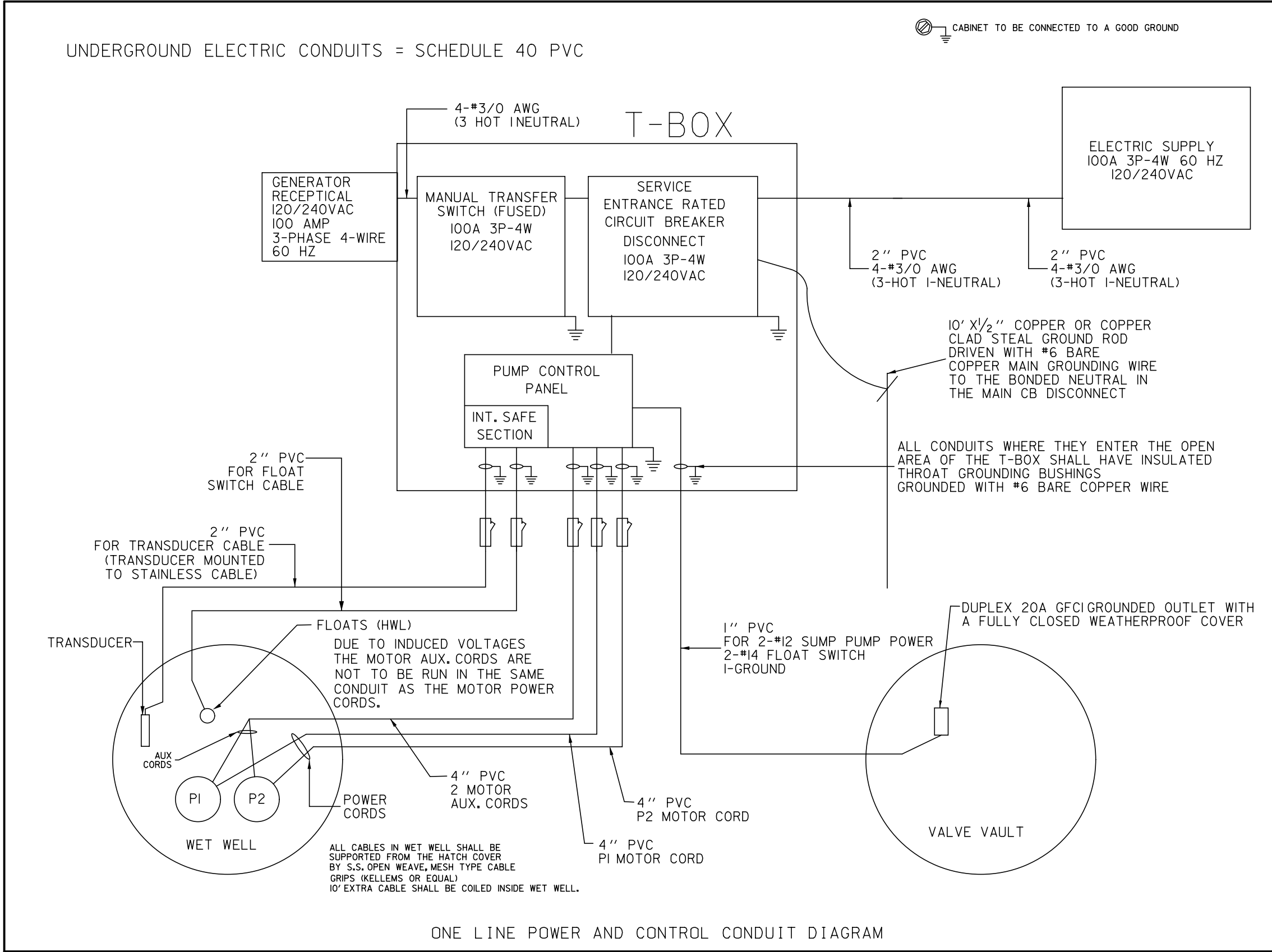
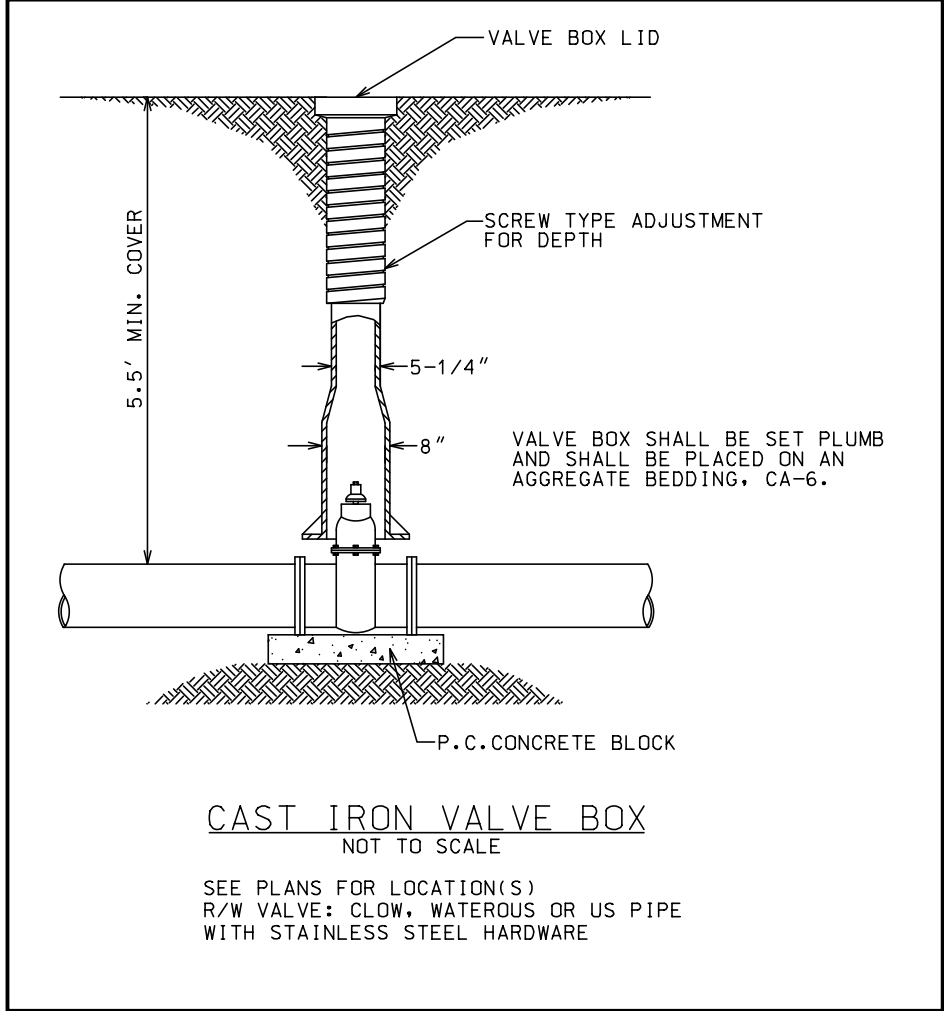
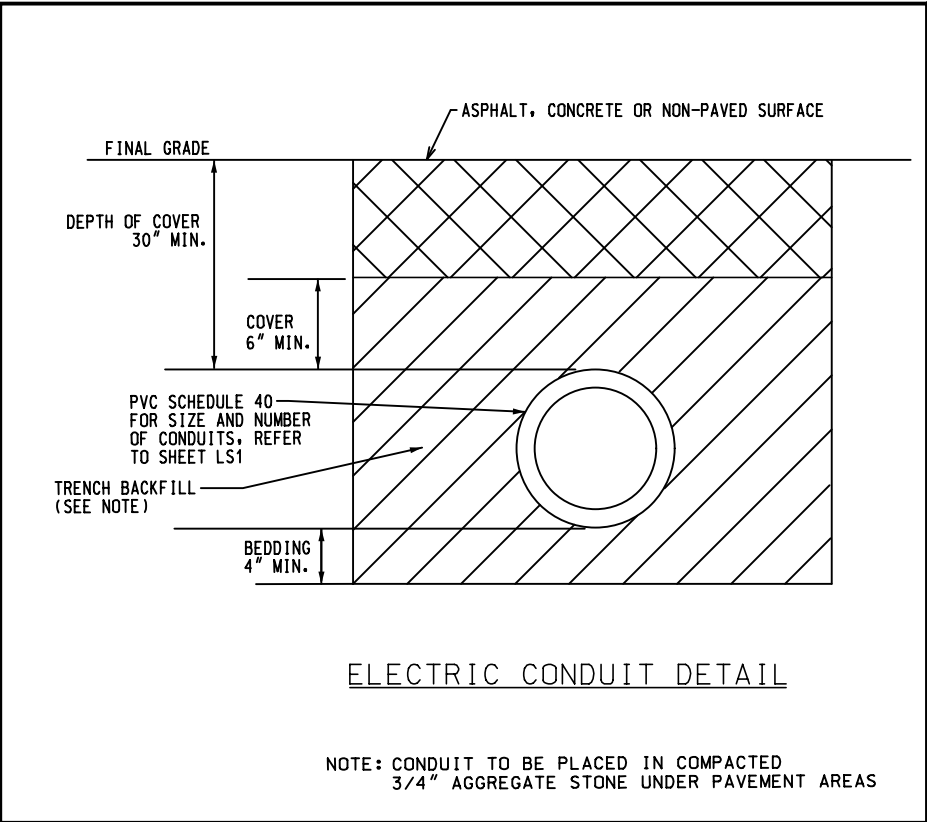
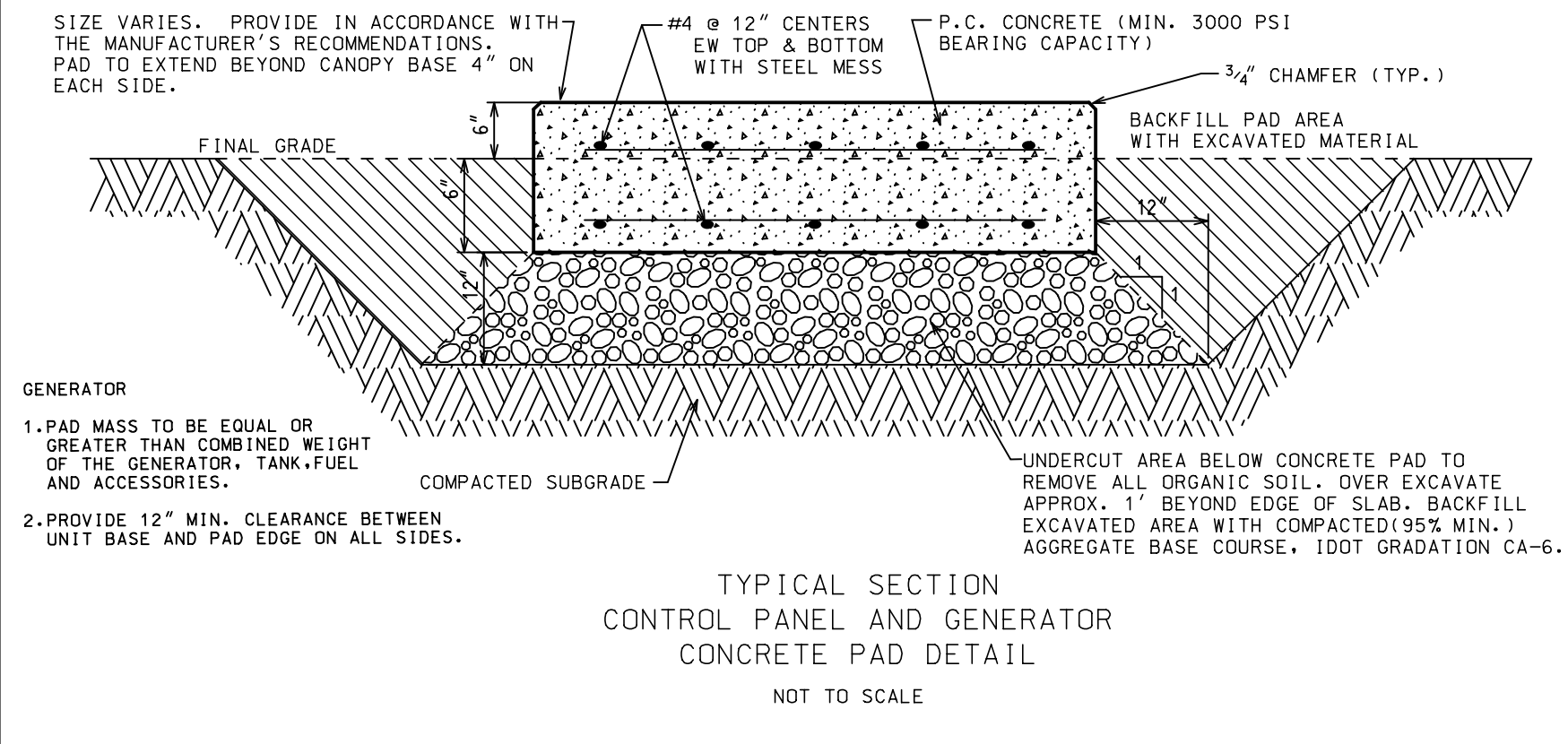
LIFT STATION DETAILS - 1
FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS
Indianapolis
Indiana
Phone: (317) 779-2184



FILENAME:
11582LS1
DATE:
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19 OF 24

SANITARY LIFT STATION		F. Mechanical Seal	
6.01 General		Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in an oil reservoir that hydrodynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the oil chamber, shall contain one stationary and one positively driven rotating tungsten-carbide ring. The upper, secondary seal unit, located between the oil chamber and the motor housing, shall contain one stationary tungsten-carbide ring and one positively driven rotating carbon seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical	
All stations shall be designed for and operate on three (3) phase 240 volt power. The contractor shall confirm the available power prior to ordering the equipment.		The following seal types shall not be considered acceptable nor equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. Cartridge type systems will not be acceptable. No system requiring a pressure differential to offset pressure and to effect sealing shall be used.	
6.02 General Requirements		Each pump shall be provided with an oil chamber for the shaft sealing system. The oil chamber shall be designed to prevent overfilling and to provide oil expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.	
A. All of the mechanical and electrical equipment shall be an integral package supplied by the pump manufacturer with local representation so as to provide undivided responsibility.		G. Pump Shaft	
The package shall be furnished by Flygt Pump, or approved equal.		Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The pump shaft shall be AISI Type 420 stainless steel.	
B. The Contractor shall submit for review and approval two (2) sets of shop drawings, detailed specifications, pump warranty and performance characteristics for all of the equipment and fixtures to be furnished and installed. The shop drawings and equipment data shall be submitted with a cover letter or Contractor's stamp of approval, indicating that he has reviewed, checked and approved the data submitted. The Engineer will review the submittal and render a decision in writing as to the acceptability of the equipment.		H. Impeller	
C. Any exceptions to this Standard or associated approved Plans shall be submitted in writing and clearly stated. The exceptions must be approved by the Engineer prior to proceeding with the work.		The impeller(s) shall be of gray cast iron, Class 30, dynamically balanced, double shrouded non-clogging design having a long through let without acute turns. The impeller(s) shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater. Whenever possible, a full vaned, not vortex, impeller shall be used for maximum hydraulic efficiency; thus, reducing operating costs. Mass moment of inertia calculations shall be provided by the pump manufacturer upon request. Impeller(s) shall be retained with an Allen Head bolt and shall be capable of passing a minimum 3-inch diameter solid. All impellers shall be coated with alkylid resin primer.	
D. All components of the lift station that are exposed to weather shall be constructed of material that is resistant to corrosion and will not require surface protection throughout the expected life of the lift station. In general, these materials are stainless steel, aluminum, fiberglass reinforced polyester (FRP) and ultraviolet stabilized PVC.		I. Wear Rings	
E. All valves and piping coming in contact with sewage or installed in the pump or valve chambers shall be coated as follows:		A wear ring system shall be used to provide efficient sealing between the volute and suction inlet of the impellers. The wear ring shall be stationary and made of brass, which is drive fitted to the volute inlet.	
1. Primer - Aromatic Urethane Zinc-Rich 2.5 - 3.5 mil		J. Volute	
2. Field Coats - Aliphatic Acrylic Polyurethane		Pump volute(s) shall be single-piece grey cast iron, Class 30, non-concentric design with smooth passages large enough to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified.	
2 coats@ 2.0 - 4.0 mil per Coat		K. Rail/Removal System	
6.03 Operating Conditions		The pump mounting base shall include adjustable guide rail supports and a discharge connection with a one hundred twenty-five (125) pound standard flange. The base and the discharge piping shall be permanently mounted in place. The base plates shall be anchored in place utilizing epoxy type anchors with stainless steel studs and nuts as manufactured by HILTI Fasteners, Inc. or equal.	
Prior to installation the Contractor shall submit the following information for each pump to the Engineer for review and approval:		A rail system shall be provided for easy removal of the pump and motor assembly for inspection and service. The system shall not require a man to enter the wet well to remove the pump and motor assembly. Two (2) rails of two (2) inch stainless steel pipe shall be provided for each pump. The guide rails shall be positioned and supported by the pump mounting base. The guide rails shall be aligned vertically and supported at the top by attachment to the access hatch frame. One (1) intermediate guide rail support is required for each fifteen (15) feet of guide rail length for pipe.	
A. Pump Capacity in Gallons Per Minute:		The pumps shall be equipped with sliding brackets or rail guides. To insure easy removal of the pumps, the rail guides attached to each pump shall not encircle the rails. A stainless steel lifting chain or manufacturer's pump removal system shall be used. The lifting chain or pump removal system shall be provided for each pump. Each pump shall be equipped with a permanent, stationary lifting handle with a minimum clearance of 12" between the top of pump and bottom of handle.	
B. Total Dynamic Head (TDH) and Operating RPM:		The rails and the rail guides shall function to allow the complete weight of the pumping unit to be lifted on dead center without binding and stressing the pump and motor. The rail system shall function to automatically align the pumping unit to the discharge connection by a simple downward movement of the pump. No twisting or angle approach will be considered acceptable. The actual sealing of the discharge interface may be of the hydraulically sealing diaphragm type assembly with removable Buna-N diaphragm as supplied by Hydromatic Pump or may be of the metal-to-metal contact as provided by Flygt Pump.	
C. Motor Horsepower:		L. Pump Warranty	
3.0 H.P.		Pump warranty shall be provided by the pump manufacturer and shall warrant the units being supplied to the Owner against defects in workmanship and materials for a period of one (1) year under normal use, operation, and service. The warranty shall be in printed form and apply to all similar units. A copy of the warranty statement shall be submitted with the approval drawings.	
D. Motor RPM:		6.05 Protection	
1750 RPM		All stations shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 260 F (125 C) the thermal switches shall open, stop the motor and activate an alarm.	
E. Motor Voltage, Phase and Cycle:		A leakage sensor shall be provided to protect water in the sator chamber. The Float Leakage Sensor (FLS) shall be a small float switch to detect the presence of water in the sator chamber. When activated, the FLS shall stop the motor and send an alarm. USE OF VOLTAGE SENSITIVE SOLID STATE SENSORS AND TRIP TEMPERATURE ABOVE 260 F (125 C) SHALL NOT BE ALLOWED.	
230V, 3-Phase, 60 HZ		6.06 Wet Well and Valve Pit	
6.04. Pump Design		A. General	
A. Pump Construction		The walls of the pump station and valve pit structures shall be constructed of reinforced concrete pipe which shall conform to the latest ASTM Specifications C-76, with a minimum compressive strength of concrete equal to 4000 psi. Reinforcement of the pipes shall be of the circular type. All of the pipe for the pump chambers and the access tubes shall be Class III and of the diameter shown on the Plans. Handling or lifting lugs and/or devices shall be provided in the pipe shells for ease of unloading and setting in place. All joints between pipes and between ends of pipes and concrete slabs shall be made watertight.	
Major pump components shall be of gray cast iron, ASTM A 48, Class 30, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI Type 304 stainless steel or brass construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of alkylid primer with a chlorinated rubber paint finish on the exterior of the pump.		The pipes utilized for the pump station wet well or valve pit shall be joined with a rubber O-ring type seal conforming to the ASTM Standard C-443 (latest revision). The joint shall be designed to provide a maximum infiltration/exfiltration limit of .158 gallons (200 gpd/in.-mile). The interior and exterior joint spaces shall be grouted to a smooth surface using a sand-cement mixture mortar. The mortar-grout shall have one part cement to two parts sand mix ratio. The completed interior and exterior joints shall have a smooth troweled waterproof finish.	
Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.		The top concrete slab of the pump station and valve pit shall have cast into it a socket for receiving the end of each concrete pipe. The joint shall be made watertight. An access ladder shall be provided with rungs spaced 12 inches on center from top to bottom of the station and shall be of welded steel construction, and hot-dipped galvanized after fabrication or aluminum.	
Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.		Concrete for the foundation and roof slabs shall be made of Class A concrete.	
B. Cooling System		B. Access Hatches	
Motors shall be sufficiently cooled by the surrounding environment or pumped media. A water cooling jacket is not required.		The Contractor shall furnish and install for both the wet well and valve pit aluminum access doors complete with frames, hinged and hasp-equipped covers, upper guide holders, drain hole and cable holder. The frames shall be securely mounted above the pumps. The doors shall be torsion bar loaded for ease of lifting and shall have safety locking handles in the open position. The access doors shall be capable of withstanding a 300 lb. live load per square foot. The lift station wet wells are to be provided with two (2) separate access hatches or a two (2) door hatch. The valve pit access hatches are to be single door type.	
C. Cable Entry Seal		The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal.	
D. Motor		The pump motor shall be induction type with a squirrel cage rotor, shell type design, housed in an air or oil filled, watertight chamber, NEMA B type. The sator windings and sator leads shall be insulated with moisture resistant Class F insulation rated for 311 F (155 C). The sator shall be dipped and baked three times in Class F varnish and shall be heat-shrink fitted into the sator housing. The use of bolts, pins or other fastening devices requiring penetration of the sator housing is not acceptable. The motor shall be designed for continuous duty handling pumped media of 104 F (40 C) and capable of up to 15 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 260 F (125 C) shall be embedded in the sator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The motor and pump shall be designed and assembled by the same manufacturer.	
The pump motor shall be induction type with a squirrel cage rotor, shell type design, housed in an air or oil filled, watertight chamber, NEMA B type. The sator windings and sator leads shall be insulated with moisture resistant Class F insulation rated for 311 F (155 C). The sator shall be dipped and baked three times in Class F varnish and shall be heat-shrink fitted into the sator housing. The use of bolts, pins or other fastening devices requiring penetration of the sator housing is not acceptable. The motor shall be designed for continuous duty handling pumped media of 104 F (40 C) and capable of up to 15 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 260 F (125 C) shall be embedded in the sator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The motor and pump shall be designed and assembled by the same manufacturer.		The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be chloroprene rubber. The motor and cable shall be capable of continuous submergence under water without loss of watertight integrity to a depth of 65 feet.	
E. Bearings		The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable.	
The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable.		The seal on the impeller hub will not be acceptable.	
F. The control center shall incorporate connections for seal failure sensors which are installed in the pumps. The panel will have a seal failure alarm light for each pump. This alarm indicates failure of the lower mechanical seal in the pump. This will be an alarm light only and will not shut down the pump.		G. The control center shall include an hour meter for each pump to register the elapsed operating time of each pump.	
G. The control center shall have a high and low water alarm built into the main enclosure. The alarms shall consist of a flashing alarm light with red Lexan plastic cover or red glass globe with metal guard mounted on top of the enclosure such that it is visible from all directions. An alarm horn shall be mounted on the side of the enclosure. A push to test horn and light button as well as a push to silence horn button shall be provided and mounted on the side of the enclosure.		I. The control center shall include a condensate heater to protect against condensation inside the enclosure. The heater shall be placed so as not to damage any other component or wiring in the control center.	
H. The control center shall include lightning protection and a phase monitor relay to shut down the control circuit and protect the equipment due to loss of phase or phase reversal. The three phase sequence voltage relay shall be of the 8-pin connector type.		J. The control center shall incorporate an alternator selector switch to allow selection of automatic alternation or manual selection of the lead pump.	
K. The control center shall incorporate an alternator selector switch to allow selection of automatic alternation or manual selection of the lead pump.		L. The control center shall include a GFI convenience outlet with 20 amp breaker and suitable transformer or power supply to provide 110 volt single (1) phase power to the convenience outlet.	
M. Section not used		N. Section not used.	
O. A minimum four (4) inch PVC Schedule 40 wall conduit shall be provided from the wet well basin to the control center which will allow the pump power cables, sensor cables and level monitoring cables to be pulled through without difficulty. The conduit shall allow the use of one (1) piece cables from the pumps and level system to the control center. The conduit shall be sealed at the control center to avoid entrance of sewer gases into the control panel.		P. The control center and associated components shall be mounted on a concrete pad. The control center shall be located so as to provide safe access to the panel while wet well hatch doors are opened, and shall be positioned so as not to be between the access drive and the wet well.	
Q. All components of the control center shall be available from local sources. In particular, items such as circuit breakers, overload protection, relays, etc. shall be available and in stock by local sources.		R. In order to maintain unit responsibility and warranty on the pumping equipment and control center, the control center must be furnished by the pump manufacturer as suitable for operation with the pumping equipment.	
6.09 Level Monitoring System		A. Components	
The wet well level shall be monitored using an Integrated Level Management Pump Control System. The microprocessor based electronic control system shall be installed within the control panel. The level-management system shall be furnished as a complete factory assembled unit requiring only field installation and required electrical and sensor connections. The level-management system shall sequence the pumps automatically, in response to changing wet well levels. The control system shall be a complete automatic control package consisting of pump sequencing logic, operator interface terminal, and discreet operator controls. The system shall operate completely unattended and shall provide annunciation of abnormal conditions. The entire assembly shall be completely pre-wired and function-tested at the factory prior to shipment.		The transducer housing shall be 316 stainless-steel fitted with a stainless-steel cable support bracket. Liquid level shall be sensed by the deflection of a stainless-steel diaphragm having a displacement of less than 5 cu.mm from 0 to full scale. The atmospheric pressure side of the diaphragm shall be bonded to a silicon strain sensor coupled to an integral bridge circuit. Air leakage into the diaphragm shall be prevented directly to atmosphere. Transmitters requiring separate, sealed, expansion breathing systems shall not be accepted. Electrical connection shall be 2 wire, 4-20 mA, and shall be reverse polarity and surge protected. Accuracy shall be 0.6 percent of full scale. Full scale range shall be 0 to 14 feet (or as shown on the plans). Temperature compensated range shall be -20°F to 122°F., maximum operating temperature shall be -40°F to 176°F. The level-transducers shall be field-adjustable from above the wet-well, via the use of a chain & anchor system, consisting of a stainless-steel chain, stabilized by a cast-iron anchor, as shown on the drawings.	
The level management system shall alternate the lead pump after each cycle. Pumps which are faulted or out of service shall automatically be omitted from the alternation scheme. The operator shall also be capable of manually selecting the lead pump.		The level management system shall alternate the lead pump after each cycle. Pumps which are faulted or out of service shall automatically be omitted from the alternation scheme. The operator shall also be capable of manually selecting the lead pump.	
The wet well level shall be displayed on the controller's color touch-screen operator interface terminal. Each pump and alarm set point shall also be displayed according to pump-on and pump-off set points shall be independently adjustable providing true differential level control. All set points shall be adjusted via the LMS-II operator-interface color touch-screen.		The programmable logic controller (PLC) shall include integral processor, power supply, input and output circuits and communications ports. This specification requires the use of a non-proprietary, commercially available PLC and touch screen operator interface device. Universal, proprietary controllers and/or displays with separate function buttons, indicators and complex multi-level function trees will not be considered equal or acceptable. A built-in real-time clock shall provide reference for time-based control applications. The unit shall include a memory module for backup and portability of user program. Processor on board memory shall be non-volatile. The unit shall provide a minimum of 4K user program space, 4K user data space, 128K data logging and up to 64K for recipe. The processor shall function as specified over an ambient temperature range of -4°F to +140°F with a relative humidity up to 95%, non-condensing. The PLC shall be UL listed for industrial control equipment. To facilitate inter-connectivity the PLC shall include two communications channels, an isolated RS-232/485 communication port and an Ethernet/IP port.	
The operator interface panel shall show system status and shall provide the operator with convenient soft screen touch keys for the entry of pass codes, set points, and commands. Screen menu keys shall produce instructional screens that will guide the operator in set point entry and alarm diagnosis. Multi-level password protection shall be available to prevent unauthorized set point changes. All information displayed on the screen shall be in plain English and simple graphic representations of the system components. An alarm log shall be provided at the operator interface. This screen shall allow the user to view a summary of a minimum of 20 alarm occurrences. The screen shall show the time and date at the onset of the alarm.		Statistical Display Screen: Pump Status (Off/Running/Alarm) (Each Pump) Pump Running Hours (Each Pump) Wet-Well Level Alarm History	
The operator interface shall consist of an 800 x 600-pixel, color transmissive, TFT active-matrix LCD with backlight. The viewing area shall be a minimum of 5.5" x 4.16". The touch panel shall be sealed from dirt & moisture and shall not exhibit parallax within the viewing angle.		- Alarm Conditions	
The operator interface shall consist of an 800 x 600-pixel, color transmissive, TFT active-matrix LCD with backlight. The viewing area shall be a minimum of 5.5" x 4.16". The touch panel shall be sealed from dirt & moisture and shall not exhibit parallax within the viewing angle.		- Transducer Failure	
The operator interface shall consist of an 800 x 600-pixel, color transmissive, TFT active-matrix LCD with backlight. The viewing area shall be a minimum of 5.5" x 4.16". The touch panel shall be sealed from dirt & moisture and shall not exhibit parallax within the viewing angle.		Set-Point Screens:	
The operator interface shall consist of an 800 x 600-pixel, color transmissive, TFT active-matrix LCD with backlight. The viewing area shall be a minimum of 5.5" x 4.16". The touch panel shall be sealed from dirt & moisture and shall not exhibit parallax within the viewing angle.		- Level Set-Points	
The operator interface shall consist of an 800 x 600-pixel, color transmissive, TFT active-matrix LCD with backlight. The viewing area shall be a minimum of 5.5" x 4.16". The touch panel shall be sealed from dirt & moisture and shall not exhibit parallax within the viewing angle.		- Alarm Set-Points	
A back-up high level mechanical type float switch shall be provided for high level alarm.		The contractor shall submit a minimum of one (1) electronic copy of all drawings to the Engineer for approval. Of these, one copy will be returned to the contractor with appropriate action taken.	
Each set of shop drawings shall include, but not necessarily be limited to:		- Drawings showing dimensions	
- Control details and electrical schematic diagrams.		- Performance data including, pump curves, and motor data.	
- All other information necessary to enable the Engineer to determine whether the proposed equipment meets the requirements.		INSTALLATION AND OPERATING INSTRUCTIONS	
One (1) copy of a manual, containing installation instructions, operating instructions, wiring diagrams, parts list, and, where applicable, test data and curves shall be provided.		The contractor shall provide the services of factory-trained representative for a maximum period of one (1) day to start up the station and to instruct the owner's operating personnel in the operation and maintenance of the equipment provided.	
WARRANTY		The manufacturer shall warrant his product to be free from defects in workmanship for a period of one (1) year from date of completion. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the contractor shall not be accepted. The contractor shall be solely responsible for the warranty.	
In the event a component failure to perform as specified or is proven defective during the warranty period, excluding items of normal wear and tear, normally expended during operation, the manufacturer shall provide a replacement part without cost to the owner.		This warranty shall be void only if the product is installed, serviced, and operated under normal conditions, in accordance with the manufacturer instructions.	
NOT FOR CONSTRUCTION		LIFT STATION DETAILS - 2	
FRANKLIN FLATS APARTMENTS		UPPER SHELBYVILLE ROAD	
FRANKLIN, IN 46131		NOT FOR CONSTRUCTION	
STATE DEVELOPMENT ENGINEERS		CONSULTING ENGINEERS	
LAND SURVEYORS		INDIANAPOLIS	
INDIANAPOLIS		INDIANAPOLIS	
PHONE: (317) 791-2171		PHONE: (317) 791-2171	
SHEET		SHEET	
C8.5		C8.5	
20 OF 24		20 OF 24	



Interior Pipe
Ductile Iron Pipe (Dip): Flanged Class 53, Pipe Barrel Conforming To ANSI/AWWA C151/A21.51.
Flanged Pipe Joints Conforming To ANSI/AWWA C115/A21.15
Flanged Interior Fittings: Conforming To ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11.
Bituminous Coated And Cement Mortar Lining shall conform to ANSI A21.4 (AWWA C-104).
Stainless Steel 304 Or 316 Nuts And Bolts shall be installed. (See Sheet LS2 for coating requirements)

Forcemain Pipe:
Ductile Iron Pipe (Dip): Mechanical Joint Class 52, Pipe Barrel Conforming To ANSI/AWWA C151/A21.51.
Flanged Pipe Joints Conforming To ANSI/AWWA C115/A21.15
Fittings: Conforming To ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11.
Bituminous Coated And Cement Mortar Lining shall conform to ANSI A21.4 (AWWA C-104).
Stainless Steel 304 Or 316 Nuts And Bolts shall be installed.

Underground Fittings
All fittings shall be ductile-iron C110 with push-on or mechanical joints conforming to ANSI/AWWA C110/a21.10, or ANSI/AWWA C153/a21.53, ANSI/AWWA C111/a21.11 and cement lined ANSI a21.4 (AWWA C104).
All mechanical joint fittings shall use "Megalog" retainer glands, stainless steel nuts and bolts.
Cost of fittings shall be considered incidental to the cost of the pipe.
All ductile iron watermain and fittings shall be encased in 12-mil polyethylene in accordance with ANSI a21.5 (AWWA C105). Provide two layers of encasement for directional drilling.

Gate valves
Shall be used on all watermain 3" and larger. All valves shall turn counter-clockwise To open.
Valves shall be ductile iron body resilient wedge gate valves with non-rising stems Conforming to AWWA C-515.
The valves shall have mechanical joints.
All fasteners on the valve body shall have stainless steel 304 or 316 nuts and bolts.

Project: Franklin Flats Apartments
City, State: Franklin, IN
Project: 11582
Version: Final

FLOW:		
Used for Pump Size		
CONDITIONS	Based on 3.0 ft/s	Based on PE
Apartments		
Residence Occupancy:		
Population Equivalent (P.E.):	465	405
Ave. Flow per Person (GPD)	100	100
Q average (GPD):	46,500	40,500
Q average (GPM):	32	28
Surge Factor (per IEPA)	3.99	4.00
Q peak - (GPM):	130	113

WET WELL ELEVATION/LEVELS			
Rim Elevation of Basin (ft):	730.65	Storage:	
Station Disch. Pipe Elev. (ft):	722.00	4" Forcemain	3.7
Lowest Invert Elevation (ft):	717.29	8" Sewer	7.0
Alarm Elevation (ft):	717.29	Basin Dia. (ft):	1.70
Dist. Between Levels (ft):	0.50	Storage Height (ft):	
Override Level (ft):	716.79	Storage Volume (gal):	480.00
Pump "on" Level (ft):	716.29		
Pump "off" Level (ft):	714.59	Pump Suction:	4.0
Basin Bottom (ft):	711.59		
Overall Basin Height (ft):	19.00	Storage Volume Based On: 15 x Pump GPM/4	
		490 Gallons	

Use	Units	PE	Total PE
7.0' Basin	60	2.0	120
287.9 Gallons/Foot	60	3.0	180
1.70' Operating Sump	30	3.5	105
	150		405

*Pipe Head Loss is calculated using William-Hazen Formula:
Head Loss = 0.2083*((100/C)*1.85*((V*1.85)/(D*4.8655)))^(L/100)

STATIC:			
Highest Point of F.M. (ft):	730.16	Discharge MH	
Pump "off" Level (ft):	714.59		
Static Head:	15.6		

STATION LOSSES:			
Station "C" Factor: 100			
Dia. of Station Piping (in): 4.16 DIP CL53			
Number of Fittings			
Items per Pump	Item	Eq. Length	
0	Plug	0.0	
1	Gate	2.1	
0	45 Bends	0.0	
0	Long 90	0.0	
3	Std 90	30.6	
Number of Fittings			
Items per Pump	Item	Eq. Length	
1	Std Tee	20.3	
0	Short 90	0.0	
1	Swing Ck	26.0	
0	Angle Val	0.0	
0	Globe Val	0.0	

Eq. Lgth.due to Fittings (ft) 79
Length of Straight Pipe (ft) 7.4
Total Eq. Lgth. of Pipe (ft): 86.4

Flow (gpm)	0	50	100	130	130	150
Station Loss (ft)	0.0	0.2	0.9	1.4	1.4	1.9
Velocity (ft/sec)	0.0	1.2	2.4	3.1	3.1	3.5

FORCE MAIN LOSSES:			
Forcemain "C" Factor: 100			
Dia. of Forcemain (in): 4.22 DIP CL 52			
Number of Fittings			
Items per Pump	Item	Eq. Length	
0	Plug	0.0	
0	Gate	0.0	
2	45 Bends	9.4	
0	Long 90	0.0	
0	Std 90	0.0	
Number of Fittings			
Items per Pump	Item	Eq. Length	
0	Std Tee	0.0	
0	Short 90	0.0	
0	Swing Ck	0.0	
0	Angle Val	0.0	
0	Globe Val	0.0	

Eq. Lgth.due to Fittings (ft) 9.4
Length of Forcemain (ft) 557.0
Total Eq. Lgth. of Pipe (ft): 566.4

Flow (gpm)	0	50	100	130	130	150
Forcemain (ft)	0.0	1.5	5.4	8.7	8.7	11.4
Velocity (ft/sec)	0.0	1.1	2.3	3.0	3.0	3.4

SYSTEM HEAD CONDITIONS:						
Loss Type	Flow (gpm)					
	0	50	100	130	130	150
Static	15.6	15.6	15.6	15.6	15.6	15.6
Station	0.0	0.2	0.9	1.4	1.4	1.9
Forcemain	0.0	1.5	5.4	8.7	8.7	11.4
TDH (ft)	15.6	17.3	21.8	25.7	25.7	28.8

PUMP DESIGN CONDITIONS:			
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DUPLEX SYSTEM:
Each pump to be rated at: 130 GPM at a TDH of 25.7 (FT)

NO.	DATE	REMARKS

NOT FOR
CONSTRUCTION

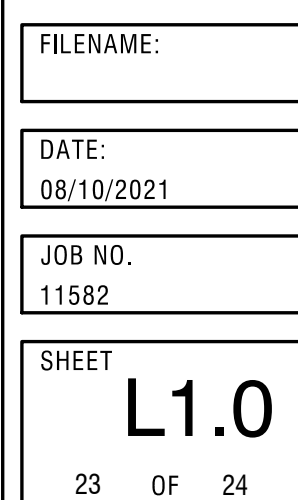
LIFT STATION DETAILS - 3
FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS
Indianapolis
Indiana
Phone: (317) 795-2184



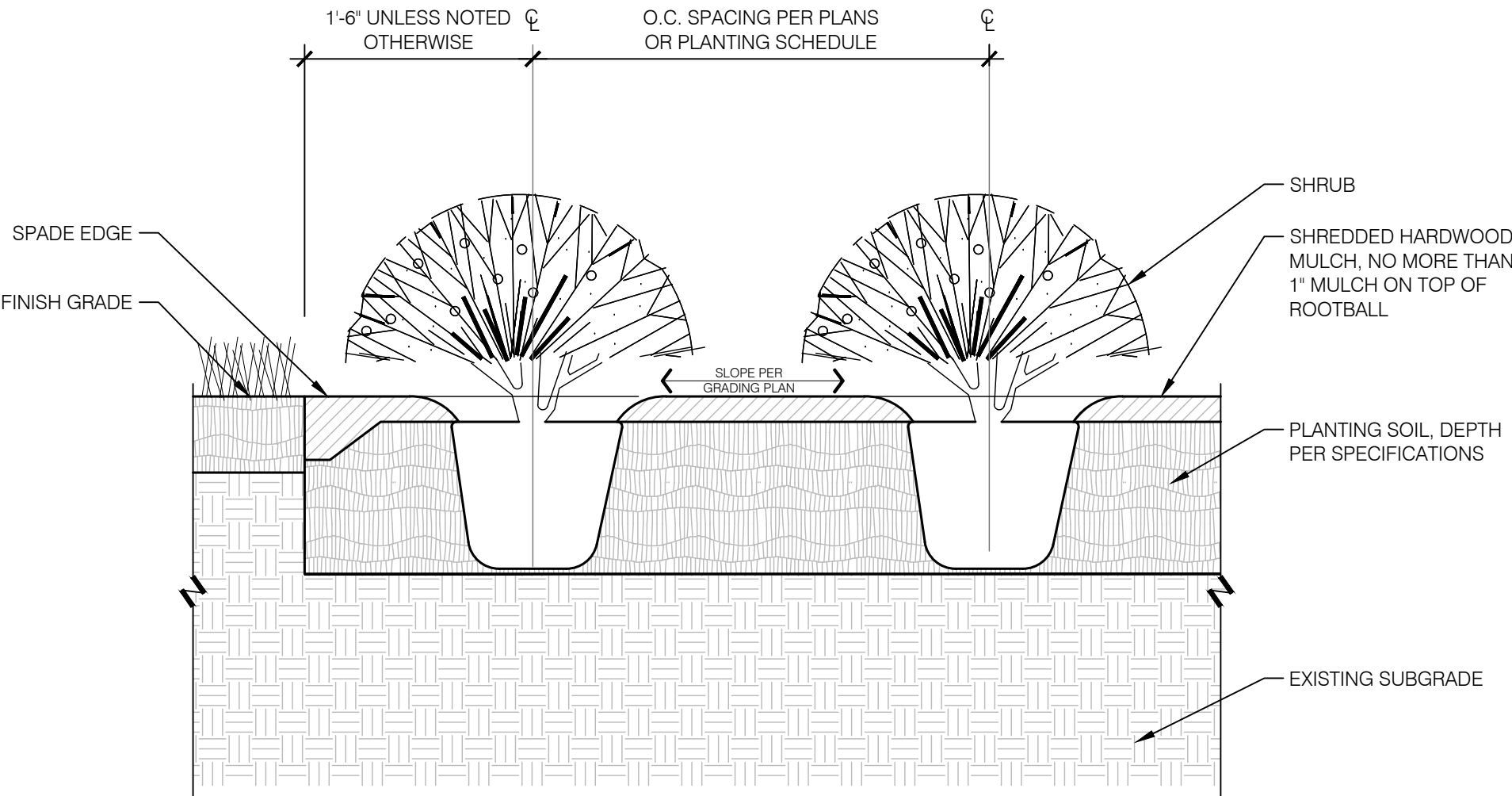
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08/10/2021
JOB NO.
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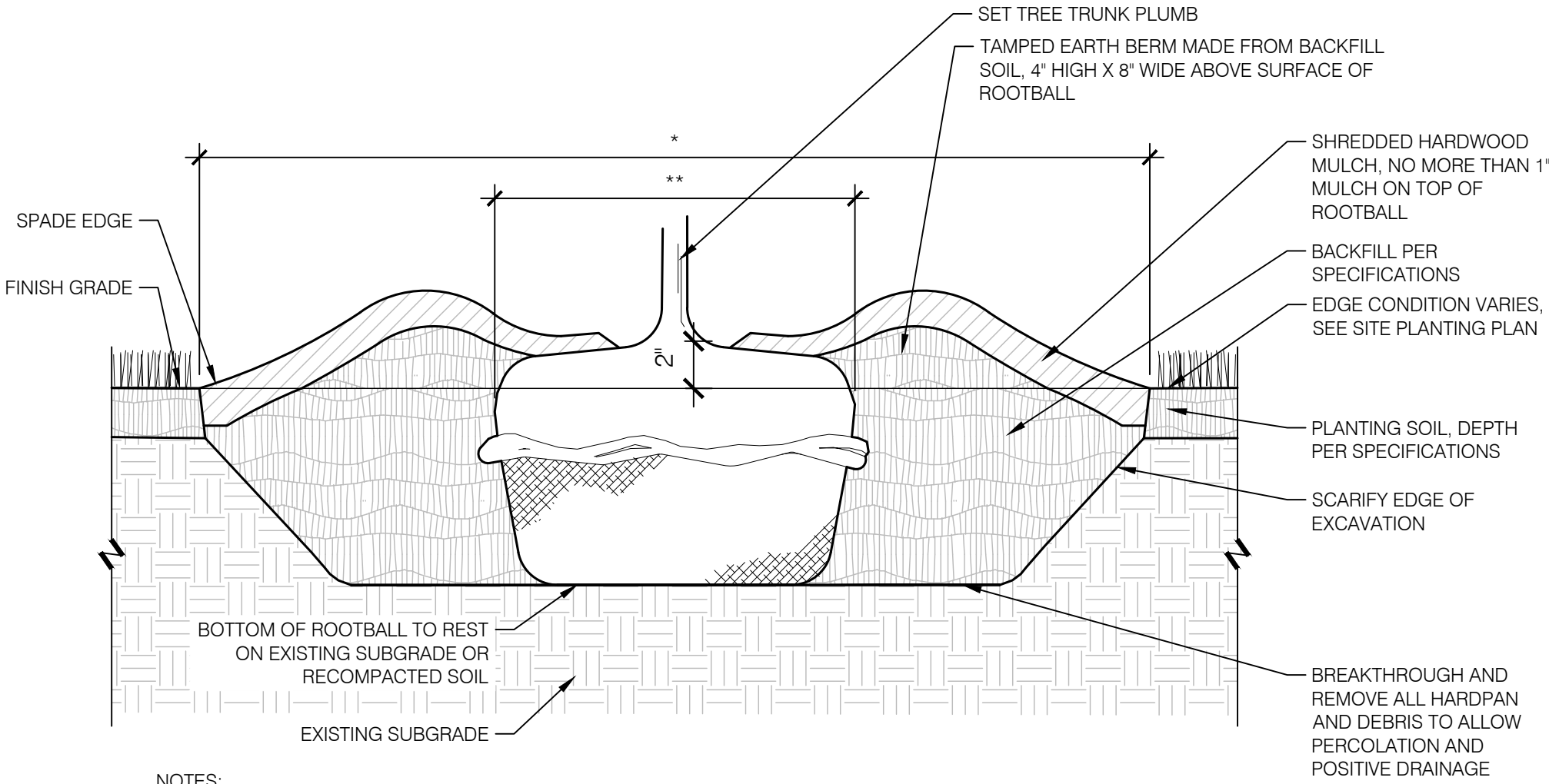
GENERAL NOTES:

- BROWNING DAY CLAIMS NO RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED IN THE SURVEYS. IF ANY DISCREPANCIES ARE FOUND ON THE SURVEY PLAN OR FROM ACTUAL FIELD CONDITIONS THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR CONTRACTORS TO OBTAIN FEDERAL, STATE, COUNTY, CITY, AND LOCAL PERMITS FOR WORK REQUIRED UNLESS OTHERWISE NOTED. THE CONTRACTOR OR CONTRACTORS ARE RESPONSIBLE TO PAY FOR REQUIRED PERMITS BY AGENCIES MENTIONED ABOVE UNLESS OTHERWISE NOTED BY THE CONTRACT OR SPECIFICATIONS.
- SEED OR SOD DAMAGE TO EXCAVATED AREAS AFTER FINAL GRADING UNLESS OTHERWISE NOTED. SEE PLANTING PLAN AND/OR EROSION CONTROL PLAN FOR DIRECTION AND VERIFICATION.
- DAMAGE TO EXISTING IMPROVEMENTS, EXCAVATION AND /OR REMOVAL OF EXISTING IMPROVEMENTS SHALL BE RESTORED, RECONSTRUCTED, OR REPLACED DURING CONSTRUCTION BY THE CONTRACTOR AT HIS EXPENSE.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE MUD, DIRT, GRAVEL, AND ANY OTHER MATERIALS TRUCKED ONTO ANY PUBLIC OR PRIVATE STREETS OR SIDEWALKS ON OR OFF THE PROJECT SITE.
- PROVIDE SMOOTH TRANSITION FROM NEW AREAS TO EXISTING FEATURES AS NECESSARY.
- IN CASE OF DISCREPANCIES BETWEEN THE PLAN AND PLANT LIST, THE PLAN SHALL DICTATE. IF PLANT IDENTIFICATION BOX QUANTITY SHOWN ON PLAN DIFFERS FROM GRAPHIC PLANT CIRCLE COUNT, THE GRAPHIC CIRCLE COUNT SHALL DICTATE. IF IN QUESTION CONTACT THE LANDSCAPE ARCHITECT.
- NO SUBSTITUTION OF PLANT MATERIAL IS ALLOWED. IF PLANTS ARE SHOWN TO BE UNAVAILABLE, NOTIFY LANDSCAPE ARCHITECT PRIOR TO BID DATE IN WRITING. PLANTS SHALL BE INSPECTED AND TAGGED WITH PROJECT IDENTIFICATION AT NURSERY OR CONTRACTOR'S OPERATION PRIOR TO MOVING TO JOB SITE. PLANTS MAY ALSO BE INSPECTED AND APPROVED OR REJECTED AT THE JOB SITE.
- PLANTS ARE TO MEET OR EXCEED AMERICAN STANDARDS FOR NURSERY STOCK, CURRENT EDITION, AS SET FORTH BY AMERICAN ASSOCIATION OF NURSERYMEN.
- PLANTS AND OTHER MATERIAL TO BE STORED ON SITE WILL BE PLACED WHERE THEY WILL NOT CONFLICT WITH CONSTRUCTION OPERATIONS.
- PLANTING BEDS SHALL HAVE A SPADED EDGE TO A DEPTH EQUAL TO SPECIFIED MULCH THICKNESS, UNLESS OTHERWISE NOTED.
- SEED AND STRAW ALL DISTURBED AREAS.



2 MASS SHRUB PLANTING

L1.1 1" = 1'-0"



- NOTES:
- PLANT MATERIAL AND MULCH TO FOLLOW SPECIFICATIONS OUTLINED IN SECTION 32 93 00
 - PLANTING SOIL AND SUBGRADE TO BE PREPARED PER SPECIFICATIONS OUTLINED IN SECTION 32 91 00
- * OVER DIG TREE PIT PER SPECIFICATIONS
** TREE ROOTBALL PER SPECIFICATIONS

1 TREE PLANTING PIT (LEVEL GRADE)

L1.1 1" = 1'-0"

				REMARKS
NO.	DATE			

NOT FOR CONSTRUCTION

PLANTING DETAILS

FRANKLIN FLATS APARTMENTS
UPPER SHELBYVILLE ROAD
FRANKLIN, IN 46131

CONSULTING ENGINEERS
SITE DEVELOPMENT ENGINEERS
LAND SURVEYORS

Indianapolis
Phone: (317) 779-2194

SPACECO INC.

FILENAME:

DATE:
08/10/2021

JOB NO.
11582

SHEET
L1.1
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