

GENERAL

- Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
- No geological information is shown on these plans.
- The utility locations shown on these plans are taken from utility company records and are approximate only. They do not constitute actual field locations. The contractor shall verify the location and depth of all utilities prior to construction.
- The contractor shall adhere to the provisions of the Senate Bill Number 583,78th General Assembly of the State of Missouri. The bill requires that any person of firm doing excavation on public right-of-way do so only after giving notice to, and obtaining information from, utility companies. State law requires 48 hours advance notice. The names and telephone numbers of utility companies, even if only remotely involved with this project are provided. Prior to commencement of work, the contractor shall notify all those companies which have facilities in the near vicinity of the construction to be performed.
- All waste material resulting from the project shall be disposed of off-site by the contractor.
- All excavation shall be unclassified. No separate payment will be made for rock excavation.
- The contractor shall control the erosion and siltation during all phases construction, and he shall keep the streets clean of mud and debris.
- All manholes, catch basins, utility valves and meter pits to be adjusted or rebuilt to grade as required. All existing utilities shall be adjusted as required.
- Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated; shall be free from muck and mud, and shall be sufficiently stable to remain firm and intact under the feet of the workmen or machinery engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
- The contractor is responsible for providing all surveying that may be required.
- Easements indicated on these drawings will be provided for on the final plat and properly dimensions. Easements outside the platted area will be provided for by separate documents prior to issuance of a construction permit.

STREETS & STORM SEWER

- All construction shall follow the City of Lee's Summit Design and Construction Manual as adopted by Ordinance 5813.
- High Density Plastic Pipe (HDPE) shall conform to A.A.S.H.T.O. M-294.
- Reinforced Concrete Pipe (RCP) shall conform to ASTM Designation C-76-62T (Class III).
- Curb Return Radius, 15' minimum unless shown otherwise.
- The top 6" of roadway subgrade shall be undercut and compacted to minimum 95% of maximum density at optimum moisture as determined by AASHTO T99, Method B. Contractor shall provide for moisture-density and relative density tests on roadway subgrade by an accepted testing firm. Contractor shall provide for in-place density test on compacted subgrade by an accepted testing firm. In-place density test shall be conducted every 50-feet along the proposed roadway. Contractor shall provide testing results to Engineer.
- All Flared End Sections shall be installed with Toe Wall. (See Toe Wall Detail on Storm Sewer Detail Sheet)

WATER

- All construction shall follow the City of Lee's Summit Design and Construction Manual as adopted by Ordinance 5813 and with all the requirements of the Missouri Department of Health and Missouri Clean Water Commission.
- Class 50 Ductile Iron Pipe or C900 pipe shall be used per city specifications
- All fittings shall be lined inside and out with an asphaltic base or bitumastic coating, and shall be megalug.
- Fire Hydrants shall be Watrous Pacer WG-67 with non-rising stem or approved equal by the City Engineer. Hydrants shall have 5 1/4" valve with 4 1/2" pumper nozzle and 2-2 1/2" hose nozzles (left hand opening).
- Gate Valves to be on city approved product list valves 12 inches and larger shall be Butterfly valves manufactured by the Henry Pratt Company or City Engineer Approved equal Left hand opening minimum 200# testing AWWA.
- Valve boxes shall be Clay & Bailey # P1108 or any on city approved product list. All boxes to be installed out of pavement areas.
- Water lines are to be constructed to a depth of 4 feet below and back of street curbs. Street grading is to be complete prior to waterline placement.
- Easements for water lines located outside the platted area will be provided for by separate documents after the Final Plat is recorded.
- All tees, bends, plugs, valves and hydrants shall be provided with reaction blocking. Pre-cast blocks shall not be used.
- After water mains have been laid and partially backfilled, they shall be subject to a hydrostatic pressure test of not less than 150 psi in accordance with AWWA C605. The line shall be pressurized to test pressure and closed for two hours. At the end of the two-hour period, the line shall be depressurized and the volume of water required to restore pressure shall be measured. The maximum amount of water to restore pressure shall be 0.5 gallons per 1000 feet of tested main. Testing shall be done by Contractor in presence of Engineer.
- Before connecting to City water mains and prior to wet tap, the new main shall be disinfected in accordance with AWWA C651. A 1 percent solution of chlorine shall be pumped into the water main, such that the water in the line will not have less than 25 mg/l of free chlorine. At the end of a 24 hour period, the water shall be tested to ensure that at least 10 mg/l of free chlorine. After satisfactory testing of chlorination, the main shall be flushed. Disinfection testing and flushing shall be done by Contractor in presence of Engineer.
- After final flushing and before the pipeline is placed in service, two samples shall be collected and shall be tested for bacteriological quality in accordance with the State Department of Health or other regulatory agency. Satisfactory results for both samples is required for successful completion of bacteriological testing. Contractor shall conduct all testing and provide testing results to Engineer.
- Sample Taps must be included in the new line, no less than two (2) feet no more than ten (10) feet from where the new water line connects to the existing lines at each end.
- A representative of the city water department must be present for:
 - Disinfecting
 - Pressure Testing
 - Bacteria Testing (a minimum of three required at prescribed locations to be determined by the water dept.)

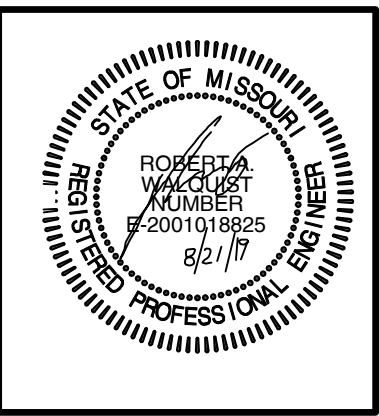
CIVIL PLANS FOR

I-470 BUSINESS AND TECHNOLOGY CENTER LOT 13A

A REPLAT OF LOTS 13, 14, 21, & 22 OF I-470 BUSINESS AND TECHNOLOGY CENTER SECTION 20, TOWNSHIP 48, RANGE 31 LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

ADDRESS: 2700 MCBRAINE DR

DEVELOPER:
BLUE SPRINGS SAFETY STORAGE LLC
1120 NW EAGLE RIDGE BLVD.
GRAIN VALLEY, MISSOURI 64029
Ph.# 816-229-8115



SHEET INDEX

- C100 CIVIL PLANS COVER SHEET
- C101 SITE SURVEY
- C200 FINAL DEVELOPMENT LAYOUT
- C201 SITE LANDSCAPING PLAN
- C210 SITE DETAIL SHEET
- C300 SITE GRADING PLAN
- C301 SITE ESC PHASE 1 & 2 PLAN
- C302 SITE ESC DETAILS
- C303 SITE ESC DETAILS
- C400 SITE STORM DRAINAGE PLAN AND CALCULATION
- C401 STORM LINE 1 THRU 5
- C402 STORM LINE DETAILS
- C600 PUBLIC WATER MAIN IMPROVEMENT PLAN
- C601 PUBLIC WATER MAIN DETAILS
- C700 SITE UTILITY PLAN

LEGAL DESCRIPTION:
I-470 BUSINESS AND TECHNOLOGY CENTER LOT 13A
A REPLAT OF LOTS 13, 14, 21, & 22 OF I-470 BUSINESS
AND TECHNOLOGY CENTER A SUBDIVISION IN LEE'S
SUMMIT, JACKSON COUNTY, MISSOURI

UTILITY NOTES:

- SANITARY SEWER**
NO NEW PUBLIC MAINS ARE PROPOSED.
CONTRACTOR SHALL LOCATE ALL EXISTING SEWER
LATERALS AND CAPED PER CITY REQUIREMENTS.
A NEW LATERAL SHALL BE INSTALLED AS SHOWN
- STORM SYSTEM**
ALL STORM SEWER WILL REMAIN PRIVATE AND WILL
TIE TO EXISTING PUBLIC STORM SYSTEM AT EXISTING
INLETS ONLY.
DOWN SPOUT SHALL BE COLLECTED AND ROUTED TO
PRIVATE OF PUBLIC STRUCTURE
- WATER CONNECTION**
NO NEW WATER MAIN OR HYDRANTS ARE PROPOSED
DOMESTIC METER SHALL BE PLACED AS SHOWN
FIRE LINE SHALL BE LOCATED AS SHOWN.

PERVIOUS VS IMPERVIOUS CALCULATIONS

LOT SIZE	179,505 SF
IMPERVIOUS SURFACES	
BUILDINGS (PORCHES)	68,222 SF
DRIVES/PARKING	
WALKS/MISC.	78,310 SF
TOTAL	146,532 SF
CALCULATIONS	
-/- =	82% IMPERVIOUS
	18% PERVIOUS (GREEN)

SITE DATA TABLE:

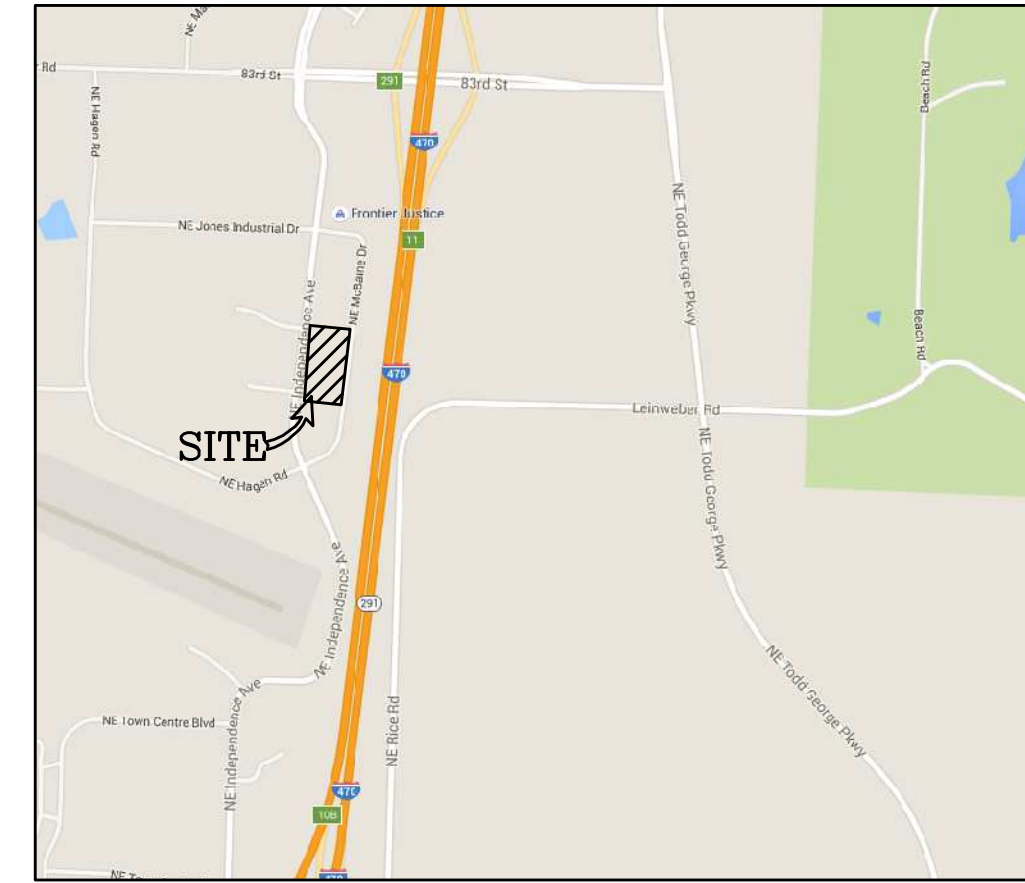
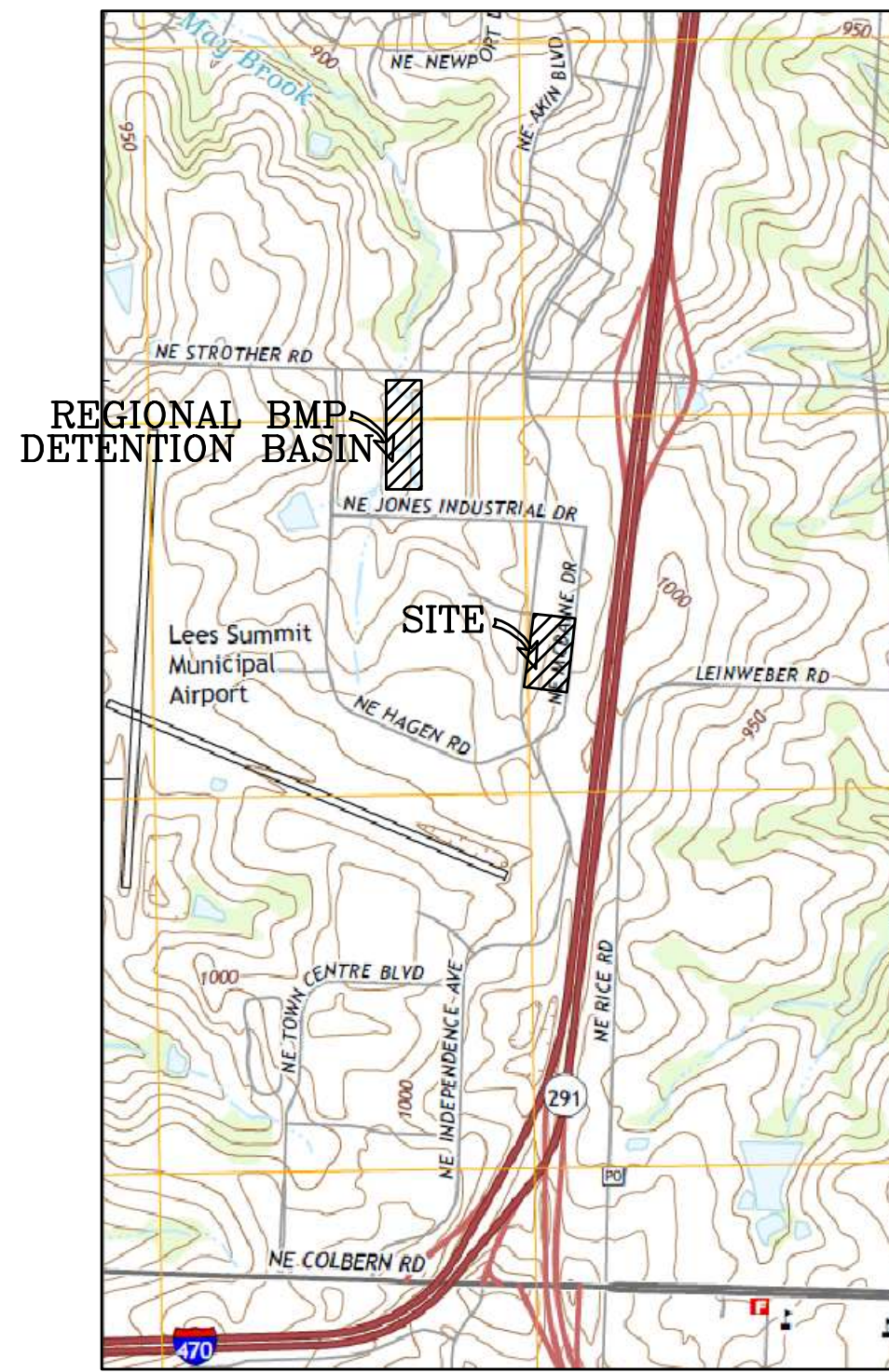
- EXISTING ZONING = PMIX
- LAND USE = INDUSTRIAL WAREHOUSE USES
- TOTAL LOT AREA = 179,505 sf = 4.12ac
- TOTAL BUILDING FOOTAGE = 68,222sf
- FLOOR AREA RATION (FAR) = 68,222 / 179,505 = 0.38 = 38%
- ESTIMATED 15% OFFICE = 10,136sf
- PARKING STALLS
REQUIRED STALL = 4 PER 1,000sf OFFICE
(10,136 / 1,000) = 40 STALLS
1 PER 1,000sf WAREHOUSE
(57,436 / 1,000) = 57 STALLS
TOTAL REQUIRED = 97
- PROPOSED STALLS
STANDARD 20'X9' STALLS = 99
ADA 20'X9' STALL WITH ISLE = 4
TOTAL = 103 STALLS
- TOTAL GREENS SPACE 33,620sf = 19%

**PRIVATE IMPROVEMENTS
NOT FOR BIDS.**

- CURB = 2,247sf
- CONCRETE HEAVY = 36,645sf
- CONCRETE LIGHT = 16,487sf
- SITE SIDEWALK / CURB WALK = 3,549sf
- CITY SIDEWALK = 2,436sf

**PUBLIC IMPROVEMENTS
NOT FOR BIDS.**

- CITY SIDEWALK = 2,436sf
- PUBLIC FIRE HYDRANT = 1
- 6" WATER MAIN = 67 L.F.



LOCATION MAP



MAP SCALE 1" = 1000'

N

FIRM
FLOOD INSURANCE RATE MAP
JACKSON COUNTY,
MISSOURI
AND INCORPORATED AREAS

PANEL 430 OF 625
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	ENCL.	SHEET
JACKSON COUNTY	2909SC0430G	000	0
LEE'S SUMMIT	2909SC0430G	000	0
LOT 13A			

Map Number 2909SC0430G
Map Revised January 20, 2017
Federal Emergency Management Agency



UTILITIES

<p>LEE'S SUMMIT PUBLIC WORKS 220 SE GREEN STREET LEE'S SUMMIT, MISSOURI 64063 (816) 969-1800</p> <p>KANSAS CITY POWER & LIGHT CO. P.O. BOX 219330 KANSAS CITY, MO 64121-9330 (816) 471-5275</p> <p>MISSOURI ONE-CALL 1-800-344-7483</p>	<p>MO GAS ENERGY P.O. BOX 219255 KANSAS CITY, MO 64141 (816) 756-5252</p> <p>TELEPHONE COMPANY CENTURY LINK P.O. BOX 2961 PHOENIX, AZ 85062 (800) 788-3600</p>
--	--

**BEFORE YOU
DIG - DRILL - BLAST**



Call
1-800-344-7483 (MISSOURI)
1-800-344-7233 (KANSAS)

PROJECT CONTACTS: ROBERT WALQUIST, P.E.
821 NE COLUMBUS ST
LEE'S SUMMIT, MISSOURI 64063
Phone: (816) 550-5675

CIVIL PLANS COVER SHEET

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential &
Commercial Site Development
821 NE Columbus St
Lee's Summit, Missouri 64063
Phone: (816) 550-5675
email: rwalquist@quistengineering.com

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6-20-19

REVISIONS

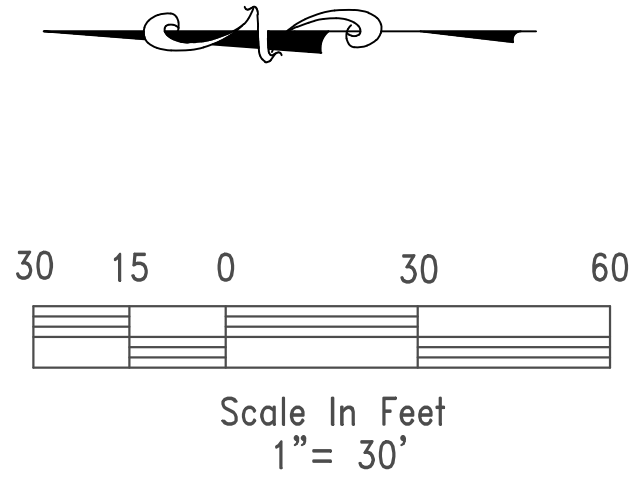
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SHEET NO.

C100

JOB NO.

E18-337



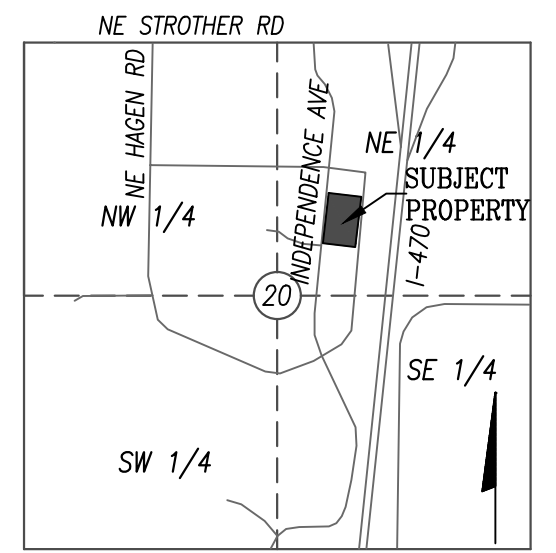
- SYMBOL LEGEND**
- SET 1/2" REBAR AND CAP
RLS-2134, MO
 - FOUND MONUMENT (AS NOTED)
 - R/W RIGHT OF WAY
 - GM GAS METER
 - WV WATER VALVE
 - ⊕ FIRE HYDRANT
 - GUY WIRE
 - PP POWER POLE
 - ⊙ SEWER MANHOLE
 - FENCE
 - G GAS LINE
 - SAN SANITARY SEWER LINE
 - STM STORM SEWER LINE
 - FO UNDERGROUND FIBER OPTIC LINE
 - W WATER LINE
 - OHE OVERHEAD ELECTRIC LINE
 - FO UNDERGROUND FIBER OPTIC LINE

BEFORE YOU DIG - DRILL - BLAST

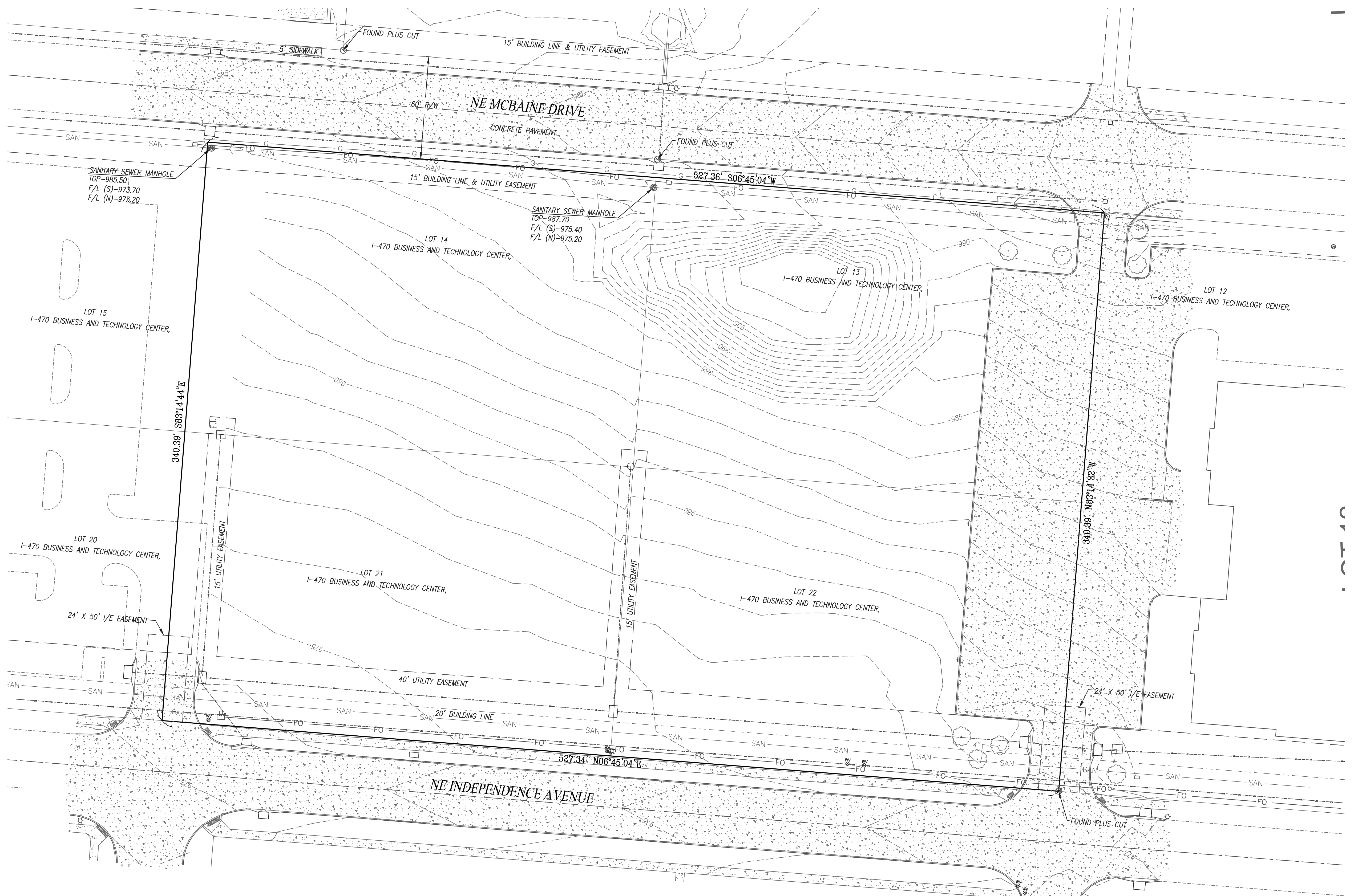


Call
1-800-344-7483 (MISSOURI)
1-800-344-7233 (KANSAS)

UTILITY NOTE:
THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES FOR FIELD LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO ANY EXCAVATION AND FOR MAKING HIS OWN VERIFICATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.



LOCATION MAP
SCALE=1"=200'
SECTION 20
TOWNSHIP 48 RANGE 31



- NOTES:**
- THE SUBJECT PROPERTY CONTAINS 179,505 SQUARE FEET MORE OR LESS
 - ACCESS TO PROPERTY VIA PUBLIC RIGHT OF WAY, NE MCBAIN DRIVE AND NE INDEPENDENCE AVENUE.
 - UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE FOLLOWING:
 - FIELD SURVEY METHODS FOR OBSERVABLE FACILITIES.
 - THERE ARE NO BUILDINGS ON SUBJECT PROPERTY.
 - SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT SURVEYED OR CONSIDERED AS A PART OF THIS SURVEY. NO EVIDENCE OR STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONDITIONS THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS PROPERTY.
- BASIS OF BEARING:**
THE BASIS OF BEARING FOR THIS SURVEY IS GRID BEARINGS AS TAKEN FROM THE PLAT OF "I-470 BUSINESS AND TECHNOLOGY CENTER".
- ENCROACHMENT:**
THERE ARE NO ENCROACHMENTS, EXCEPT AS SHOWN ON SURVEY.
- ZONING REGULATIONS:**
1. ACCORDING TO THE CITY OF LEE'S SUMMIT, MISSOURI THE SUBJECT PROPERTY IS ZONED PMX (PLANNED MIXED USE DISTRICT)

FLOOD STATEMENT:
ALL OF THE SUBJECT PROPERTY LIES IN AN AREA LABELED ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 500-YEAR FLOOD PLAIN) AS DETERMINED BY THE FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0430G WITH AN EFFECTIVE DATE OF JANUARY 20, 2017.

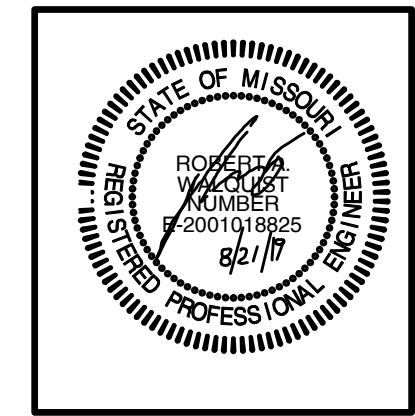
SURVEY REFERENCE:
NOTE: NO TITLE REPORT WAS PROVIDED BY THE CLIENT. BOUNDARY & CONSTRUCTION SURVEYING, INC. ASSUMES NO RESPONSIBILITY FOR EASEMENTS NOT SHOWN.

DESCRIPTION:
ALL OF LOTS 13, 14, 21, 22, I-470 BUSINESS AND TECHNOLOGY CENTER, A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI.

CERTIFICATION:
I HEREBY DECLARE THAT AN ACTUAL PROPERTY BOUNDARY RE-SURVEY WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT SURVEY MEETS OR EXCEEDS THE CURRENT MINIMUM STANDARDS FOR PROPERTY BOUNDARY SURVEYS TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF.

ROGER A. BACKUES, PLS
LAND SURVEYOR REG. NO. PLS-2134
DATE: DECEMBER 27, 2018

CERTIFICATE OF SURVEY	
LOTS 13, 14, 21, & 22 I-470 BUSINESS AND TECHNOLOGY CENTER LEE'S SUMMIT, JACKSON COUNTY, MISSOURI	
BOUNDARY & CONSTRUCTION SURVEYING, INC.	
821 NE COLUMBUS STREET SUITE 100, LEE'S SUMMIT, MO. 64063 PH # 816/554-9798, FAX # 816/554-0337	
DATE: DECEMBER 27, 2018	PROJECT NO. 18-329
CLIENT: QUIST ENGINEERING 821 NE COLUMBUS ST. LEE'S SUMMIT, MISSOURI 64063	SHEET 1 OF 1 I-470 BUSINESS AND TECHNOLOGY CENTER, LEE'S SUMMIT, MO.

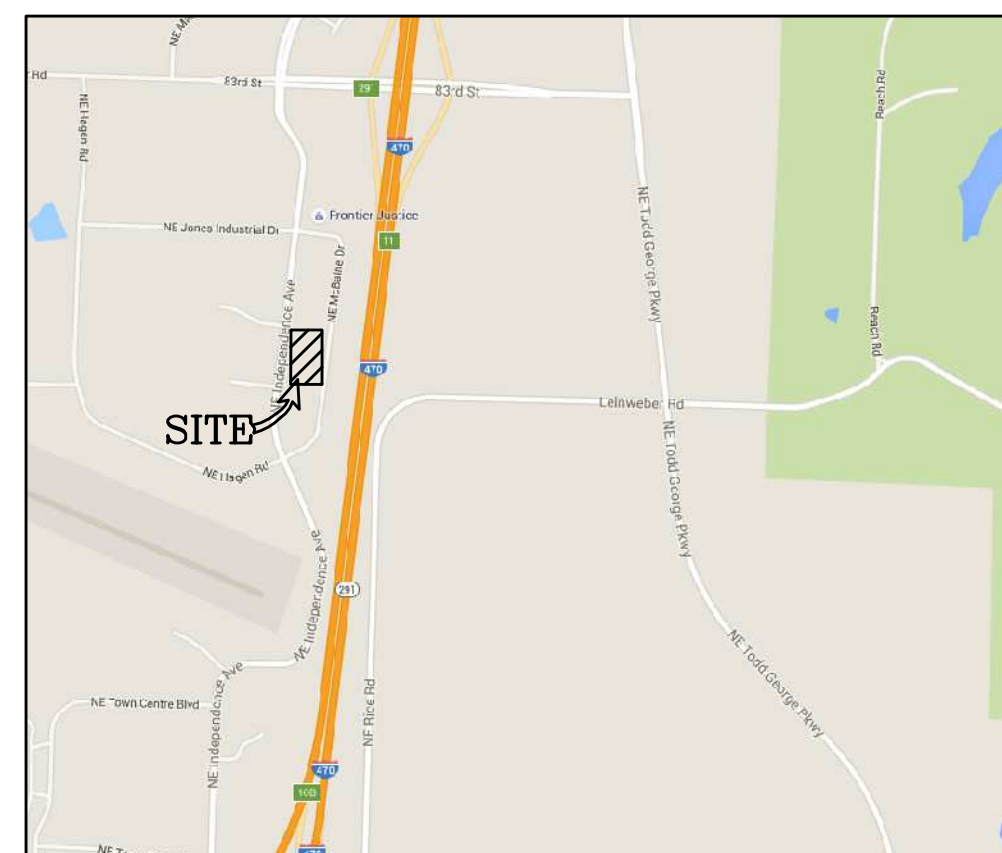


LINE LEGEND

PROPOSED	EXISTING
ST	ST
SAN	SAN
VTR	VTR
25"BL	BL
	EASEMENT LINE
4" Sidewalk	
2' Curb	
840	840
	Tree Line
x	x
G	G
	Overhead Telephone Line
	Underground Telephone Line
	Overhead Electrical Line
	Underground Electrical Line

SYMBOL LEGEND

PROPOSED	EXISTING
MH	MHO
C.I.	C.I.
JB	JB
FI	FI
FES	FES
FH	FH
BO	BO
WV	WV
WM	WM
	Straddle
	Utility Pole
	Cuy Wire
	Electric Transformer
	Telephone Pedestal
	Cable Pedestal
CO	CO



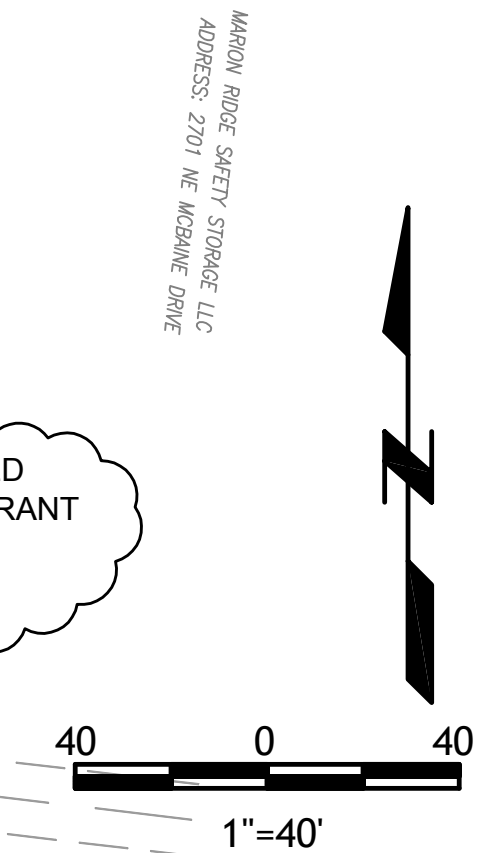
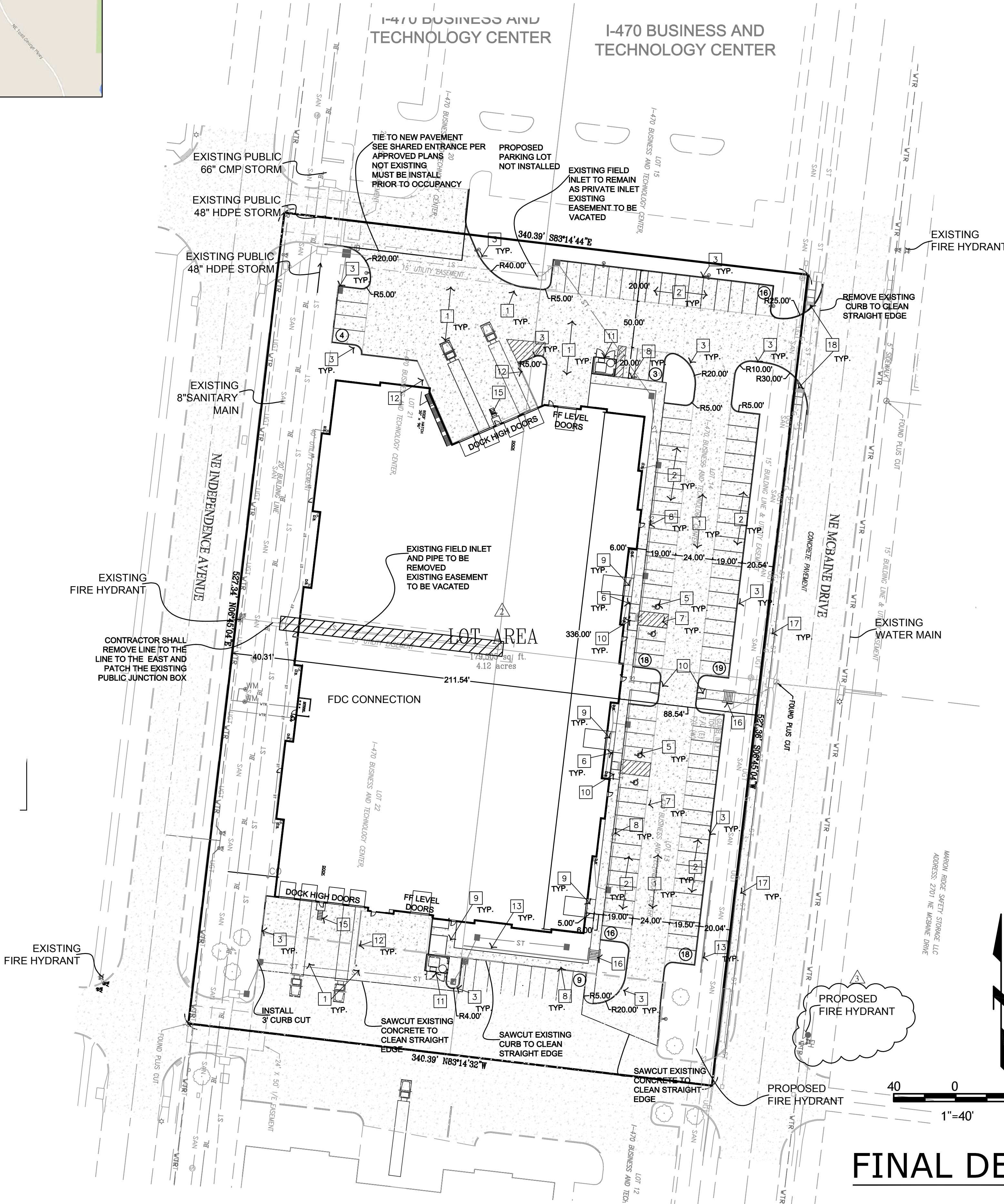
LEGAL DESCRIPTION:
 I-470 BUSINESS AND TECHNOLOGY CENTER LOT 13A
 A REPLAT OF LOTS 13, 14, 21, & 22 OF I-470 BUSINESS
 AND TECHNOLOGY CENTER A SUBDIVISION IN LEE'S
 SUMMIT, JACKSON COUNTY, MISSOURI

PLAN NOTES:

- HEAVY CONCRETE PAVEMENT RE: SEE SHEET C210
- LIGHT CONCRETE PAVEMENT RE: SEE SHEET C210
- STRAIGHT BACK CURB RE: SEE SHEET C210
- ACCESSIBILITY RAMP RE: SEE SHEET C210
- PAINT ACCESSIBLE PARKING SYMBOLS ACCORDING TO APWA PAVEMENT MARKING STANDARDS. RE: SEE SHEET C210
- INSTALL ACCESSIBLE PARKING SIGN "TYPE B" RE: SEE SHEET C210
- STRIPING PAVING WITH 4" WIDE STRIPE & PAINT ACCORDING TO APWA PAVEMENT MARKING STANDARDS.
- CURB WALK RE: SEE SHEET C210
- SITE SIDEWALK RE: SEE SHEET C210
- SITE ADA RAMP RE: SEE SHEET C210
- TRASH ENCLOSURE RE: SEE ARCHITECTURAL PLANS
- CONCRETE RETAINING WALL RE: SEE STRUCTURAL PLANS W/ HAND RAIL
- MODULAR RETAINING WALL RE: SEE SHEET C210
- SITE MONUMENT SIGN RE: SEE ARCHITECTURAL PLANS
- METAL DOCK STAIRS RE: SEE ARCHITECTURAL PLANS
- SITE STAIRS RE: SEE ARCHITECTURAL PLANS
- 5' CITY SIDEWALK RE: SEE CITY DETAILS
- CITY ADA RAMP RE: SEE CITY DETAILS

GENERAL NOTES:

- CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
- PERFORM TEMPORARY EROSION CONTROL MEASURES IN ACCORDANCE WITH ALL STATE & LOCAL REQUIREMENTS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT IMPROVEMENTS ARE IN PLACE.
- ALL PARKING STALLS SHALL BE MARKED W/ A 4" WIDE STRIPE. PARKING STRIPES TO BE PAINTED ACCORDING TO SPECIFICATIONS.
- CONSTRUCT ALL SIDEWALKS WITH 2% MAX. CROSS SLOPE AWAY FROM BUILDING UNLESS OTHERWISE SHOWN ON PLANS.
- PLACE EXPANSION JOINTS, IN SIDEWALKS AT 50' MAX. SPACING, AT ALL DIRECTION CHANGES AND WHEN ADJACENT TO BUILDINGS.
- ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
- LAYOUT ALL SIDEWALKS AND PAVEMENT APPROX. TO LINES SHOWN. FINAL APPROVAL BY ARCHITECT PRIOR TO COMMENCEMENT



PROJECT CONTACTS: ROBERT WALQUIST, P.E.
 821 NE COLUMBUS ST
 LEE'S SUMMIT, MISSOURI 64063
 Phone: (816) 550-5675

FINAL DEVELOPMENT LAYOUT

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
 Civil Engineering for Residential &
 Commercial Site Development
 821 NE Columbus St
 Lee's Summit, Missouri 64063
 Phone: (816) 550-5675
 email: rwalquist@quistengineering.com

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SHEET NO.
C200

JOB NO.
 E18-337



LANDSCAPING PLAN

Section 14.070. Installation of plant materials
 Plant materials, as required by the provisions of this Article, shall be installed by the date specified on the approved landscaping and buffer plan. The Director may allow one (1) planting season in a twelve (12)-month period in which the installation of plant materials shall be completed.

Buffers, if required, shall be installed before a certificate of occupancy permit is granted; except where the weather is not suitable for planting and escrow provisions are made in accordance with guidelines of the Department.

Section 14.080. Maintenance of required plant materials

A. The owner, tenant and their agent, if any, shall be jointly responsible for the maintenance in good condition of the plant materials used to meet the minimum requirements of this Article for landscaping, buffer or tree replanting. The plant materials shall be kept free from refuse and debris.

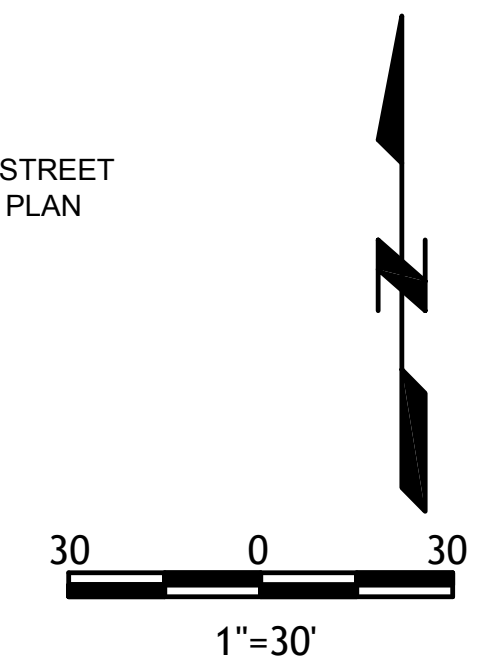
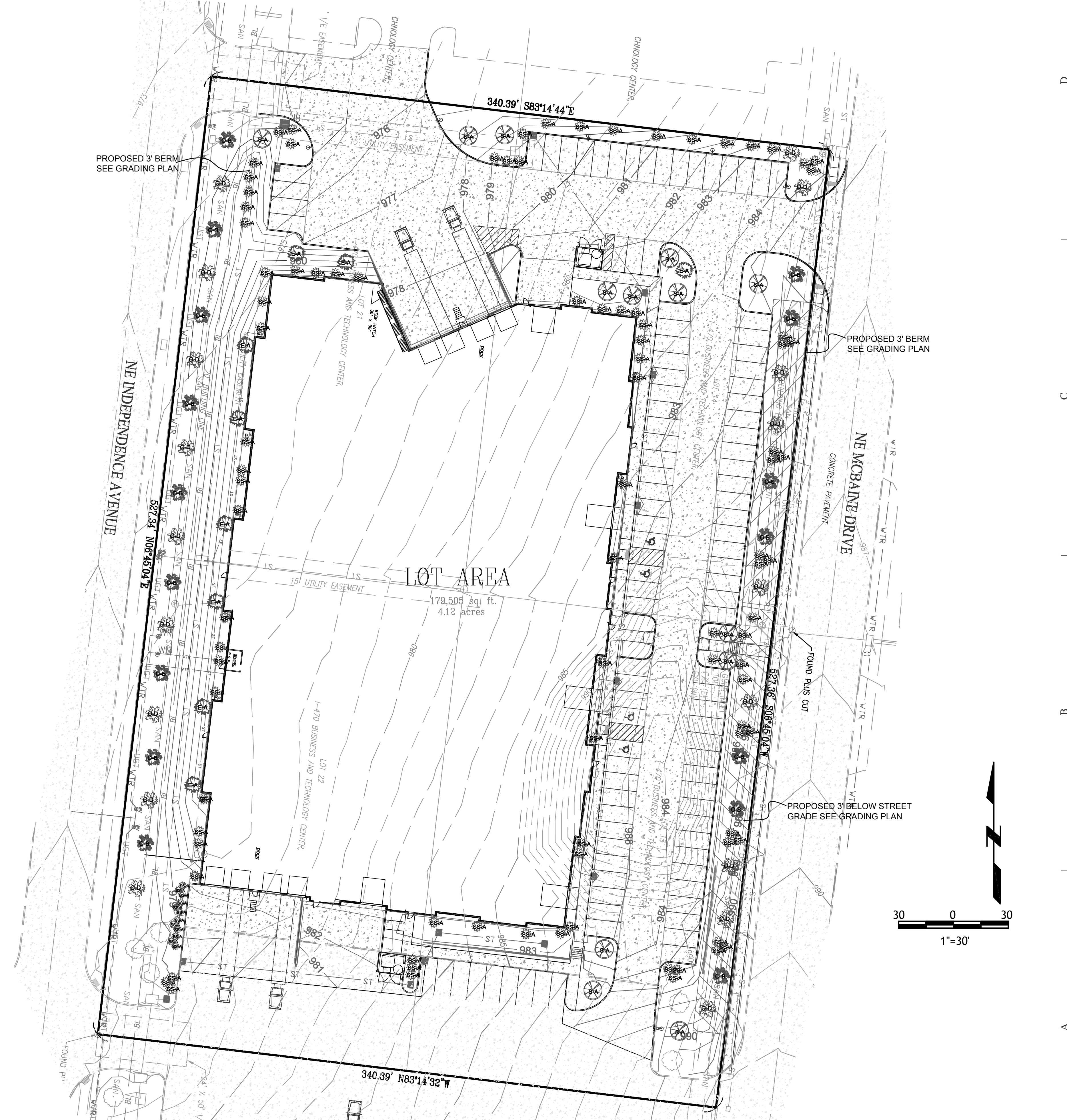
B. Plants that are not in sound growing condition or are dead shall be removed and replaced with a plant of a species or variety as determined by the Director.

C. Other landscape materials shall be maintained in proper repair and shall be kept clear of refuse and debris.

1. UDC SECTION 14. LANDSCAPING, BUFFERS AND TREE PROTECTION PLAN REQUIREMENTS
- A. TREE PROTECTION: THIS SITE HAS NO TREES TO BE REMOVED.
- B. BUFFERS: WE HAVE SHOWN A 20' LANDSCAPING BUFFER ON ALL STREET FRONTAGE.
- C. STREET TREES & SHRUBS: THIS SITE HAS A TOTAL OF 1,054 L.F. OF ROW FRONTAGE
1. REQUIRED TREES 1,054 / 30 = 35
 2. REQUIRED SHRUBS 1,054 / 20 = 53
- D. OPEN YARD AREA: (TOTAL REMAINING YARD AFTER FULL DEVELOPMENT = 57,442sf)
 (TOTAL LOT AREA = 179,505sf)
1. REQUIRED 1 TREES PER 5,000sf OF REMAINING YARD = 11
 2. REQUIRED 2 SHRUBS PER 5,000sf OF REMAINING YARD = 58
- TOTAL LANDSCAPING REQUIRED
 TREES = 46
 SHRUBS = 111
- E. PROPOSED TREES & SHRUBS:
1. TREES(ORNAMENTAL TREES) ALONG THE ROW INDEPENDENCE AVE. = 18
 2. SHRUBS ALONG THE ROW INDEPENDENCE AVE. = 54
 3. TREES ALONG THE ROW McBAIN DR.
 (ORNAMENTAL TREES) = 16
 TREES = 4
 TOTAL = 20
 4. SHRUBS ALONG THE ROW McBAIN DR. = 26
 - 3 OTHER PROPOSED TREES = 9
 - 4 OTHER PROPOSED SHRUBS = 42
- TOTAL TREES = 46
 TOTAL SHRUBS = 111

PLANTING SCHEDULE

COMMON NAME	SCIENTIFIC NAME	CALIPER	TOTAL/PROPOSE
S-A STATE STREET MAPLE	ACER MIYABEI	3" CAL.	12
S-B PACIFIC SUNSET MAPLE	ACER TRUNCATUM 'PACIFICSUNSET'	3" CAL.	0
S-C AUTUMN BLAZE MAPLE	ACER X 'AUTUMN BLAZE'	3" CAL.	0
S-D SHAWNEE BRAVE BALD CYPRESS	TAXODIUM DISTICHUM 'SHAWNEE BRAVE'	3" CAL.	0
S-E VALLEY FORGE ELM	ULMUS AMERICANA 'VALLEY FORGE'	3" CAL.	0
S-F SWAMP WHITE OAK	QUERCUS BICOLOR	3" CAL.	0
			TOTAL PROPOSED = 12
ORNAMENTAL TREES			
O-A ROYAL RAINDROPS CRABAPPLE	MALUS 'ROYAL RAINDROPS'	3" CAL.	0
O-B HOT WINGS MAPLE	ACER TATARICUM 'HOT WINGS'	3" CAL.	16
O-C IVORY SILK TREE LILAC	SYRINGA RETICULATA 'IVORY SILK'	3" CAL.	0
O-D REDBUD	CERCIS CANADENSIS	3" CAL.	18
O-E JUNE SNOW DOGWOOD	CORNUS CONTROVERSA 'JUNE SNOW'	3" CAL.	0
O-F SPRING FLURRY SERVICEEBERRY	AMELNCHIER LAEVIS 'SPRING FLURRY'	3" CAL.	0
			TOTAL PROPOSED = 34
EVERGREEN TREES/ SHRUB			
E-A NORWAY SPRUCE	PICEA ABIES	8' HT.	9
E-B CANAERTI JUNIPER	JUNIPERUS VIRGINIANA 'CANAERTI'	8' HT.	0
E-C GREEN GIANT ARBORVIATAE	THUJA PLICATA 'GREEN GIANT'	8' HT.	0
TRUE SHRUBS			
SS-A BOX WOOD	BUXUS SEMPERVERENS	3GAL	102
			TOTAL PROPOSED = 111
			TOTAL REQUIRED = 111



I-470 LOT 13A
 LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
 Civil Engineering for Residential & Commercial Site Development
 821 W. Columbus St.
 Lee's Summit, Missouri 64063
 Phone: (816) 550-5575
 email: wmalquist@quistengineering.com

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SHEET NO. C201
JOB NO. E18-337

SITE LANDSCAPING PLAN



I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
 Civil Engineering for Residential &
 Commercial Site Development
 824 NE Columbus St.
 Lee's Summit, Missouri 64063
 Phone: (816) 550-5575
 email: rwalquist@quistengineering.com

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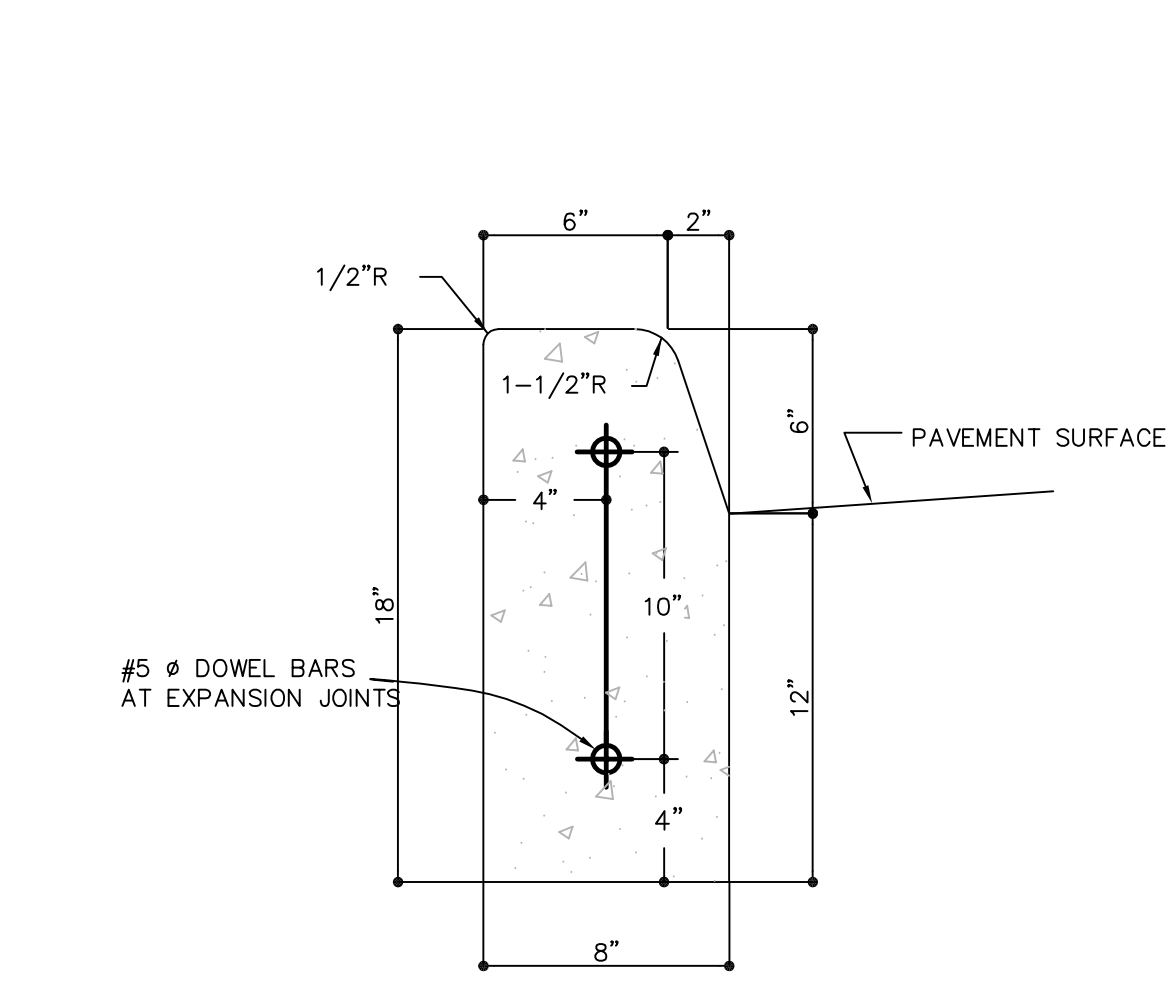
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 7-24-19
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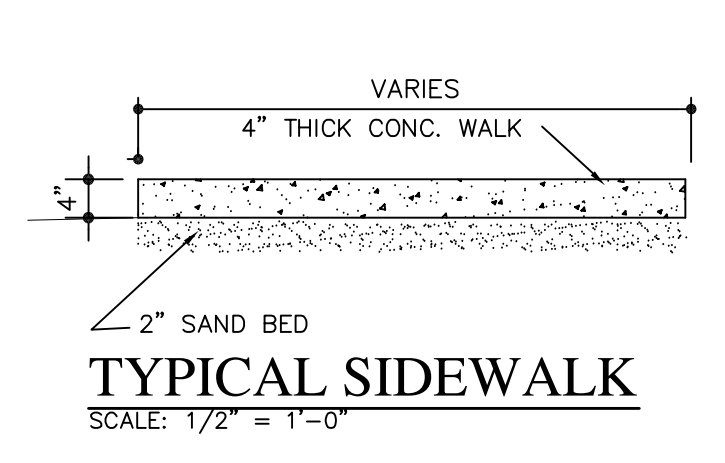
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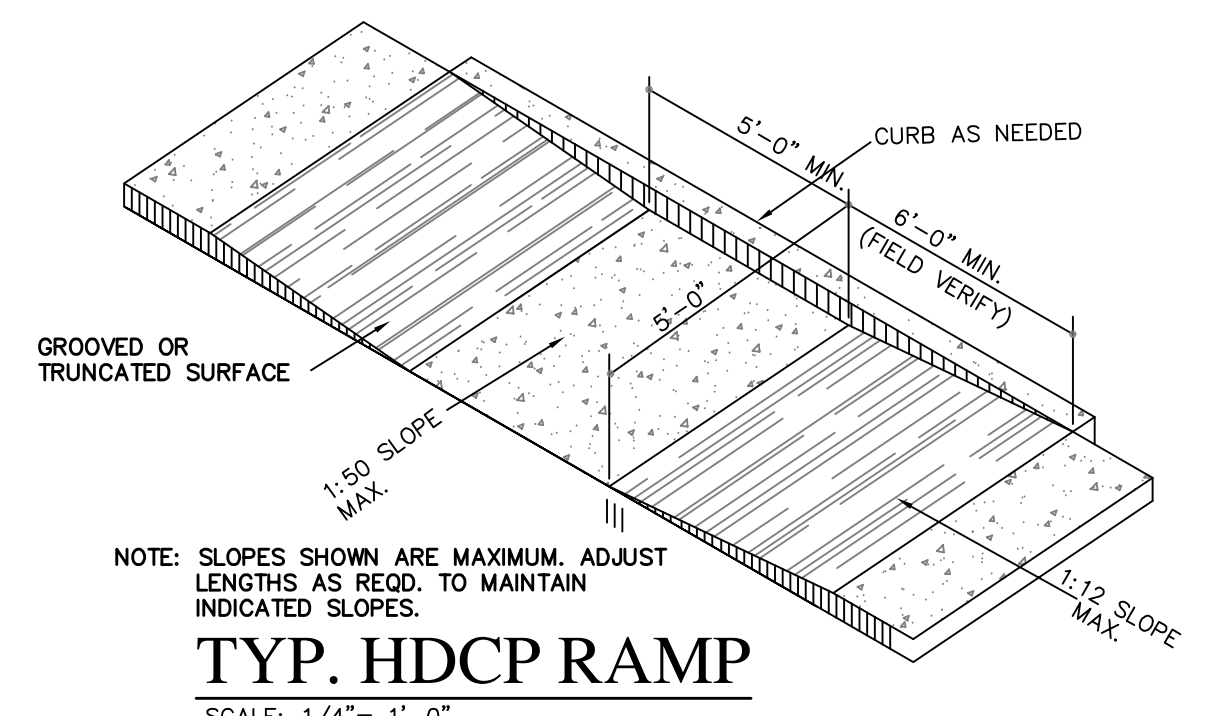
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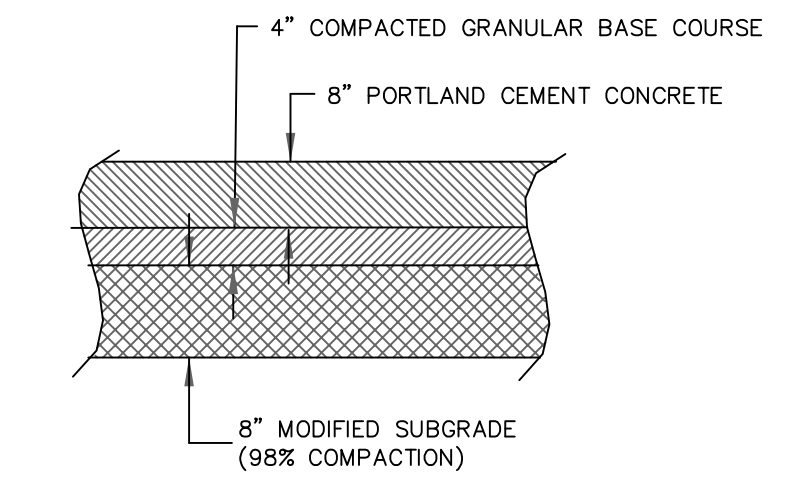
CONCRETE CURB
NTS.



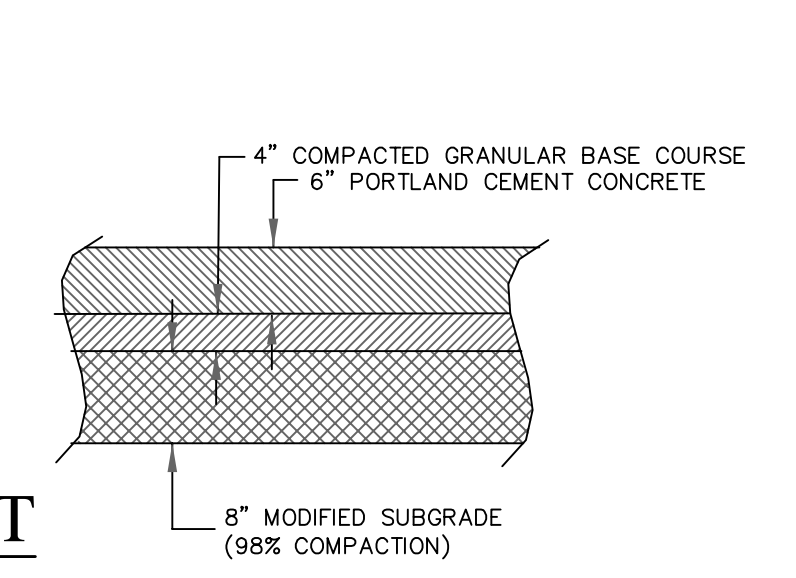
TYPICAL SIDEWALK
SCALE: 1/2" = 1'-0"



TYP. HDCP RAMP
SCALE: 1/4" = 1'-0"

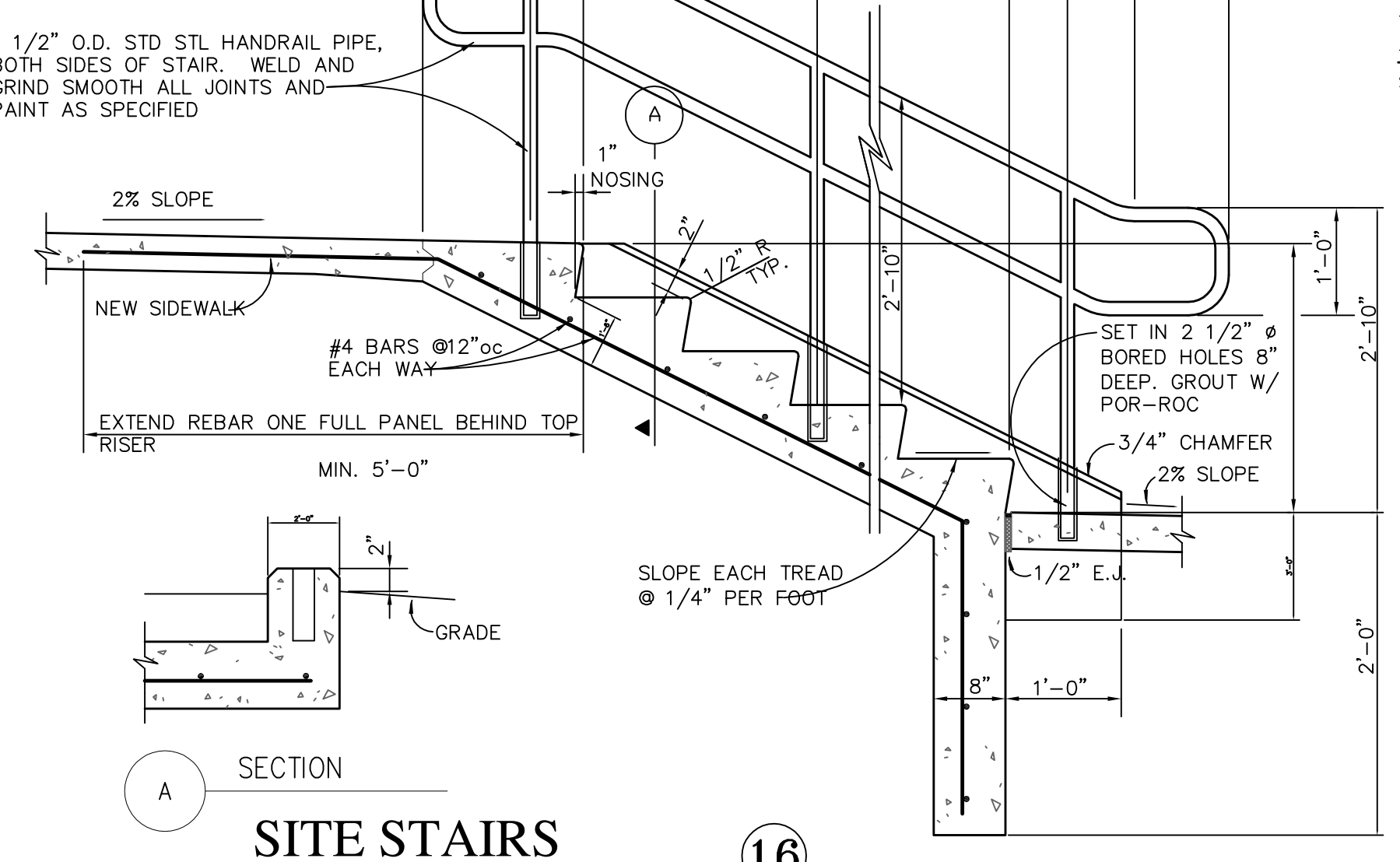


HEAVY CONCRETE PAVEMENT
SCALE: NO SCALE

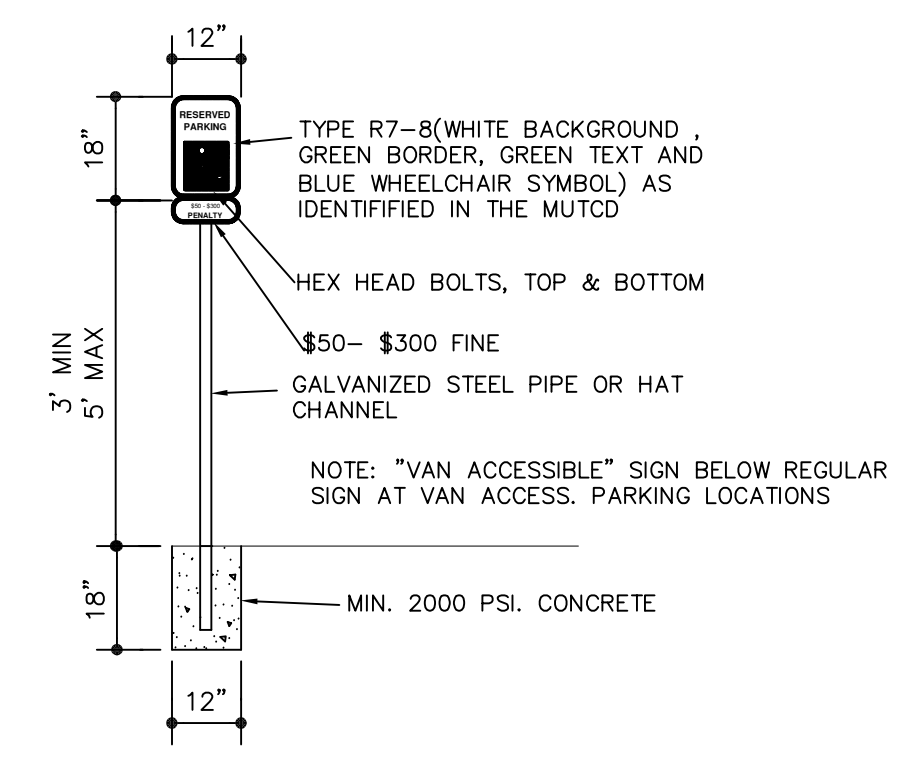


LIGHT CONCRETE PAVEMENT
SCALE: NO SCALE

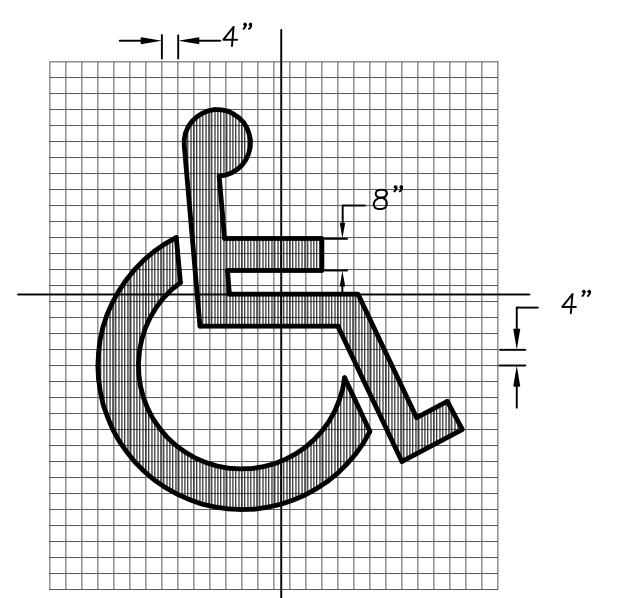
STAIR NO.	TREAD DIM.	NO. OF TREADS	RISE DIM.	NO. OF RISERS
1	18"		6"	
2				
3				
4				



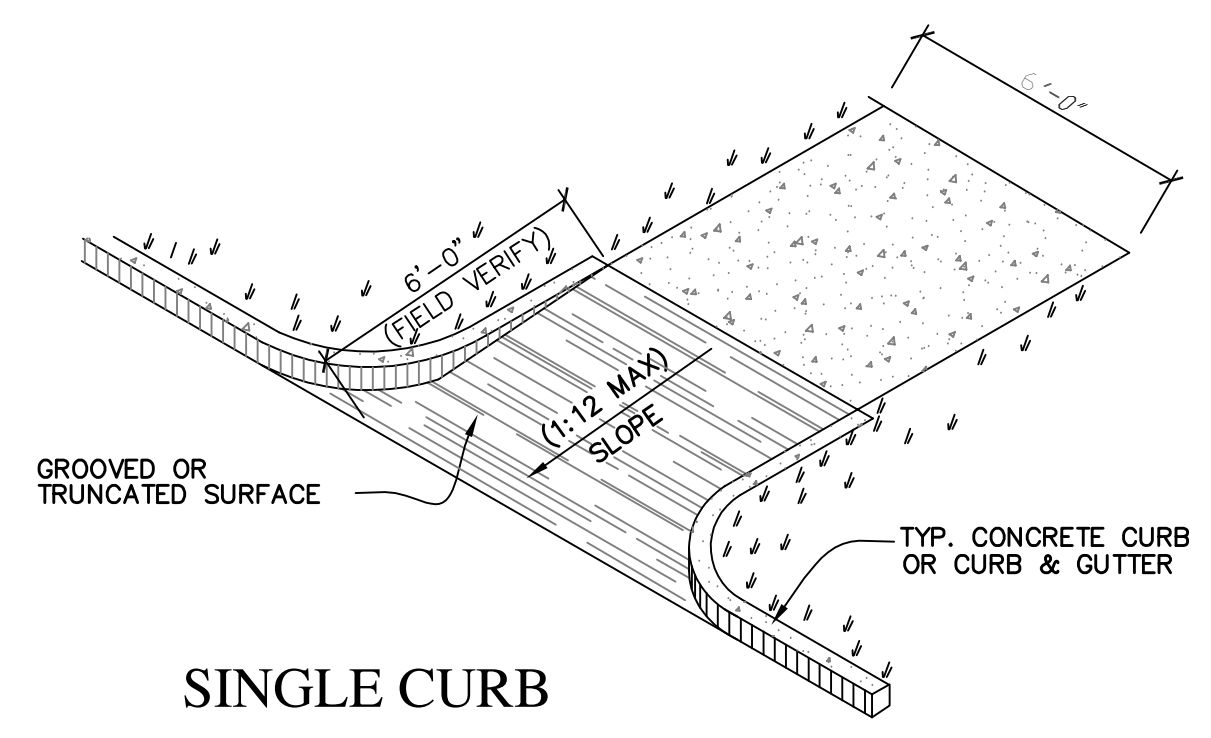
SITE STAIRS
16



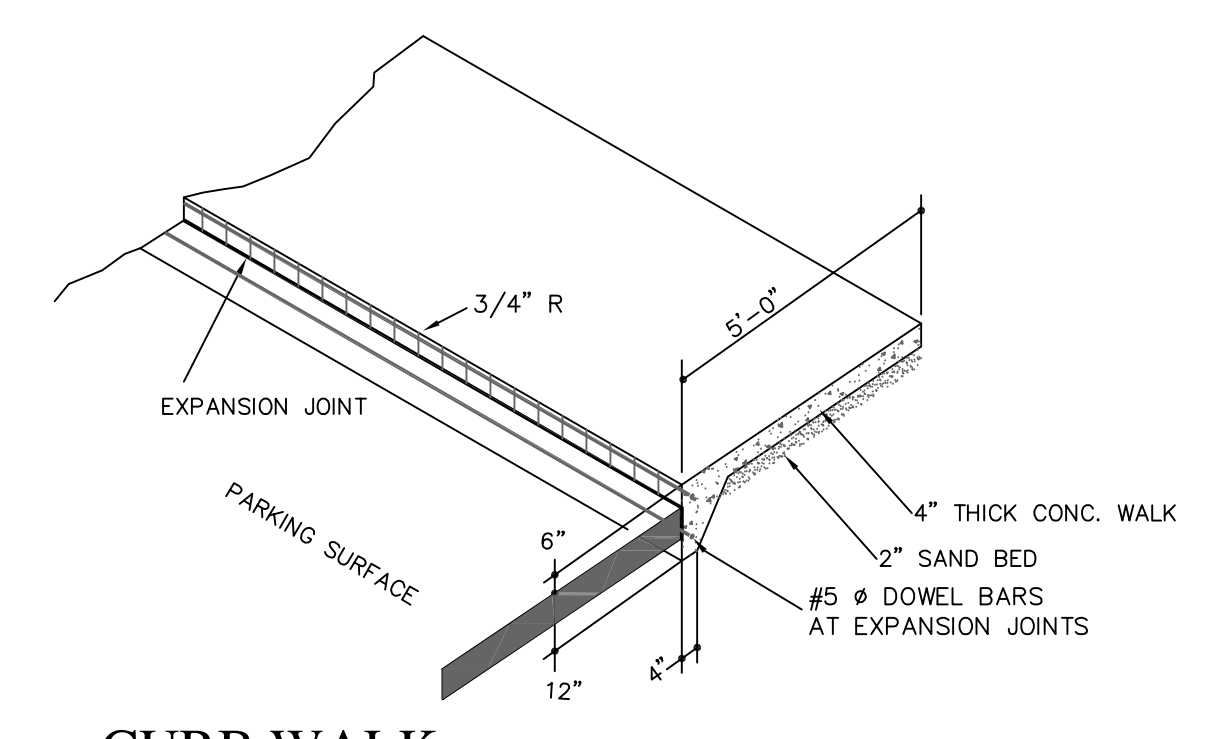
HDCP PARKING SIGN
SCALE: 3/8" = 1'-0"



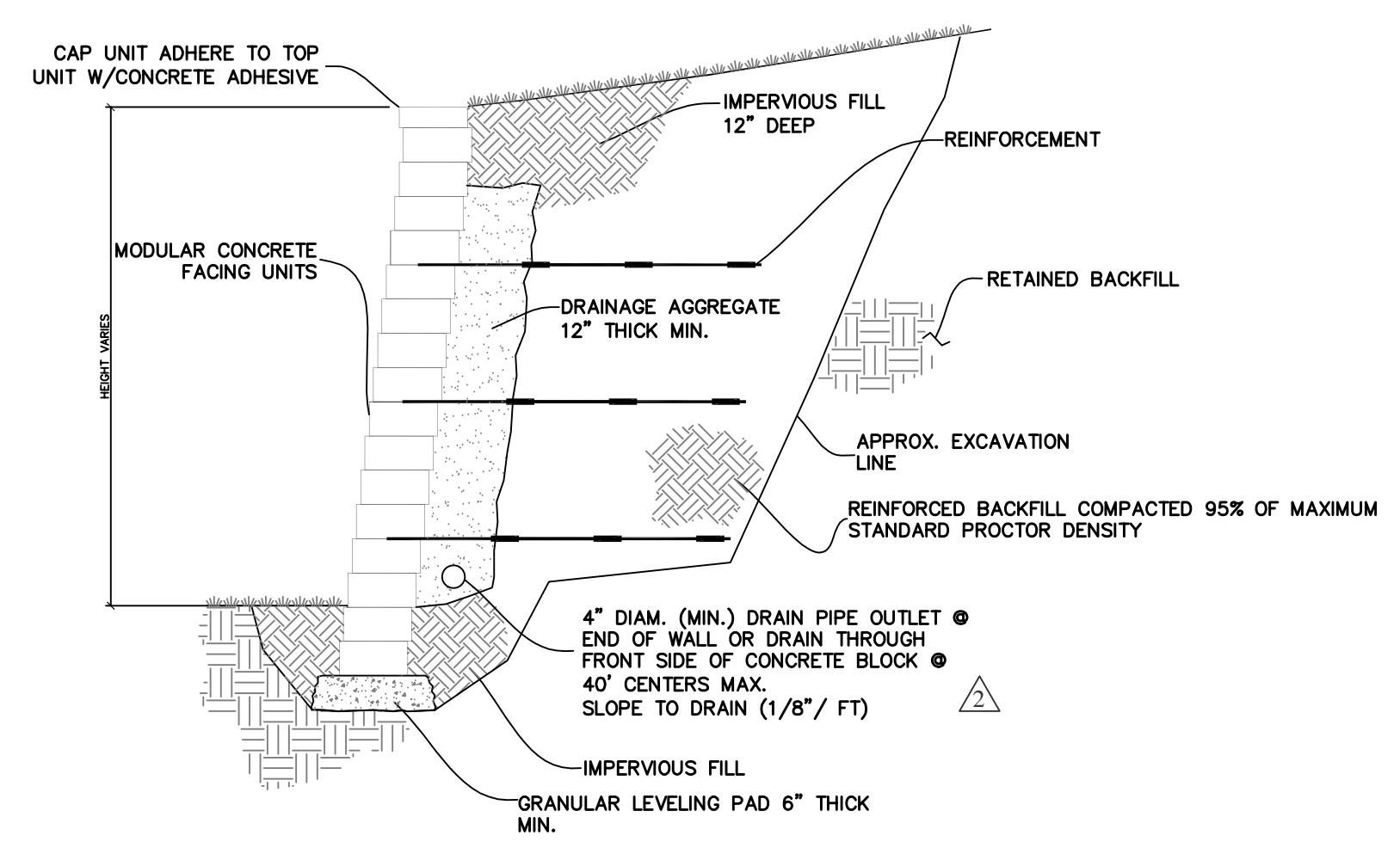
HANDICAP PARKING DETAIL
NTS.



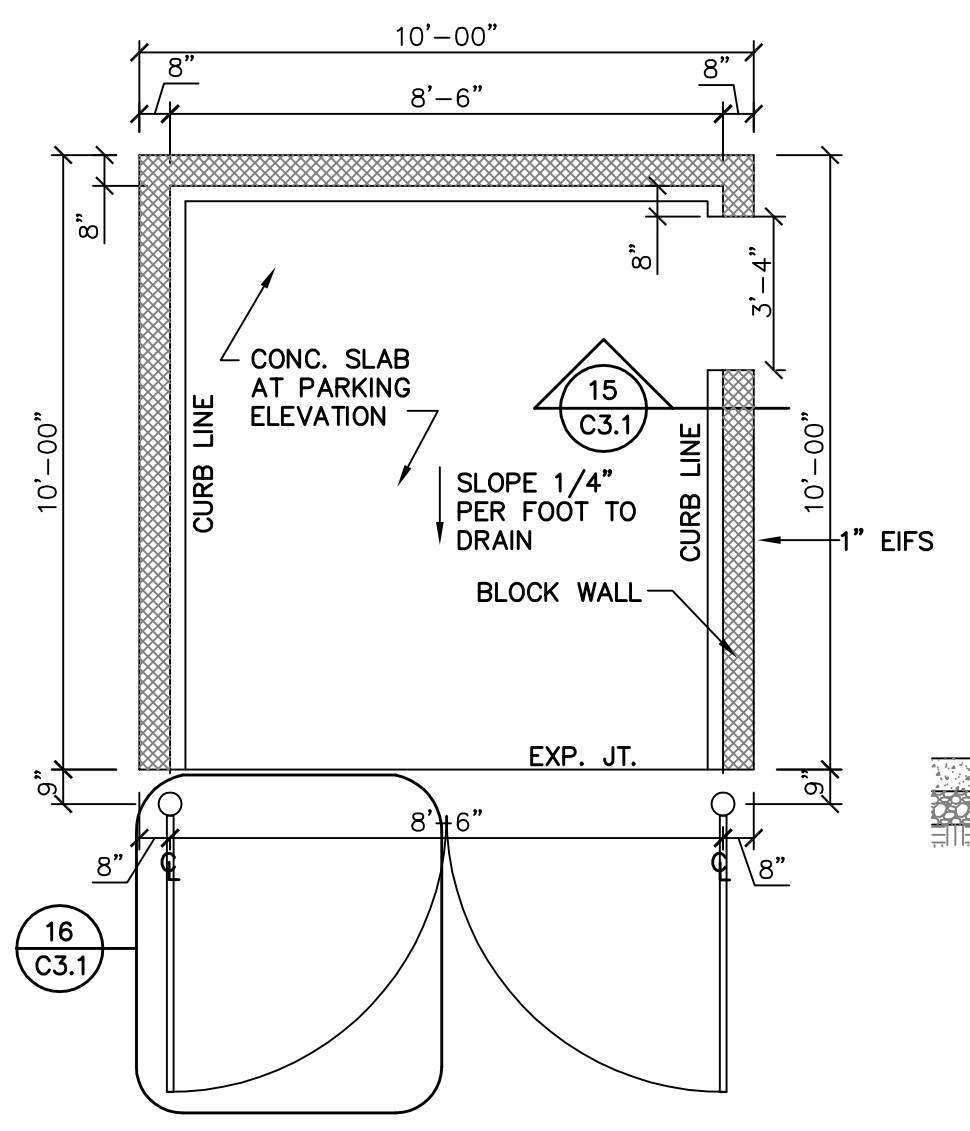
SINGLE CURB ACCESS RAMP
(SCHEMATIC) 1/4" = 1'-0"



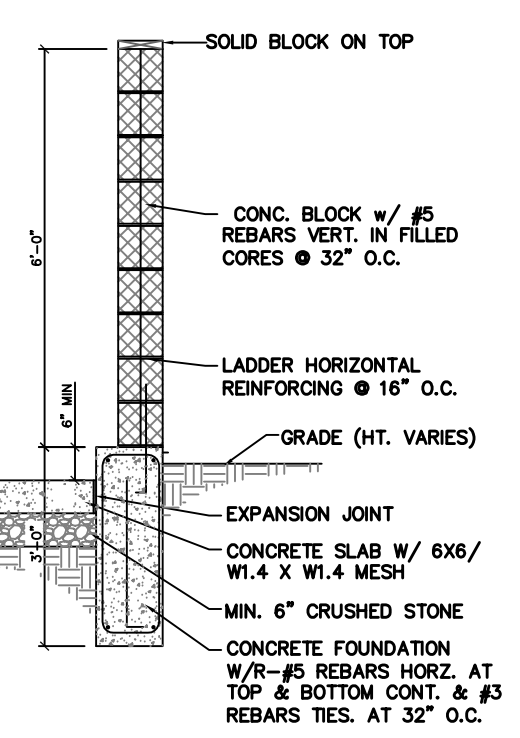
CURB WALK
SCALE: 1/2" = 1'-0"



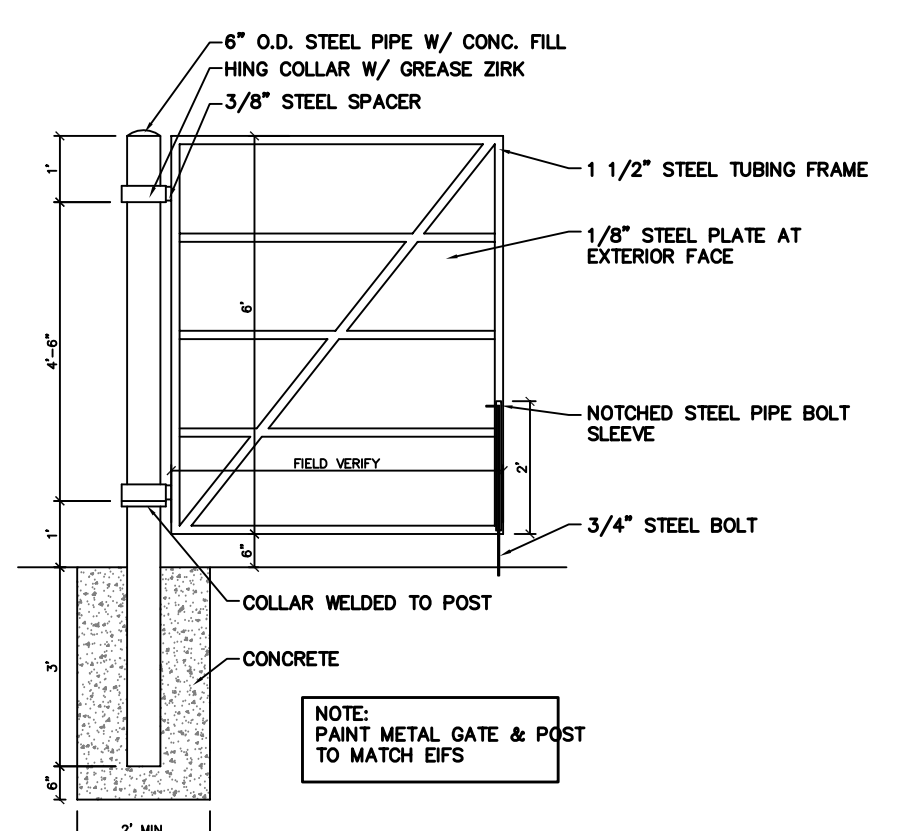
TYP. SECTION-REINFORCED RETAINING WALL
NTS



DUMPSTER ENCLOSURE DETAIL
NO SCALE



SECTION 15
SCALE: 1/2" = 1'-0"



GATE DETAIL 16
SCALE: 1/2" = 1'-0"

- SITE NOTES**
- The Contractor shall strip the building area of top soil and stockpile it. He shall then install fill dirt as per soils report included within the specifications.
 - The bottoms of footings shall bear on soils as per soils report included within the specifications. The footings shall be at depths indicated on plans, or deeper as required due to specific site conditions.
 - Topsoil finish grade shall be 8" below the finish floor elevations, sloping away 6" in 10' minimum. Finish grades shall not exceed a 2:1 slope.
 - Finish grade shall be 2" below the surface of walks, slabs, steps, etc., except where necessary to accommodate drainage. Contractor shall seed all areas of site disturbed by construction.
 - Sidewalks shall not exceed 5% (1'-0" in 20'-0") slope with a 2% (1'-0" in 50'-0") cross-slope and shall be 5' wide except as noted on Site Plan. Provide stairs, ramps, curbs, etc., as noted and detailed.
 - The Contractor shall obtain and pay for building permit(s) as may be required.
 - The Contractor shall furnish and install one mailboxes as post office requires.
 - Parking areas @ handicap accessible spaces and access isles shall not exceed a 2% slope (1'-0" in 50'-0") slope in any direction. Other portions of the accessible routes shall not exceed a 5% (1'-0" in 20'-0") longitudinal slope and a 2% (1'-0" in 50'-0") cross-slope. Other parking areas and cross-slopes of drives shall not exceed a 5% (1'-0" in 20'-0") slope.

SITE DETAILS



I-470 LOT 13A

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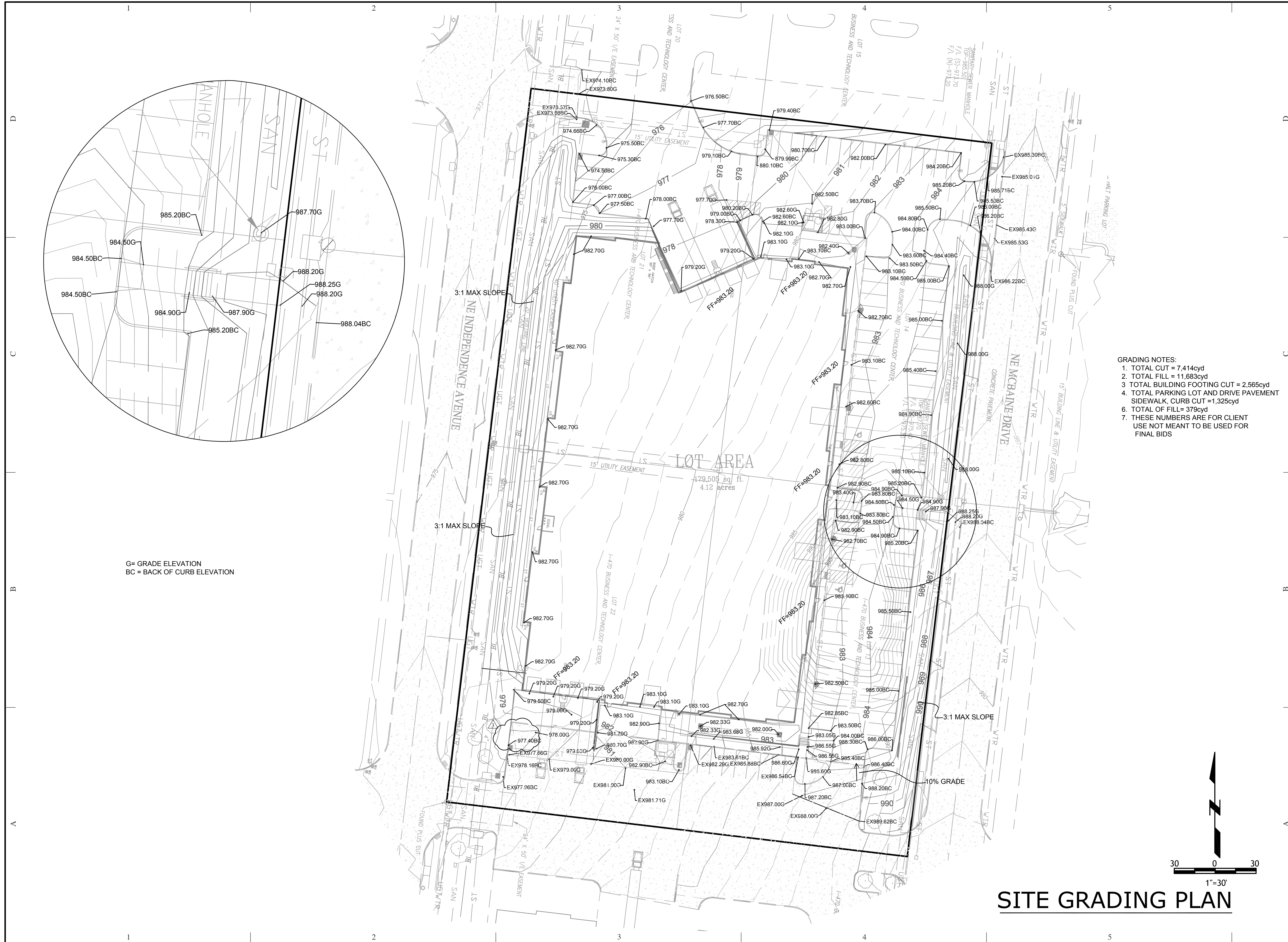
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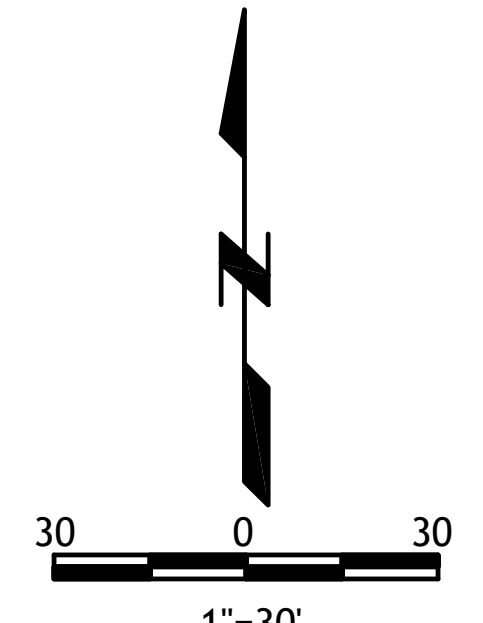
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- GRADING NOTES:**
- TOTAL CUT = 7,414cyd
 - TOTAL FILL = 11,683cyd
 - TOTAL BUILDING FOOTING CUT = 2,565cyd
 - TOTAL PARKING LOT AND DRIVE PAVEMENT SIDEWALK, CURB CUT = 1,325cyd
 - TOTAL OF FILL = 379cyd
 - THESE NUMBERS ARE FOR CLIENT USE NOT MEANT TO BE USED FOR FINAL BIDS



SITE GRADING PLAN



I-470 LOT 13A

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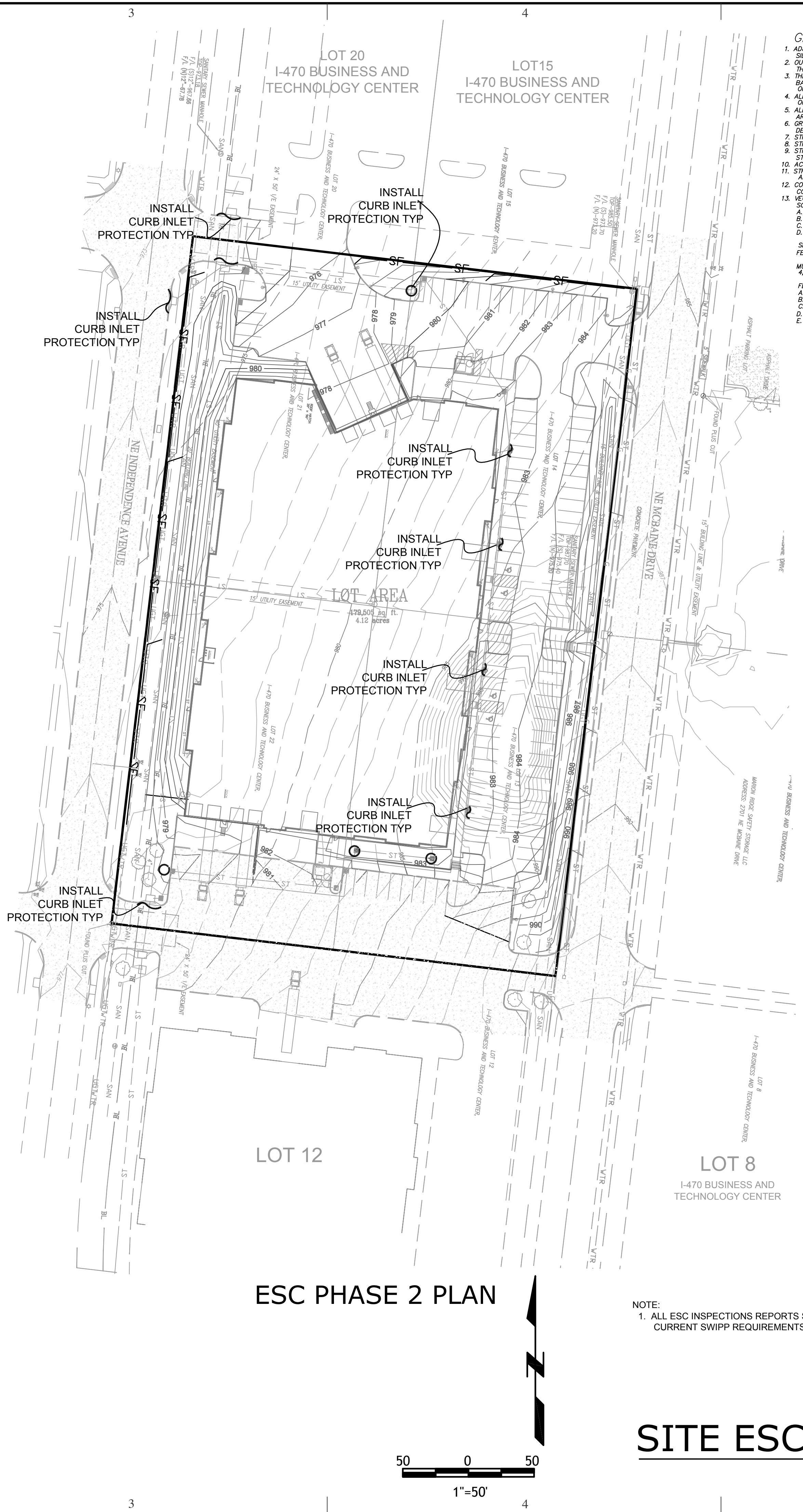
- GENERAL NOTES:**
- ADJACENT LAND ACRES SHALL BE PROTECTED FROM EROSION AND SILTATION WITH HAY BALES OR FILTER FABRIC.
 - SILT CONTAINMENT SHALL REMAIN IN PLACE UNTIL VEGETATION IS REESTABLISHED.
 - OUTFALL LINES FROM THE ENCLOSED STORM DRAINAGE SYSTEMS SHALL BE PROVIDED WITH END SECTIONS AND THE DRAINAGE DITCHES PREPARED TO DISPERSE FLOW AND CONTROL EROSION.
 - THE FOLLOWING MAY BE USED AS EROSION/SILTATION CONTROL AS INDICATED ON THE PLANS: DEBRIS/SILT BASINS, SILT FENCING, STAKED STRAW BALES, RETENTION STRUCTURES, DIVERSIONS, OTHER METHODS AS DETAILED ON THE PLANS.
 - ALL METHODS SHALL BE UTILIZED AND MAINTAINED UNTIL THE SURFACE HAS BEEN STABILIZED WITH VEGETATION OR MULCH.
 - ALL STRAW BALES MUST BE EITHER WIRE BOUND OR STRUNG TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. BALES SHALL BE OF STRAW ONLY.
 - GRAVING AND SEDIMENT CONTROL SHALL BE AS SPECIFIED IN THE "MODEL GRADING AND SEDIMENT CONTROL ORDINANCE" DEVELOPED BY THE MID-AMERICA ASSOCIATION OF CONSERVATION DISTRICTS AND THE MID-AMERICA REGIONAL COUNCIL.
 - STRAW BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF FOUR INCHES.
 - STRAW BALES SHALL BE PLACED IN A ROW AS INDICATED ON THE ADOPTED DRAWING.
 - STRAW BALES SHALL BE ANCHORED IN PLACE BY STAKES OR REBAR AS SHOWN IN THE DETAIL PROVIDED. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD A PREVIOUSLY Laid BALE TO FORCE THE BALES TOGETHER.
 - ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
 - STRAW BALES SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION AND SEEDING AND MULCHING OF GRADED AREAS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF STRAW BALES OR OTHER EROSION OR SEDIMENT CONTROL DEVICES UNTIL UPLAND AREAS HAVE BEEN STABILIZED.
 - VEGETATION ESTABLISHMENT FOR URBAN DEVELOPMENT SITES: GRADED AND EXCAVATED AREA OF 4.0 ACRES TO BE SOWN AFTER CONSTRUCTION WITH ONE OF THE FOLLOWING:
 - FALL FESCUE - 25 LBS./ACRE
 - SMOOTH BROME - 35 LBS./ACRES
 - COMBINED: FESCUE @ 20 LBS./ACRE AND BROME @ 15 LBS./ACRE
 - OTHER SEEDING MIXTURES AS APPROVED BY THE SOIL CONSERVATION SERVICE.
 - SEEDING PERIODS:
 FESCUE OR BROME - MARCH 1 TO JUNE 1
 MULCH RATES: (REQUIRED FOR ALL PERMANENT SEEDING)
 4,356 LBS./ACRE
 FERTILIZER:
 A. NITROGEN 90 LBS./ACRE
 B. PHOSPHATE 90 LBS./ACRE
 C. POTASSIUM 90 LBS./ACRE
 D. LIME 700 LBS./ACRE (EFFECTIVE NEUTRALIZING MATERIAL AS PER STATE EVALUATION OF QUARRIED ROCK)
 E. OTHER RATES AS DEFINED BY A CURRENT SOIL TEST AND APPROVED BY THE SOIL CONSERVATION SERVICE.

- PHASE 1**
 SHALL INCLUDE THE FOLLOWING:
- INSTALL SILT FENCE
 - INSTALL TEMPORARY CONSTRUCTION ENTRANCE

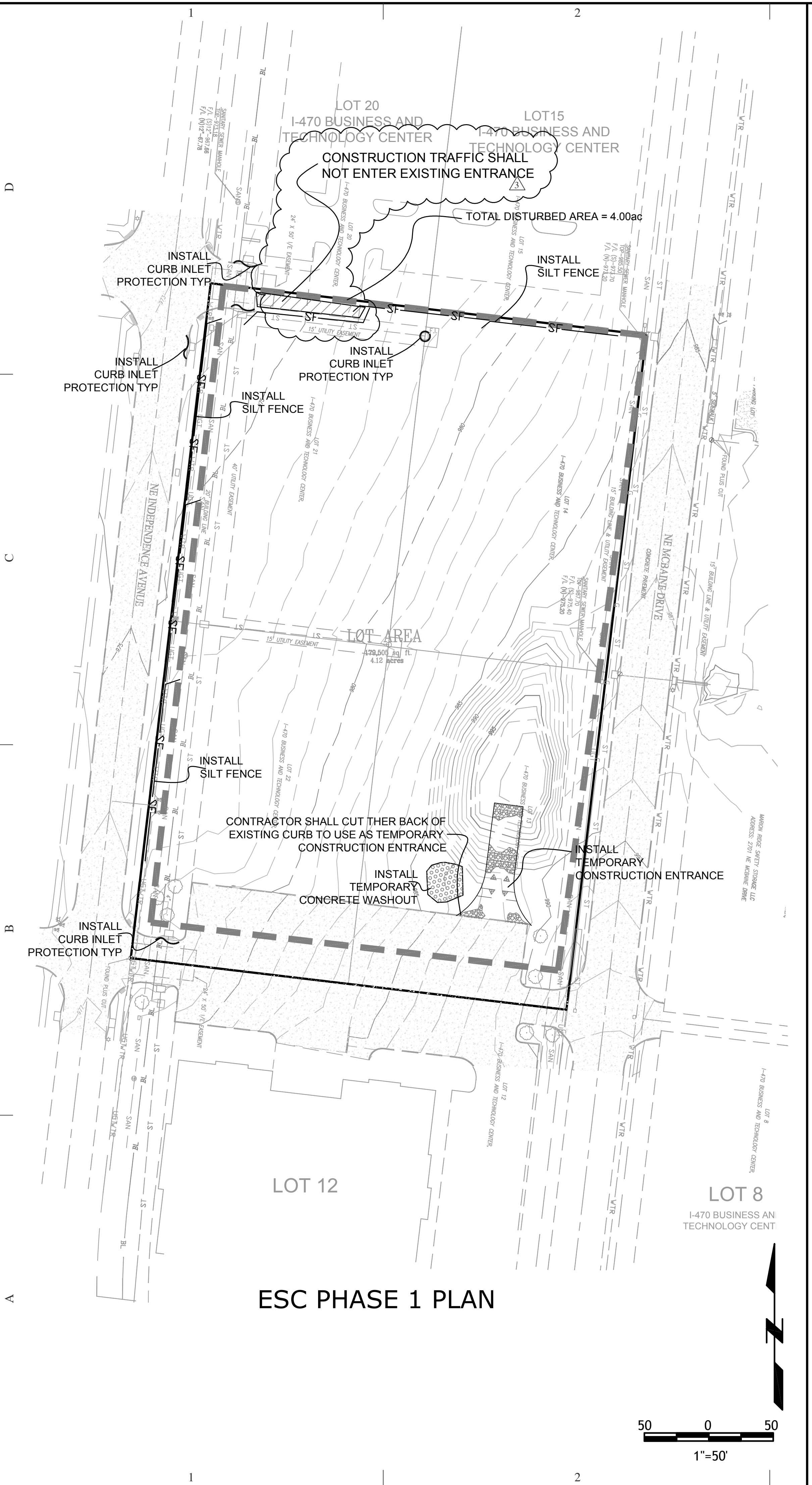
- PHASE 2**
 SHALL INCLUDE THE FOLLOWING:
- REMOVE TOP SOIL, CURB, SIDEWALK, FENCE, AND TREES.
 - ROUGH GRADE CUT A ENGINEERED FILL
 - INSTALL UTILITIES
 - INSTALL FOOTING AND WALLS
 - INSTALL PARKING LOT, SIDEWALK AND MAIN ENTRANCES
 - SEED AND SOD ALL DISTURBED AREAS

- PHASE 3**
 SHALL INCLUDE THE FOLLOWING:
- FULLY VEGETATED SITE
 - REMOVE SILTATION FENCE

NOTE:
 1. ALL ESC INSPECTIONS REPORTS SHALL BE MADE PER THE CURRENT SWPPP REQUIREMENTS AND COPIES KEPT ONSITE.



ESC PHASE 2 PLAN



ESC PHASE 1 PLAN

SITE ESC PHASE 1 AND 2 PLAN



I-470 LOT 13A
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4
5

(*) Cross Section of Outlet
Not to Scale

H	H ₀	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

(*) Perspective View of Outlet
Not to Scale

(*) - The perspective view and cross section are schematic in nature. Construction plans must provide specific site construction arrangements.

Maintenance for Sediment Trap:

1. The area under the embankment shall be cleared, graded, and striped of any vegetation and rock mat.
2. Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material. The embankment should be compacted in 6-inch layers by troweling with construction equipment.
3. The surface embankment shall be stabilized immediately after installation.
4. Construction operations shall be carried out to minimize erosion and water pollution.
5. The structure shall be removed and the area stabilized when the upstream drainage area has been stabilized.
6. All cut and fill slopes shall be 2H : 1V or flatter, except for excavated, wet storage areas which may be as a maximum 1H : 1V grade.

Plan View
Not to Scale

Notes for Sediment Trap at Culvert Opening:

1. The best protection device shall be constructed in a manner that will facilitate clean-out and disposal of trapped sediment and minimize maintenance with construction activities.
2. The best protection device shall be constructed in such manner that any residual ponding downstream will not cause excessive incision or damage to adjacent areas or structures.
3. Geometry of the design will be a horseshoe shape around the culvert inlet.
4. The toe of the slope shall be no closer than 24" from the culvert opening to provide an acceptable emergency outlet for flash flows larger than storm events.
5. Storage requirements equivalent to that of temporary sediment trap.
6. 67 C.I./Area set storage below base of slope.
7. 67 C.I./Area set storage from base of slope to top of slope form.

Maintenance for Sediment Trap at Culvert Opening:

1. Check sediment traps after periods of significant runoff.
2. Remove sediment and restore the trap to its original dimensions when sediment accumulates to 25% of the storage capacity.
3. Immediately report any erosion damage to the embankment and outlet.
4. Keep outlet and pool area free of trash and other debris.

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-08
 ADOPTED: 10/24/2016
SEDIMENT TRAPS

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

4
5

On-Grade Curb Inlet Protection

Notes:

1. Immediately following final construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" x 12" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or equivalent equal should be used (Late Stage Curb Inlet). Stone waffles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

Sump Inlet Sediment Filter

Notes:

1. Filter sock is to have a tight curb contact with no gaps and extend approximately 1' beyond inlet opening.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-06
 ADOPTED: 10/24/2016
CURB INLET PROTECTION

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

2
3

SILT FENCE DETAILS
Not to Scale

(*) EGGS - MIL LENGTH 4" - HARDWOOD 1 3/4" x 1 3/4" - NO. 2 SOUTHERN PINE 2 1/2" x 2 1/2" - STEEL 1.3 LB/FT

()** - Geotextile Fabric shall meet the requirements of ASTM D2875

Notes:

1. In order to contain water, the ends of all silt fence must be turned up (Figure A).
2. Long perimeter runs of all fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long spans should be broken up with intermediate rows of all fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where silt fence machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches 1/2 the height of all fence.
2. Repair as necessary to maintain function and structure.

SILT FENCE LAYOUT
Not to Scale

Figure A

JOINING FENCE SECTIONS
Not to Scale

Notes:

1. The area under the embankment shall be cleared, graded, and striped of any vegetation and rock mat.
2. Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material. The embankment should be compacted in 6-inch layers by troweling with construction equipment.
3. The surface embankment shall be stabilized immediately after installation.
4. Construction operations shall be carried out to minimize erosion and water pollution.
5. The structure shall be removed and the area stabilized when the upstream drainage area has been stabilized.
6. All cut and fill slopes shall be 2H : 1V or flatter, except for excavated, wet storage areas which may be as a maximum 1H : 1V grade.

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-03
 ADOPTED: 10/24/2016
SILT FENCE

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

2
3

Section A-A
Not to Scale

Notes:

1. Contractor shall field verify that Ponded Water Depth will not cause excessive unintended flooding.
2. Top of all fence below top of disturbance area to prevent escape.
3. Backfill excavated area ONLY after final grading of the site. Distribution of the site is to immediately follow.
4. Wire reinforced all fence may be used in place of silt fence attached to wood frame.

Plan
Not to Scale

LATE STAGE AREA INLET
(Area inlets at final grade and existing inlets)

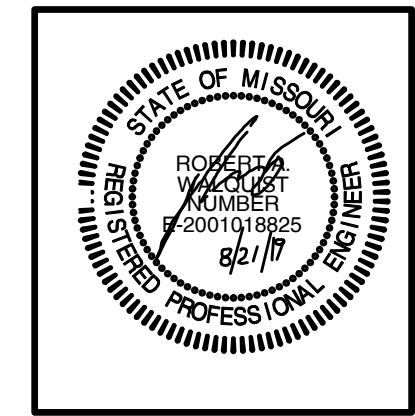
Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-07
 ADOPTED: 10/24/2016
AREA INLET AND JUNCTION BOX PROTECTION

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

SITE ESC DETAILS



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SITE ESC DETAILS

Notes for Concrete Washout:

- Concrete washout areas shall be installed prior to any concrete placement on site.
- Concrete washout areas shall include a steel substructure pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the substructure pit shall be 2:1. The vehicle tracking mat shall be sloped towards the concrete washout area.
- Vehicle tracking control is required at the access point to all concrete washout areas.
- Signs shall be placed at the construction site entrance, washout areas and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete trucks and pump rigs.
- A non-slip impervious liner may be required along the bottom and sides of the substructure pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

- Concrete washout materials shall be removed once the materials have dried to approximately 75% RH.
- Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
- Concrete washout areas, water pipes, concrete and all other items in the substructure pit shall be transported from the job site in a water-tight container and disposed of properly.
- Concrete washout areas shall remain in place until all concrete for the project is placed.
- When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topped with disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.

Notes for Construction Entrances:

- Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed areas.
- Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
- If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3/4" aggregate across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
- Install pipe under the entrance if needed to maintain drainage ditches along public roads.
- Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
- Start all surface runoff and drainage from the entrance to a sediment control device.
- If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrances:

- Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

CONCRETE WASHOUT

Encouraged material shall be used for granular base. Soil for base shall be compacted in the same manner as truck beds.

AMERICAN PUBLIC WORKS ASSOCIATION
 KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-01
 ADOPTED: 10/24/2016

Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control. Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

Temporary Rock Ditch Check Spacing

Ditch Centerline Slope (S)	Spacing Interval (feet)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

Note: Use this spacing only for Rock Ditch Checks.

Notes:

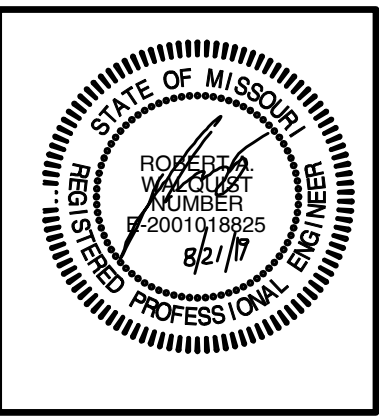
- Rock check stone shall be used only for drainage areas less than 10 acres unless approved by the City Engineer.
- Use rock checks only in situations where the ditch slope exceeds 6%.

Maintenance:

- Remove and dispose of sediment deposits when the deposit approaches 1/2 the height of the ditch check.
- Replace and reshape as necessary to maintain function and integrity of installation.

AMERICAN PUBLIC WORKS ASSOCIATION
 KANSAS CITY METRO CHAPTER
 STANDARD DRAWING NUMBER ESC-10
 ADOPTED: 10/24/2016

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.



I-470 LOT 13A

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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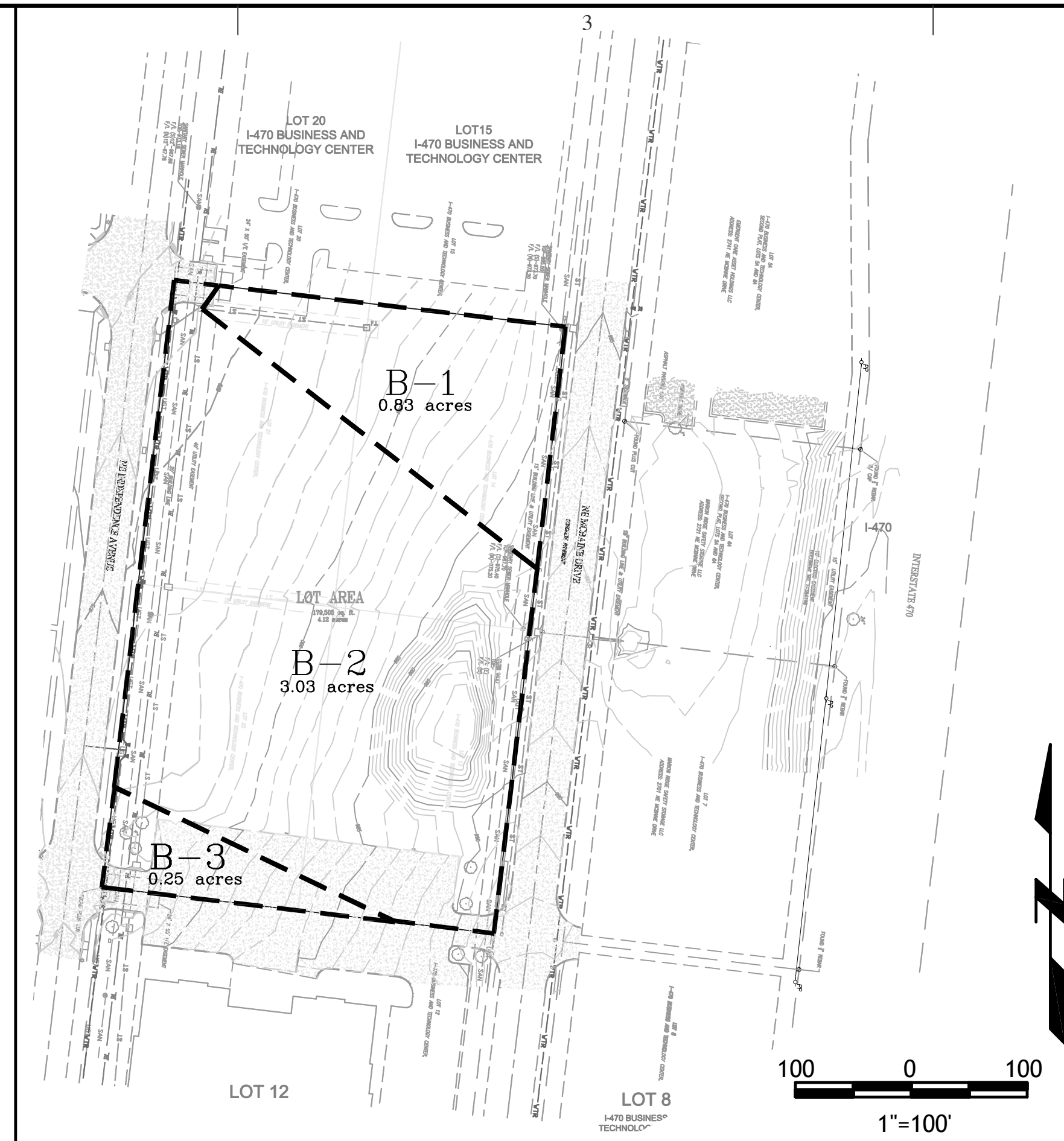
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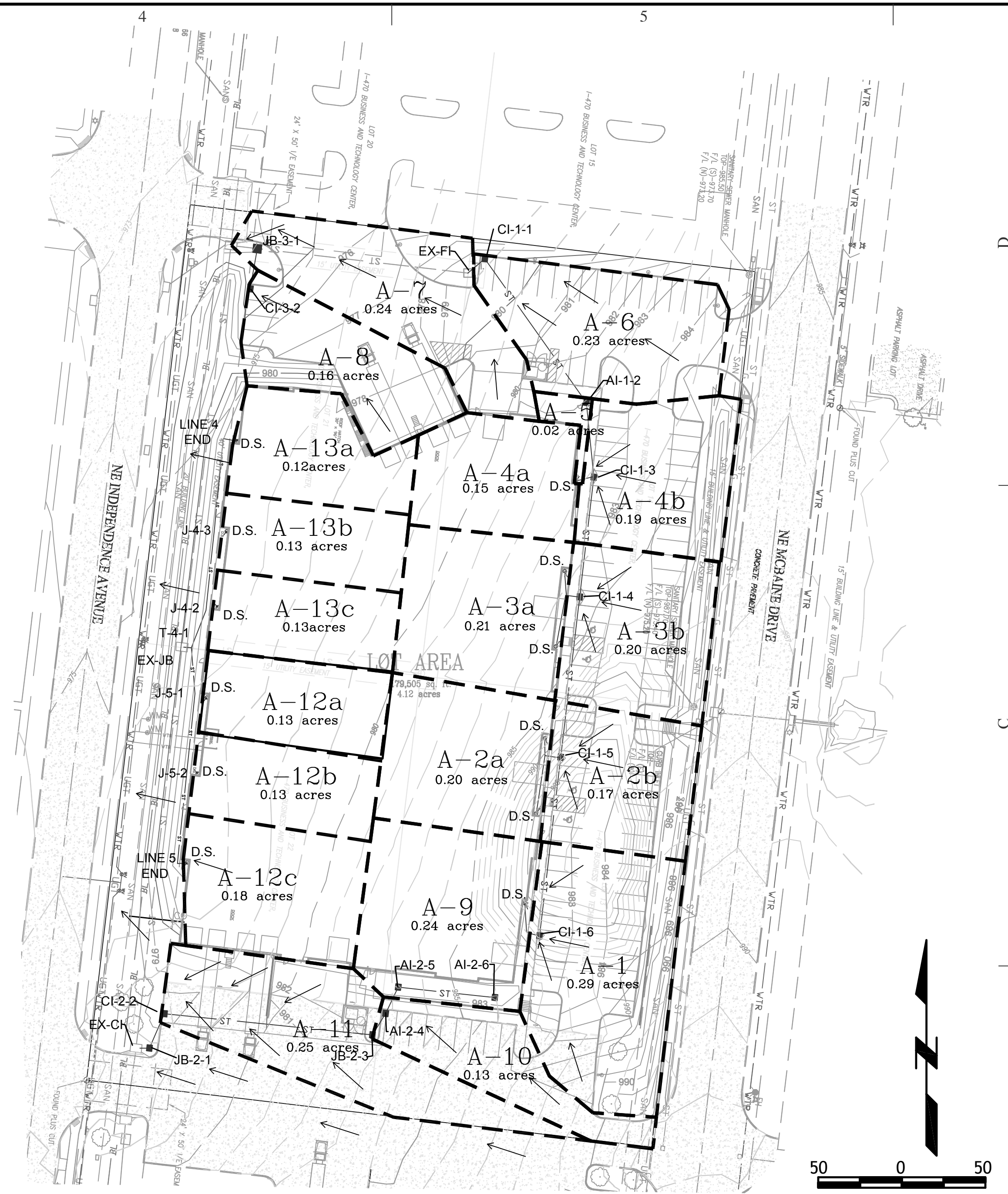
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PRE-DEVELOPMENT

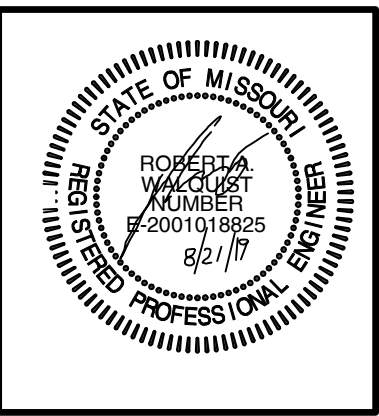


POST-DEVELOPMENT

STORM SEWER CALCULATIONS TABLE

Line	Sewer Location		Drainage Area to Inlet			Time of Flow TC	Rainfall Runoff Flow										Elevation			Sewer Characteristics										Velocity stats	
	From	To	Designation	Area	Coef		1100 Intensity	125 Intensity	110 Intensity	Inlet 100yr K*1*C*A	Inlet 25yr K*1*C*A	Inlet 10yr K*1*C*A	Additional Flow Lines	Additional cfs	In-pipe 100yr K*1*C*A	In-pipe 25yr K*1*C*A	In-pipe 10yr K*1*C*A	Inlet	Top elevation	Coverage	Pipe Size (in)	FLin	Flout	segment length	slope	pipe area	Pipe Capacity (cfs)	100yr overflow	V 10ys	V 100 yr	
LINE 1	CI-1-6	CI-1-5	A-1, A-9	0.49	0.60	5.00	10.32	8.53	7.35	3.79	2.76	2.16			3.79	2.76	2.16	CI-1-6	982.00	1.20	12.00	979.80	978.70	107.54	1.02	0.79	3.60	YES	2.75	4.83	
	CI-1-5	CI-1-4	A-2b, A-2a	0.37	0.60	5.00	10.32	8.53	7.35	2.86	2.08	1.63			6.66	4.84	3.79	CI-1-5	982.70	2.95	15.00	978.50	977.80	96.62	0.72	1.23	5.50	YES	3.09	5.43	
	CI-1-4	CI-1-3	A-3b, A-3a	0.41	0.60	5.00	10.32	8.53	7.35	3.17	2.31	1.81			9.83	7.15	5.60	CI-1-4	982.60	3.60	18.00	977.50	976.60	72.09	1.25	1.77	11.73	NO	3.17	5.57	
	CI-1-3	AI-1-2	A-4b, A-4a	0.34	0.60	5.00	10.32	8.53	7.35	2.63	1.91	1.50			12.46	9.06	7.10	CI-1-3	982.70	4.60	24.00	976.10	975.50	44.85	1.34	3.14	26.15	NO	2.26	3.97	
	AI-1-2	CI-1-1	A-5	0.02	0.60	5.00	10.32	8.53	7.35	0.15	0.11	0.09			12.62	9.18	7.19	AI-1-2	982.40	5.20	24.00	975.20	974.50	105.32	0.66	3.14	18.43	NO	2.29	4.02	
	CI-1-1	EX-FL	A-6	0.23	0.60	5.00	10.32	8.53	7.35	1.78	1.29	1.01			14.40	10.47	8.21	CI-1-1	979.40	3.10	24.00	974.30	974.00	13.32	2.25	3.14	33.93	NO	2.61	4.59	
LINE 2	AI-2-6	AI-2-5	A-9b	0.04	0.60	10.00	8.59	7.05	6.08	0.26	0.19	0.15			0.26	0.19	0.15	AI-2-6	982.00	2.00	12.00	979.00	978.20	58.14	1.38	0.79	4.18	NO	0.19	0.33	
	AI-2-5	AI-2-4	N/A	0.00	0.60	5.00	10.32	8.53	7.35	0.00	0.00	0.00			0.26	0.19	0.15	AI-2-5	982.33	3.33	12.00	978.00	977.70	17.45	1.72	0.79	4.67	NO	0.19	0.33	
	AI-2-4	JB-2-3	A-10	0.13	0.60	5.00	10.32	8.53	7.35	1.01	0.73	0.57			1.26	0.92	0.72	AI-2-4	982.29	3.79	12.00	977.50	977.20	15.09	1.99	0.79	5.02	NO	0.92	1.61	
	JB-2-3	CI-2-2	N/A	0.00	0.60	5.00	10.32	8.53	7.35	0.00	0.00	0.00			1.26	0.92	0.72	JB-2-3	983.20	5.20	12.00	977.00	973.20	125.08	3.04	0.79	6.21	NO	0.92	1.61	
	CI-2-2	JB-2-1	A-11	0.25	0.60	5.00	10.32	8.53	7.35	1.94	1.41	1.10			3.20	2.33	1.82	CI-2-2	977.40	3.40	12.00	973.00	972.70	22.48	1.33	0.79	4.11	NO	2.32	4.08	
	JB-2-1	EX-CI	N/A	0.00	0.60	5.00	10.32	8.53	7.35	0.00	0.00	0.00			3.20	2.33	1.82	JB-2-1	978.00	4.50	12.00	972.50	972.00	5.72	8.74	0.79	10.53	NO	2.32	4.08	
LINE 3	CI-3-2	JB-3-1	A-8	0.16	0.85	7.00	9.55	7.87	6.78	1.62	1.18	0.92			1.62	1.18	0.92	CI-3-1	974.30	2.30	12.00	971.00	968.00	24.60	12.20	0.79	12.44	NO	1.18	2.07	
LINE 4	END	J-4-2	A-13a	0.12	0.60	5.00	10.32	8.53	7.35	0.93	0.68	0.53			0.93	0.68	0.53	END	982.00	3.33	8.00	978.00	977.20	61.89	1.29	0.35	1.37	NO	1.52	2.66	
	J-4-2	T-4-1	A-13b, A-13c	0.26	0.60	5.00	10.32	8.53	7.35	2.01	1.46	1.15			2.94	2.14	1.68	J-4-2	982.00	3.80	12.00	977.20	976.55	78.45	0.83	0.79	3.24	NO	2.14	3.75	
	T-4-1	EX-FI	N/A		0.60	5.00	10.32	8.53	7.35	0.00	0.00	0.00	LINE 5 25yr	1.46	4.40	3.60	3.14	J-4-1	982.00	4.45	12.00	976.55	976.50	4.63	1.08	0.79	3.70	YES	4.00	5.61	
LINE 5	END	J-5-1	A-12c	0.18	0.60	5.00	10.32	8.53	7.35	1.39	1.01	0.79			1.39	1.01	0.79	END	982.00	3.33	8.00	978.00	977.30	59.23	1.18	0.35	1.31	YES	2.28	3.99	
	J-5-1	J-4-1	A-12a, A-12b	0.26	0.60	5.00	10.32	8.53	7.35	2.01	1.46	1.15			3.41	2.48	1.94	J-5-1	982.00	3.70	12.00	977.30	976.55	76.04	0.99	0.79	3.54	NO	2.47	4.34	

SITE STORM DRAINAGE PLAN AND CALCULATIONS



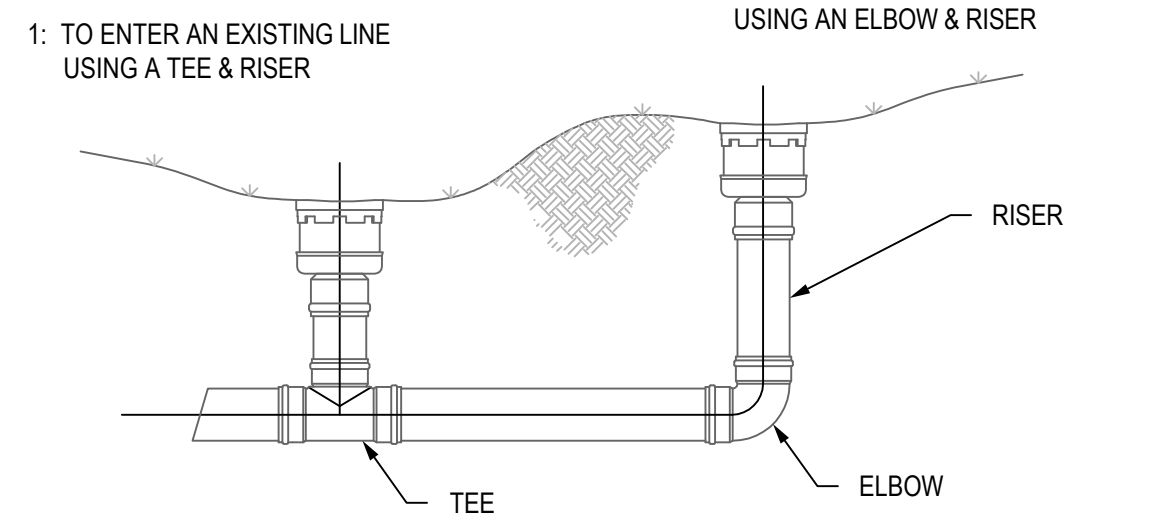
I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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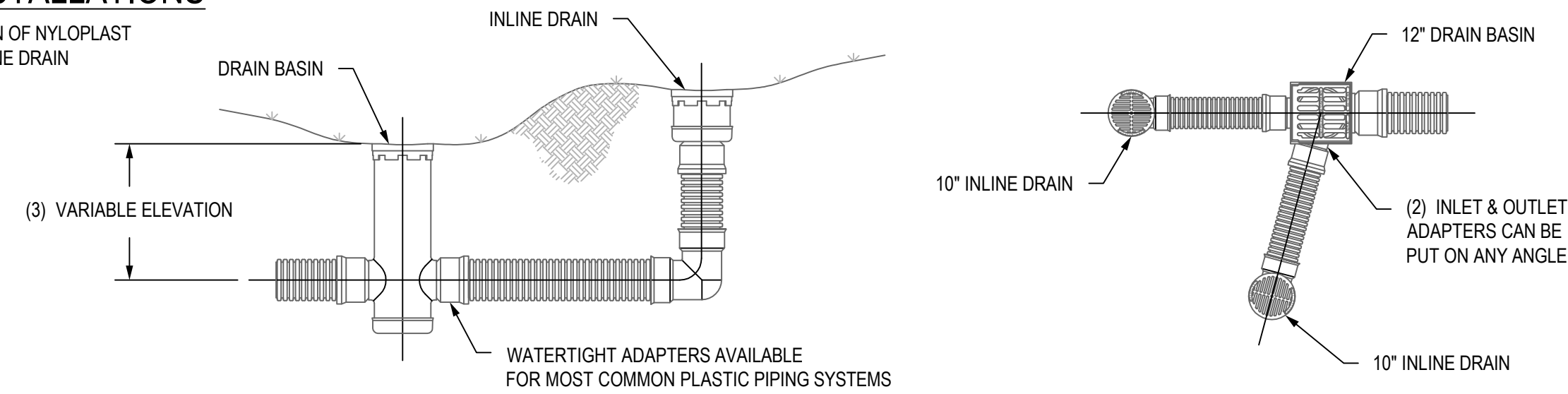
WHEN ARE INLINE DRAINS USED?

- 2708AG __X
- 2710AG __X
- 2712AG __X
- 2715AG __X
- 2718AG __X
- 2724AG __X
- 2730AG __X



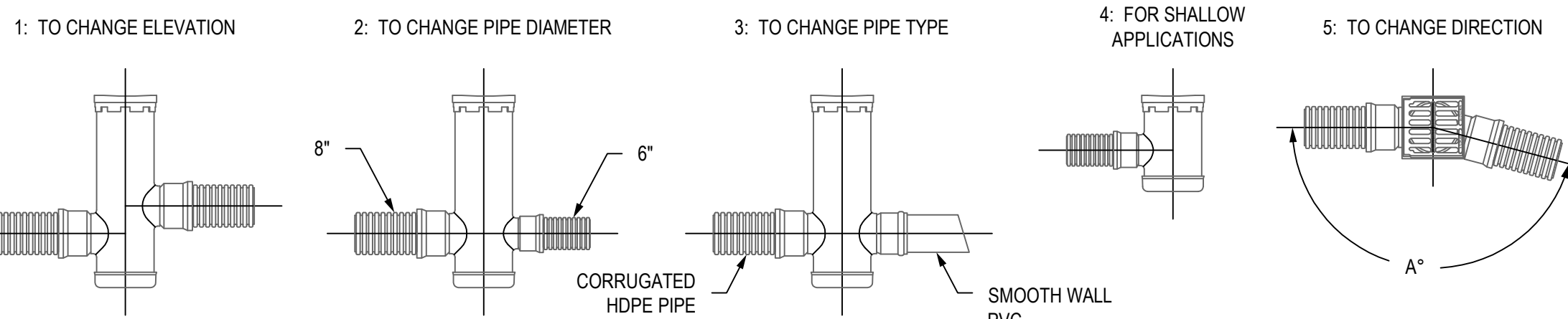
TYPICAL INSTALLATIONS

TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN



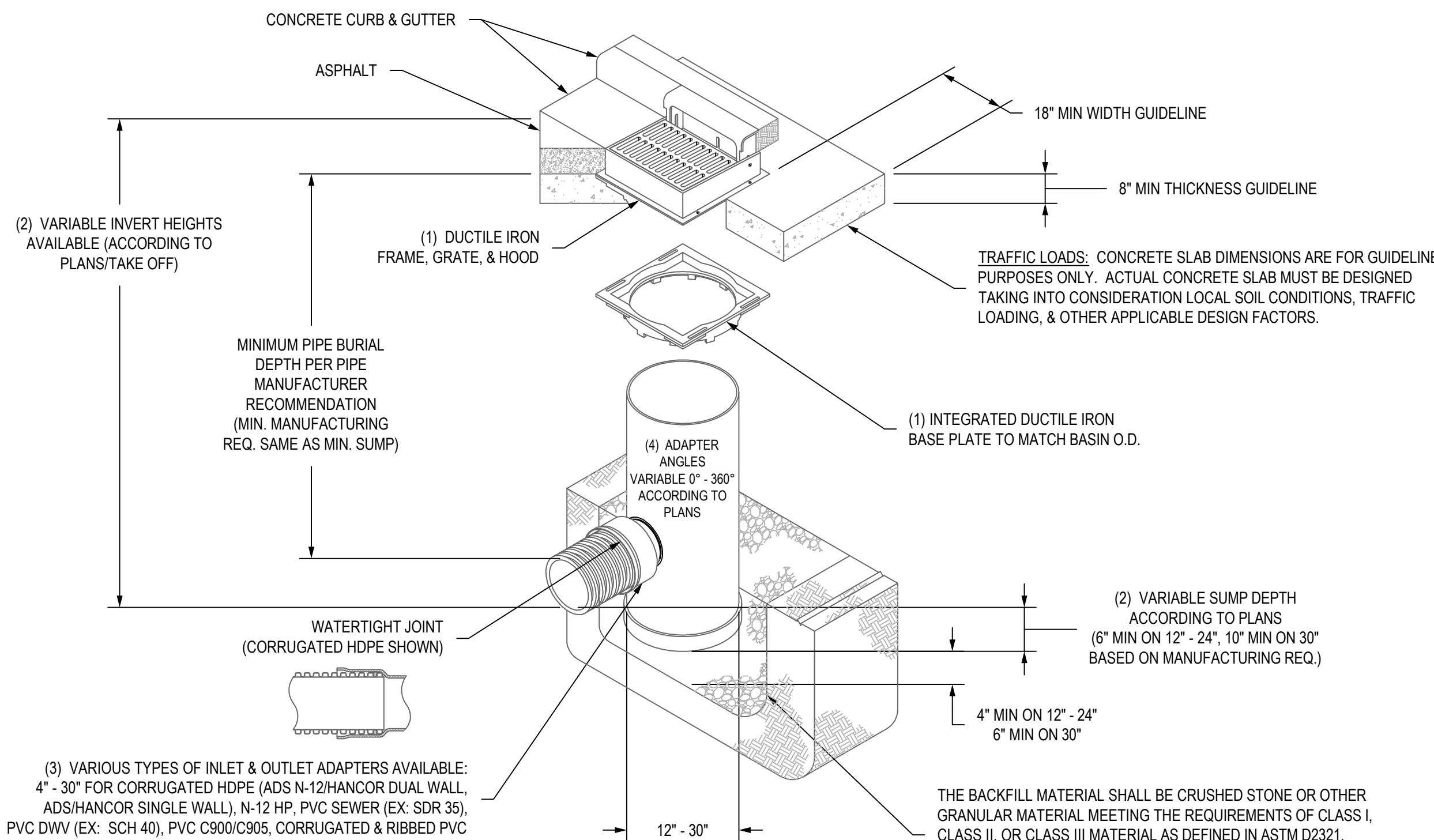
WHEN ARE DRAIN BASINS USED?

- 2808AG __X
- 2810AG __X
- 2812AG __X
- 2815AG __X
- 2818AG __X
- 2824AG __X
- 2830AG __X
- 2836AG __X



- 1 - STRUCTURES & ADAPTERS AVAILABLE IN SIZES 8" - 36"
- 2 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°, TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012
- 3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
- 4 - REDUCING CONES DOWN TO 30" DIAMETER WILL BE REQUIRED FOR 36" DRAIN BASINS.

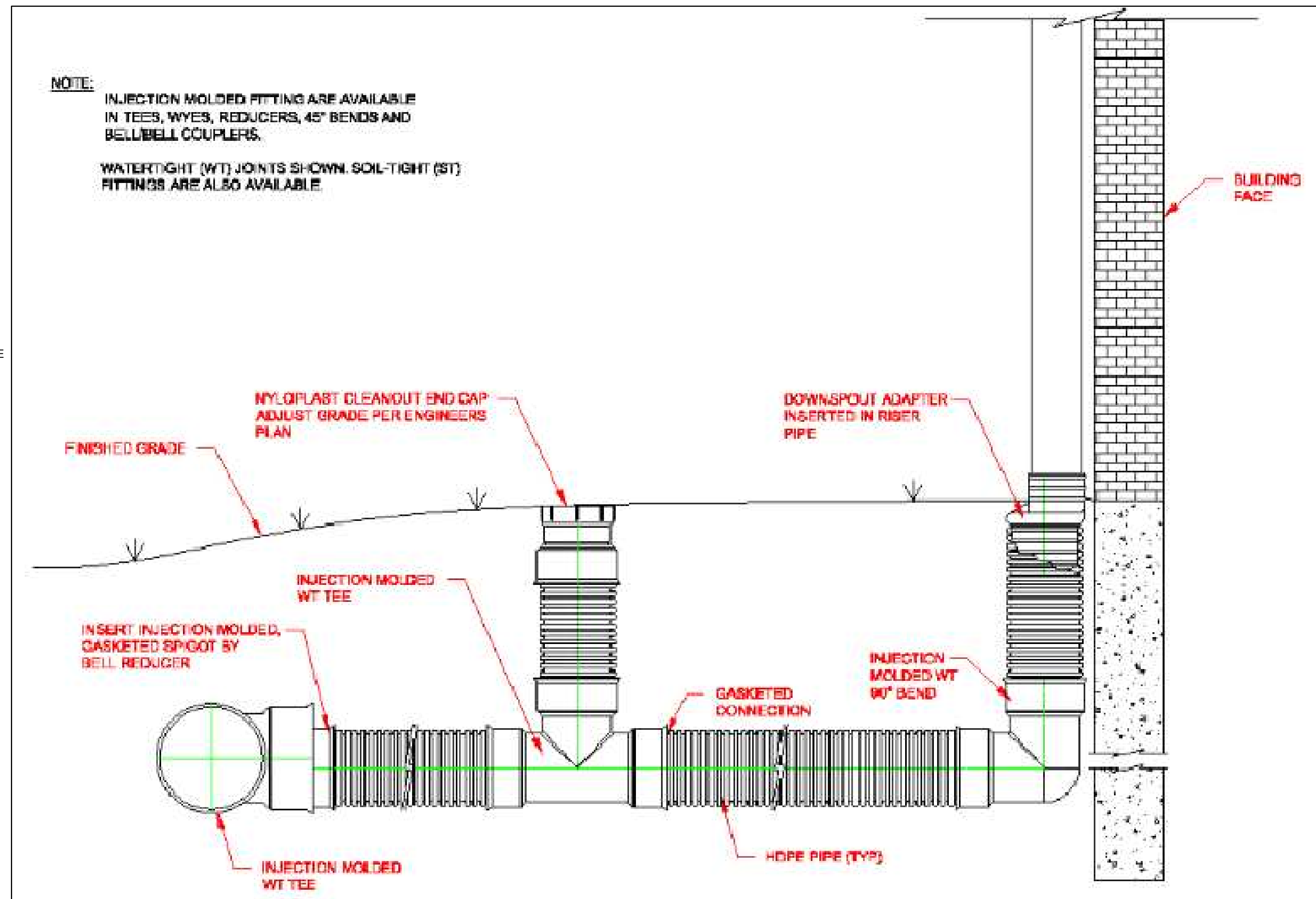
NYLOPLAST 2 FT X 2FT CURB INLET STRUCTURE: 30 __ AGS __ X



- 1 - 12" - 30" FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- 2 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
- 3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, N-12 HP, & PVC SEWER (4" - 24").
- 4 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
- 5 - ALL CURB INLET GRATE OPTIONS (STANDARD & DIAGONAL) SHALL MEET H-20 LOAD RATING

NOTE: INJECTION MOLDED FITTINGS ARE AVAILABLE IN TEES, WYES, REDUCERS, 45° BENDS AND BELLEBELL COUPLERS.

WATERTIGHT (WT) JOINTS SHOWN. SOIL-TIGHT (ST) FITTINGS ARE ALSO AVAILABLE.



STORM LINE DETAILS

GENERAL

- Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
- No geological information is shown on these plans.
- The utility locations shown on these plans are taken from utility company records and are approximate only. They do not constitute actual field locations. The contractor shall verify the location and depth of all utilities prior to construction.
- The contractor shall adhere to the provisions of the Senate Bill Number 583,78th General Assembly of the State of Missouri. The bill requires that any person of firm doing excavation on public right-of-way do so only after giving notice to, and obtaining information from, utility companies. State law requires 48 hours advance notice. The names and telephone numbers of utility companies, even if only remotely involved with this project are provided. Prior to commencement of work, the contractor shall notify all those companies which have facilities in the near vicinity of the construction to be performed.
- All waste material resulting from the project shall be disposed of off-site by the contractor.
- All excavation shall be unclassified. No separate payment will be made for rock excavation.
- The contractor shall control the erosion and siltation during all phases construction, and he shall keep the streets clean of mud and debris.
- All manholes, catch basins, utility valves and meter pits to be adjusted or rebuilt to grade as required. All existing utilities shall be adjusted as required.
- Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated; shall be free from muck and mud; and shall be sufficiently stable to remain firm and intact under the feet of the workmen or machinery engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
- The contractor is responsible for providing all surveying that may be required.
- Easements indicated on these drawings will be provided for on the final plat and properly dimensions. Easements outside the platted area will be provided for by separate documents prior to issuance of a construction permit.

SUMMARY OF PUBLIC IMPROVMENT QUANTITIES

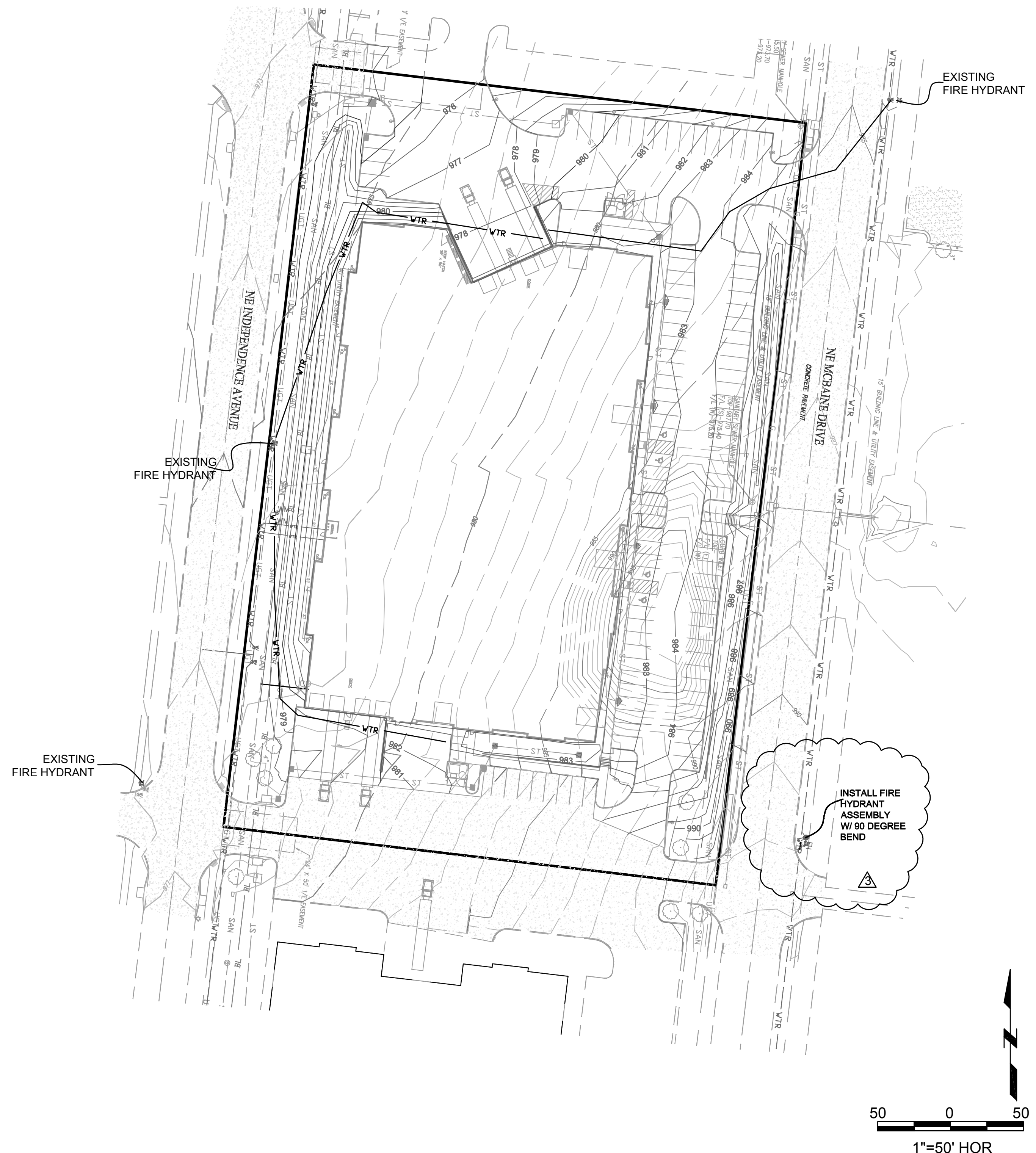
SUMMARY OF QUANTITIES	UNITS
PUBLIC WATER MAIN	
FIRE HYDRANT ASSEMBLY	1 EACH L.F.

UTILITY NOTES:

- ALL FIRE HYDRANTS AND WATER MAINS SHALL BUILT TO CITY STANDARDS AND DEDICATED TO THE CITY

WATER

- All construction shall follow the City of Lee's Summit Design and Construction Manual as adopted by Ordinance 5813 and with all the requirements of the Missouri Department of Health and Missouri Clean Water Commission.
- Class 50 Ductile Iron Pipe or C900 pipe shall be used per city specifications
- All fittings shall be lined inside and out with an asphaltic base or bitumastic coating, and shall be megalug.
- Fire Hydrants shall be Waterous Pacer WB-67 with non-rising stem or approved equal by the City Engineer. Hydrants shall have 5 1/4" valve with 4 1/2" pumper nozzle and 2-2 1/2" hose nozzles (left hand opening).
- Gate Valves to be on city approved product list valves 12 inches and larger shall be Butterfly valves manufactured by the Henry Pratt Company or City Engineer Approved equal Left hand opening minimum 200# testing AWWA.
- Valve boxes shall be Clay & Bailey # P1108 or any on city approved product list. All boxes to be installed out of pavement areas.
- Water lines are to be constructed to a depth of 4 feet below and back of street curbs. Street grading is to be complete prior to waterline placement.
- Easements for water lines located outside the platted area will be provided for by separate documents after the Final Plat is recorded.
- All tees, bends, plugs, valves and hydrants shall be provided with reaction blocking. Pre-cast blocks shall not be used.
- After water mains have been laid and partially backfilled, they shall be subject to a hydrostatic pressure test of not less than 150 psi, in accordance with AWWA C605. The line shall be pressurized to test pressure and closed for two hours. At the end of the two-hour period, the line shall be repressurized and the volume of water required to restore pressure shall be measured. The maximum amount of water to restore pressure shall be 0.5 gallons per 1000 feet of tested main. Testing shall be done by Contractor in presence of Engineer.
- Before connecting to City water mains and prior to wet tap, the new main shall be disinfected in accordance with AWWA C651. A 1 percent solution of chlorine shall be pumped into the water main, such that the water in the line will not have less than 25 mg/l of free chlorine. At the end of a 24 hour period, the water shall be tested to ensure that at least 10 mg/l of free chlorine. After satisfactory testing of chlorination, the main shall be flushed. Disinfection testing and flushing shall be done by Contractor in presence of Engineer.
- After final flushing and before the pipeline is placed in service, two samples shall be collected and shall be tested for bacteriological quality in accordance with the State Department of Health or other regulatory agency. Satisfactory results for both samples is required for successful completion of bacteriological testing. Contractor shall conduct all testing and provide testing results to Engineer.
- Sample Taps must be included in the new line, no less than two (2) feet no more than ten (10) feet from where the new water line connects to the existing lines at each end.
- A representative of the city water department must be present for:
 - Disinfecting
 - Pressure Testing
 - Bacteria Testing (a minimum of three required at perscribed locations to be determined by the water dept.)



I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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SHEET NO.
C600

JOB NO.
 E18-337

PUBLIC WATER MAIN IMPROVEMENT PLAN



I-470 LOT 13A LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 228 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JH
Checked By: DL
FILE: WAT-6
Rev: 1/14

GEN-6

REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)					
NOM. DIA. (INCHES)	TEE, PLUG	90	45	22.5	11.25
6	4.7	8.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.5	14.4	7.6	4.0
14	25.7	36.5	19.6	10.0	5.0
16	33.8	47.4	25.6	13.1	6.6
18	42.4	59.1	32.5	16.5	8.3
20	51.5	71.6	40.1	20.4	10.3
24	74.1	98.1	54.4	29.4	14.8

NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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FILE: WAT-1
Rev: 1/14

GEN-5

LEE'S SUMMIT MISSOURI
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Date: 02/13
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FILE: WAT-5
Rev: 1/14

GEN-4

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Rev: 1/14

GEN-3

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FILE: WAT-8
Rev: 1/14

GEN-2

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FILE: WAT-11
Rev: 1/14

GEN-5

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PUBLIC WORKS ENGINEERING DIVISION | 228 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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FILE: WAT-11
Rev: 1/14

GEN-5

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 228 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JH
Checked By: DL
FILE: WAT-9
Rev: 1/14

GEN-1

PUBLIC WATER MAIN DETAIL SHEET



I-470 LOT 13A

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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 Commercial Site Development
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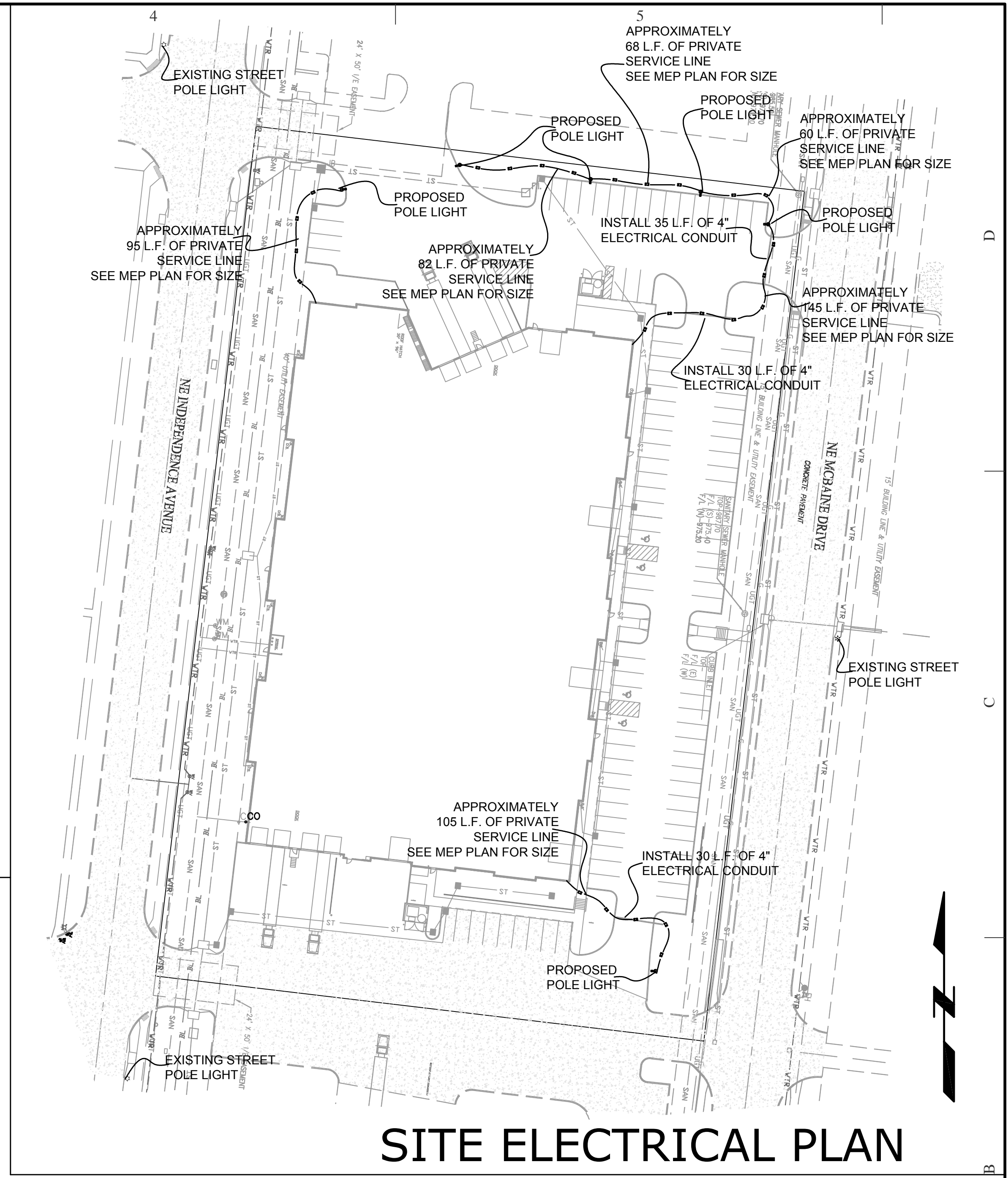
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SHEET NO.

C700

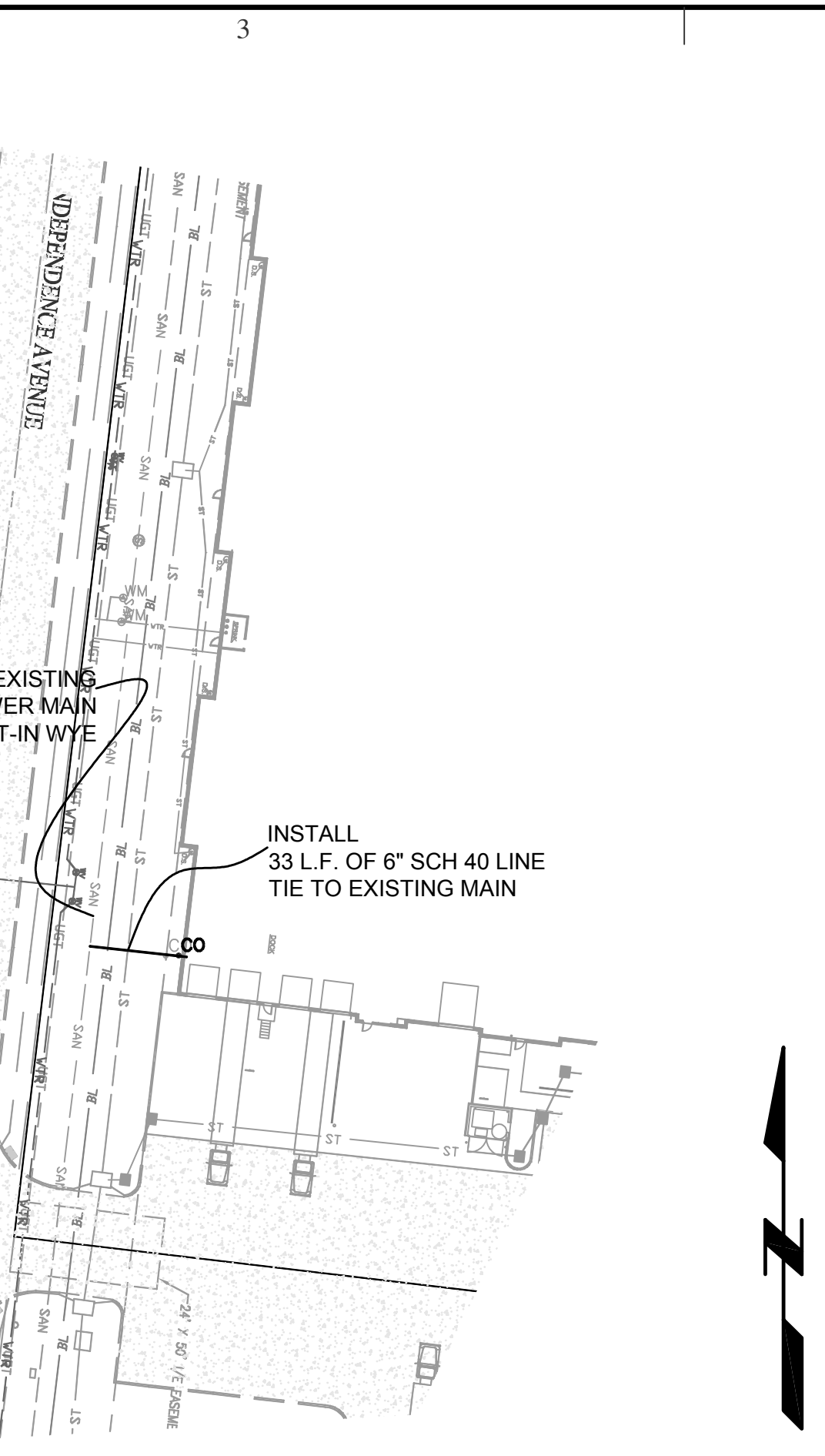
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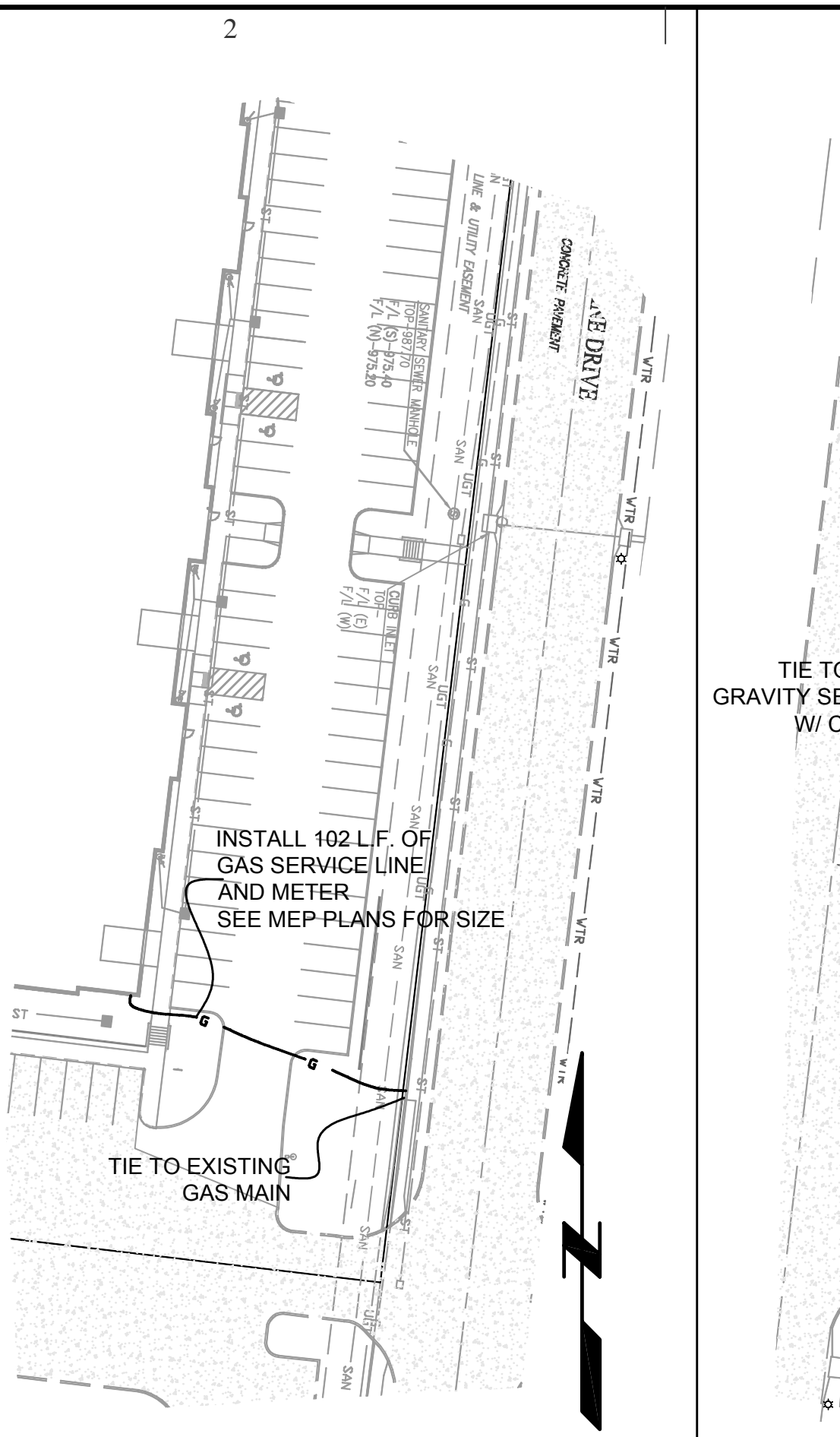
SITE ELECTRICAL PLAN

NOTE:
1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY PRIOR TO CONSTRUCTION.

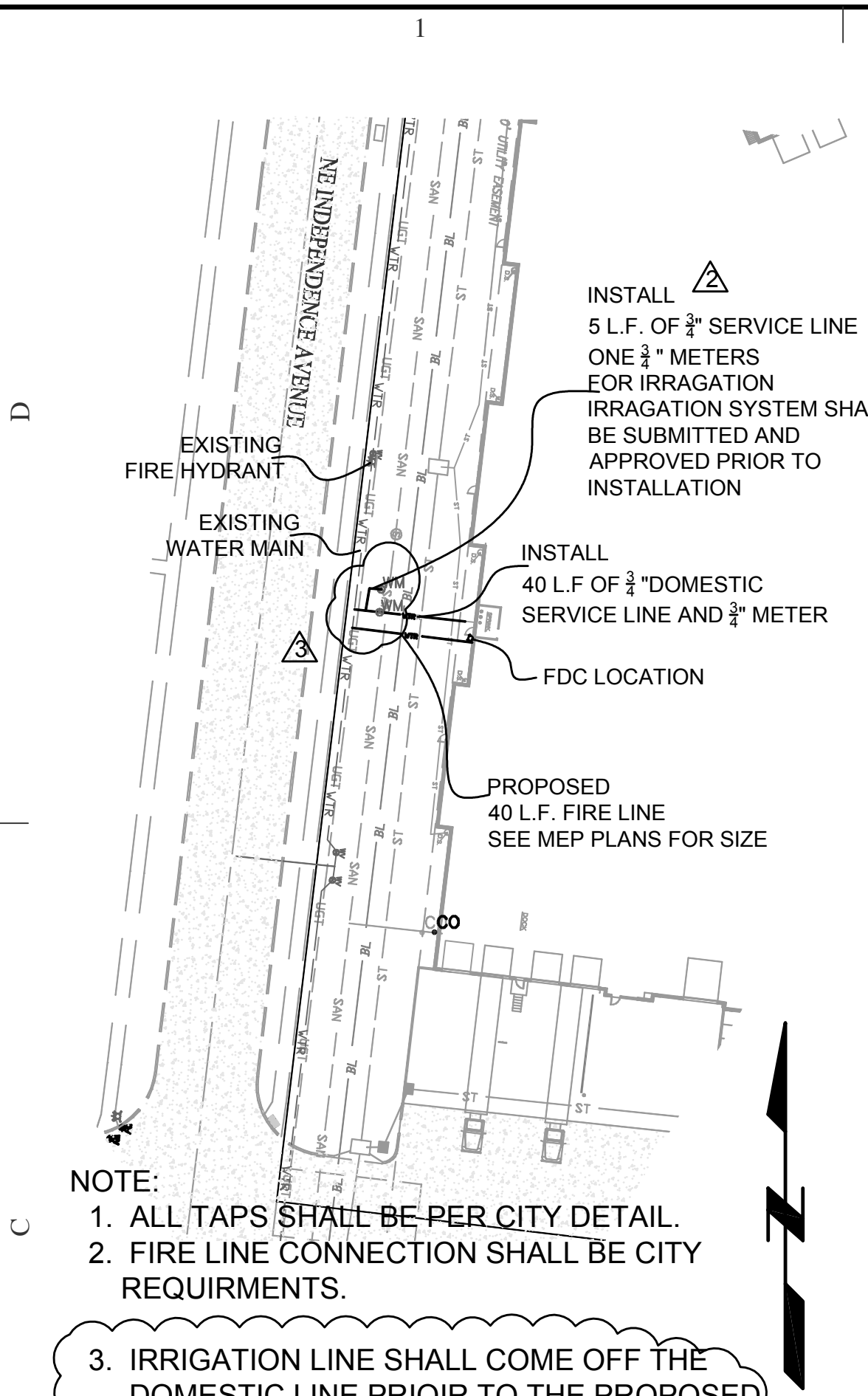
- NOTE:
1. ENDS OF ALL CONDUITS SHALL BE MARKED WITH 4"X4" WOOD POST.
 3. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY PRIOR TO CONSTRUCTION.
 4. SHOP DRAWINGS FOR THE LIGHT POLES SHALL BE SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION.



SITE SEWER PLAN



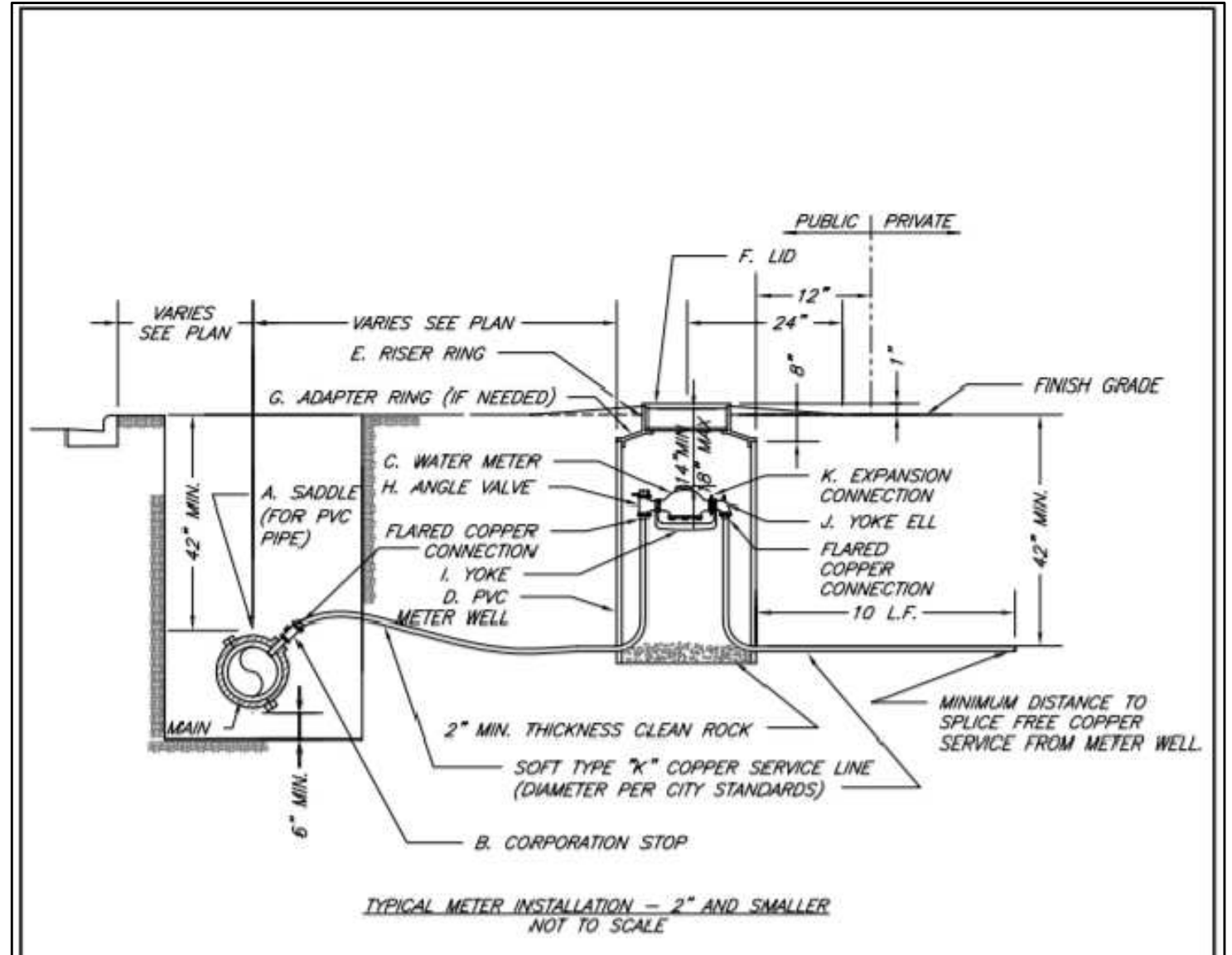
GAS SERVICE PLAN



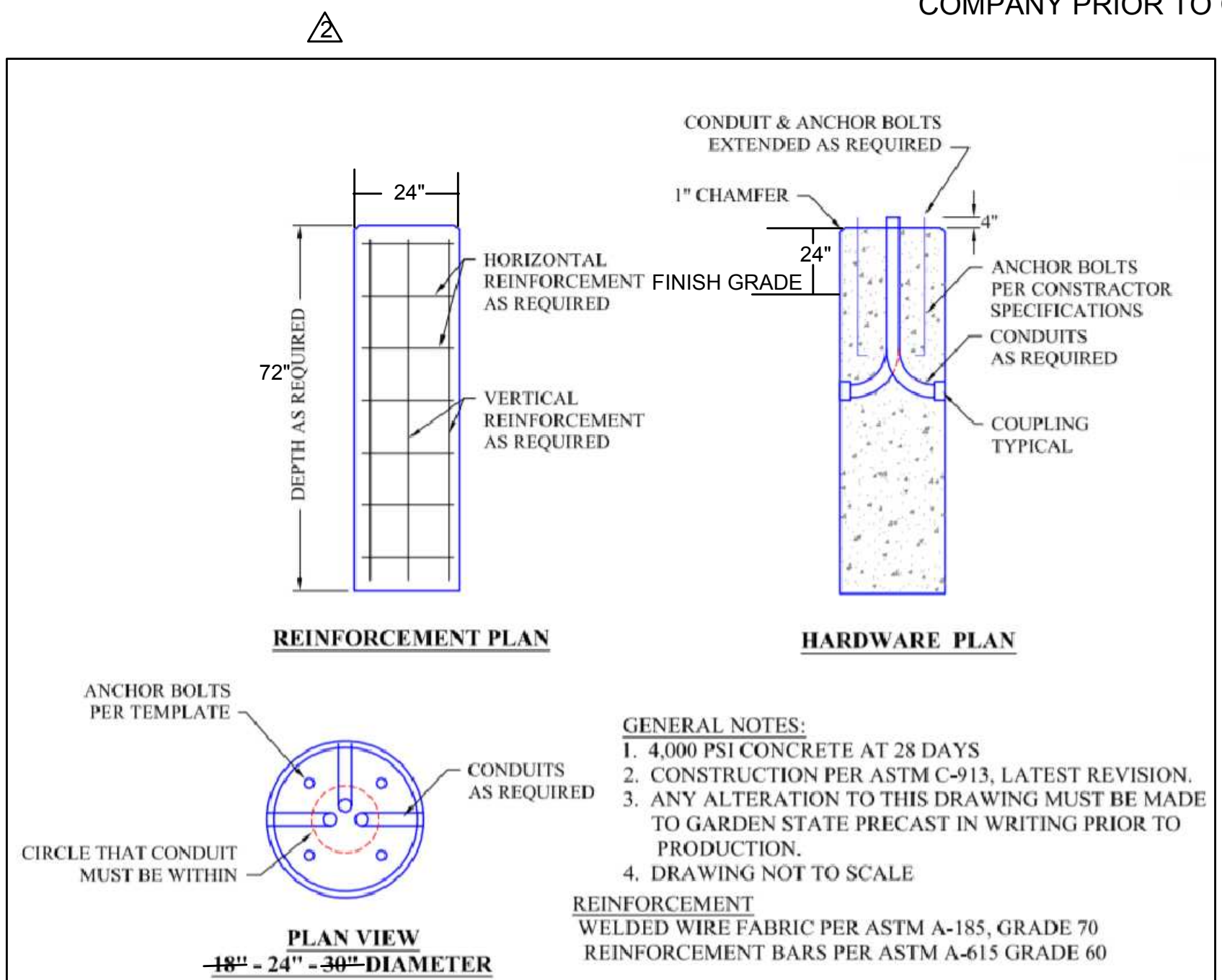
SITE WATER PLAN

- NOTE:
1. ALL TAPS SHALL BE PER CITY DETAIL.
 2. FIRE LINE CONNECTION SHALL BE CITY REQUIREMENTS.
 3. IRRIGATION LINE SHALL COME OFF THE DOMESTIC LINE PRIOR TO THE PROPOSED METER

NOTE:
1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY PRIOR TO CONSTRUCTION.



- NOTES:
1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
 2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
 3. CITY TO FURNISH ITEMS A-K.
 4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
 5. 42" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
 6. EXCAVATION FOR TAP TO EXPOSE 4' LINEAR FEET OF MAIN.
 7. NO SPICES ALLOWED BETWEEN METER AND MAIN.
 8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
 9. LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
 10. CONTACT WATER UTILITIES, 816-969-1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"



- GENERAL NOTES:
1. 4,000 PSI CONCRETE AT 28 DAYS
 2. CONSTRUCTION PER ASTM C-913, LATEST REVISION.
 3. ANY ALTERATION TO THIS DRAWING MUST BE MADE TO GARDEN STATE PRECAST IN WRITING PRIOR TO PRODUCTION.
 4. DRAWING NOT TO SCALE
- REINFORCEMENT
WELDED WIRE FABRIC PER ASTM A-185, GRADE 70
REINFORCEMENT BARS PER ASTM A-615 GRADE 60

- LEGEND
- ⊗ FIRE HYDRANT
 - ⊕ WATER VALVE
 - ⊕ WATER METER
 - ⊕ GAS METER
 - ⊕ GAS MARKER
 - MANHOLE
 - ⊕ STREET LIGHT
 - ⊕ YARD LIGHT
 - ⊕ CABLE TV PEDESTAL
 - ⊕ ELECTRIC TRANSFORMER
 - ⊕ TELEPHONE BOX
 - ⊕ POWER POLE
 - ⊕ POWER POLE W/TEL.
 - ⊕ ELECTRICAL PULL BOX
 - ⊕ POWER POLE W/STREET LIGHT
 - ⊕ ELECTRICAL PULL BOX
 - ⊕ GROUND FLOOD LIGHT
 - ⊕ TRAFFIC SIGN

LEE'S SUMMIT MISSOURI
 PUBLIC WORKS ENGINEERING DIVISION | 22816 GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
 Drawn By: JM
 Checked By: DL
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