LANCER ASSOCIATES ARCHITECTURE

ADDENDUM NO. FOUR

PROJECT: **Johnson County Recycling Center**

PROJECT NUMBER: **23122**

DATE OF ADDENDUM: **June 5, 2024**

THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND IS ISSUED IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY SIGNING THE ADDENDUM ACKNOWLEDGMENT SECTION OF THE BID FORM.

Questions:

Q: What is the material for the gates.? Those will be some sizeable double swing gates for that shadow box style of fence?
A: These will not be shadow box gates they will be a galvanized steel swing gate.

Q: What is the total linear footage you show for the shadowbox fencing? I'm seeing two gates but not the opening size—are these walk gates or Drive gates?
A: The shadowbox fence length is 320 feet. The gates on site will be drive gates not walking gates.

Q: S001 calls for seismic site class "D", soils report indicates site class "C". Should we design for site class "C" or "D"?
A: Site Class is C. Report was completed after the drawings were completed as noted in the Foundation Notes on S001. The Geotech Report can be followed. See below for the updated Seismic Design Criteria that will be updated once the final PEMB loads are

provided.

1 B. Seismic Load

Site Classification	C
Risk Category (IBC Table 1604.5)	II
Seismic Importance Factor, Ie	1.0
Mapped Spectral Response Acceleration, Ss	0.167g
Mapped Spectral Response Acceleration, S1	0.089g
Design Spectral Response Acceleration, Sds	0.134
Design Spectral Response Acceleration, Sd1	0.101
Seismic Design Category, SDC	B
Response Modification Coefficient, R	3
Seismic Response Coefficient, Cs	0.045

Q: S001 PEMB notes basically state that the "PEMB design loads indicate 10 PSF collateral load but can be reduced to 5 PSF". I didn't see a collateral load listed in any of the design criteria. Should we design for a 5 PSF or 10 PSF uniform collateral load for all frames and roof secondaries?
A: 5psf

Q: The overall dimensions on the architectural and structural drawings do not match up. Which one should be used?
A: Structural has dimensioned to Steel Lines of PEMB, Architectural are to the outside face of the building. Use architectural to the outside face of the metal paneling,

Q: It is very likely the lead time for the PEMB building is not going to allow for a March/April completion date. We are currently doing a 9,300 square foot PEMB building for Purdue right now and it was 4 months to receive the building from bid day and that was expediting everything.
A: The owner would like to be able to move in as was indicated in the prebid meeting; however, the owner understands that there might be lead time issues outside of the contractors control

Q: Do you have the CDR already?
A: By the time the contract is signed, the contractor will have an early foundation release to be able to start moving dirt. State requires sealed PEMB drawings for complete release

Q: Are there liquidated damages?
A: There aren't liquidated damages on this building

Q: Will item 3.4.5 in the example contract be enforced? We have a few subs concerned about that and would like to make sure I include the administration costs associated with that.

- **3.4.5 The Contractor shall perform a criminal history check for all workers including all subcontractors prior to starting work on the project. A list of workers who have successfully passed the criminal history check and who will be working on the project shall be provided to the Owner's representative. Only persons who have successfully passed the criminal history check will be allowed to work on the project. The Contractor and all subcontractors shall provide written verification to the Owner's representative that all persons working on the project have completed and filed valid I-9 forms and are eligible for employment on the project**

A: Yes, we expect the GC to control who comes on site and verify that the people coming on site are cleared to work on the project

Attachments: Civil Addendum and re-issued civil set, pavement cross-sections

End of Addendum 4

Johnson County Recycle Center
Addendum Plan Changes Summary

- Sheet 100
  - Updated the INDOT Specs to be dated 2024
- Sheet 200
  - Added Note 3 to the Topographical Notes regarding demolition of the existing drive and access to the adjacent business
- Sheet 300
  - Changed the striping and added words at the exit aisle from the drive through; added item 5 to the Site Dimension Legend
  - Added striping between the two entrance bays to the drive through
  - Reduced sidewalk width along the edge of pavement of the exit drive aisle to 4 feet wide
  - Added space for a second Tox Box south of the building and modified the sidewalk accordingly
  - Added small concrete pad for mechanical equipment north of the building
  - Added Note 9 regarding drive construction and adjacent business access
- Sheet 400
  - Adjusted downspouts on the north side of the building. Downspout at the west end to be collected and piped to pond. Remaining downspouts on north to be joined and piped to Str. No. 4. Modified Storm Downspout Data Table accordingly.
  - Modified pipe type and size for Str. No. 5 leaving the ADS Duraslot XL Trench Drain. Pipe is now 10" HDPE pipe
  - Added Note 14 to the Utility Notes
- Sheet 500
  - Added ditch from pond spillway to existing ditch south of building
  - Adjusted grades around additional Tox Box
  - Adjusted grades at sidewalk along edge of pavement south of the building
- Sheet 600
  - Added Drainage Notes to the sheet
- Sheet 700
  - Added Utility Crossings for Line 'STM-C'
  - Added invert information for Line 'STM-D'
  - Corrected the pipe size and type for Line 'STM-E' as well as fixing the grade tags
- Sheet 701
  - Revised Line 'STM-G' for clarity and new profile grade
- Sheet 800
  - Added Utility Crossings for Line 'SS-A'
  - Changed the pipe type to be SDR-26 instead of SDR-35
  - Added Sanitary Main Installation Notes

- Sheet 900
    - Added Erosion Control Blanket along new ditch cut from the pond spillway to the drive culvert
    - Adjusted limits of construction around the southern portion of the property
- Sheet 901
    - Adjusted A22 and A23 accordingly with changes to construction limits
- Sheet 1000
    - Added more information for the retaining wall details including thickness, footing depth, and rebar
- Sheet 1200
    - Adjusted location of all trees and shrubs. Added callouts for the desired type of tree to be used at each location

FINAL CONSTRUCTION PLANS

JOHNSON COUNTY RECYCLE CENTER
2250 N. GRAHAM ROAD
FRANKLIN, INDIANA 46131

VICINITY MAP
NO SCALE

LOCATION MAP
NO SCALE

PLAN INDEX	
SHEET #	SUBJECT
100	TITLE SHEET
200	TOPOGRAPHICAL SURVEY
300	SITE DIMENSION PLAN
400	UTILITY PLAN
500	GRADING PLAN
600	DRAINAGE PLAN
700–701	STORM PLAN AND PROFILE
800	SANITARY PLAN AND PROFILE
900	EROSION CONTROL PLAN
901	STORMWATER POLLUTION PREVENTION PLAN
1000–1001	MISCELLANEOUS DETAILS
1100	SPECIFICATIONS
1200	LANDSCAPE PLAN
E00	SITE LIGHTING & PHOTOMETRIC PLAN
E01	GREY SCALE RENDERING
E02	SITE LIGHTING DETAILS

OWNER/DEVELOPER
JOHNSON COUNTY SOLID WASTE DISTRICT
86 W. COURT STREET
FRANKLIN, IN 46131
PHONE: (317) 346-4301
CONTACT: KEVIN WALLS
EMAIL: kwalls@co.johnson.in.us

ENGINEER
CROSSROAD ENGINEERS, PC
115 N. 17TH AVENUE
BEECH GROVE, IN 46107
PHONE: (317) 780-1555
CONTACT: GREGORY J. ILKO
EMAIL: gilko@crossroadengineers.com

ALL IMPROVEMENTS SHALL COMPLY WITH ALL APPLICABLE ADA REQUIREMENTS

INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DETAILS DATED 2024 TO BE USED WITH THESE PLANS

LEGAL DESCRIPTION

INSTRUMENT NO. 2023–000852

LOT NUMBERED ONE IN THE LINVILLE COMMERCIAL MINOR SUBDIVISION AS RECORDED IN PLAT CABINET E, SLIDE 359B AND AS INSTRUMENT NO. 2019–000197 IN THE OFFICE OF THE RECORDER OF JOHNSON COUNTY, INDIANA.

UTILITY CONTACTS

Note: Listed below are the Indiana Underground Plant Protection Services Contacts; Others not listed may exist. The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities comprise all such utilities in the area, either in–service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although the surveyor does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.

UTILITY	COMPANY	CONTACT	PHONE	EMAIL
COMMUNICATIONS	MCI	DEAN BOYERS	469–886–4238	investigations@verizon.com
FIBER OPTIC	BRIGHTSPEED	MELISSA TEAGUE	765–656–4663	melissa.teague@brightspeed.com
FIBER OPTIC	METRO FIBERNET	MARK DECKARD	812–253–2196	rrhwypermits@metronetinc.com
ELECTRIC	DUKE ENERGY	JESSICA TURNER	812–662–2007	jessica.turner3@duke–energy.com
SANITARY	CITY OF FRANKLIN DPW	EVAN HART	317–412–8450	ehart@franklin.in.gov
WATER	INDIANA AMERICAN WATER COMPANY	TRACY WHITE	317–885–2426	tracy.s.white@amwater.com
GAS	CENTERPOINT ENERGY	JON EASTHAM	765–287–2119	publicproject@centerpointenergy.com
FIRE DEPARTMENT	CITY OF FRANKLIN	BRYNE PURSIFULL	317–736–3650	bpursifull@franklin.in.gov

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 100

TITLE SHEET

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

GREGORY J. ILKO
REGISTERED NO. 10300059
STATE OF INDIANA
PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
9				
8				
7				
6				
5				
4				
3				
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI

SHEET 100

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
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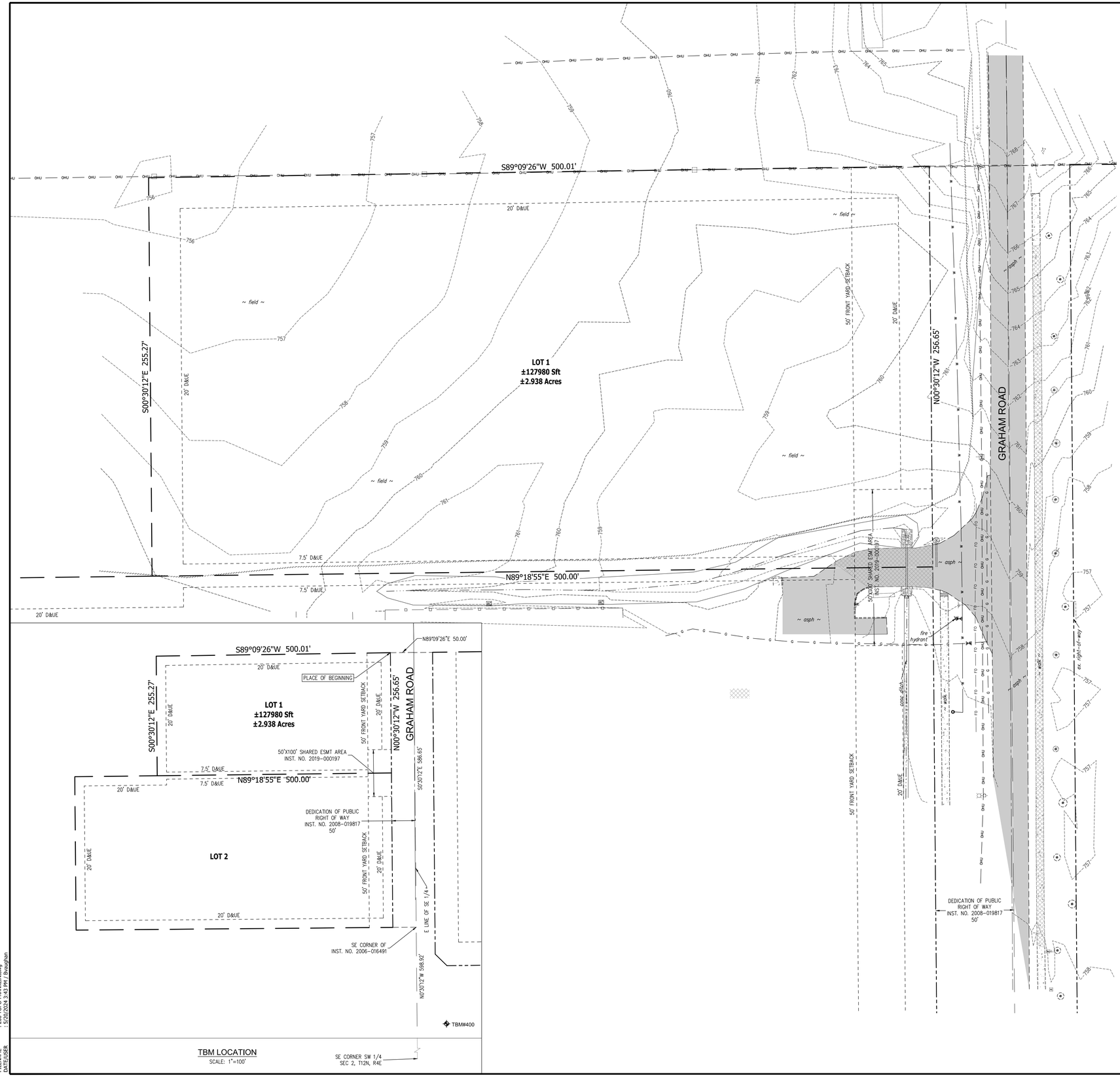

TBM LOCATION
SCALE: 1"=100'

SE CORNER SW 1/4
SEC 2, T12N, R4E

30 0 30 60
SCALE: 1" = 30'

EXISTING LEGEND

- POWERPOLE
- POWERPOLE W/RISER
- POWERPOLE W/LIGHT
- GUY WIRE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- GAS VALVE
- SIGN
- MAILBOX
- TEMP. BENCHMARK
- MONUMENT FOUND
- ASPHALT
- GRAVEL
- CONCRETE
- REMOVAL/DEMOLISH
- 800 CONTOURS
- PROPERTY LINE
- SECTION LINE
- RIGHT-OF-WAY
- EASEMENT
- ADJOINER LINE
- PAVEMENT LINE
- FIELD LINE
- FENCE
- DITCH
- GAS LINE
- WATER LINE
- FIBER OPTIC LINE
- OVERHEAD UTILITY LINE
- SANITARY SEWER W/MANHOLE
- STORM SEWER W/ END SECTION

TOPOGRAPHICAL NOTES

1. CONTRACTOR SHALL DISPOSE OF ALL MATERIALS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
2. UTILITIES ARE GRAPHICAL REPRESENTATION PER SURVEY AND MAPPING. CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
3. PRIOR TO ANY DEMOLITION OF THE EXISTING DRIVE ENTRANCE, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND ENGINEER TO ENSURE ACCESS IS MAINTAINED TO THE ADJACENT BUSINESS AT ALL TIMES. NO WORK SHOULD BE DONE ON THE DRIVE ENTRANCE WITHOUT COORDINATION WITH THE ADJACENT BUSINESS AS TO ENSURE THEIR ACCESS IS MAINTAINED. THE ADJACENT BUSINESS MUST ALSO BE NOTIFIED PRIOR TO ANY MODIFICATIONS TO THE EXISTING DRIVE.

FLOODPLAIN INFORMATION

BY GRAPHIC PLOTTING ONLY, THIS TRACT OF LAND DESCRIBED HEREON LIES WITHIN ZONE 'X' (AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AND IS NOT IN A SPECIAL FLOOD HAZARD AREA AS PLOTTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR JOHNSON COUNTY, INDIANA, COMMUNITY PANEL NO. 18081C0143E, WHICH BEARS AN EFFECTIVE DATE OF JANUARY 29, 2021.

BENCHMARK INFORMATION

ORIGINATING BENCHMARK

DESIGNATION – X 13
PID – KA0010
STATE/COUNTY – IN/MORGAN
USGS QUAD – MOORESVILLE EAST (1980)

VERT ORDER – FIRST CLASS II

DESCRIBED BY COAST AND GEODETIC SURVEY 1946
1.2 MI N FROM WAVERLY, IN JOHNSON COUNTY, 1.2 MILES NORTH ALONG STATE HIGHWAY 37 FROM THE INTERSECTION OF STATE HIGHWAY 144 AT WAVERLY, MORGAN COUNTY, 125 YARDS NORTH OF THE MORGAN-JOHNSON COUNTY LINE, 26 FEET WEST OF THE CENTERLINE OF THE HIGHWAY, IN LINE WITH THE WEST RIGHT-OF-WAY FENCE, 1.5 FEET SOUTH OF A WHITE WOODEN WITNESS POST, AND ABOUT 2 FEET HIGHER THAN THE HIGHWAY. A STANDARD DISK, STAMPED 686.370 X 13 1930 AND SET IN THE TOP OF A CONCRETE POST PROJECTING 7 INCHES ABOVE GROUND.
RECOVERY NOTE BY IN DEPT OF NAT RES 1985
NEW DESC– AT THE INTERSECTION OF NEW STATE ROAD 144 AND OLD STATE ROAD 37, IN THE SOUTHWEST QUARTER OF THE INTERSECTION, WITNESS POST IS GONE RIGHT-OF-WAY FENCE IS GONE, ALL OTHER INFORMATION APPEARS TO BE CORRECT.

ELEV. = 685.94 (NAVD 88)

TBM #400
CUT "BOX" ATOP SW MOST CRNR OF CONC HEADWALL @ SE QUAD OF 'LINVILLE WAY' & 'GRAHAM RD'

ELEV. = 754.94

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FIBER OPTIC	METRO FIBERNET	MARK DECKARD	812-253-2196	mfwypermits@metronetinc.com
ELECTRIC	DUKE ENERGY	JESSICA TURNER	812-662-2007	jessica.turner.3@duke-energy.com
SANITARY	CITY OF FRANKLIN DPW	EVAN HART	317-412-8450	ehart@franklin.in.gov
WATER	INDIANA AMERICAN WATER COMPANY	TRACY WHITE	317-885-2426	tracy.s.white@amwater.com
GAS	CENTERPOINT ENERGY	JON EASTHAM	765-287-2119	publicproject@centerpointenergy.com
FIRE DEPARTMENT	CITY OF FRANKLIN	BRYNE PURSIFULL	317-736-3650	bpursifull@franklin.in.gov

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INDIANA 811 Know what's below. Call before you dig

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

TOPOGRAPHICAL SURVEY

JOHNSON COUNTY RECYCLE CENTER

JOB No.	-	DRAWN	LMC	CHECKED	BTV	APPR.	GJI
DATE	APRIL 11, 2024	DESIGNED	BTV				

SHEET 200

GREGORY J. ILKO
REGISTERED
NO. 10300059
STATE OF INDIANA
PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCRB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI

SHEET 200

DIRECTORY PATH : R:\Active\Johnson-Rhoda\JoCo Recycle Center\Design\CAD\Plans
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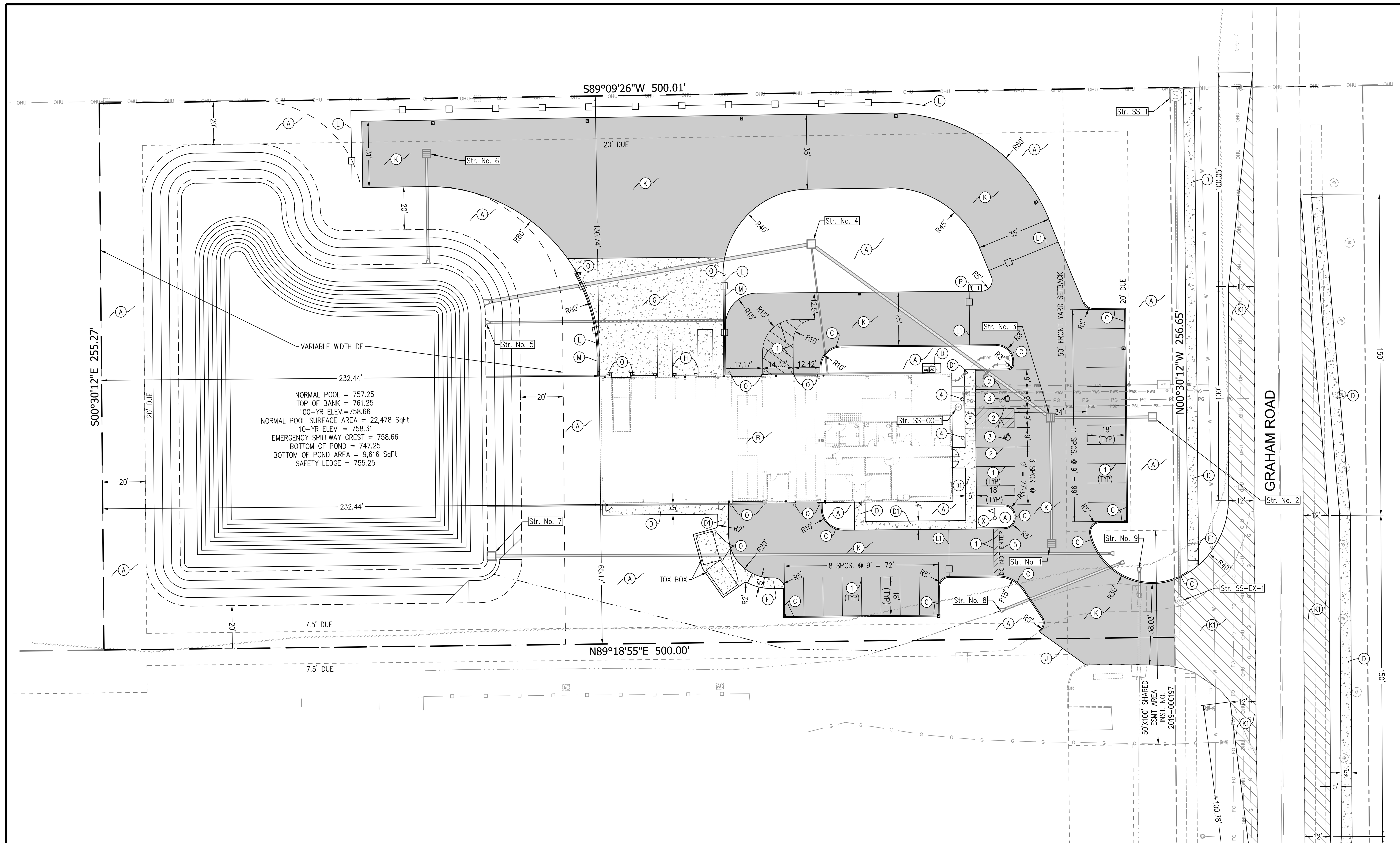
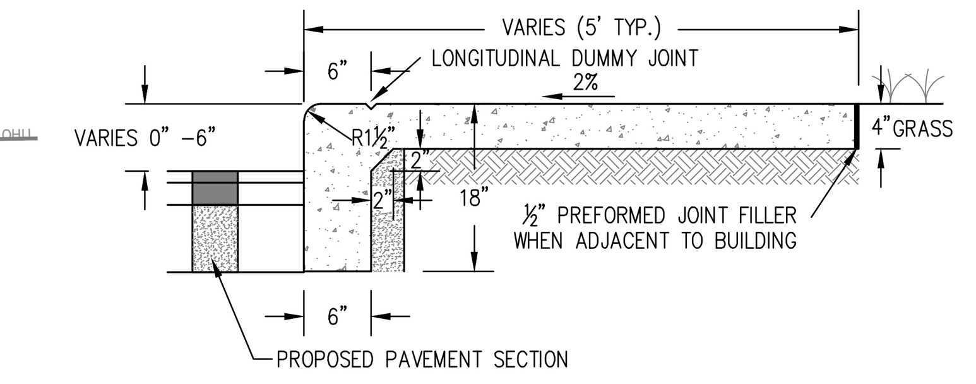
SITE DIMENSION PLAN

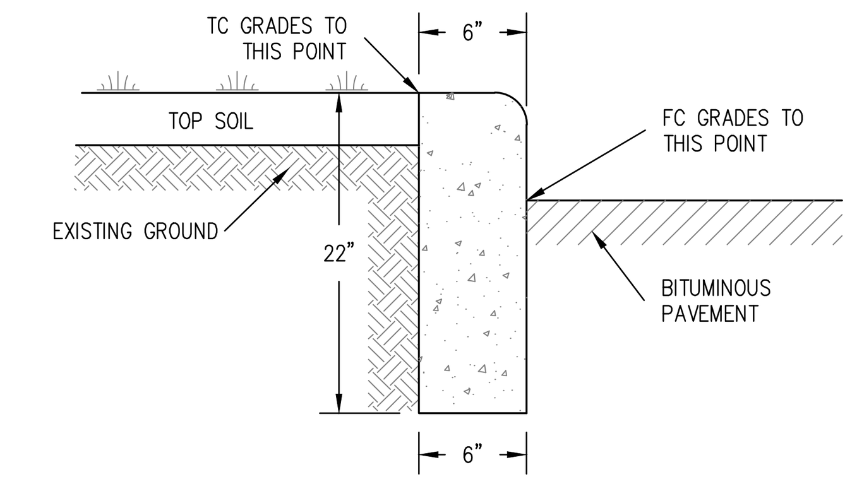
JOHNSON COUNTY RECYCLE CENTER



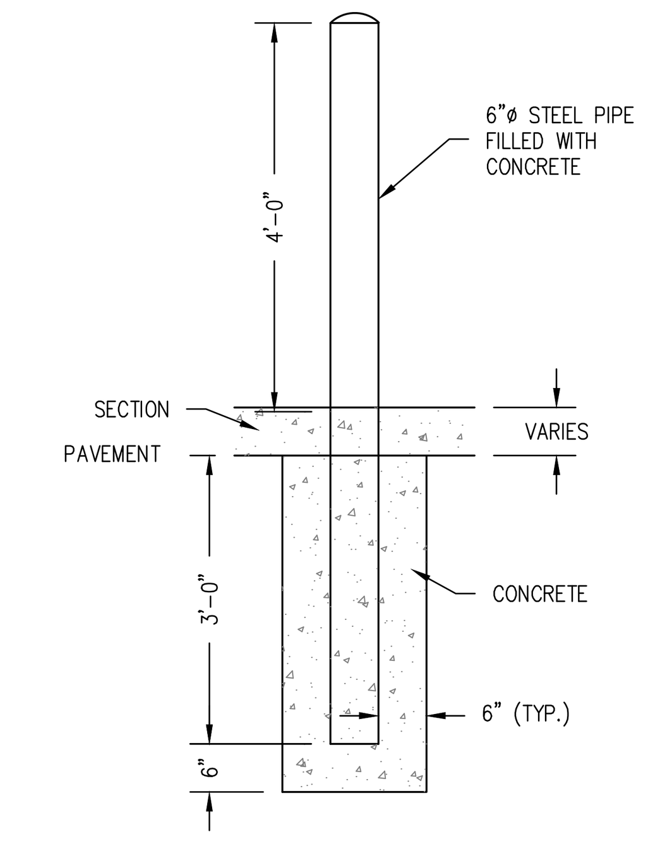


MONOLITHIC CURB AND SIDEWALK (D1)
NOT TO SCALE

SCALE: 1" = 30'



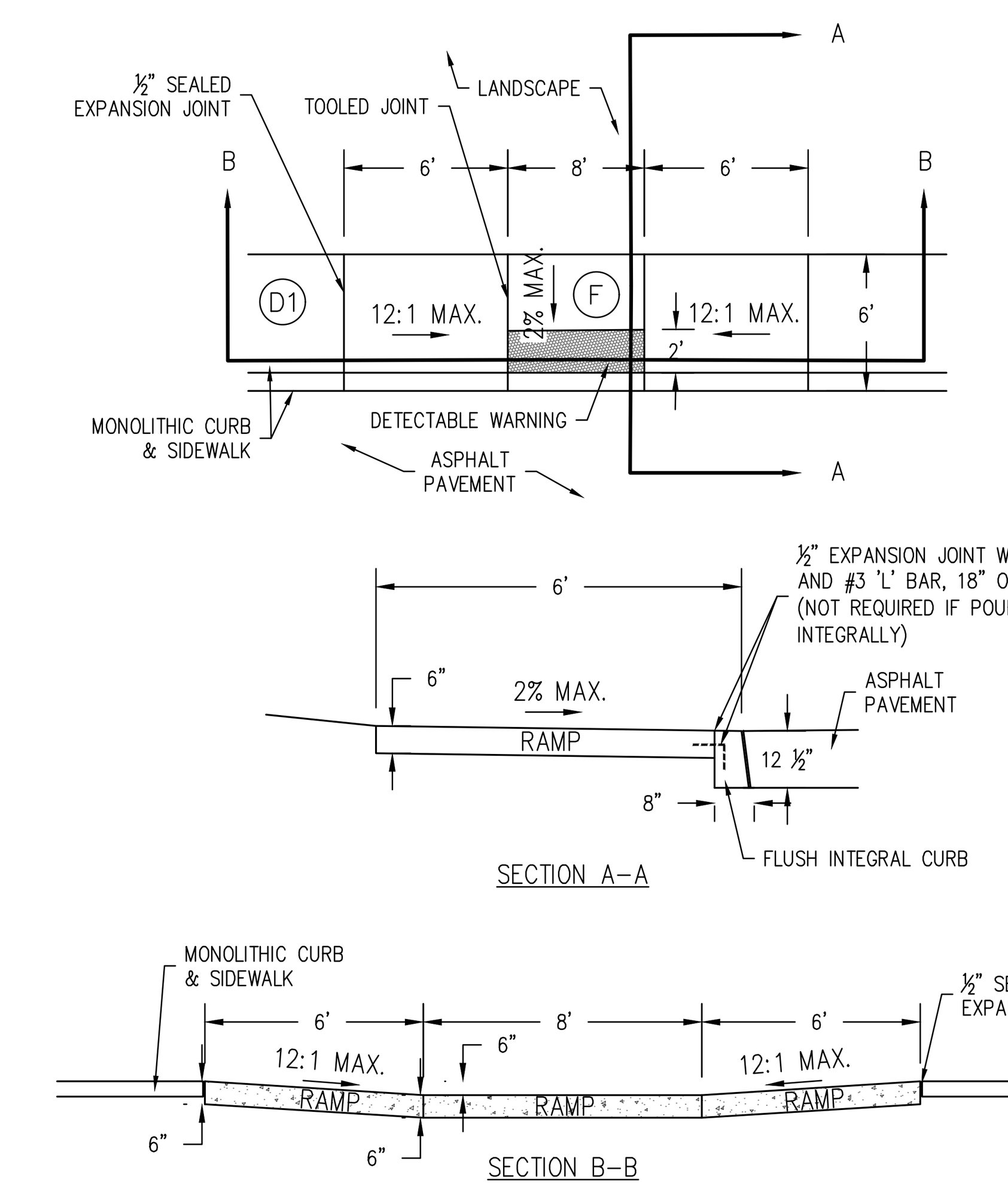
STRAIGHT CONCRETE CURB (C)
NOT TO SCALE



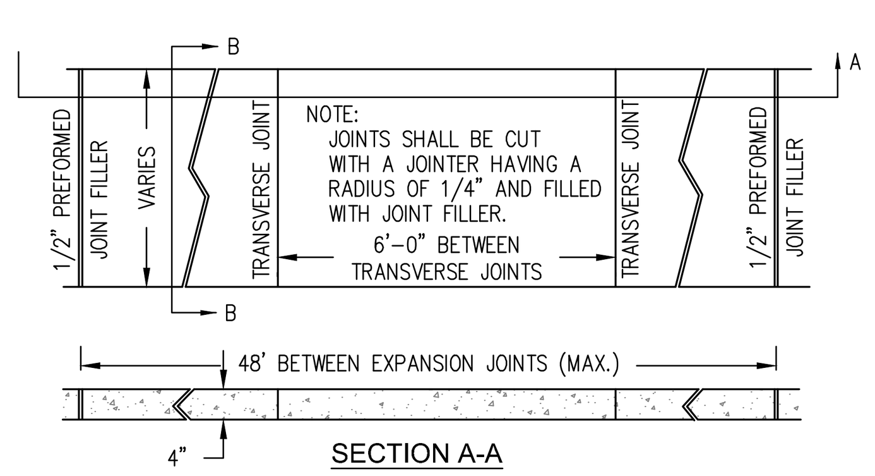
PIPE BOLLARD DETAIL (O)
NOT TO SCALE

SITE DIMENSION LEGEND

(A)	MULCH SEEDING/LANDSCAPE AREAS
(B)	STRUCTURE FOUNDATION – PER BUILDING PLANS
(C)	STRAIGHT CONCRETE CURB (SEE DETAIL–THIS SHEET)
(D)	4" CONCRETE SIDEWALK (SEE DETAIL–THIS SHEET)
(D1)	MONOLITHIC CONCRETE CURB AND SIDEWALK (SEE DETAIL–THIS SHEET)
(F)	HANDICAP RAMP (SEE DETAIL–THIS SHEET)
(F1)	HANDICAP RAMP (SEE DETAIL–THIS SHEET)
(G)	TYPICAL CONCRETE SECTION 9" CONCRETE SLAB ON 6" COMPACTED AGGREGATE #53 ON COMPACTED SUBGRADE (SEE DETAIL–THIS SHEET)
(H)	DUMPSTER/COMPACTER
(J)	SAWCUT
(K)	TYPICAL ASPHALT SECTION 1.5" HMA SURFACE 9.5mm, ON 3" HMA INTERMEDIATE 19.0mm, ON 6" HMA BASE 25.0mm, ON 8" COMPACTED AGGREGATE #53, ON COMPACTED SUBGRADE (SEE DETAIL–THIS SHEET)
(K1)	HEAVY DUTY ASPHALT SECTION 1.5" HMA SURFACE 9.5mm, ON 3" HMA INTERMEDIATE 19.0mm, ON 6" HMA BASE 25.0mm, ON 8" COMPACTED AGGREGATE #53, ON COMPACTED SUBGRADE (SEE DETAIL–THIS SHEET)
(L)	FENCE (SEE DETAIL–SHEET 1000)
(L1)	SWING GATE (DETAIL PER OWNER)
(M)	RETAINING WALL (SEE DETAIL–SHEET 1000)
(O)	BOLLARD (SEE DETAIL–THIS SHEET)
(P)	BICYCLE RACK (SEE DETAIL–THIS SHEET)
(X)	FLAG POLE PER OWNER
(1)	LINE, PAINTED, SOLID WHITE, 4"
(2)	LINE, PAINTED, SOLID BLUE, 4"
(3)	HANDICAP SYMBOL, PAINTED, SOLID BLUE, 4"
(4)	ADA SIGNAGE (SEE DETAIL THIS SHEET)
(5)	WORD "DO NOT ENTER", PAINTED, SOLID WHITE

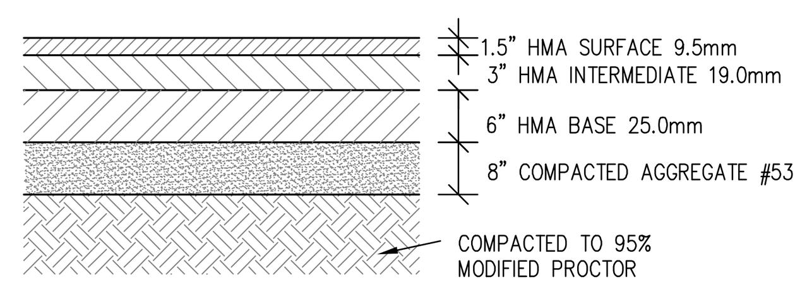


PARALLEL CURB RAMP (F)
NOT TO SCALE

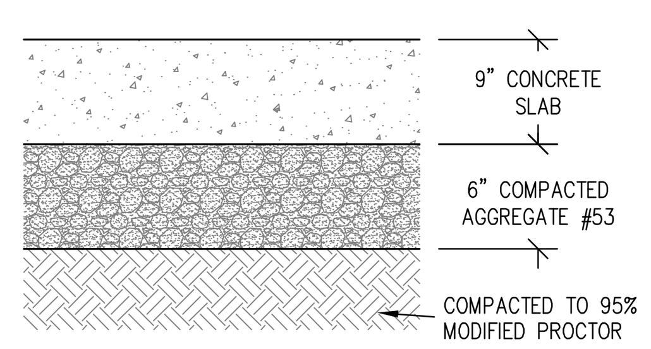


CONCRETE SIDEWALK (D)
NOT TO SCALE

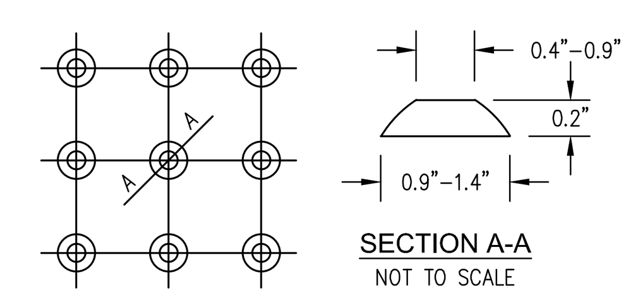
NOTES:
1) MAXIMUM ALLOWABLE CROSS SLOPE OF SIDEWALK SHALL NOT EXCEED 2% IN ACCORDANCE WITH A.D.A. REQUIREMENTS. SIDEWALKS EXCEEDING THE ALLOWABLE CROSS SLOPE WILL BE REJECTED AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT.



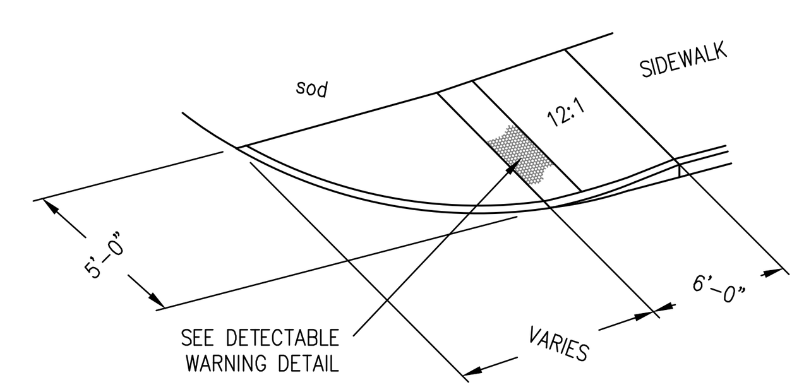
ASPHALT PAVEMENT SECTION (K) (K1)
NOT TO SCALE



TYPICAL CONCRETE SECTION (G)
NOT TO SCALE



TRUNCATED DOMES USED IN DETECTABLE WARNINGS
NOT TO SCALE



HANDICAP RAMP TYPE 'H' MODIFIED (F1)
NOT TO SCALE

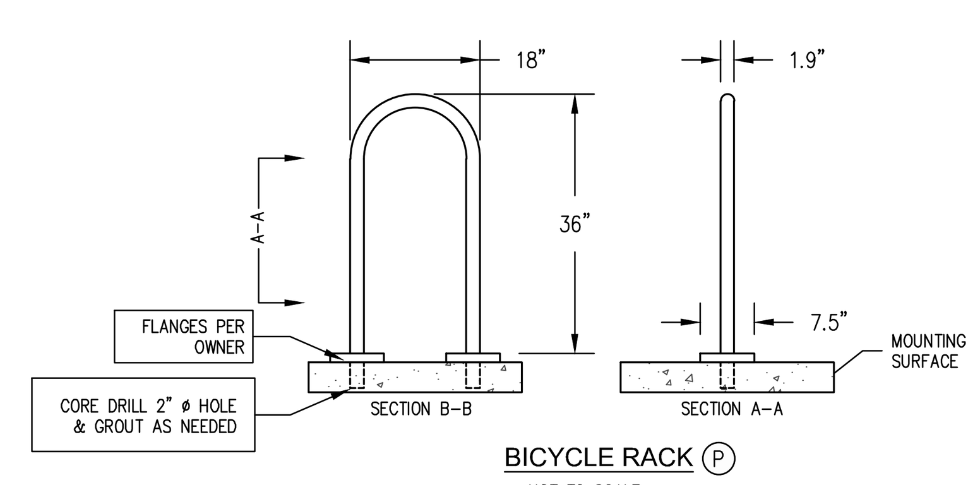
SITE DIMENSION NOTES

1. CONTRACTOR SHALL NOTIFY ENGINEER, IF PROOF ROLL OF SUBGRADE FAILS, TO DETERMINE IF LIME STABILIZATION OF SUBGRADE IS NECESSARY.
2. ALL RADII DIMENSIONS ARE TO THE BACK OF PROPOSED CURB OR EDGE OF PAVEMENT.
3. SIGNAGE SHALL INCLUDE ALL NECESSARY HARDWARE AND FITTINGS, INCLUDING 10 FT. OF 11 GUAGE FLANGED CHANNEL SIGN POST.
4. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL SIGNAGE. VERIFY CONFLICTS WITH OWNER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK.
6. CONTRACTOR SHALL COORDINATE WITH OWNER AND APPLICABLE UTILITY COMPANIES FOR CABLE, ELECTRIC, GAS, AND TELEPHONE SERVICE INSTALLATIONS.
7. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
8. PROOF ROLL OF PAVEMENT SECTIONS IN THE R/W (SUBGRADE AND STONE BASE) SHALL BE PERFORMED AND SHALL BE WITNESSED BY CITY ENGINEERING STAFF. CONTACT CITY OF FRANKLIN ENGINEERING AT LEAST 48 HOURS PRIOR TO PERFORMING PROOR ROLLS.
9. THE ADJACENT BUSINESS OWNER SHALL BE NOTIFIED PRIOR TO ANY WORK BEING DONE ON THE EXISTING DRIVE ENTRANCE. CONTRACTOR TO COORDINATE WITH OWNER, ENGINEER, AND ADJACENT BUSINESS OWNER PRIOR TO ANY WORK BEING DONE.

NOTE: MAXIMUM ALLOWABLE CROSS SLOPE OF SIDEWALK SHALL NOT EXCEED 2% IN ACCORDANCE WITH A.D.A. REQUIREMENTS. SIDEWALKS EXCEEDING THE ALLOWABLE MAX. WILL BE REJECTED AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT.

PARKING ANALYSIS

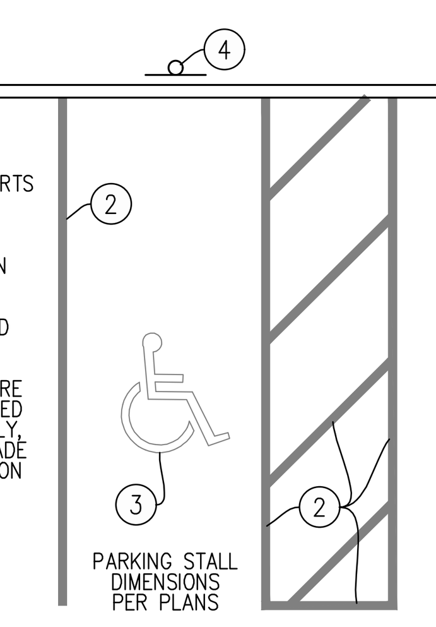
RECYCLING FACILITY		
TOTAL EMPLOYEES	=	8 TOTAL
REQUIRED RATIO	=	1 SPCS/EMP.
OFFICE SPACE	=	512 SFT.
REQUIRED RATIO	=	1 SPC./250 SFT.
TOTAL REQUIRED SPACES	=	11 SPACES
STANDARD PARKING SPACES	=	23 SPACES
HANDICAP ACCESSIBLE SPACES	=	2 SPACES
TOTAL PROPOSED PARKING SPACES	=	25 SPACES



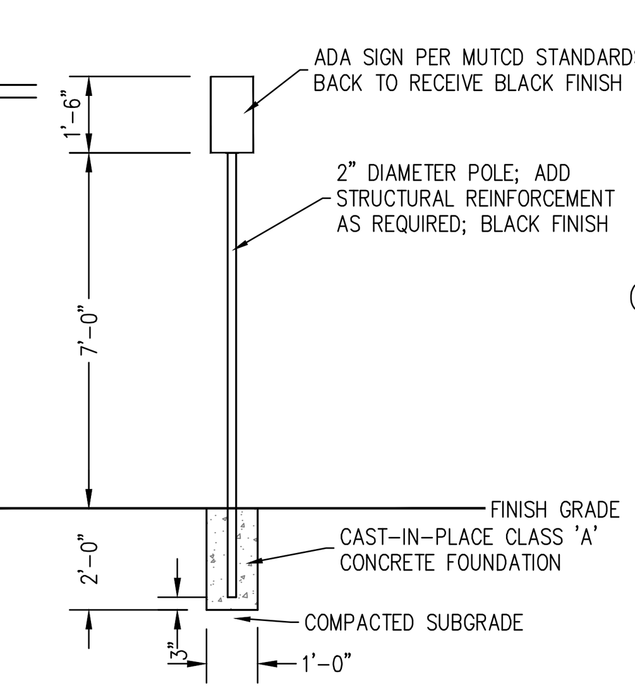
BICYCLE RACK (P)
NOT TO SCALE

*ALL SIGN MATERIAL, PARTS AND PIECES SHALL BE OF ALUMINUM CONSTRUCTION WITH POWDER COAT FINISH UNLESS NOTED OTHERWISE

*ALL HARDWARE SHALL BE SIZED APPROPRIATELY, EXTERIOR GRADE AND CORROSION RESISTANT

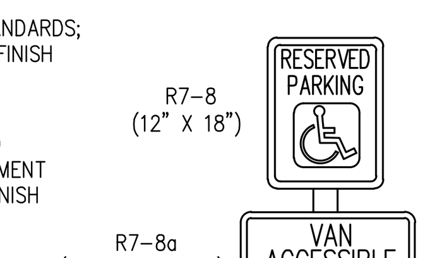


TYPICAL ADA PARKING PLAN



ADA PARKING SIGNAGE

HANDICAP PARKING DETAILS
NOT TO SCALE



ADA SIGNAGE DETAILS (4)
NOT TO SCALE

ABBREVIATIONS

FYS	FRONT YARD SETBACK
SYS	SIDE YARD SETBACK
RYS	REAR YARD SETBACK
DUE	DRAINAGE & UTILITY EASEMENT
DE	DRAINAGE EASEMENT
NAE	NON–ACCESS EASEMENT
AE	ACCESS EASEMENT
M.F.P.G.	MINIMUM FLOOD PROTECTION GRADE
M.L.A.G.	MINIMUM LOWEST ADJACENT GRADE
F.F.E.	FINISH FLOOR ELEVATION

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

INDIANA 811 Know what's below. Call before you dig.

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

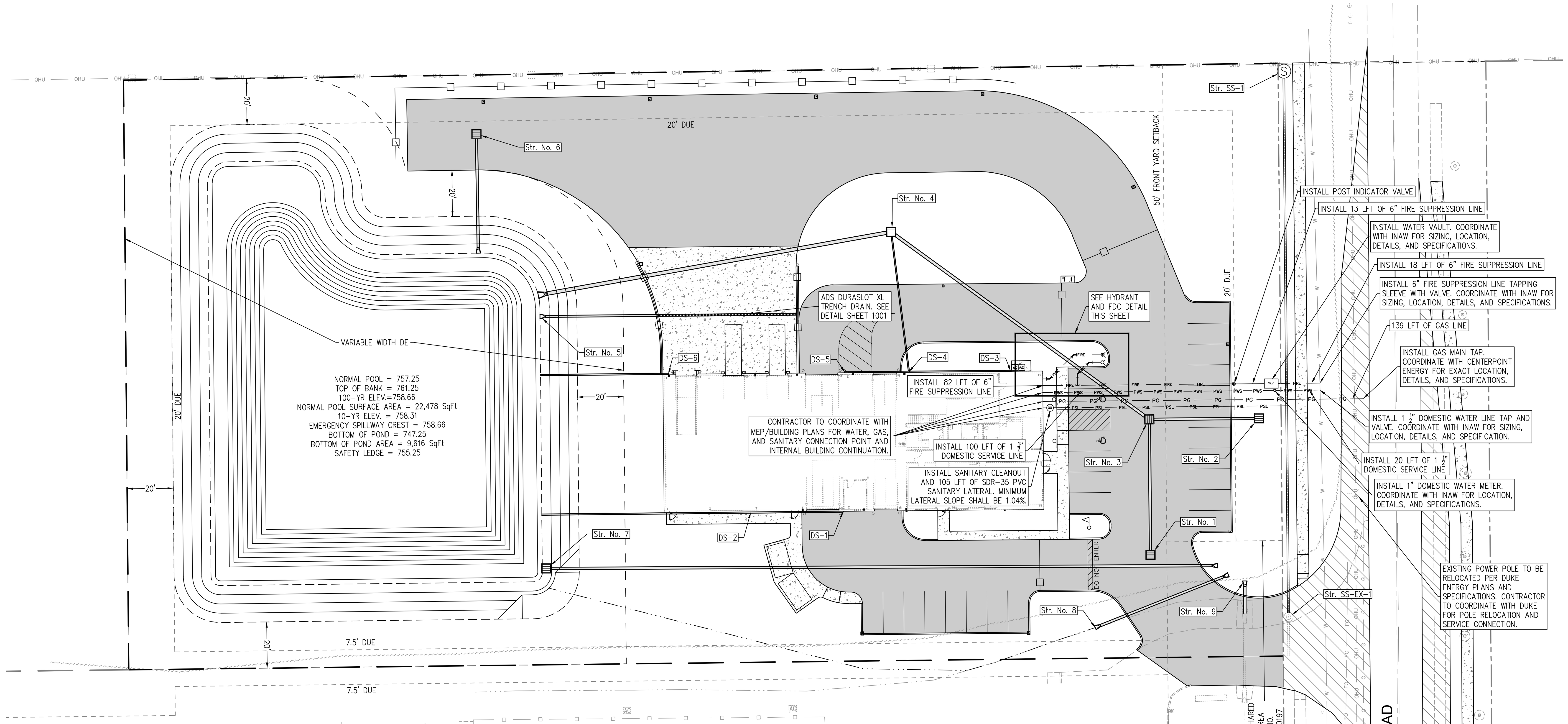
NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI

JOB No.	.	DRAWN	LMC
CHECKED	BTV	DATE	APRIL 11, 2024
DESIGNED	BTV	APPR.	GJI

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 300

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
FILENAME : 300 SITEDIM-FRANKLIN.dwg
DATE/USER : 5/21/2024 11:40 AM / Lcox


INSTALL POST INDICATOR VALVE
INSTALL 13 LFT OF 6" FIRE SUPPRESSION LINE
INSTALL WATER VAULT. COORDINATE WITH INAW FOR SIZING, LOCATION, DETAILS, AND SPECIFICATIONS.
INSTALL 18 LFT OF 6" FIRE SUPPRESSION LINE
INSTALL 6" FIRE SUPPRESSION LINE TAPPING SLEEVE WITH VALVE. COORDINATE WITH INAW FOR SIZING, LOCATION, DETAILS, AND SPECIFICATIONS.
139 LFT OF GAS LINE
INSTALL GAS MAIN TAP. COORDINATE WITH CENTERPOINT ENERGY FOR EXACT LOCATION, DETAILS, AND SPECIFICATIONS.
INSTALL 82 LFT OF 6" FIRE SUPPRESSION LINE
CONTRACTOR TO COORDINATE WITH MEP/BUILDING PLANS FOR WATER, GAS, AND SANITARY CONNECTION POINT AND INTERNAL BUILDING CONTINUATION.
INSTALL SANITARY CLEANOUT AND 105 LFT OF SDR-35 PVC SANITARY LATERAL. MINIMUM LATERAL SLOPE SHALL BE 1.04%.
INSTALL 1" DOMESTIC WATER METER. COORDINATE WITH INAW FOR LOCATION, DETAILS, AND SPECIFICATIONS.
EXISTING POWER POLE TO BE RELOCATED PER DUKE ENERGY PLANS AND SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH DUKE FOR POLE RELOCATION AND SERVICE CONNECTION.
ADS DURASLOT XL TRENCH DRAIN. SEE DETAIL SHEET 1001
SEE HYDRANT AND FDC DETAIL THIS SHEET
NORMAL POOL = 757.25
TOP OF BANK = 761.25
100-YR LEVEL=758.66
NORMAL POOL SURFACE AREA = 22,478 SqFt
10-YR ELEV. = 758.31
EMERGENCY SPILLWAY CREST = 758.66
BOTTOM OF POND = 747.25
BOTTOM OF POND AREA = 9,616 SqFt
SAFETY LEDGE = 755.25
VARIABLE WIDTH DE
50' FRONT YARD SETBACK
GRAHAM ROAD
DEDICATION OF PUBLIC RIGHT OF WAY INST. NO. 2008-019817
SCALE: 1" = 30'

EXISTING LEGEND

POWERPOLE	CONTOURS
POWERPOLE W/RISER	PROPERTY LINE
POWERPOLE W/LIGHT	SECTION LINE
GUY WIRE	RIGHT-OF-WAY
WATER VALVE	EASEMENT
FIRE HYDRANT	ADJOINER LINE
WATER METER	PAVEMENT LINE
GAS VALVE	FIELD LINE
SIGN	FENCE
MAILBOX	DITCH
TEMP. BENCHMARK	GAS LINE
MONUMENT FOUND	WATER LINE
ASPHALT	FIBER OPTIC LINE
GRAVEL	OVERHEAD UTILITY LINE
CONCRETE	SANITARY SEWER W/MANHOLE
	STORM SEWER W/ END SECTION

STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 1 INSTALL TYPE 'E' INLET WITH NEENAH CASTING R-3405-A OR APPROVED EQUAL AND 59 LFT OF 12"ø RCP @ 0.25% RIM=760.70 INV OUT (12"~N)=758.24
STR. NO. 2 INSTALL TYPE 'E' INLET WITH NEENAH CASTING R-4215-C OR APPROVED EQUAL AND 48 LFT OF 12"ø RCP @ 0.25% RIM=760.80 INV OUT (12"~W)=758.22
STR. NO. 3 INSTALL TYPE 'F' INLET WITH NEENAH CASTING R-3405-A OR APPROVED EQUAL AND 138 LFT OF 15"ø RCP @ 0.35% RIM=761.00 INV IN (12"~S)=758.10 INV IN (12"~E)=758.10 INV OUT (15"~NW)=758.10

STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 4 INSTALL TYPE 'F' INLET WITH NEENAH CASTING R-4215-C OR APPROVED EQUAL AND ONE (1) CONCRETE END SECTION AND 155 LFT OF 18"ø RCP @ 0.25% RIM=761.00 INV IN (15"~SE)=757.63 INV IN (6"~S)=757.63 INV OUT (18"~W)=757.63 D.S. ELEV.=757.25
STR. NO. 5 60 LFT OF ADS DURASLOT XL TRENCH DRAIN PIPE 10" AND ONE (1) CONCRETE END SECTION TRENCH DRAIN U.S. ELEV.=758.05 D.S. ELEV.=757.90 51 LFT OF 10" HDPE U.S. ELEV.=757.90 D.S. ELEV.=757.25
STR. NO. 6 INSTALL TYPE 'E' INLET WITH NEENAH CASTING R-3405-A OR APPROVED EQUAL AND ONE (1) CONCRETE END SECTION AND 52 LFT OF 12"ø RCP @ 0.35% RIM=759.70 INV OUT (12"~S)=757.43 D.S. ELEV.=757.25

STORM SEWER STRUCTURE TABLE

STR. DATA
STR. NO. 7 INSTALL TYPE 'E' INLET WITH NEENAH CASTING R-4215-C OR APPROVED EQUAL AND ONE (1) CONCRETE END SECTION AND 291 LFT OF 12"ø RCP @ 0.29% RIM=760.00 INV OUT (12"~E)=757.25 D.S. ELEV.=756.40
STR. NO. 8 INSTALL TWO (2) CONCRETE END SECTION AND 62 LFT OF 12"ø RCP @ 1.84% U.S. ELEV.=757.64 D.S. ELEV.=756.50
STR. NO. 9 INSTALL ONE (1) CONCRETE END SECTION AND EXTEND 14 LFT OF 12"ø RCP @ 0.64% U.S. ELEV.=756.40 D.S. ELEV.=756.31

SANITARY SEWER STRUCTURE TABLE

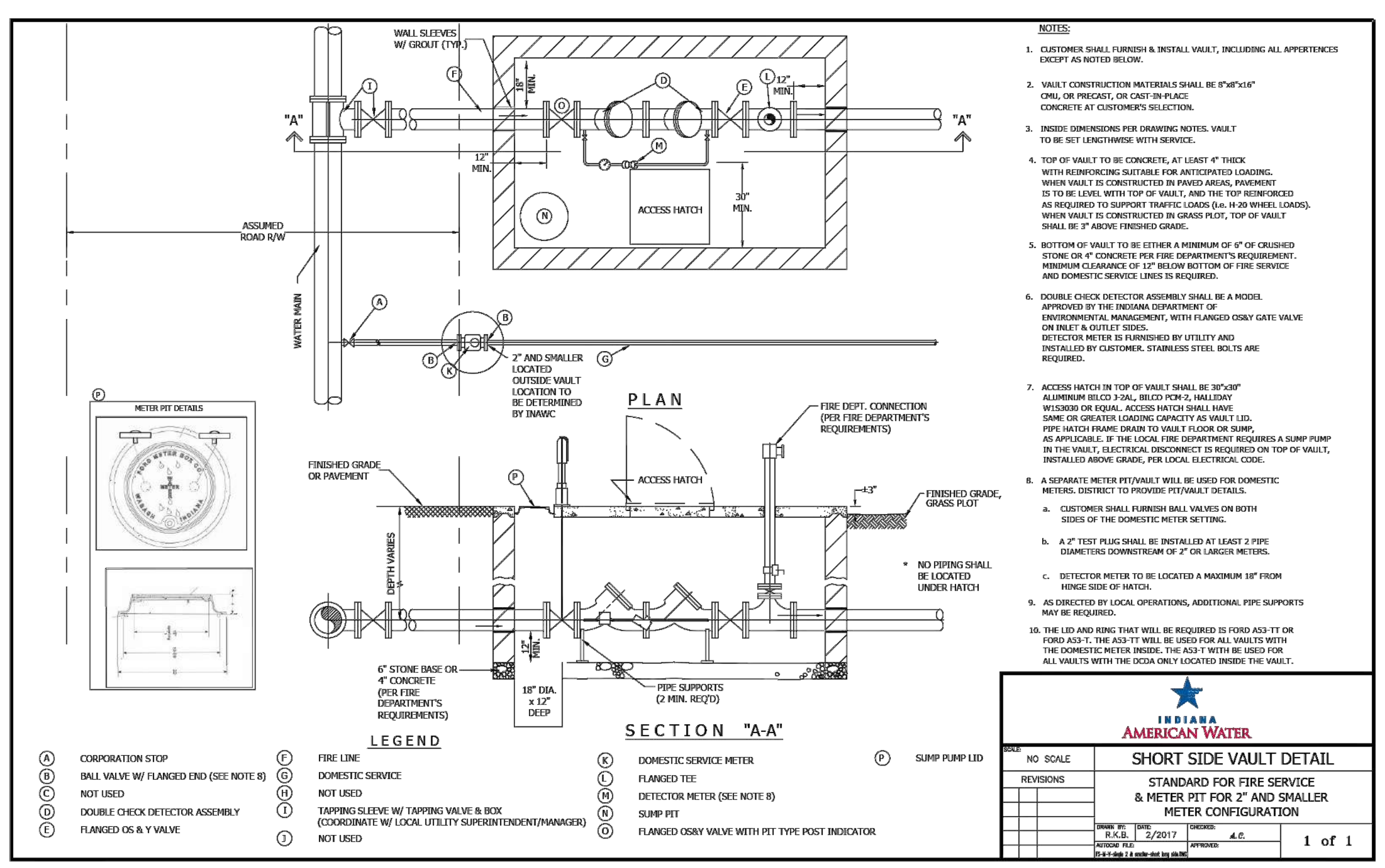
STR. DATA
STR. NO. SS-1 INSTALL SANITARY SEWER MANHOLE TYPE 'C' WITH NEENAH R-1712-B-SP CASTING OR APPROVED EQUAL AND 236 LFT OF 10"ø PVC @ 0.35% RIM=761.95 INV OUT (10"~S)=747.02
STR. NO. SS-EX-1 EXISTING SANITARY SEWER MANHOLE. MECHANICAL CORE AND DENOTE FLEXIBLE BOOT CONNECTION FOR NEW INCOMING PIPE. ADJUST CASTING TO GRADE. RIM=758.82 PROP. INV IN (10"~N)=746.21 EX. INV OUT (10"~S)=745.91

STORM DOWNSPOUT DATA TABLE

STR. DATA DOWNSPOUT
DS-1 SEE DETAIL-SHEET 1000 40 LFT OF 6"ø PVC @ 0.50% U.S. EL=757.90 D.S. EL.=757.70
DS-2 SEE DETAIL-SHEET 1000 90 LFT OF 6"ø PVC @ 0.50% U.S. EL=757.70 D.S. EL.=757.25
DS-3 SEE DETAIL-SHEET 1000 44 LFT OF 6"ø PVC @ 0.50% U.S. EL=758.16 D.S. EL.=757.94

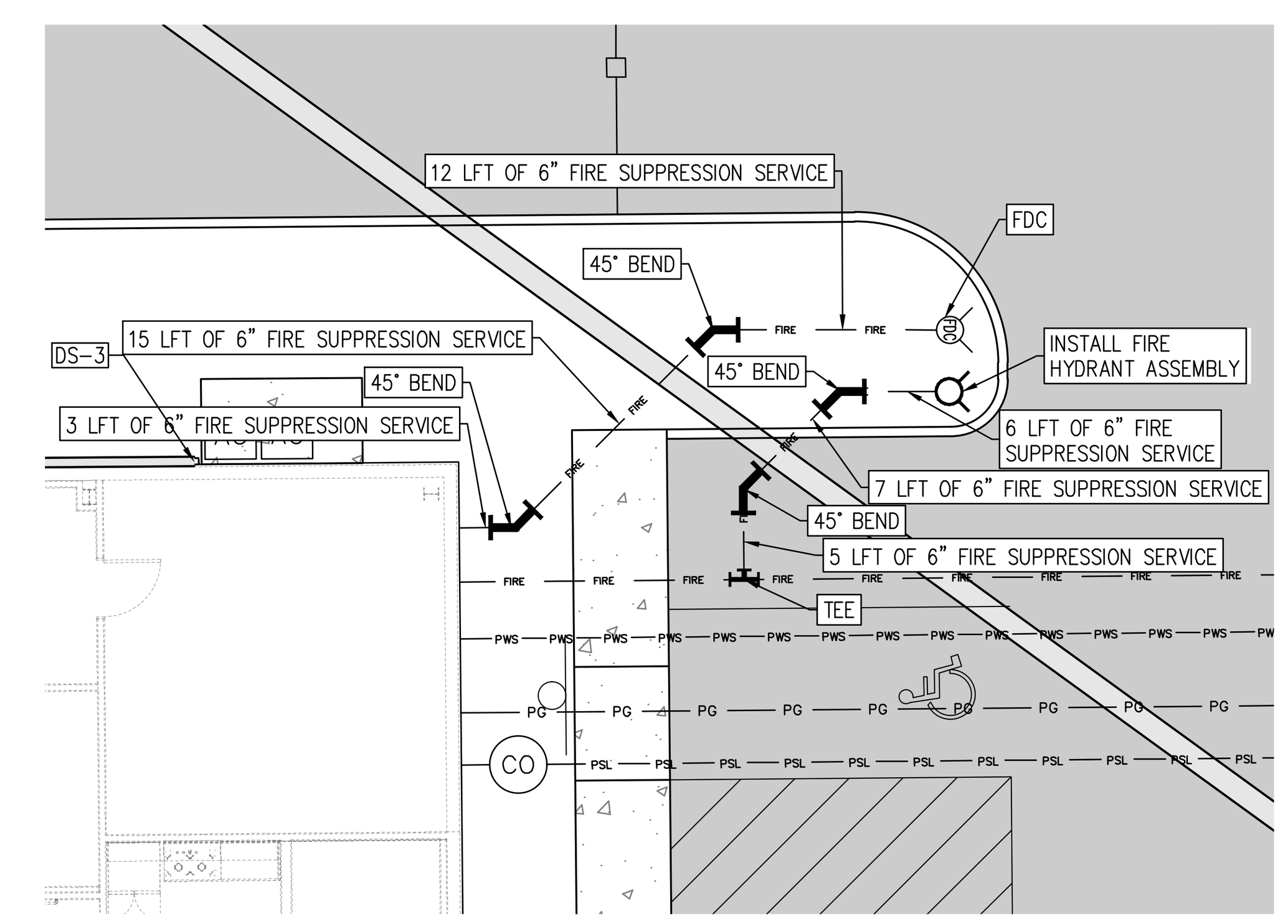
STORM DOWNSPOUT DATA TABLE

STR. DATA DOWNSPOUT
DS-4 SEE DETAIL-SHEET 1000 61 LFT OF 6"ø PVC @ 0.50% U.S. EL=757.94 D.S. EL.=757.63
DS-5 SEE DETAIL-SHEET 1000 28 LFT OF 6"ø PVC @ 0.50% U.S. EL=758.08 D.S. EL.=757.94
DS-6 SEE DETAIL-SHEET 1000 55 LFT OF 6"ø PVC @ 0.50% U.S. EL=757.53 D.S. EL.=757.25


SHORT SIDE VAULT DETAIL
STANDARD FOR FIRE SERVICE & METER PIT FOR 2" AND SMALLER METER CONFIGURATION
INDIANA AMERICAN WATER
PLAN
SECTION "A-A"
1 of 1
DOUBLE CHECK DETECTOR ASSEMBLY
FLANGED OS & Y VALVE
TAPPING SLEEVE W/ TAPPING VALVE & BOX (COORDINATE W/ LOCAL UTILITY SUPERINTENDENT/MANAGER)
NOT USED
SUMP PIT
FLANGED OS&Y VALVE WITH PIT TYPE POST INDICATOR

UTILITIES NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK.
2. CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES AND CABLE, ELECTRIC, AND TELEPHONE CONNECTION SERVICE INSTALLATIONS. ALL LIGHTING FIXTURES AND POLES SHALL BE PER OWNER AND PHOTOMETRIC DETAILS, SHEET E02 OF THESE PLANS.
3. CONTRACTOR TO INSTALL 1" SCH. 40 PVC AT 3' TO 4' DEPTH AS NEEDED FOR ALL SITE LIGHTING IN COORDINATION WITH ELECTRICAL SITE PLANS. INSTALL 2" SCH. 40 PVC AT ALL PAVEMENT CROSSINGS. CONTRACTOR SHALL CONFIRM ELECTRICAL TRANSFORMER LOCATION, SERVICE CONNECTION REQUIREMENTS, DIMENSIONS, AND SPECIFICATIONS, WITH DUKE ENERGY.
4. ALL LIGHT FIXTURES SHALL USE PULSE START BALLASTS AND TWO PHOTOCELL CONTROL RELAYS.
5. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY.
6. CONTRACTOR SHALL CONFIRM DEPTH AND LOCATION OF SANITARY SEWER MAIN STUB REPORT TO ENGINEERING PRIOR TO INSTALLING STR. NO. SS-1.
7. ALL SANITARY SEWER MAIN SHALL BE SDR-26 PVC PIPE.
8. DURING CONSTRUCTION, CONTRACTOR SHALL INSTALL TWO (2) GREEN METAL SIGN POSTS AT EACH SANITARY MANHOLE, AND ONE (1) GREEN METAL SIGN POST AT EACH LATERAL STUB. CONTRACTOR SHALL PROTECT POSTS DURING CONSTRUCTION ACTIVITIES.
9. ALL STORM SEWER CASTINGS SHALL HAVE RECESSED OR RAISED LETTERS AT LEAST ONE INCH HIGH WITH THE PHRASE "DUMP NO WASTE – DRAINS TO WATERWAY" AND INCLUDE AN ENVIRONMENTAL LOGO (FISH). PHRASE AND LOGO SHALL BE A PART OF ALL CASTINGS.
10. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW DRAINAGE FACILITIES.
11. GATE VALVES SHALL BE INSTALLED ON ALL SERVICE LINE TAPS. COORDINATE WITH THE INAW UTILITY FOR ALL STANDARDS AND SPECIFICATIONS.
12. COORDINATE INSTALLATION OF FIRE HYDRANTS WITH INDIANA AMERICAN WATER AND THE CITY OF FRANKLIN FIRE DEPARTMENT. TYPE, MATERIAL, AND MANUFACTURER OF FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH FRANKLIN FIRE DEPARTMENT REQUIREMENTS. ALL PUBLIC FIRE HYDRANTS ARE TO BE YELLOW AND ALL PRIVATE FIRE HYDRANTS ARE TO BE RED WITH THE TOP CAP COLOR CODED TO SHOW WATER FLOW, AS FOLLOWS: 1500 gpm=BLUE, 1000–1499 gpm=GREEN, AND 500–999 gpm=ORANGE.
13. ALL HYDRANTS SHALL HAVE A STORZ CONNECTION.
14. ALL UTILITY CROSSINGS WITH STORM SEWER SHALL BE DONE WITH A MINIMUM 18" VERTICAL SEPARATION.


12 LFT OF 6" FIRE SUPPRESSION SERVICE
FDC
45° BEND
15 LFT OF 6" FIRE SUPPRESSION SERVICE
INSTALL FIRE HYDRANT ASSEMBLY
3 LFT OF 6" FIRE SUPPRESSION SERVICE
6 LFT OF 6" FIRE SUPPRESSION SERVICE
7 LFT OF 6" FIRE SUPPRESSION SERVICE
5 LFT OF 6" FIRE SUPPRESSION SERVICE
TEE

HYDRANT AND FDC DETAIL
SCALE: 1" = 10'

UTILITY CONTACTS

Note: Listed below are the Indiana Underground Plant Protection Services Contacts; Others not listed may exist. The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although the surveyor does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.

UTILITY	COMPANY	CONTACT	PHONE	EMAIL
COMMUNICATIONS	MCI	DEAN BOYERS	469-886-4238	investigations@verizon.com
FIBER OPTIC	BRIGHTSPEED	MELISSA TEAGUE	765-656-4663	melissa.teague@brightspeed.com
FIBER OPTIC	METRO FIBERNET	MARK DECKARD	812-253-2196	rrhwypermits@metronetinc.com
ELECTRIC	DUKE ENERGY	JESSICA TURNER	812-662-2007	jessica.turner3@duke-energy.com
SANITARY	CITY OF FRANKLIN DPW	EVAN HART	317-412-8450	ehart@franklin.in.gov
WATER	INDIANA AMERICAN WATER COMPANY	TRACY WHITE	317-885-2426	tracy.s.white@amwater.com
GAS	CENTERPOINT ENERGY	JON EASTHAM	765-287-2119	publicproject@centerpointenergy.com
FIRE DEPARTMENT	CITY OF FRANKLIN	BRYNE PURSIFULL	317-736-3650	bpursifull@franklin.in.gov

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- SETBACK LINE
- EASEMENT LINE
- FENCE LINE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/INLET & END SECTION
- FIRE SERVICE LINE
- WATER SERVICE LINE
- GAS LINE
- SIGN
- PIV
- WATER VAULT
- FDC
- FIRE HYDRANT
- 45° BEND
- TEE

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
FILENAME : 400 UTILITY-FRANKLIN.dwg
DATE/USER : 5/21/2024 11:40 AM / Lcox

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

UTILITY PLAN

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC
CHECKED	BTV	DATE	APRIL 11, 2024
DESIGNED	BTV	APPR.	GJI

GREGORY J. ILKO
REGISTERED NO. 10300059
STATE OF INDIANA
PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
9				
8				
7				
6				
5				
4				
3				
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
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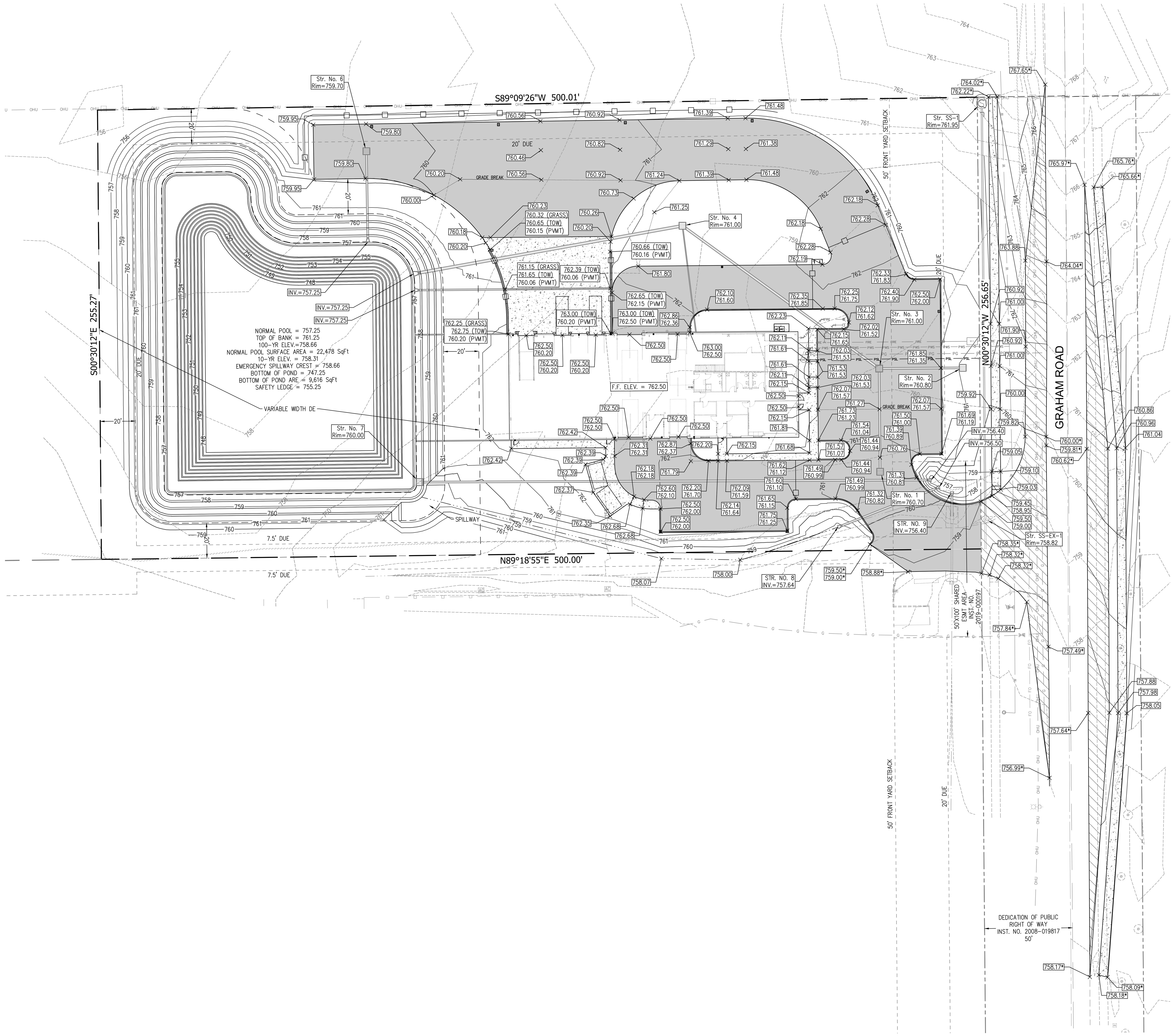

SCALE: 1" = 30'

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

GRADING LEGEND

860.00 TOP OF CURB / 859.50 EDGE OF PAVEMENT	PROPOSED ELEVATIONS
860.00 FINISH GRADE	
860.00 * / 859.50 *	EXISTING ELEVATIONS
860.00 *	(TO BE FIELD VERIFIED)
FFE = XXX.XX	PROPOSED FINISH FLOOR ELEVATION
— · · · — · · · —	PROPOSED DRAINAGE SWALE
- - - 800 - - -	EXISTING CONTOURS
—— 800 ——	PROPOSED CONTOURS
GRADE BREAK	GRADE BREAK
←*→	CURB HEIGHT TO TAPER FROM 0.5' TO 0.0' IN 6 LFT.

GRADING NOTES

1. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS IN FINAL GRADING OF SITE. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT TO DETERMINE PROPER FOUNDATION EXPOSURE. IN NO INSTANCE SHALL DRAINAGE TOWARD THE BUILDING FOUNDATION BE ALLOWED.
2. CONTRACTOR SHALL NOT ALLOW DRAINAGE FROM PROJECT SITE TO DISCHARGE ONTO ADJACENT PROPERTIES IN FINAL GRADING OF SITE.

BENCHMARK INFORMATION

ORIGINATING BENCHMARK

DESIGNATION – X 13
PID – KA0010
STATE/COUNTY – IN/MORGAN
USGS QUAD – MOORESVILLE EAST (1980)

VERT ORDER – FIRST CLASS II

DESCRIBED BY COAST AND GEODETIC SURVEY 1946
1.2 MI N FROM WAVERLY. IN JOHNSON COUNTY, 1.2 MILES NORTH ALONG STATE HIGHWAY 37 FROM THE INTERSECTION OF STATE HIGHWAY 144 AT WAVERLY, MORGAN COUNTY, 125 YARDS NORTH OF THE MORGAN–JOHNSON COUNTY LINE, 26 FEET WEST OF THE CENTERLINE OF THE HIGHWAY, IN LINE WITH THE WEST RIGHT–OF–WAY FENCE, 1.5 FEET SOUTH OF A WHITE WOODEN WITNESS POST, AND ABOUT 2 FEET HIGHER THAN THE HIGHWAY. A STANDARD DISK, STAMPED 686.370 X 13 1930 AND SET IN THE TOP OF A CONCRETE POST PROJECTING 7 INCHES ABOVE GROUND.
RECOVERY NOTE BY IN DEPT OF NAT RES 1985
NEW DESC– AT THE INTERSECTION OF NEW STATE ROAD 144 AND OLD STATE ROAD 37, IN THE SOUTHWEST QUARTER OF THE INTERSECTION, WITNESS POST IS GONE RIGHT–OF–WAY FENCE IS GONE, ALL OTHER INFORMATION APPEARS TO BE CORRECT.

ELEV. = 685.94 (NAVD 88)

TBM #400
CUT 'BOX' ATOP SW MOST CRNR OF CONC HEADWALL @ SE QUAD OF 'LINVILLE WAY' & 'GRAHAM RD'

ELEV. = 754.94

CROSSROAD ENGINEERS, PC
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115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

GRADING PLAN

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

SHEET 500

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

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3				
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SHEET 500

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
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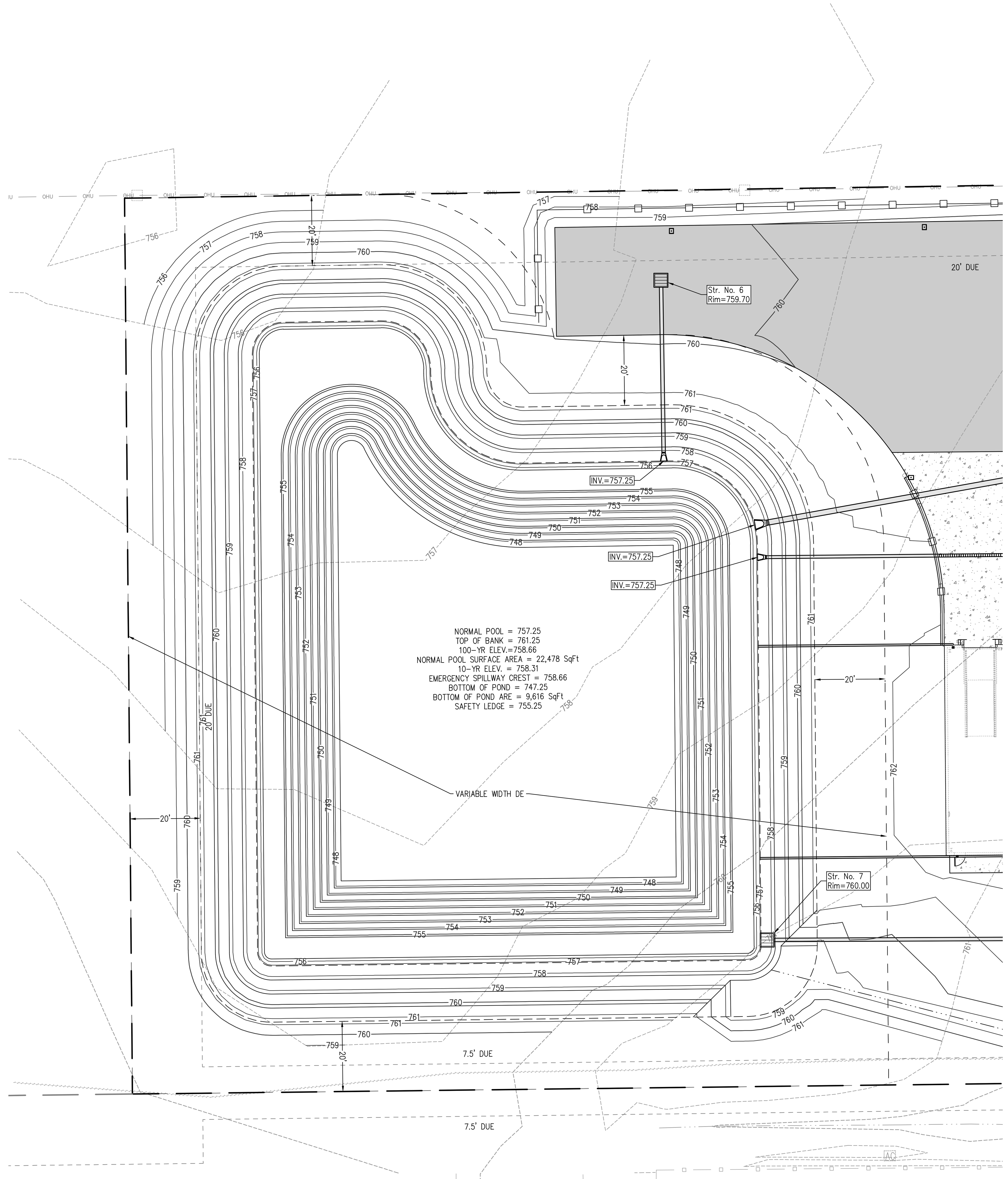
DATE/USER : 5/21/2024 11:40 AM / Lcox



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TBM #400
CUT 'BOX' ATOP SW MOST CRNR OF CONC HEADWALL @ SE QUAD OF 'LINVILLE WAY' & 'GRAHAM RD'

ELEV. = 754.94

20 0 20 40
SCALE: 1" = 20'

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- SETBACK LINE
- EASEMENT LINE
- FENCE LINE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/INLET & END SECTION
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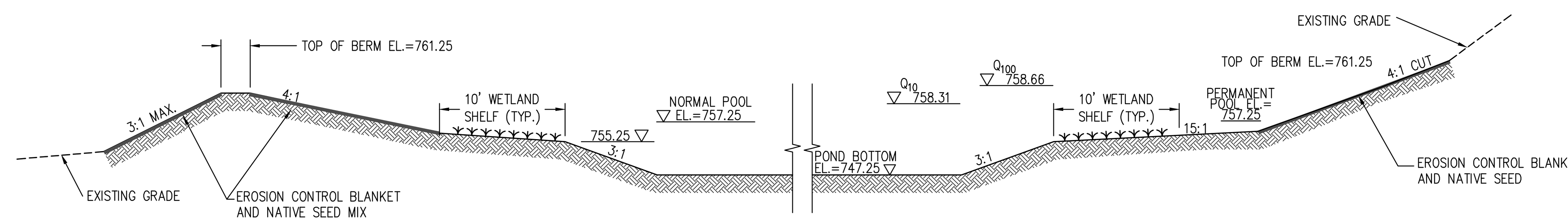
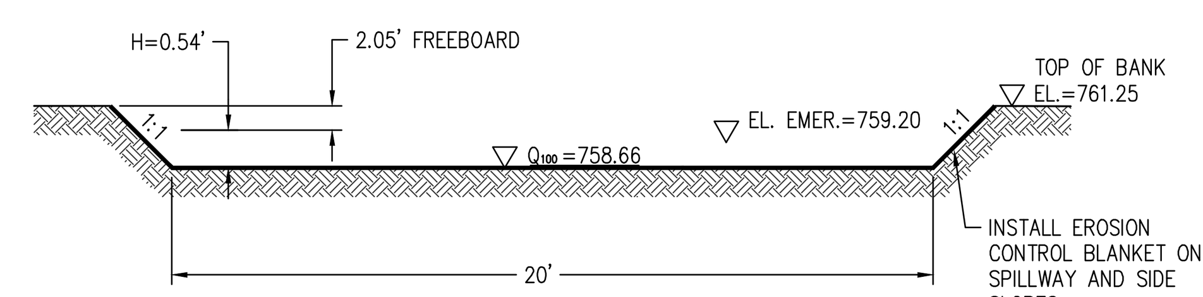
- FDC
- FIRE HYDRANT
- 45° BEND
- TEE



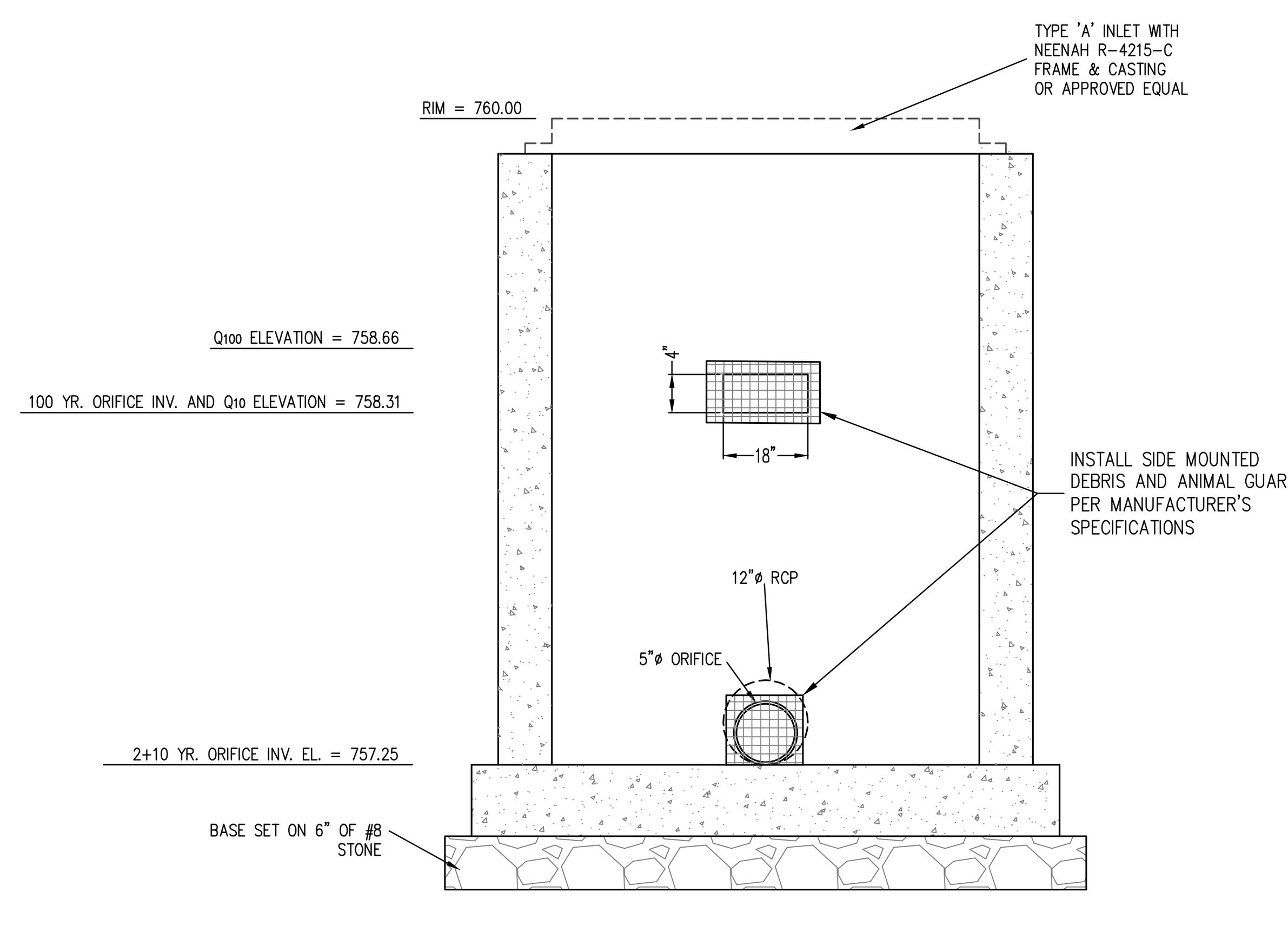
TYPICAL DETENTION POND SECTION
NO SCALE



EMERGENCY SPILLWAY DETAIL
NO SCALE

DRAINAGE NOTES

1. NO STRUCTURES, OR IMPROVEMENTS SHALL BE PERMITTED WITHIN THE LEGAL DRAIN EASEMENT. ALL UTILITIES, BUILDINGS, STRUCTURES, PLANTINGS, CROPS, TREES, SHRUBS, AND WOODY VEGETATION GROWN WITHIN THE EASEMENT, OR ALONG THE LEGAL DRAIN ARE AT THE RISK OF THE OWNER AND SUBJECT TO REMOVAL WITH MINIMAL NOTICE, WITHOUT RESTITUTION, AND SUBJECT TO SPECIAL ASSESSMENT.
2. THIS SITE PLOTS BY SCALE AS BEING WITHIN A REGULATED WATERSHED. ANY AND ALL SITE IMPROVEMENTS WITHIN A REGULATED WATERSHED ARE SUBJECT TO REVIEW BY THE JOHNSON COUNTY DRAINAGE BOARD. ALL TRACTS WITHIN A REGULATED DRAIN WATERSHED ARE SUBJECT TO ASSESSMENTS FOR MAINTENANCE (IC 36–9–27–44), AND WHEN PRACTICABLE, RECONSTRUCTION (IC 36–9–27–51).
3. NO CONSTRUCTION, OR IMPROVEMENTS SHALL IMPAIR OR NEGATIVELY IMPACT ANY PRIVATE DRAIN TILE (IC 36–9–27–2) KNOWN OR UNKNOWN. NO CONSTRUCTION, OR IMPROVEMENTS SHALL IMPAIR, IMPEDE, OR NEGATIVELY IMPACT, A NATURAL SURFACE WATERCOURSE (IC 36–9–27.4–3). WHEN ENCOUNTERED SAID TILE OR WATERCOURSE WILL BE DESIGNED, AND RE–ROUTED SO NOT TO IMPEDE, IMPAIR, OR NEGATIVELY IMPACT SURFACE OR SUBSURFACE WATER FLOW.
4. PRIVATE TILES, AND MUTUAL DRAIN CONNECTIONS TO REGULATED DRAIN (IC 36–27–9–17). ALL CONNECTIONS, OR OUT–LETS INTO A REGULATED DRAIN ARE SUBJECT TO APPROVAL BY THE COUNTY SURVEYOR (≤ 10"), OR THE JOHNSON COUNTY DRAINAGE BOARD (≥ 11"). APPLICATIONS ARE AVAILABLE IN THE COUNTY SURVEYOR'S OFFICE AND SHOULD INCLUDE ALL MAPS, PLANS, SPECIFICATIONS, BONDING, EASEMENT VERBIAGE, APPLICATION FEES AND OWNER'S STATEMENT OF WATER QUALITY (IC 36–27–9–23), PRIOR TO APPROVAL.



DETENTION FACILITY OUTLET STRUCTURE DETAIL
STR. NO 7
NOT TO SCALE

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE, CITY OR COUNTY OFFICIALS

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

INDIANA 811
Know what's below. Call before you dig.

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants

DRAINAGE PLAN
JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

GREGORY J. ILKO
REGISTERED NO. 10300059
STATE OF INDIANA
PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
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9				

SHEET 600

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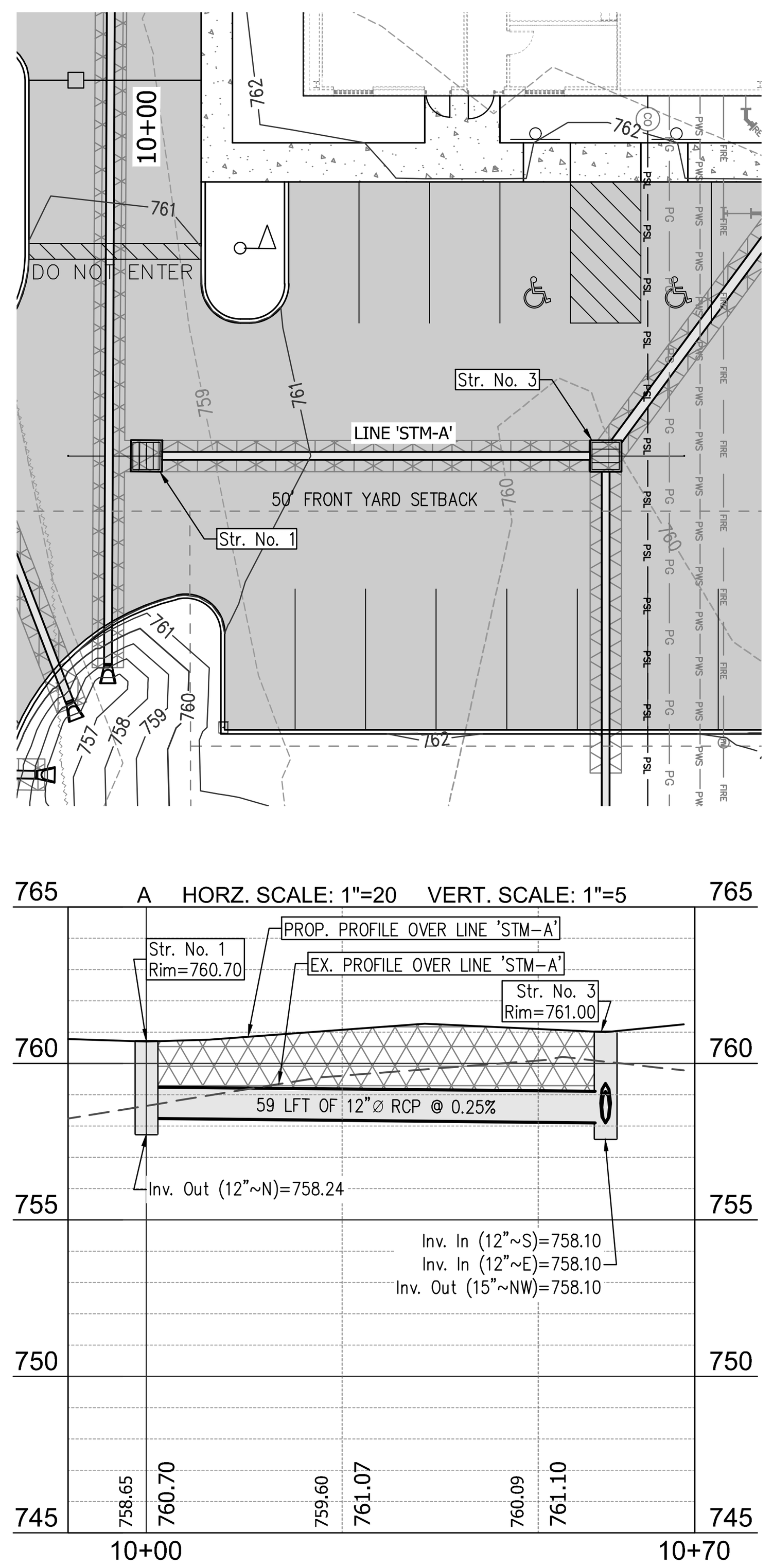

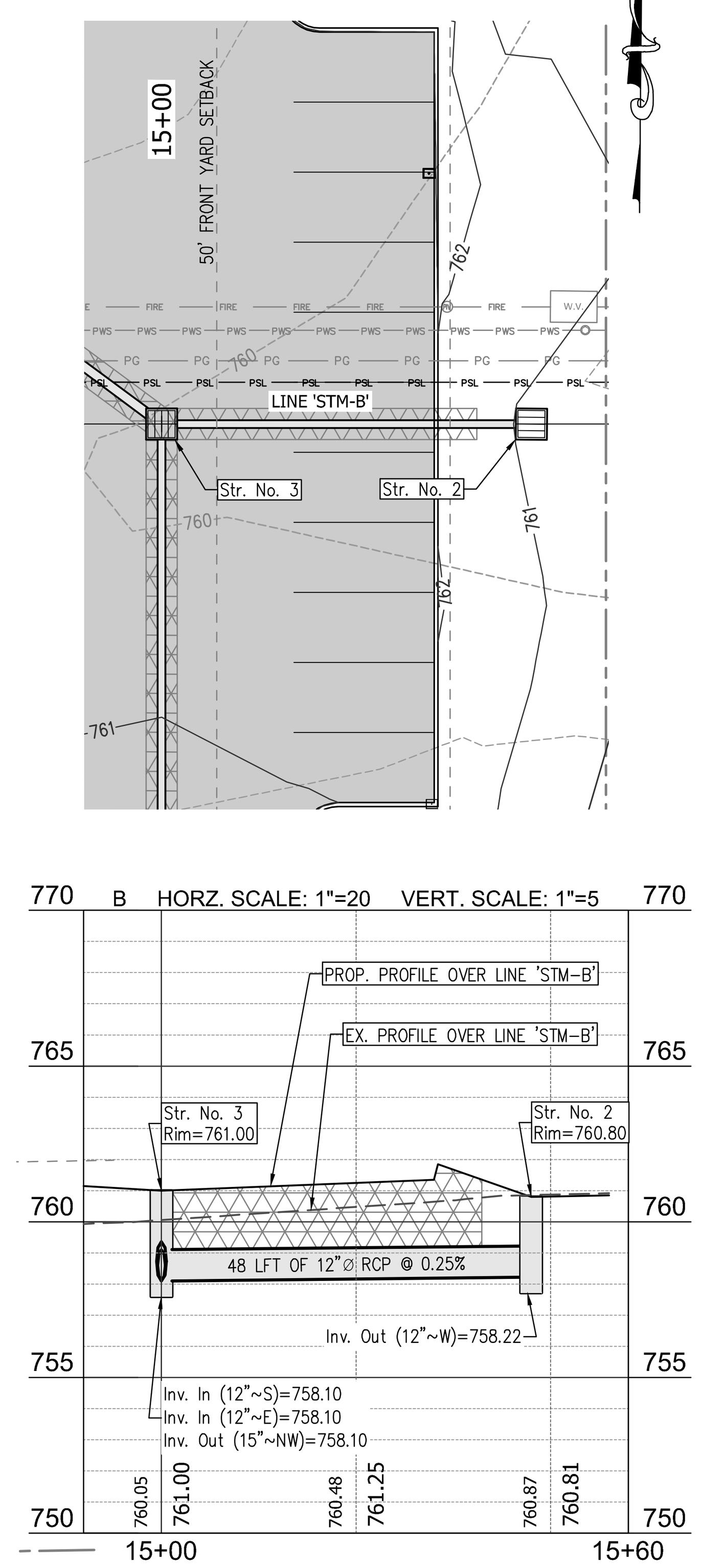

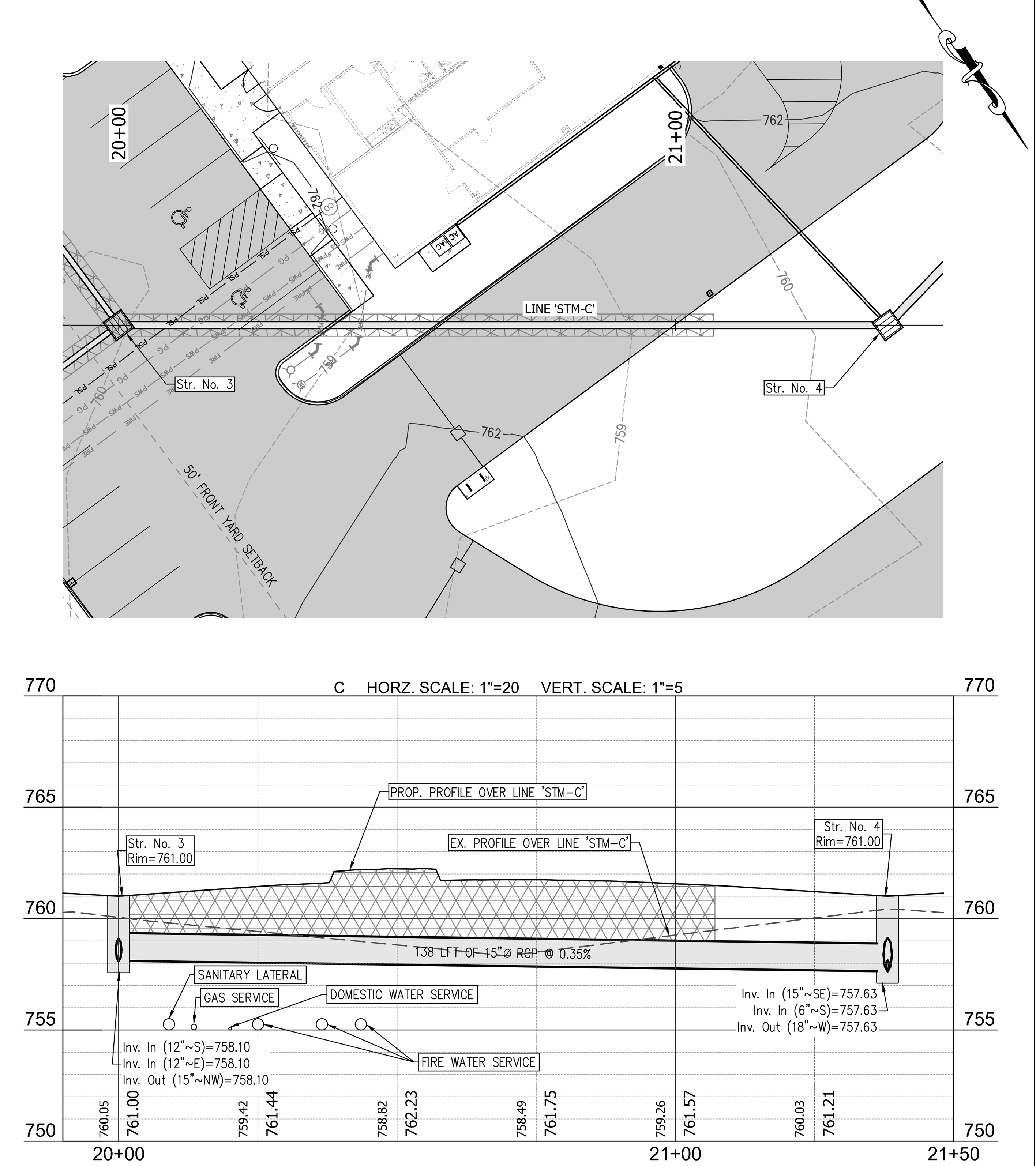

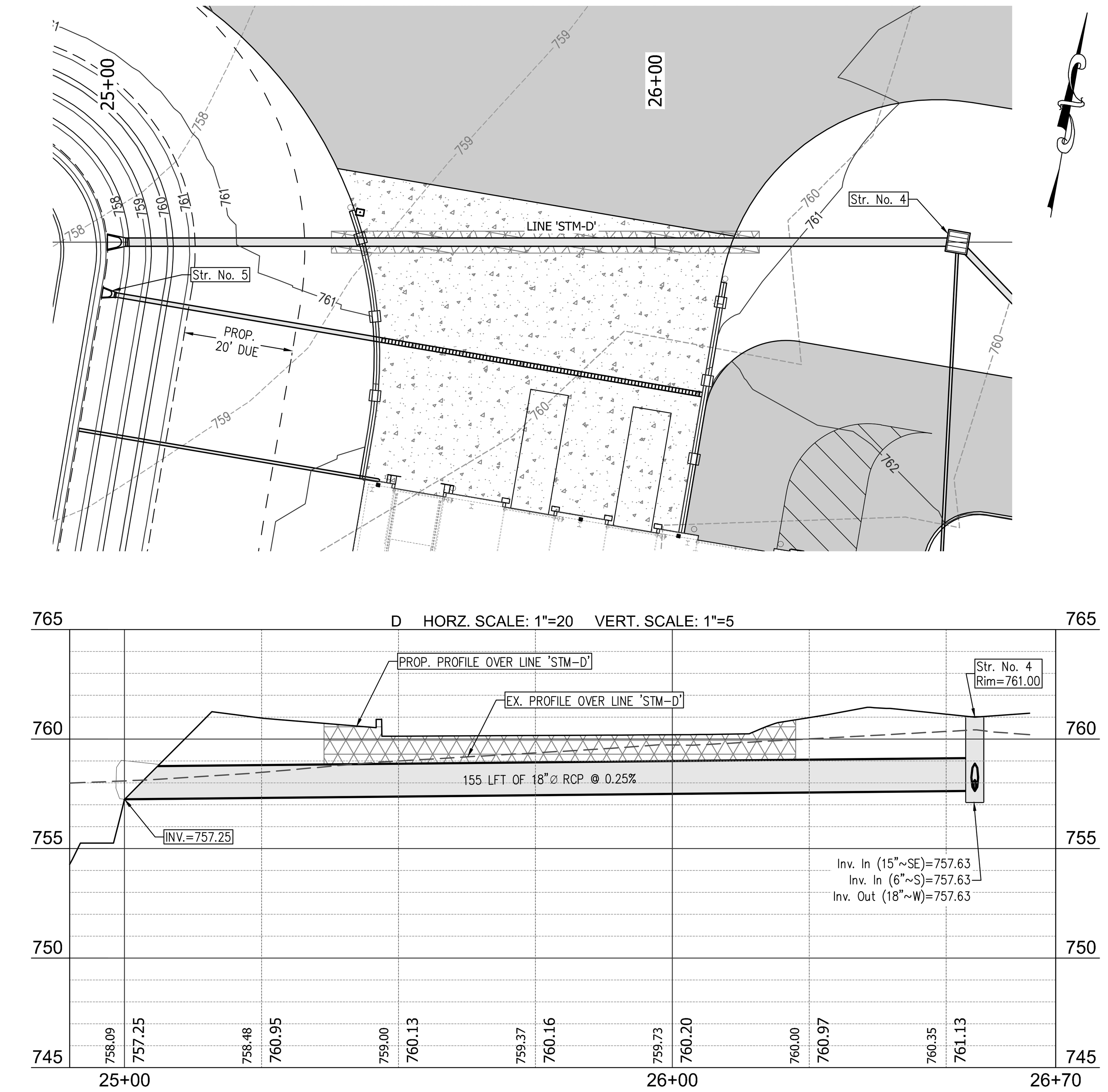

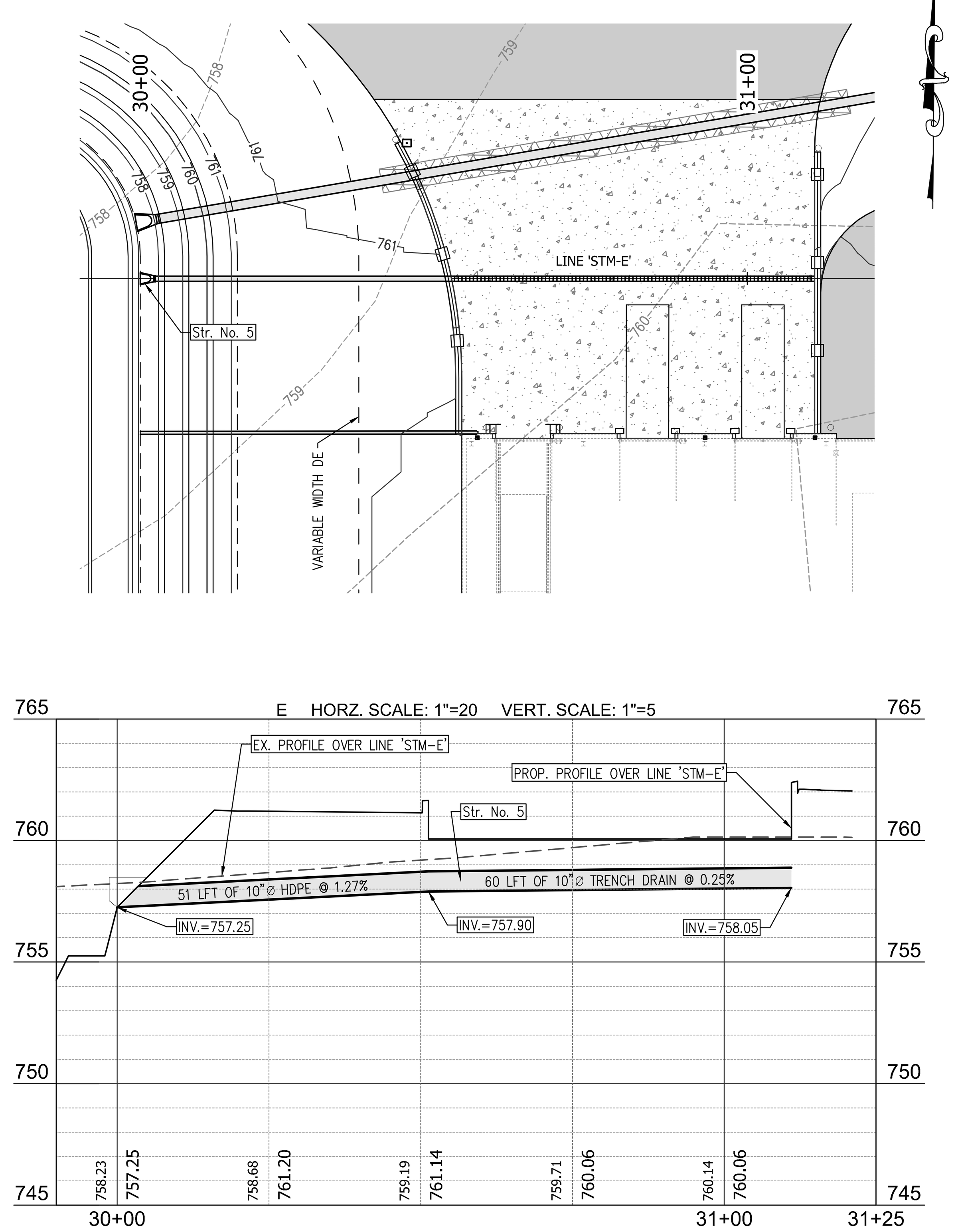

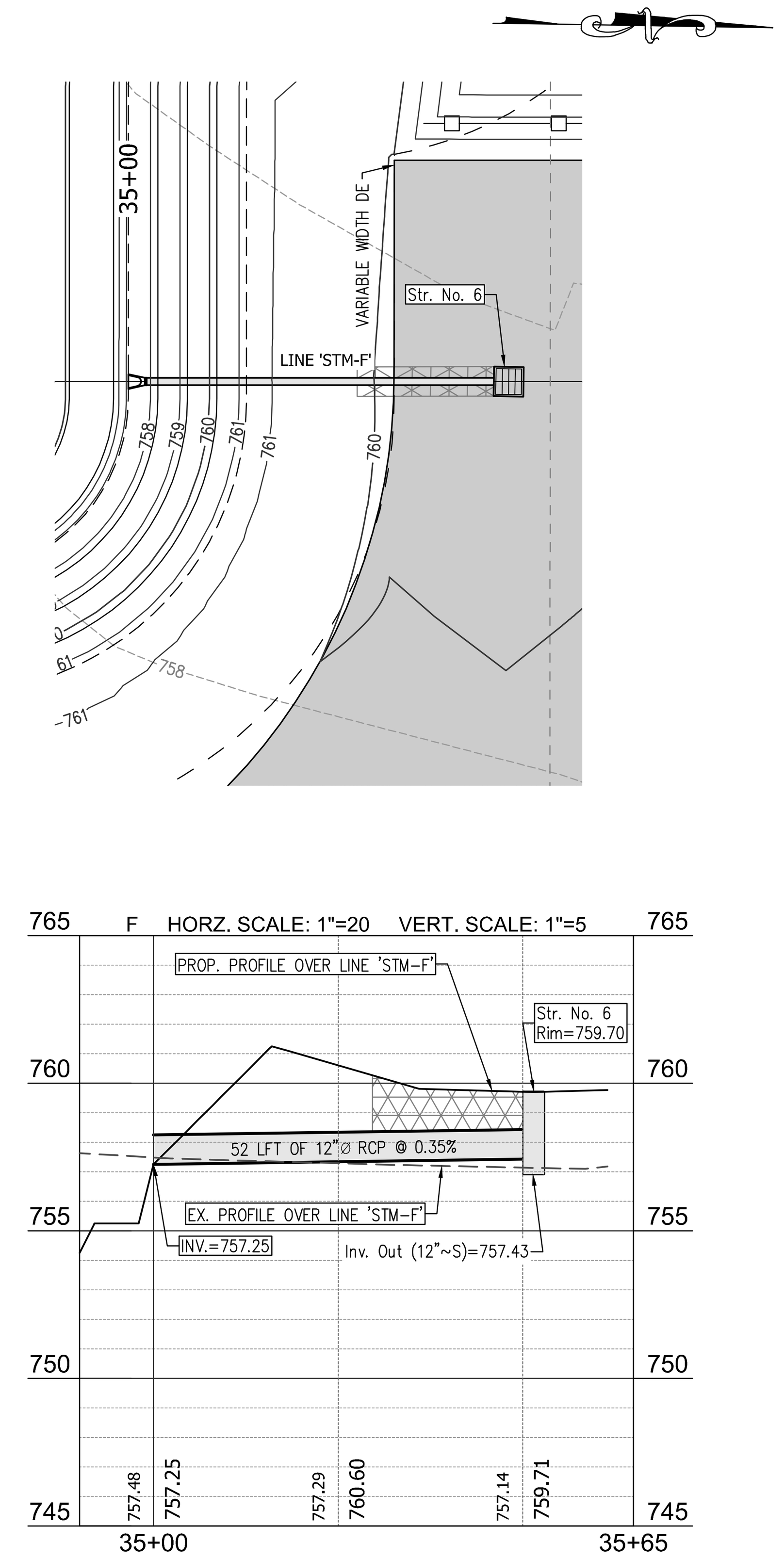

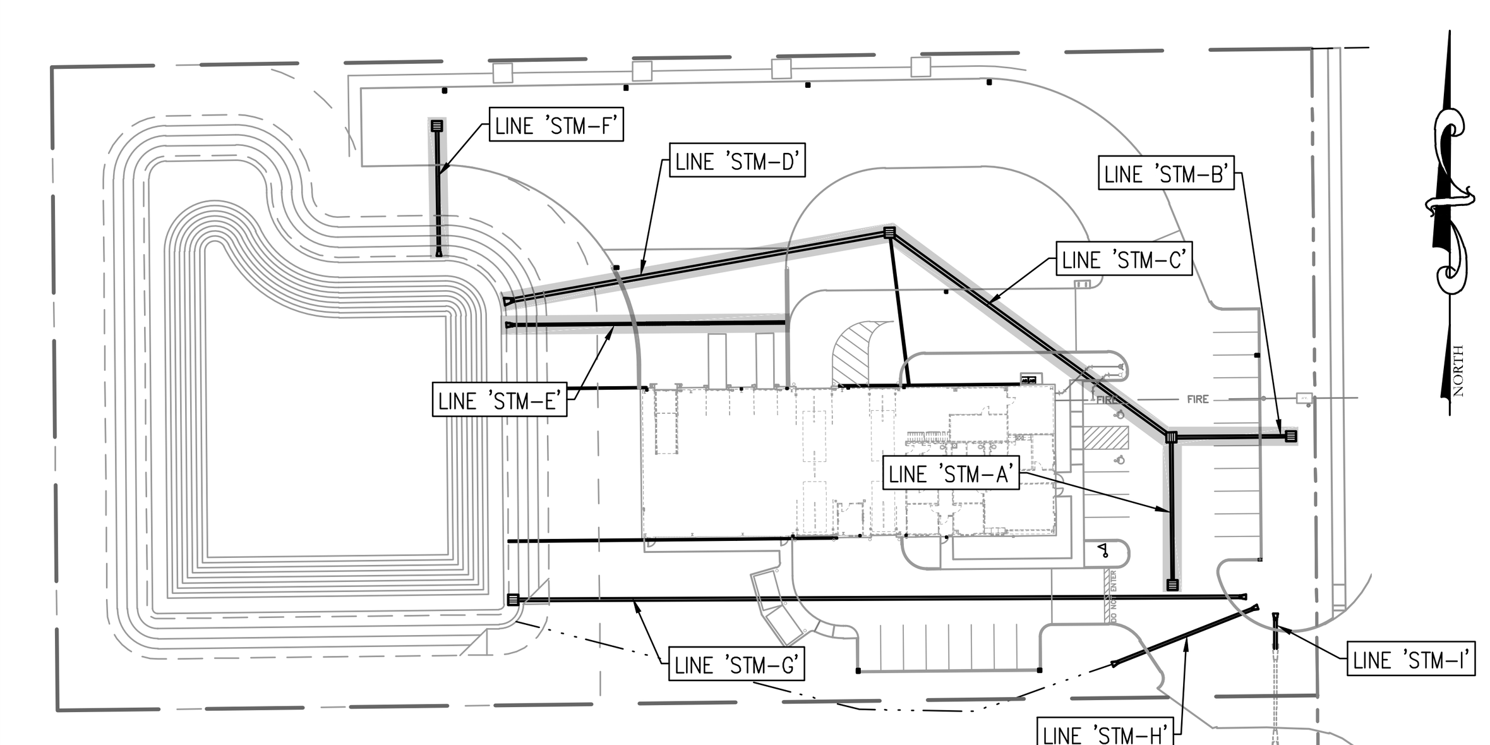

KEYMAP

NO SCALE

20 0 20 40

SCALE: 1" = 20'

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- SETBACK LINE
- EASEMENT LINE
- FENCE LINE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/INLET & END SECTION
- FIRE SERVICE LINE
- WATER SERVICE LINE
- GAS LINE
- SIGN
- WATER VAULT
- 45° BEND
- PIV
- FDC
- FIRE HYDRANT
- TEE

GRANULAR BACKFILL ALONG STORM SEWER

ALL STORM, SANITARY AND UTILITY TABLES ARE LOCATED ON SHEET ___

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

NOTES

1. ALL STORM SEWER CASTINGS SHALL INCLUDE AN EMBOSSED ENVIRONMENTAL LOGO WITH A DEPICTION OF A FISH AND THE PHRASE "DUMP NO WASTE-DRAINS TO STREAM".
2. ALL STORM SEWER LOCATED WITHIN PUBLIC RIGHT-OF-WAY SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS III, WITH TYPE B WALL THICKNESS, UTILIZING GASKET FITTINGS.
3. ALL HDPE PIPE SHALL BE SOIL TIGHT, N-12 DUAL WALL HDPE PIPE AS MANUFACTURED BY ADS DRAINAGE SOLUTIONS OR AN APPROVED EQUAL.

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7				
8				
9				

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

STORM PLAN AND PROFILE

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 700

SHEET 700

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
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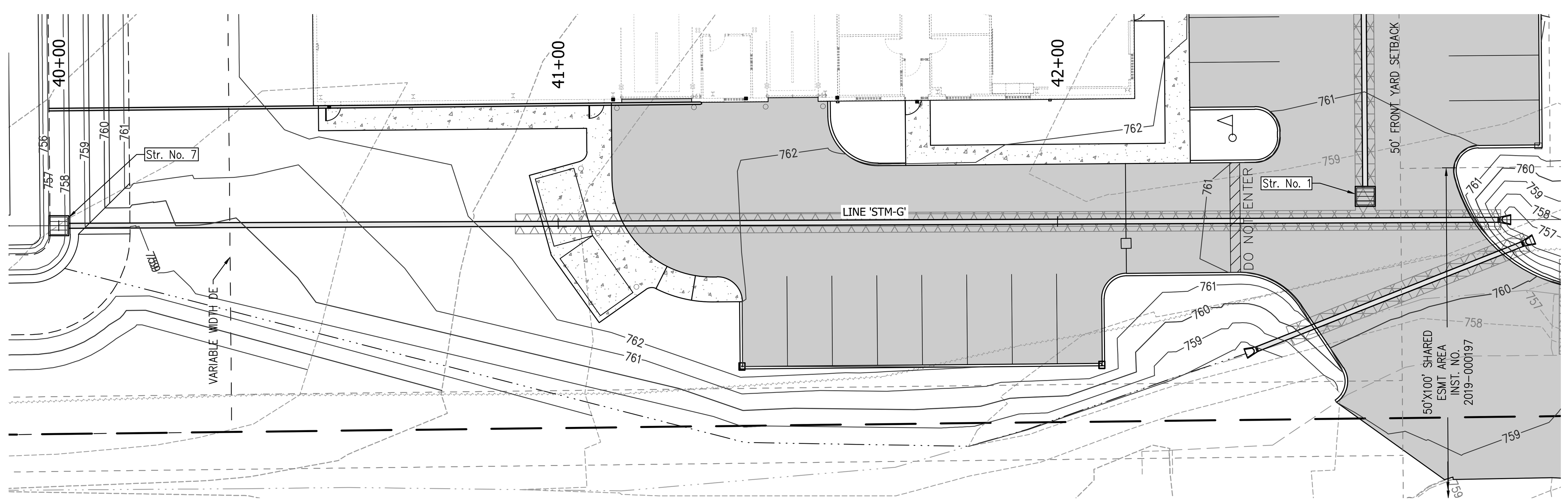
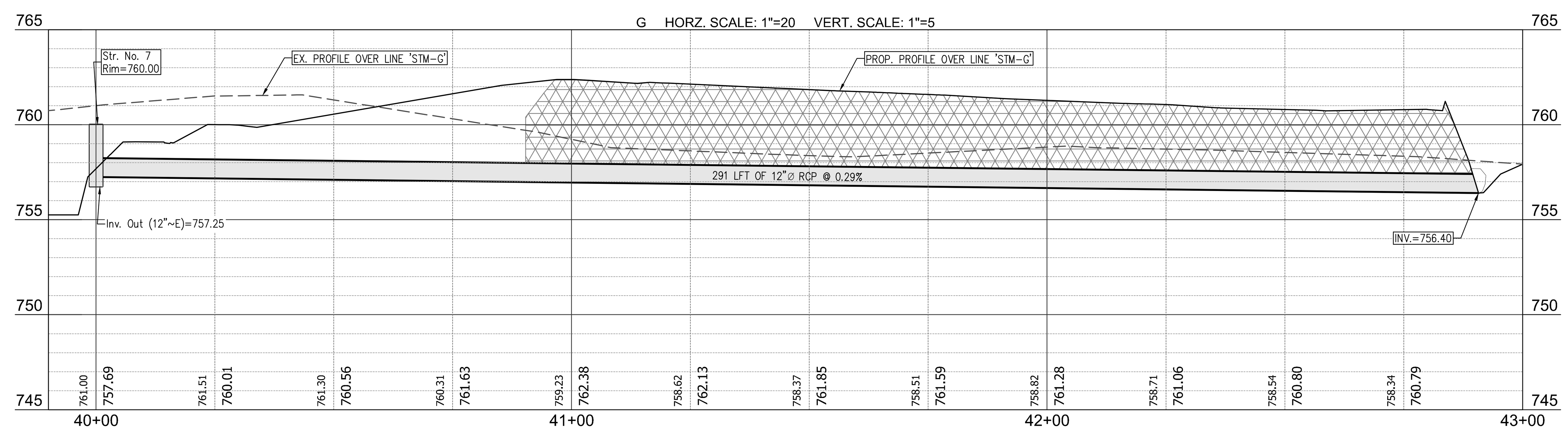
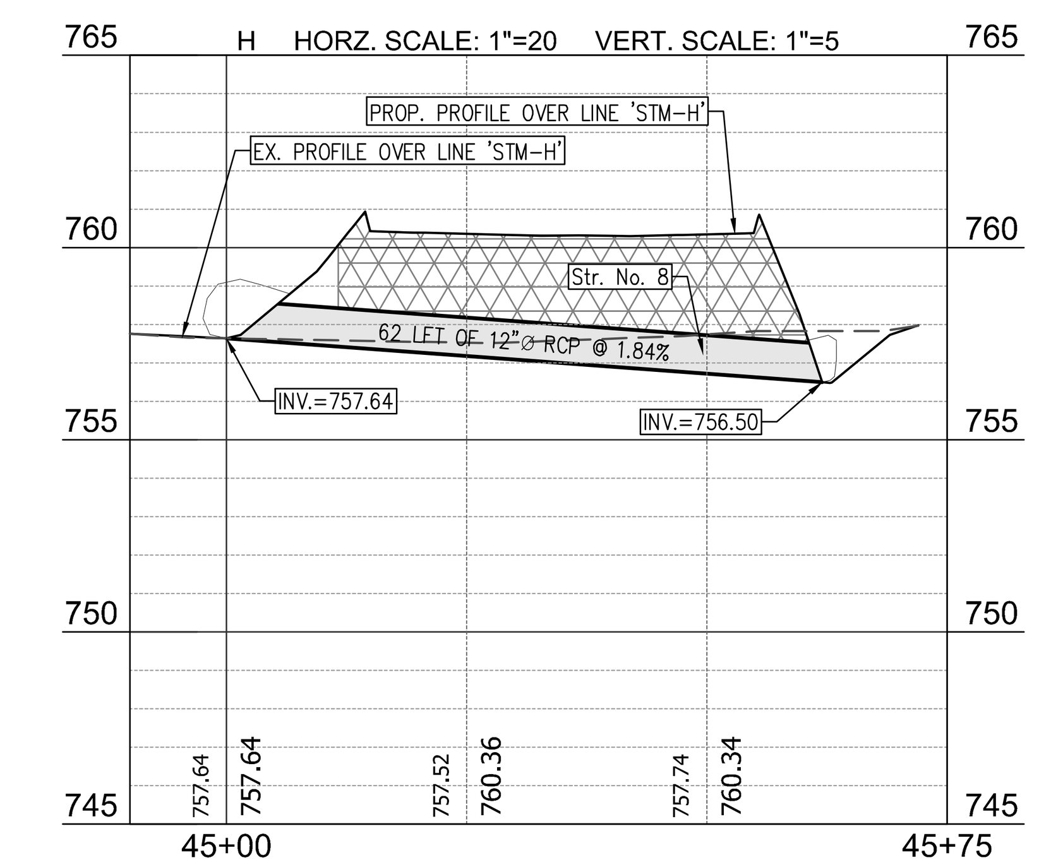
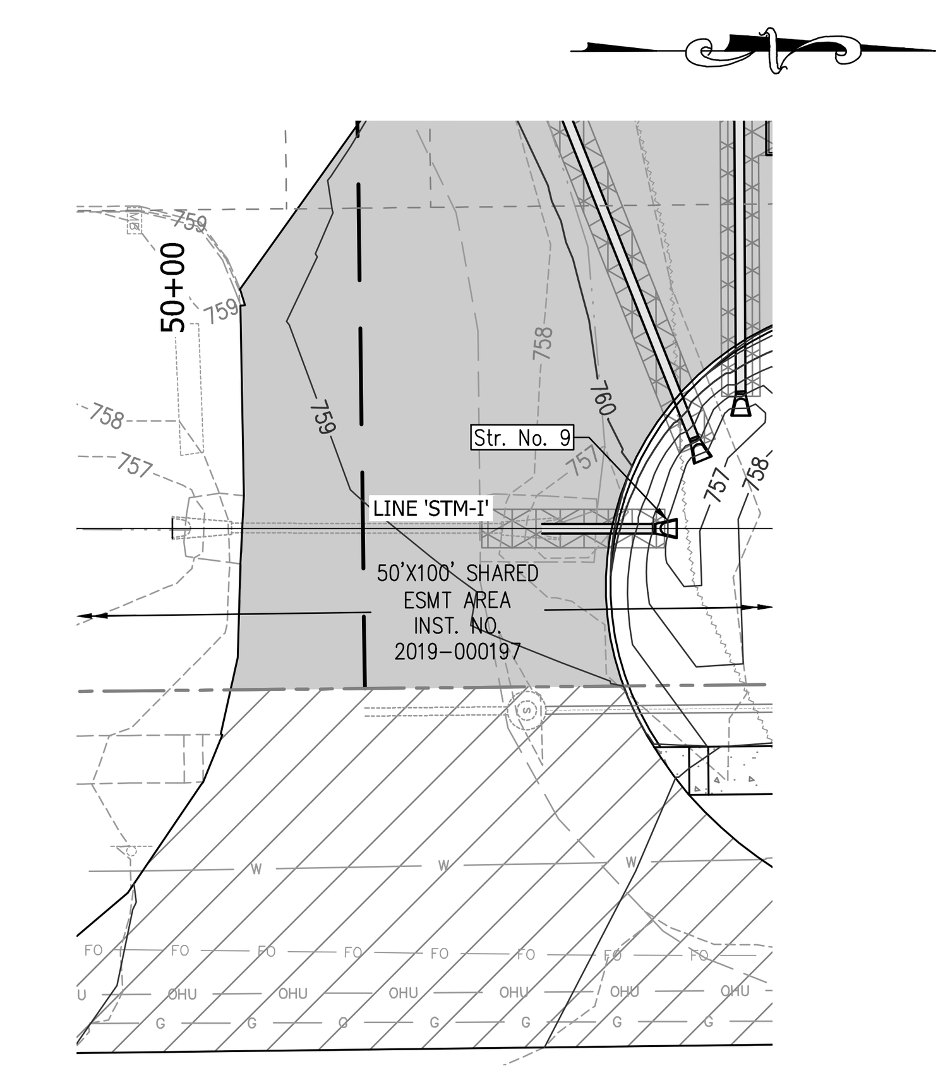
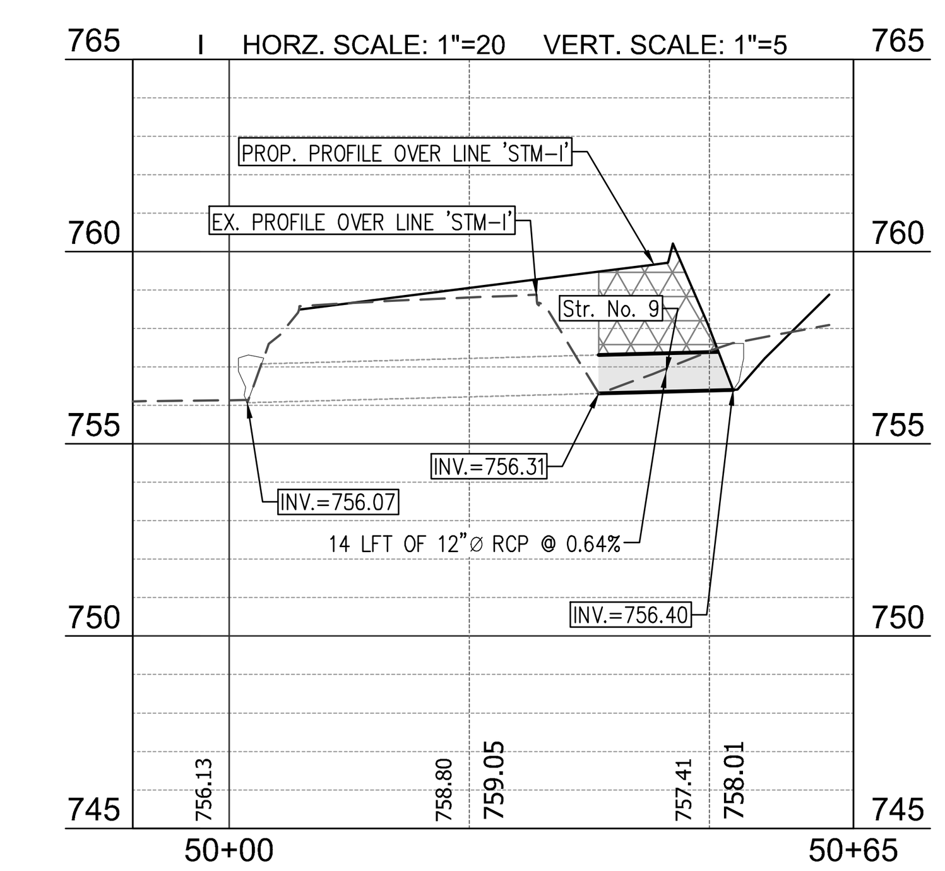
DATE/USER : 5/8/2024 12:36 PM / lhoughan

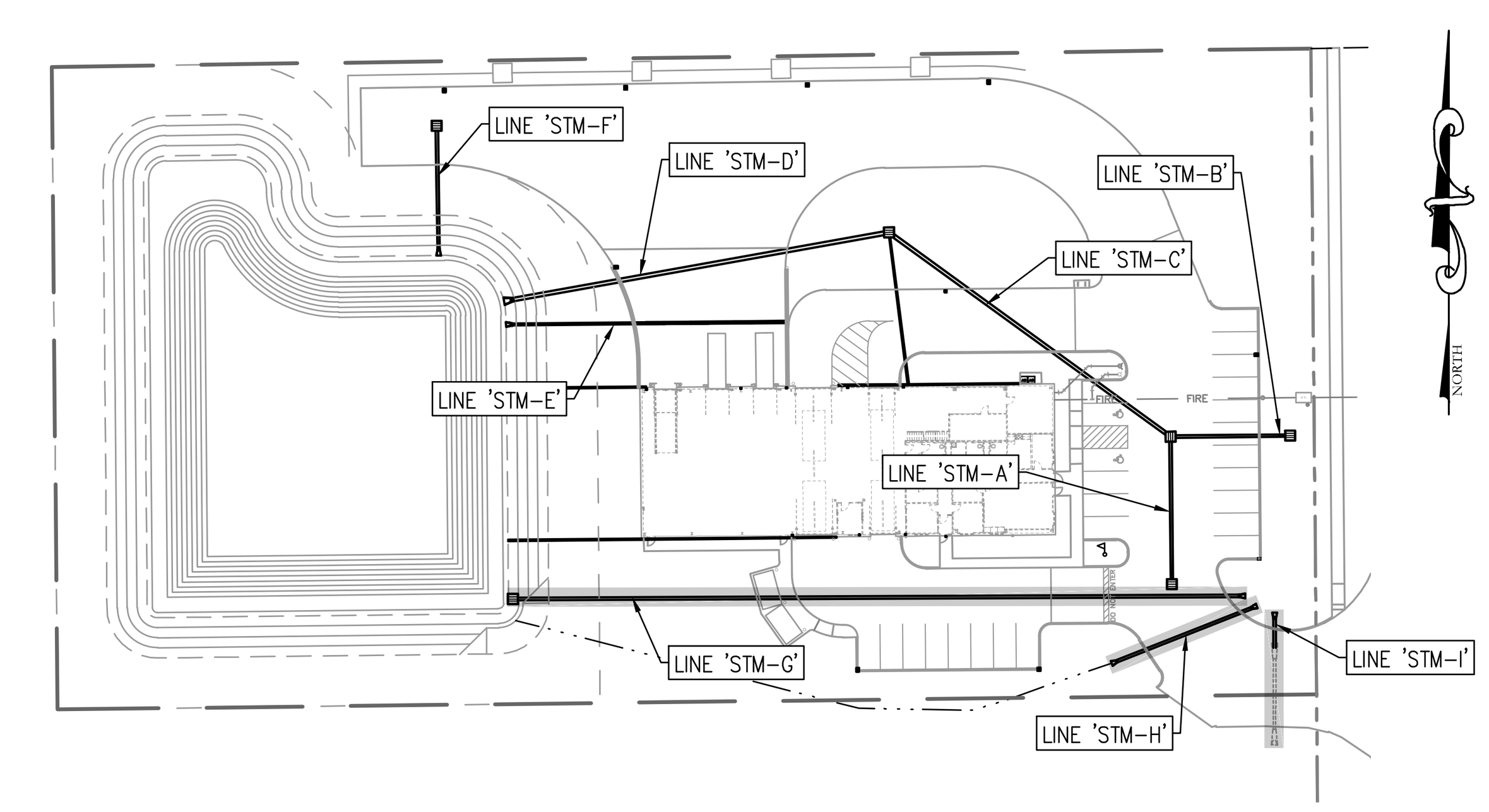












KEYMAP

NO SCALE

20 0 20 40

SCALE: 1" = 20'

PROPOSED LEGEND

PROPERTY LINE
SECTION LINE
SETBACK LINE
EASEMENT LINE
FENCE LINE
SANITARY SEWER LATERAL WITH CLEANOUT
STORM SEWER W/INLET & END SECTION
FIRE SERVICE LINE
WATER SERVICE LINE
GAS LINE
SIGN
WATER VAULT
45° BEND
PIV
FDC
FIRE HYDRANT
TEE

GRANULAR BACKFILL ALONG STORM SEWER

ALL STORM, SANITARY AND UTILITY TABLES ARE LOCATED ON SHEET ___

NOTE:
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STORM PLAN AND PROFILE

JOHNSON COUNTY RECYCLE CENTER

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JOB No.	.	DRAWN	LMC	CHECKED	BTV
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SHEET 701

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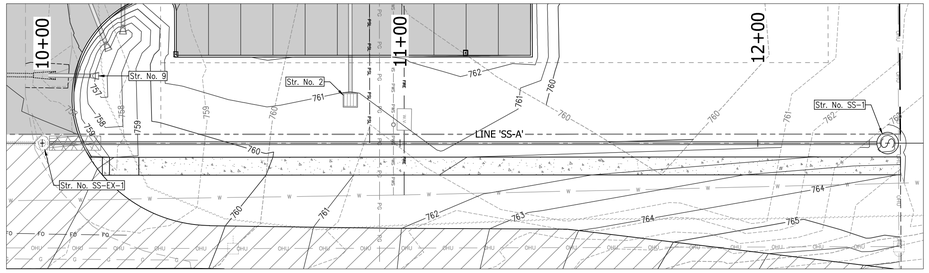
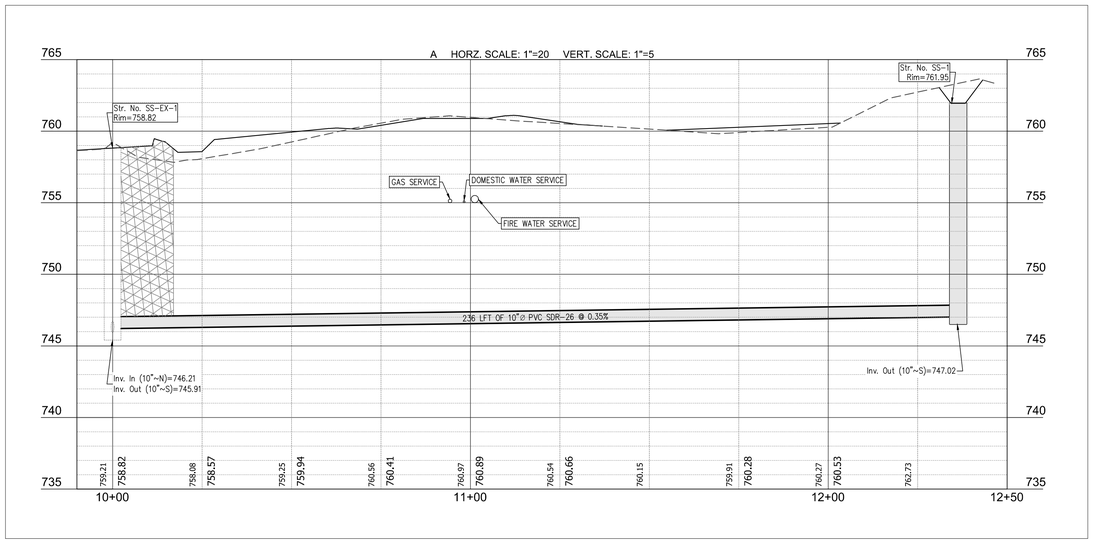


NORTH

20 0 20 40

SCALE: 1" = 20'



SANITARY MAIN INSTALLATION NOTES

1. FOR ANY WATER MAIN CROSSINGS, THE WATER MAIN SHALL BE A MINIMUM OF 18" ABOVE THE SANITARY SEWER. IF VERTICAL SEPARATION CANNOT BE MET, USE OF CONCRETE CRADLES IS REQUIRED.
2. WHEN CROSSING THE NEW WATER SERVICE LINE AND GAS SERVICE LINE, THE SANITARY MAIN MUST BE A MINIMUM OF 18" ABOVE THOSE LINES.
3. PIPE MATERIAL FOR SANITARY SEWER MAINS GREATER THAN 12' IN DEPTH SHALL BE SDR-26 PVC.
4. SANITARY LATERAL PIPE DIAMETER MUST BE A MINIMUM OF 4" ACCORDING TO 327 IAC 3-6-8.D.

ALL STORM, SANITARY AND UTILITY TABLES ARE LOCATED ON SHEET 400

GRANULAR BACKFILL ALONG SANITARY SEWER

NOTE:
CONTRACTOR TO FIELD VERIFY EXISTING ELEVATIONS OF STRUCTURE SS-EX-1 PRIOR TO INSTALLATION OF ANY PROPOSED INFRASTRUCTURE. PROPOSED INVERT SHALL BE CORE DRILLED INTO EXISTING MANHOLE PER ALL REQUIRED FRANKLIN REQUIREMENTS

NOTE:
NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

PROPOSED LEGEND

- PROPERTY LINE
- SECTION LINE
- SETBACK LINE
- EASEMENT LINE
- FENCE LINE
- SANITARY SEWER LATERAL WITH CLEANOUT
- STORM SEWER W/INLET & END SECTION
- FIRE SERVICE LINE
- WATER SERVICE LINE
- GAS LINE
- SIGN
- WATER VAULT
- 45° BEND
- PIV
- FDC
- FIRE HYDRANT
- TEE

INDIANA 811 Dig Now
Know what's below. Call before

DIRECTORY PATH : R:\Active\Larson-Rehak\JoCo Recycle Center\Design\CAD\Plans
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DATE/USER : 5/20/2024 4:21 PM / Breughan

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SANITARY PLAN AND PROFILE

JOHNSON COUNTY RECYCLE CENTER

JOB No.	-	DRAWN	LMC	CHECKED	BTV	APPR.	GJI
DATE	APRIL 11, 2024	DESIGNED	BTV				

SHEET 800

GREGORY J. ILKO NO. 10300059 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER

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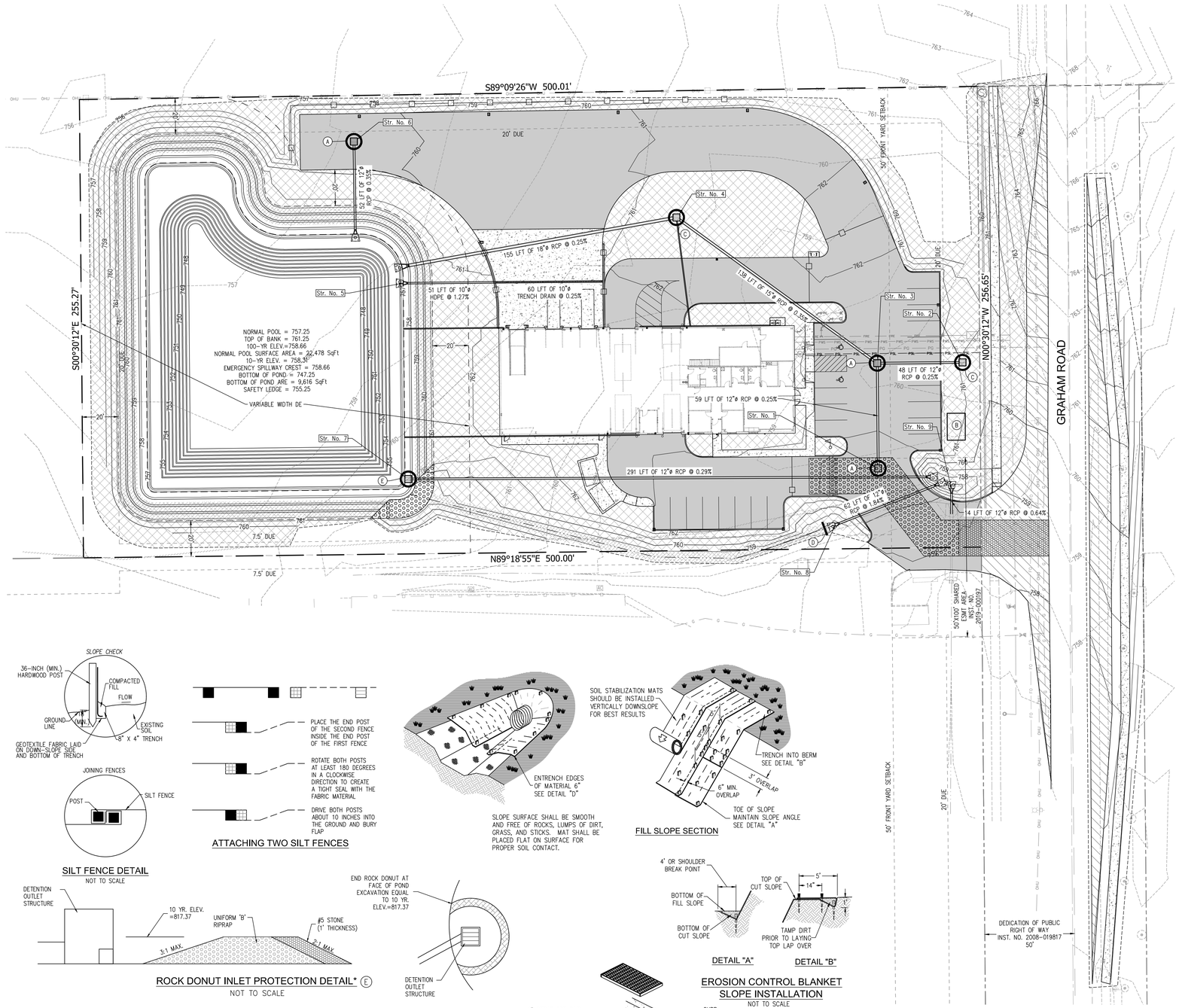
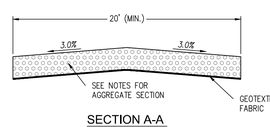
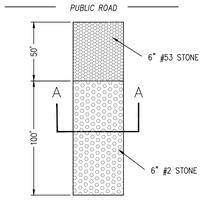
SHEET 800





SECTION A-A



TEMPORARY CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

EXISTING CONTOUR INTERVAL = 1'
PROPOSED CONTOUR INTERVAL = 1'

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE OR COUNTY OFFICIALS

EROSION CONTROL LEGEND

- MULCHED SEEDING
- EROSION CONTROL BLANKET (NORTH AMERICAN GREEN SC-150 OR EQUAL) AND MULCHED SEEDING
- REVETMENT RIPRAP
- CONSTRUCTION DRIVE (SEE DETAIL THIS SHEET)
- 800 EXISTING CONTOURS
- 800 PROPOSED CONTOURS
- SILT FENCE SLOPE CHECK (NUTEC 3 NWS-6 OR APPROVED EQUAL)
- CONSTRUCTION LIMITS
- (A) CURB INLET PROTECTION (SEE DETAIL-THIS SHEET)
- (B) CONCRETE WASHOUT AREA (SEE DETAIL-THIS SHEET)
- (C) FABRIC DROP INLET PROTECTION (SEE DETAIL-THIS SHEET)
- (D) ROCK CHECK DAM (SEE DETAIL-THIS SHEET)
- (E) ROCK DONUT INLET PROTECTION (SEE DETAIL-THIS SHEET)

EROSION CONTROL NOTES

1. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE, COUNTY, OR LOCAL OFFICIALS.
2. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
3. CONSTRUCTION STAGING AREA (TO BE DETERMINED BY CONTRACTOR) SHALL INCLUDE THE NOI POSTING, PORT-O-LETS, TRASH CONTAINERS, AND FUELING TANKS.
4. A TRAINED INDIVIDUAL MUST PERFORM AN INSPECTION ONCE A WEEK AND AFTER EVERY ½" OR MORE RAIN EVENT. A LOG OF THE INSPECTION REPORTS MUST BE KEPT AND MADE AVAILABLE TO THE CITY INSPECTOR UPON REQUEST.
5. THERE SHALL BE NO DIRT, DEBRIS, OR STORAGE OF MATERIALS WITHIN THE EXISTING STREET OR RIGHT-OF-WAYS.
6. ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE INDIANA STORM WATER QUALITY MANUAL AND THE S.C.S. "FIELD OFFICE TECHNICAL GUIDE".
7. ALL STORM WATER CASTINGS SHALL BE PHASE II COMPLIANT.
8. CONTRACTOR SHALL UTILIZE 12 OZ/SQ. YD. MINIMUM WEIGHT, NON-WOVEN NEEDLE PUNCHED GEOTEXTILE FABRIC BENEATH ALL RIPRAP USED FOR OUTLET PROTECTION.

SILT FENCE DETAIL
NOT TO SCALE

ATTACHING TWO SILT FENCES

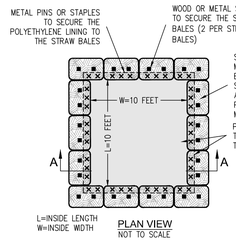
SLOPE SURFACE SHALL BE SMOOTH AND FREE OF ROCKS, LUMPS OF DIRT, GRASS, AND STICKS. MAT SHALL BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.

FILL SLOPE SECTION

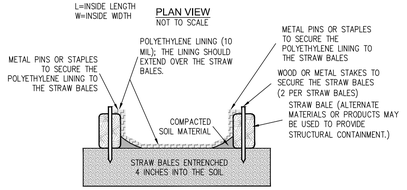
ROCK DONUT INLET PROTECTION DETAIL* (E)
NOT TO SCALE

*ROCK DONUT PROTECTION FOR STR. NO. 11 SHALL CONFORM TO THE DETAIL ABOVE. FOR ALL OTHER USES, THE MINIMUM HEIGHT SHALL BE 2 FT.

EROSION CONTROL BLANKET SLOPE INSTALLATION
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE

CONCRETE WASHOUT DETAIL (B)
NOT TO SCALE

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE, CITY OR COUNTY OFFICIALS

NOTE:
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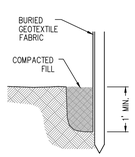

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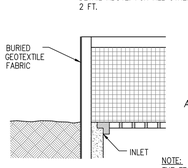
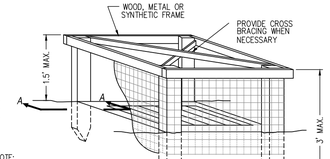


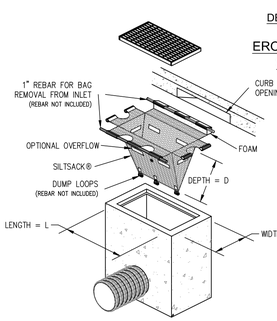
SECTION A-A

NOTE:
THE FRAME SHALL BE WRAPPED WITH ONE CONTINUOUS PIECE OF GEOTEXTILE FABRIC AND A 2' OVERLAP SHALL BE PROVIDED.



FRAME DETAIL

FABRIC DROP INLET PROTECTION DETAIL (C)
NOT TO SCALE



CURB INLET FILTER DETAIL (A)
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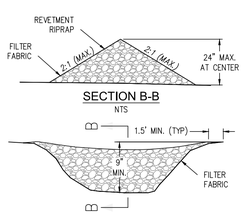
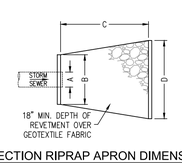


ROCK CHECK DAM DETAIL (D)
NOT TO SCALE



END SECTION RIPRAP APRON DIMENSIONS
NOT TO SCALE

PIPE OUTLET NO.	A	B	C	D	REVETMENT (TONS)	GEOTEXTILE (SYS)
5	15"	4'	5'	6.5'	3	7
13	12"	3'	4'	5'	2	5
18	15"	4'	5'	6.5'	3	7
22	12"	3'	4'	5'	2	5
32	15"	4'	5'	6.5'	3	7
33A	18"	5'	6'	7.5'	4	9
56	48"	12'	16'	20'	21	39
57	15"	4'	5'	6.5'	3	7

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 900

EROSION CONTROL PLAN

JOHNSON COUNTY RECYCLE CENTER

JOB No.	DRAWN	CHECKED	APPR.
-	LMC	BTV	GJI

DATE	DESIGNED	APPR.
APRIL 11, 2024	BTV	GJI

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FILENAME : 900 EROSION CONTROL PLAN.dwg
DATE/USER : 5/20/2024 5:45 PM / bvaughan

EROSION CONTROL PLAN INDEX

PLAN ELEMENTS

A1

CSGP EROSION CONTROL PLAN INDEX							
ELEMENT	SHEET	ELEMENT	SHEET	ELEMENT	SHEET	ELEMENT	SHEET
A4	901	A19	400	B4	900 & 901	B11	900 & 901
A5	901	A21	900	B5	900 & 901	B12	900 & 901
A6	900	A22	900	B6	900 & 901	B13	901
A15	900	A23	900	B7	900 & 901	B14	901
A16	900	B2	901	B9	900 & 901		
A18	901	B3	901	B10	900 & 901		

A2 VICINITY MAP
A vicinity map depicting the project site location is located in right half of the Stormwater Pollution Prevention Plan.

A3 PROJECT NARRATIVE
The project involves the construction of a new recycling center for Johnson County. The project is located along Graham Road, north of Linville Way. Drives, curbs, parking and walks necessary for the development shall be constructed as part of the construction plans herein. A storm sewer system shall be utilized for stormwater collection. Drainage will discharge into the existing drive culvert located in the southeast corner of the property. Water, sanitary, telephone, cable, gas, and electric utilities shall serve the property as well. Construction is anticipated to begin in the Summer of 2024.

A4 LATITUDE & LONGITUDE
Latitude N 39°30'41" Longitude W 86°03'24"

A5 LEGAL DESCRIPTION
The Legal Description of the project site is located in the lower right quadrant of the Stormwater Pollution Prevention Plan.

A6 11 BY 17 INCH PLAT
The 11x17 inch Plat has been submitted to the respective Soils and Water Conservation District.

A7 100 YEAR FLOOD PLAINS, FLOODWAYS AND FLOODWAY FRINGES
By graphic plotting only, this tract of land described hereon lies within Zone 'X' (areas outside the 0.2% annual chance floodplain) and is not in a Special Flood Hazard Area as plotted on the Federal Emergency Management Agency Flood Insurance Rate Map for Johnson County, Indiana, Community Panel No. 18081C0143E, which bears an effective date of January 29, 2021.

A8 ADJACENT LAND USE
The adjacent landuses are labeled on the Erosion Control Plan.

A9 DESCRIPTION OF TOTAL MAXIMUM DAILY LOAD (TMDL) REPORT
Name: Canary Ditch (INW0463_T1006)
Location: West of the project site
Pollutants Addressed: Not applicable, as there are no TMDL associated with this watershed.

A10 RECEIVING WATERS
The receiving water for this project is Canary Ditch.

A11 DESCRIPTION OF 303(d) LIST
Name: Canary Ditch (INW0463_T1006)
Location: West of the project site.
Category: Yes, the project falls within a 303(d) listed watershed
Pollutants Addressed: Full body contact

A12 SOILS MAP AND DESCRIPTIONS
The soils map and all pertinent soil type information are located on the upper right quadrant of the Stormwater Pollution Prevention Plan.

A13 WETLANDS, LAKES AND WATER COURSES.
There are no potential wetland areas located within the project site, nor shall any potential wetland areas be disturbed as a result of construction

A14 STATE AND/OR FEDERAL WATER QUALITY PERMITS
IDEM CSGP is required for this project.

A15 EXISTING VEGETATIVE COVER
The existing site is cultivated farm land.

A16 EXISTING SITE TOPOGRAPHY
Existing one-foot contours are shown on the Erosion Control Plan.

A17 EXISTING RUN-OFF ENTRANCE AREA
Runoff enters the site from the northeast corner via roadside ditch. Runoff also comes onto the site from the existing ditch south of the site.

A18 EXISTING RUN-OFF DISCHARGE AREA
Runoff from the eastern half of the site discharges into the existing drive culvert at the southeast corner of the site. Runoff from the western half of the site discharges west to the adjacent farm field.

A19 EXISTING STORMWATER SYSTEMS
The existing stormwater system sizes and dimensions are labeled on the Topographic Survey Plan.

A20 EXISTING RETENTION/DETENTION FACILITIES
There are no existing retention/detention facilities onsite.

A21 POTENTIAL DISCHARGES TO GROUND WATER
There are no potential locations where stormwater may enter the groundwater.

A22 TOTAL PROJECT AREA
The total project area covers ±3.27 acres.

A23 EXPECTED DISTURBED AREA
The expected project land disturbance is ±3.27 acres.

A24 PROPOSED SITE TOPOGRAPHY
Proposed one-foot contours are shown on the Erosion Control Plan.

A25 DISTURBED AREAS
The construction limits (boundary of disturbed area) are shown on the Erosion Control Plan.

A26 PROPOSED STORMWATER SYSTEMS
The proposed stormwater system sizes and dimensions are labeled on the Erosion Control Plan.

A27 PROPOSED STORMWATER DISCHARGE
Stormwater will discharge from the site through the existing drive culvert in the southeast corner of the site.

A28 SITE IMPROVEMENTS
This project involves the construction of a new recycle center. New parking and drives will be installed as well as a wet detention pond and storm system.

A29 SOIL STOCKPILES, BORROW/DISPOSAL AREAS
Topsoil shall be stockpiled in a convenient location (as determined by the owner and/or contractor) within the construction site as shown on the Erosion Control Plan. There is no anticipated soil stockpile location.

A30 CONSTRUCTION SUPPORT ACTIVITIES
There are no construction support activities anticipated with these improvements.

A31 IN-STREAM ACTIVITIES
There are no in-stream activities anticipated with these improvements.

STORMWATER POLLUTION PREVENTION - DURING CONSTRUCTION

B1 POTENTIAL POLLUTANT SOURCES ASSOCIATED WITH CONSTRUCTION ACTIVITIES
There is a potential for pollutants associated with construction machinery including diesel fuel, hydraulic fluid, engine oils and lubricants, antifreeze and other petroleum products. It is unavoidable for a small amount of these pollutants to contaminate soil in the grading and construction of the site. Sediment pollution from site disturbing activities shall be remedied by Erosion Control measures (see following sections).

B2 CONSTRUCTION ENTRANCE
The construction entrance shall be constructed at the existing drive entrance off of Graham Road. Specifications and details are located on the Stormwater Pollution Prevention Plan.

B3 TEMPORARY & PERMANENT STABILIZATION
Temporary & Permanent surface stabilization methods are shown on the Erosion Control Plan and detailed on the Stormwater Pollution Prevention Plan.

B4 SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS
Sediment Control measures for concentrated flow areas are shown on the Erosion Control Plan. Specifications and details are located on the Stormwater Pollution Prevention Plan.

B5 SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS
Sediment Control measures for Sheet flow areas are shown on the Erosion Control Plan. Specifications and details are located on the Stormwater Pollution Prevention Plan.

B6 RUNOFF CONTROL MEASURES
Runoff control measures are shown on the Erosion Control Plan. Specifications and details are located on the Stormwater Pollution Prevention Plan.

B7 STORMWATER OUTLET PROTECTION MEASURES
Stormwater outlet protection measures are shown on the Erosion Control Plan. Specifications and details are located on the Stormwater Pollution Prevention Plan.

B8 GRADE STABILIZATION STRUCTURES
No grade stabilization structures are required for this project.

B9 DEWATERING ACTIVITIES
If required during excavation operations, dewatering shall be completed as shown on the Erosion Control Plan. Specifications and details are located on the Erosion Control Plan and Stormwater Pollution Prevention Plan.

B10 WATERBODY QUALITY MEASURES
Measures utilitized for work within waterbodies are shown on the Erosion Control Plan and associated details/specifications are shown on the Stormwater Pollution Prevention Plan.

B11 MONITORING AND MAINTENANCE GUIDELINES
Monitoring and Maintenance Guidelines are located in the middle on the Stormwater Pollution Prevention Plan

B12 PLANNED CONSTRUCTION GUIDLINES
Planned Construction Sequence guidelines are located in the middle on the Stormwater Pollution Prevention Plan.

B13 EROSION & SEDIMENT CONTROL MEASURES FOR INDIVIDUAL BUILDING LOTS
Not applicable, as this is to be developed as a standalone recycle center.

B14 MATERIAL HANDLING AND SPILL PREVENTION
Spill prevention shall be accomplished by utilizing spillguards for equipment fueling and servicing operations. Spillguards shall be 3'x3'x6" and shall be constructed of a material resistant petroleum products (including diesel fuel and oil). On-site fuel storage tanks shall have emergency storage capacity directly below the tank in case of rupture. Any hazardous material spillage shall be collected and/or cleaned immediately by a trained individual and disposed of in accordance with all federal, state and local regulations.
Indiana Department of Environmental Management
Office of Emergency Response (317) 233-7745, Toll Free (800) 233-7745
Franklin Fire Department (317) 736-3651
Additional Material Handling and Spill Prevention (this sheet)

B15 MATERIAL HANDLING AND STORAGE
Material Handling and Storage Procedure guidelines are located in the middle on the Stormwater Pollution Prevention Plan.

STORMWATER POLLUTION PREVENTION - POST CONSTRUCTION

C1 PROPOSED POLLUTANTS AND SOURCES ASSOCIATED WITH PROPOSED LAND USE
Potential pollutants include petroleum products and antifreeze from automobiles using the parking areas and sediment.

C2 PROPOSED POST CONSTRUCTION STORMWATER MEASURES
Post construction stormwater quality measures shall consist of a wet detention pond.

C3 LOCATION, DIMENSIONS, SPECIFICATIONS AND DETAILS OF EACH STORMWATER QUALITY MEASURE
The location of the wet detention pond is shown on the construction plans.

C4 STORMWATER QUALITY MEASURE IMPLEMENTATION
Stormwater quality measures are implemented by construction of the site improvements which include the wet detention pond for stormwater quality treatment.

C5 MAINTENANCE GUIDELINES OF POST CONSTRUCTION STORMWATER QUALITY MEASURES
All landscape areas shall be maintained by mowing, removing trash and debris, and re-planting any vegetated areas as necessary. The proposed storm sewer inlets shall be inspected for blockage of any type after each storm event. All obstructions, trash, and debris shall be removed upon inspection. Maintenance and inspection of the wet detention pond and outlet structure shall be performed in accordance with the manufacturer's recommendation ands the Operations and Maintenance (O&M) Manual approved by the City of Franklin MS4 Coordinator.

C6 PARTY RESPONSIBLE FOR POST-CONSTRUCTION STORMWATER POLLUTION PREVENTION
Owner: Johnson County Solid Waste District, Kevin Walls, Phone: (317) 346-4306, Email: kwalls@co.johnson.in.us

MONITORING AND MAINTENANCE GUIDELINES

GRAVEL CONSTRUCTION DRIVE AND PARKING AREA:
A. Inspect daily and after each storm event. Immediately remove mud and sediment tracked or washed onto public roads.
B. Top dress with clean aggregate as needed. Reshape pad as needed for drainage and runoff control.
C. Flushing should only be used if the water can be conveyed into a sediment trap or basin.

TOPSOIL:
A. Inspect daily until vegetation is established.
B. Check for erosion or damage of newly spread topsoil and repair immediately.

TEMPORARY AND PERMANENT SEEDING:
A. Inspect seeding within 24 hours of each rain event and at least once every seven calendar days until vegetation is established.
B. Check for erosion or movement of mulch and repair immediately.
C. Plan to add fertilizer the following growing season according to soil test recommendations.
D. Repair damaged, bare, or sparse areas by filling any gullies, re-fertilizing, over- or re-seeding, and mulching.
E. If plant cover is sparse or patchy, review the plant materials chosen, soil fertility, moisture condition, and mulching; repair the affected area either by over-seeding or by re-seeding and mulching after re-preparing the seed bed.
F. If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems.
G. If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.
H. Reference INDOT Specification 621.05.

EROSION CONTROL BLANKET:
A. Inspect within 24 hours of each rain event and at least once every seven calendar days. Check for erosion or displacement of the blanket.
B. If any area shows erosion, pull back that portion of the blanket covering the eroded area, add soil and tamp, re-seed the area, and re-lay and staple the blanket.
C. After vegetative establishment, check the treated area periodically.

MULCHING:
A. Inspect within 24 hours of each rain event to check for movement of mulch or for erosion.
B. If washout, breakage, or erosion is present, repair damage areas, re-seed, apply new mulch, and anchor mulch in place.
C. Continue inspections until vegetation is firmly established.
D. Reference INDOT Specification 621.05.

RIPRAP:
A. Inspect periodically for displaced rock material, slumping, and erosion at edges, especially downstream or downslope.

SILT FENCE:
A. Inspect within 24 hours of each rain event and at least once every seven calendar days.
B. If fence fabric tears, starts to decompose, or in any way becomes ineffective, replace the affected portion immediately.
C. Remove deposited sediment when it reaches half the height of the fence at its lowest point or is causing the fabric to bulge.
D. Take care to avoid undermining the fence during clean out.
E. After the contributing drainage area has been stabilized, remove the fence and sediment deposits, bring the disturbed area to grade and stabilize.

SILT SACK INLET PROTECTION:
A. Inspect the silt sack inlet protection periodically and after each ½" storm event.
B. Remove deposited sediment when it reaches half the height of the filter at the lowest point.
C. Remove the Silt Sack Inlet Protection and sediment deposits after contributing drainage area is stabilized.

ROCK CHECK DAM:
A. Inspect the check dam and channel after each storm event, and repair any damage immediately.
B. If significant erosion occurs between dams, install a riprap liner in that portion of the channel.
C. Remove sediment accumulated behind each dam as needed to maintain channel capacity, to allow drainage through the dam, and to prevent large flows from displacing sediment.
D. Add rock to the dams as needed to maintain design height and cross section.

CONCRETE WASHOUT:
A. Concrete washout area shall be installed prior to any concrete placement on site.
B. Signs shall be placed at the construction entrance, at the washout area, and elsewhere as necessary to clearly indicate the location of the concrete washout area to operators of concrete trucks and pump rigs.
C. The concrete washout area shall be repaired and enlarged or cleaned out as necessary to maintain capacity for wasted concrete.
D. At the end of construction, all concrete shall be removed from the site and disposed of at an approved waste site.
E. When the concrete washout area is removed, the disturbed area shall be seeded and mulched or otherwise stabilized in a manner approved by the inspector.

CONSTRUCTION SEQUENCE & SCHEDULE OF EROSION CONTROL IMPLEMENTATION

1. Silt fence and/or straw bales shall be placed around existing structures and in ditches as shown in these plans before any land disturbing activities are started.
2. Schedule a pre-construction meeting with Johnson County SWCD and City of Franklin 48 hours prior to start of earthwork.
3. Construct temporary gravel entrance in accordance with the "INDIANA STORM WATER QUALITY MANUAL". All other erosion control measures and detention areas shall be installed and constructed as shown at the beginning of the project.
4. Construct detention pond and install respective outlet structures.
5. Strip topsoil and stockpile as shown.
6. Rough grade site. Disturbed areas should be seeded immediately following rough grading. Areas that will not be disturbed again should be permanently seeded. No unvegetated areas should be exposed for more than seven days.
7. Place drainage structures. Erosion control measures shall be placed around proposed structures as soon as they are in place and until vegetation is secure.
8. Construct building and other remaining site improvements and utilities.
9. Final grade site. All erosion control blankets shall be installed per manufacturers recommendations as soon as final grading is complete.
10. Final paving operations. Temporary erosion control measures shall remain in place until vegetation is secure.

GENERAL EROSION CONTROL REQUIREMENTS FOR COMPLIANCE WITH IDEM GENERAL PERMIT RULES FOR STORM WATER RUNOFF FROM CONSTRUCTION SITES

1. All Erosion Control practices shall be in accordance with the latest edition of the INDIANA STORM WATER QUALITY MANUAL.
2. The Erosion Control measures included in this plan shall be installed prior to initial land disturbance activities or as soon as practical. Sediment shall be prevented from discharging from the project site by installing and maintaining silt fence, straw bales, sediment basins, etc. As shown on this plan. If shown on this plan, energy-dissipation devices or Erosion Control at the outfall of the storm sewer system shall be installed at the time of the construction of the outfall.
3. All on-site storm drain inlets shall be protected against sedimentation with silt sack inlet filters, filter fabric, or equivalent barriers as shown on this plan.
4. Except as prevented by inclement weather conditions or other circumstances beyond the control of the contractor/developer appropriate Erosion Control practices will be initiated within (7) seven days of the last land disturbing activity at the site. The site shall be stabilized by seeding, sodding, mulching, covering, or by other equivalent Erosion Control measures.
5. This Erosion Control plan shall be implemented on all disturbed areas within the construction site. All measures involving Erosion Control practices shall be installed under the guidance of a qualified person experienced in Erosion Control and following the plans and specifications included herein.
6. During the period of construction activity, all sediment basins and other Erosion Control measures shall be maintained by the contractor. At the completion of construction, the contractor shall coordinate the transfer of required maintenance responsibilities with the owner.
7. Public or private roadways shall be kept cleared of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Cleared sediment shall be returned to the point of likely origin or other suitable location.
8. The contractor shall control wastes, garbage, debris, wastewater, and other substances on the site in such a way that they shall not be transported from the site by the action of winds, storm water runoff, or other forces. Proper disposal or management of all wastes and unused building materials appropriate to the nature of the waste or material is required.
9. Additional Erosion Control measures may be required by state or county agencies.

ADDITIONAL MATERIAL HANDLING AND SPILL PREVENTION PLAN

A. PURPOSE

The purpose of this plan is two fold:
1. To help protect the health and safety of those working on the site as well as the environment.
2. Preventing the contamination of storm water runoff. Pollutants generated onsite may include gasoline, diesel fuel, oils, grease, paints, pesticides, nutrients, concrete washout, soil, solvents, paper, plastic, Styrofoam, metals, glass and other forms of liquid or solid wastes.

This plan outlines procedures to help prevent health and safety issues, contamination of storm water by onsite pollutants, help prevent fuel and chemical spills and provide a response procedure should a spill occur.

B. PREVENTION AND READINESS

1. The contractor or responsible party will prepare a contact list in the event of a spill on the site. The contact list will have names and contact numbers. The contact list will specify first responders and a chain of command. Include information on what circumstances require the initiation of the contact list and chain of command.
2. The contractor/owner shall maintain a list of qualified contractors, Vac-trucks, tank pumpers and other equipment or businesses qualified to do clean-up operations. Absorbent materials and supplies need to be available onsite in sufficient quantities to address minor spills. All employees need to be educated on the proper application of the absorbent materials.
3. All maintenance and equipment operators must be aware and trained for prevention of spills. A continuing education program is required for new employees and emphasizing the importance to all employees.
4. All materials used in the course of a cleanup will be disposed in a manor approved by Indiana Department of Environmental Management.
5. Using water to flush spilled material will not be permitted unless authorized by a state, federal, or local agency. Tarps can be used to cover spilled material during rain events.

C. SPILL RESPONSE

Minor - Small spills that typically involve oil gasoline, paint, hydraulic fluid etc. Minor spills can be controlled by the first responder at the discovery of the spill.
- Contain spill to prevent material from entering storm or ground water. Do not flush with water or bury.
- Use absorbent material to clean-up spill material and any subsequently contaminated soil and dispose of properly.

Semi-significant Spills - Approximately ten gallons or less of pollutant with no contamination of ground or surface waters. Minor spills can be generally controlled by the first responder with help from other site personnel. This response may require other operations to stop to make sure the spill is quickly and safely addressed. At the discovery of the spill:
- Contain spill to prevent material from entering storm or ground water. Do not flush with water or bury.
- Use absorbent material to clean-up spills and dispose of properly. Spills on impervious surfaces should be contained with a dry absorbent. Spills on clayey soils should be contained by constructing an earthen dike and should be disposed of as soon as possible to prevent migration deeper into the soil and groundwater. Dispose of contaminated soils or absorbents properly.
- Contact 911 if this spill could be a safety issue.
- Contact supervisors and designated inspectors immediately
- Contaminated solids to be removed to an approved landfill.

Major or Hazardous Spills - More than ten gallons, there is the potential for death, injury or illness to humans or animals or has the potential for surface or groundwater pollution.
- Control or contain the spill without risking bodily harm. Temporarily plug storm drains if possible to prevent migration of the spill into the stormwater system.
- Immediately contact the local Fire Department at 911 to report any hazard material spill.
- Contact supervisors and designated inspectors immediately. Other county or municipal officials (list as needed) responsible for storm water facilities should be contacted as well. The contractor is responsible for having these contact numbers available at the job site. A written report should be submitted to the owner as soon as possible.
- As soon as possible but within 2 hours of discovery, contact the Department of Environmental Management,
  Office of Emergency Response 1-888-233-7745. The following information should be noted for future reports to IDEM or the National Response Center.
  - o Name, address and phone number of person making the spill report
  - o The location of the spill
  - o The time of the spill
  - o Identification of the spilled substance
  - o Approximate quantity of the substance that has been spilled or may be further spilled
  - o The duration and source of the spill
  - o Name and location of the damaged waters
  - o Name of spill response organization
  - o What measures were taken in the spill response
  - o Other information that may be significant

Additional regulation or requirements may be present. A spill response professional should be consulted to make sure all appropriate and required steps have been taken. Contaminated solids should only be removed from the site after approval is given by Emergency Response.

D. THE FOLLOWING PROCEDURES AND PRACTICES WILL HELP PREVENT UNNECESSARY SPILLS

I. Vehicle and Equipment Fueling

Description and Purpose:
- Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Limitations:
- Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling.

Implementation:
- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.
- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the absorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- Dedicated fueling areas should be protected from stormwater run-on and runoff, and should be located at least 50 feet away from the downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent run-on, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Inspection and Maintenance
- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soils.

II. Solid Waste Management

Description of Purpose:
- Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications:
This BMP is suitable for construction sites where the following wastes are generated or stored:
- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction.
- Packaging materials including wood, paper, and plastic.
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products.
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes,
- Construction waste including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts. Styrofoam and other materials send transport and package construction materials.

Implementation:
The following steps will help keep a clean site and reduce stormwater pollution:
- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use.
- Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acid, pesticides, additives, curing compounds) are not disposed of in dumpsters designed for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas. Solid waste storage areas should be located in areas prone to flooding or ponding.
- Locate solid waste dumpster a minimum of 50' away from storm water inlets or other drainage facilities.
- Locate dumpster on stone or earth to minimize the potential for spills or leaks to drain immediately into a drainage facility.

Inspection and Maintenance:
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.
- Inspect construction waste are regularly.
- Arrange for regular waste collection.

III. Concrete Washout

The following steps will help reduce stormwater pollution from concrete wastes:
- Discuss the concrete management techniques described in the BMP (such as handling of concrete waste and washout) with the reddy-mix concrete supplier before any deliveries are made.
- Incorporate requirements for concrete waste management into material supplier and subcontractors' agreements.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks offsite or in designed areas only.
- Do not wash concrete trucks into storm drains open ditches, streets, or streams.
- Do no allow excess concrete to be dumped onsite, except in designed areas.

For onsite washout:
- Locate washout areas at least 50 feet from storm drains, open ditches, or water bodies.
- Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.
- Avoid creating runoff by drinking water to a bermed or level area when washing concrete to remove fine particles and expose the aggregate.
- Do not wash sweepings form exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.

IV. Vehicle Maintenance Areas
Purpose- To prevent spills during the normal maintenance of construction machinery.

Implementation- Where and when feasible, maintenance shall be preformed offsite in covered facility with an impervious floor.
- Use a dedicated site for machinery maintenance
- Site the maintenance area at least 50 feet from storm water inlets or water bodies
- Maintain clean up materials close at hand. Utilize drip pans and absorbent pads to prevent oils from reaching the soil surface.
- Inspect equipment daily for leaks or worn hoses. Repair or replace to prevent onsite spills
- Properly dispose of all fluids removed or spilled from machinery.

V. Fluids, paints, solvents and other chemicals storage and use

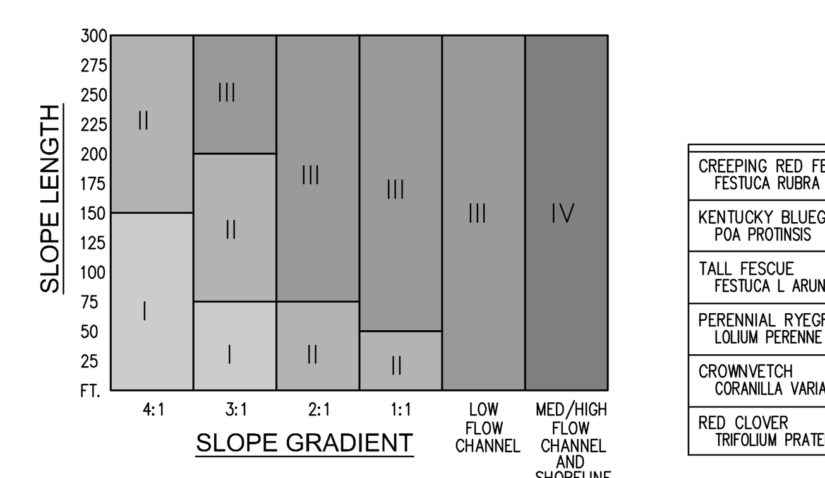
Purpose- To prevent spills during the use and storage of the materials

Implementation-
- Store materials in there original containers
- Maintain safety data sheets on all products
- Store materials in a weather proof/vandal resistant locker or building
- Keep materials away from flammable sources
- Provide and read instructions for the proper use and storage of all materials
- For bulk material stored onsite, provide diking or double containment in case of leaks or failures.
- No washout of solvent from paint supplies should be done near or into a storm water inlet or other drainage facility.

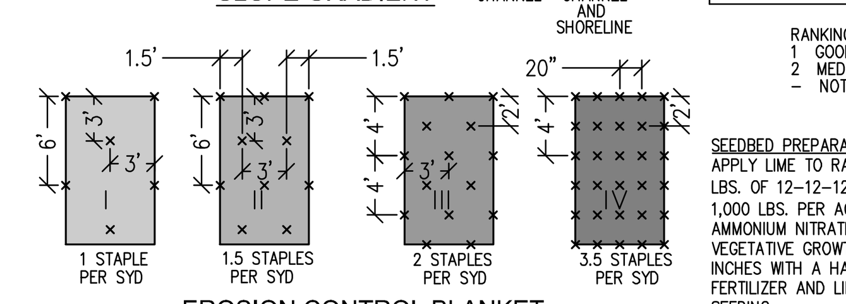
VI. Disposal of sediment laden water

Purpose- To prevent the purposeful discharge of sediment laden water into waters of the United States.

Implementation-
- The sediment and any other pollutant from all pumping or dewatering operations that discharge into storm sewers, wetlands, drainage ways or water bodies must be removed from the water before it's discharged.
- A suitable practice is needed at the discharge to allow the suspended solids to be removed from the water column. Slow moving water and time are needed components for an effective practice. Mechanical filters and chemical flocculants can do an excellent job of removing the fine materials.
- Sediment removal pumping bags may be used at the outlet of a pump. The bags must be sized appropriately for the amount of flow. The practice needs to be installed on erosion resistant surfaces. The outlet of the pumping bag must be erosion resistant to prevent additional sedimentation.
- Pumping operations that are moving clean water through a site are not required to have a pumping bag or similar device at the outlet. The point of discharge should be protected to prevent soil erosion.



SLOPE GRADIENT



EROSION CONTROL BLANKET STAPLE PATTERN DETAIL

SPECIES	SOIL CONDITION WET	SOIL CONDITION NORM	SOIL CONDITION DRY	SHADE TOLERANCE	CLOSE MOWING TO 2-3 1/2 INCHES	TRAMPING TOLERANCE	FERTILITY NEEDS	WINTER HARDINESS	FLOODING TOLERANCE (DAYS)	MATURE HEIGHT (INCHES)	EMERGENCE TIME (DAYS)	SALT TOLERANCE GEN.	SALT TOLERANCE SOIL	SALT TOLERANCE SPRAY
CREEPING RED FESCUE FESTUCA RUBRA	2	1	2	1	1	1	MED.	1	20-25	12-18	7-21			S
KENTUCKY BLUEGRASS POA PROTINSIS	2	1	2	1	1	1	MED.	1	25-35	12-18	10-20			MT
TALL FESCUE FESTUCA L ARUNDINACEA	2	1	1	1	1	1	LOW	1	24-35	24-36	5-14		T	
PERENNIAL RYEGRASS LOLIUM PERENNE	2	1	2	–	1	2	MED-HIGH	2	15-20	12-18	5-10		MT	
CROWNVETCH CORANILLA VARIA	–	1	1	2	–	–	LOW	1	5-10	24	14-21	T		
RED CLOVER TRIFOLIUM PRATENSE	–	1	–	2	–	–	MED.	1	7-10	18	5-10	S	S	

RANKING
1 GOOD
2 MEDIUM
– NOT TOLERANT

SALT TOLERANCE (TO BOTH SOIL SALTS AND SPRAY)
T – TOLERANCE
MT – MEDIUM TOLERANCE
S – SLIGHT TOLERANCE

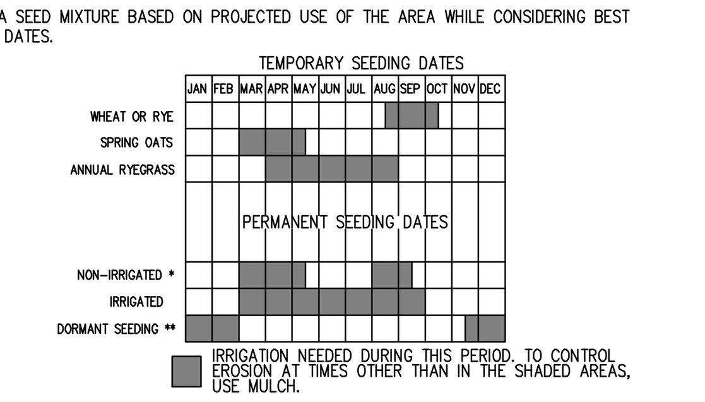
SEEDBED PREPARATION
APPLY LIME TO RAISE THE pH TO THE LEVEL NEEDED FOR SPECIES BEING SEEDED. APPLY 23 LBS. OF 12-12-12 ANALYSIS FERTILIZER (OR EQUIVALENT) PER 1,000 SQ. FT. (APPROXIMATELY 1,000 LBS. PER ACRE) OR FERTILIZE ACCORDING TO TEST. APPLICATION OF 150 LBS. OF AMMONIUM NITRATE ON AREAS LOW IN ORGANIC MATTER AND FERTILITY WILL GREATLY ENHANCE VEGETATIVE GROWTH. WORK THE FERTILIZER AND LIME INTO THE SOIL A DEPTH OF 2 TO 3 INCHES WITH A HARROW, DISK, OR RAKE OPERATED ACROSS THE SLOPE AS MUCH AS POSSIBLE. FERTILIZER AND LIME SHALL MEET REQUIREMENTS OF INDOT STANDARD SPECIFICATIONS 1995.
SEEDING
SELECT A SEED MIXTURE BASED ON PROJECTED USE OF THE AREA WHILE CONSIDERING BEST SEEDING DATES.

PERMANENT SEED MIXTURES

SPECIES	SEEDING RATE LBS/ACRE	SUITABLE pH	SITE SUITABILITY DROUGHTY	SITE SUITABILITY DRAINED	SITE SUITABILITY WET
LEVEL AND SLOPING, OPEN AREAS					
TALL FESCUE	35	5.5 – 8.3	2	1	2
TALL FESCUE RED CLOVER **	25 5	5.5 – 8.3		1	
KENTUCKY BLUEGRASS CREEPING RED FESCUE	15 15	5.5 – 7.5	2	1	
STEEP BANKS AND CUTS					
TALL FESCUE KENTUCKY BLUEGRASS	15 25	5.8 – 7.5	2	1	2
TALL FESCUE EMERALD CROWNVETCH **	35 10	5.5 – 8.3	2	1	
LAWNS AND HIGH MAINTENANCE AREAS					
KENTUCKY BLUEGRASS CREEPING RED FESCUE	40 40	5.8 – 7.5	2	1	
PERENNIAL RYEGRASS (TURF TYPE)	170	5.0 – 7.5		1	
TALL FESCUE	170	5.5 – 8.3	2	1	2

1–PREFERRED 2–WILL TOLERATE ** – INOCULATE WITH SPECIFIC INOCULATES

TEMPORARY SEEDING DATES



IRRIGATION NEEDED DURING THIS PERIOD. TO CONTROL EROSION AT TIMES OTHER THAN IN THE SHADED AREAS, USE MULCH.

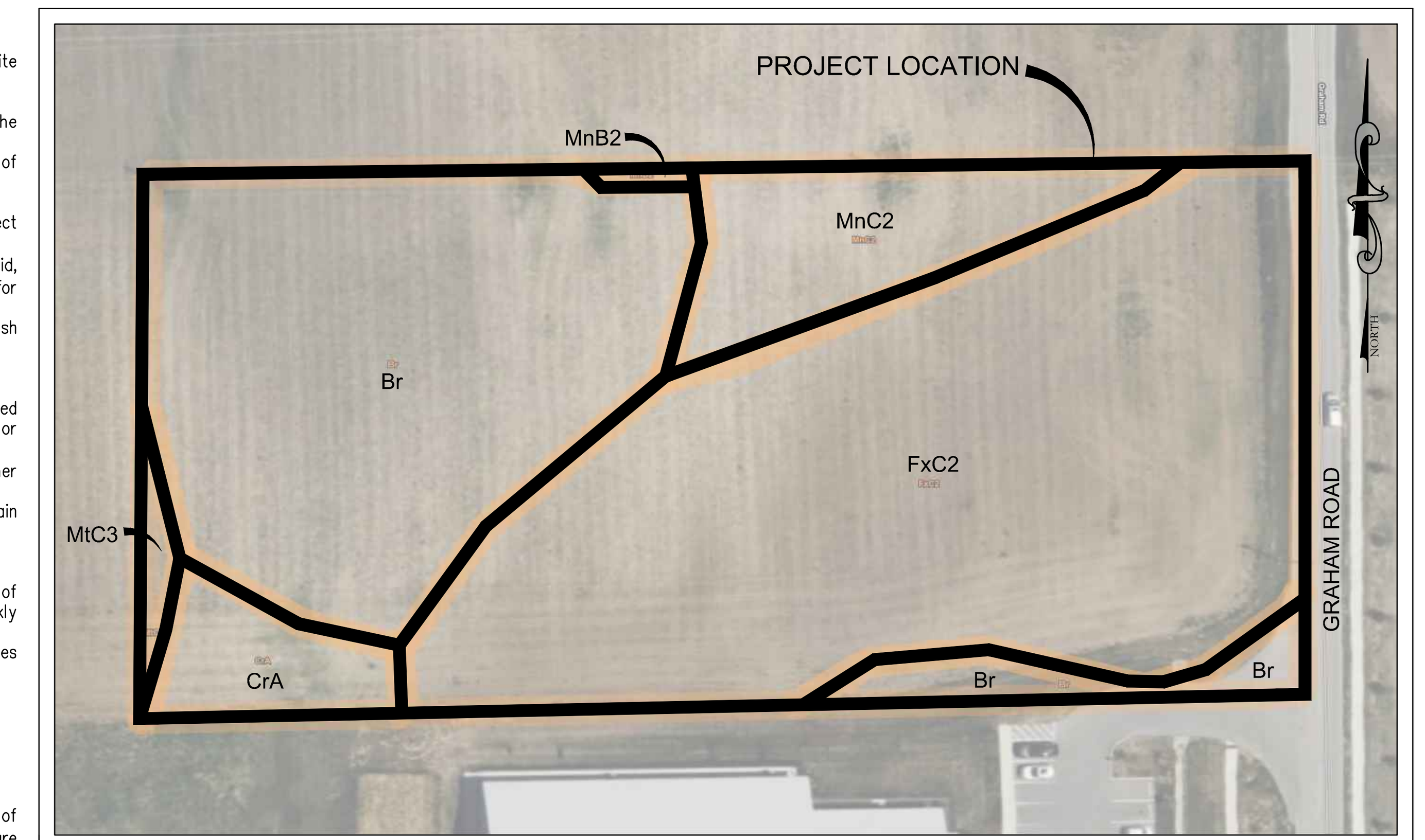
* –LATE SUMMER SEEDING DATES MAY BE EXTENDED 5 DAYS IF MULCH IS APPLIED.

** –INCREASE SEEDING APPLICATION BY 50%.

TEMPORARY SEEDINGS

KIND OF SEED	PER 1,000 SQ. FT.	PER ACRE	REMARKS
WHEAT OR RYE	3.5 LBS.	2 BU.	COVER SEED 1" TO 1 1/2" DEEP
SPRING OATS	2.3 LBS.	3 BU.	COVER SEED 1" DEEP
ANNUAL RYEGRASS	1.0 LBS.	40 LBS.	COVER SEED 1/4" DEEP *

* NOT NECESSARY WHERE MULCH IS APPLIED.



Johnson County, Indiana (IN081)

BROOKSTON SILTY CLAY LOAM (BR)
This nearly level soil is in depressions, on flats, and in narrow drainageways between better drained soils on broad, undulating plains. Slopes are 0 to 2 percent. Runoff is very slow. Wetness is the main limitation. Soil has limitations for building sites and must be artificially drained and protected from flooding.

CROSBY SILT LOAM (CrA)
This nearly level soil is on broad plains, on ridge tops in rolling areas, or in low drainageways. Slopes are 0 to 2 percent. Runoff is slow. Wetness is the main limitation.Soil has limitations for building sites and must be artificially drained and protected from flooding.

CROSBY-MIAMI SILT LOAMS, eroded (CsB2)
This gently sloping mapping unit is on broad, slightly undulating plains; on knolls of broad, nearly level plains; and at the heads of drainageways. Slopes are 2 to 4 percent. Runoff is medium. Moderate erosion is the main limitation.

FOX COMPLEX, eroded (FxC2)
This moderately sloping and strongly sloping mapping unit is on side slopes of drainageways, on steep breaks, and on side slopes of hummocky kames and eskers. Slopes are 6 to 15 percent. Runoff is medium. Moderate erosion is the main limitation.

MIAMI SILT LOAM, eroded (MnB2)
This gently sloping soil is along drainageways that cross areas of somewhat poorly drained Crosby soils.
Slopes are 2 to 6 percent. Runoff is medium. Moderate erosion is the main limitation.

MIAMI SILT LOAM, eroded (MnC2)
This moderately sloping soils is on irregularly shaped knolls surrounded by gently sloping and nearly level soils; in long narrow bands around ridgetops; along drainageways leading to terraces or bottom land; and on undulating moraines.
Slopes are 6 to 12 percent. Runoff is medium. Moderate erosion is the main limitation.

MIAMI CLAY LOAM, eroded (MtC3)
Slope: 6 to 12 percent; Depth to restrictive feature: 24 to 40 inches to densic material; Drainage class: Moderately well drained; Runoff class: High; Frequency of flooding: None; Frequency of ponding: None

SOIL MAP AND DESCRIPTION
NOT TO SCALE

VICINITY MAP
NO SCALE

LEGAL DESCRIPTION

INSTRUMENT NO. 2023-000852

LOT NUMBERED ONE IN THE LINVILLE COMMERCIAL MINOR SUBDIVISION AS RECORDED IN PLAT CABINET E, SLIDE 359B AND AS INSTRUMENT NO. 2019-000197 IN THE OFFICE OF THE RECORDER OF JOHNSON COUNTY, INDIANA.

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE OR COUNTY OFFICIALS

INDIANA 811 Know what's below. Call before you dig

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

STORMWATER POLLUTION PREVENTION PLAN

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
4				
5				
6				
7				
8				
9				

SHEET 901

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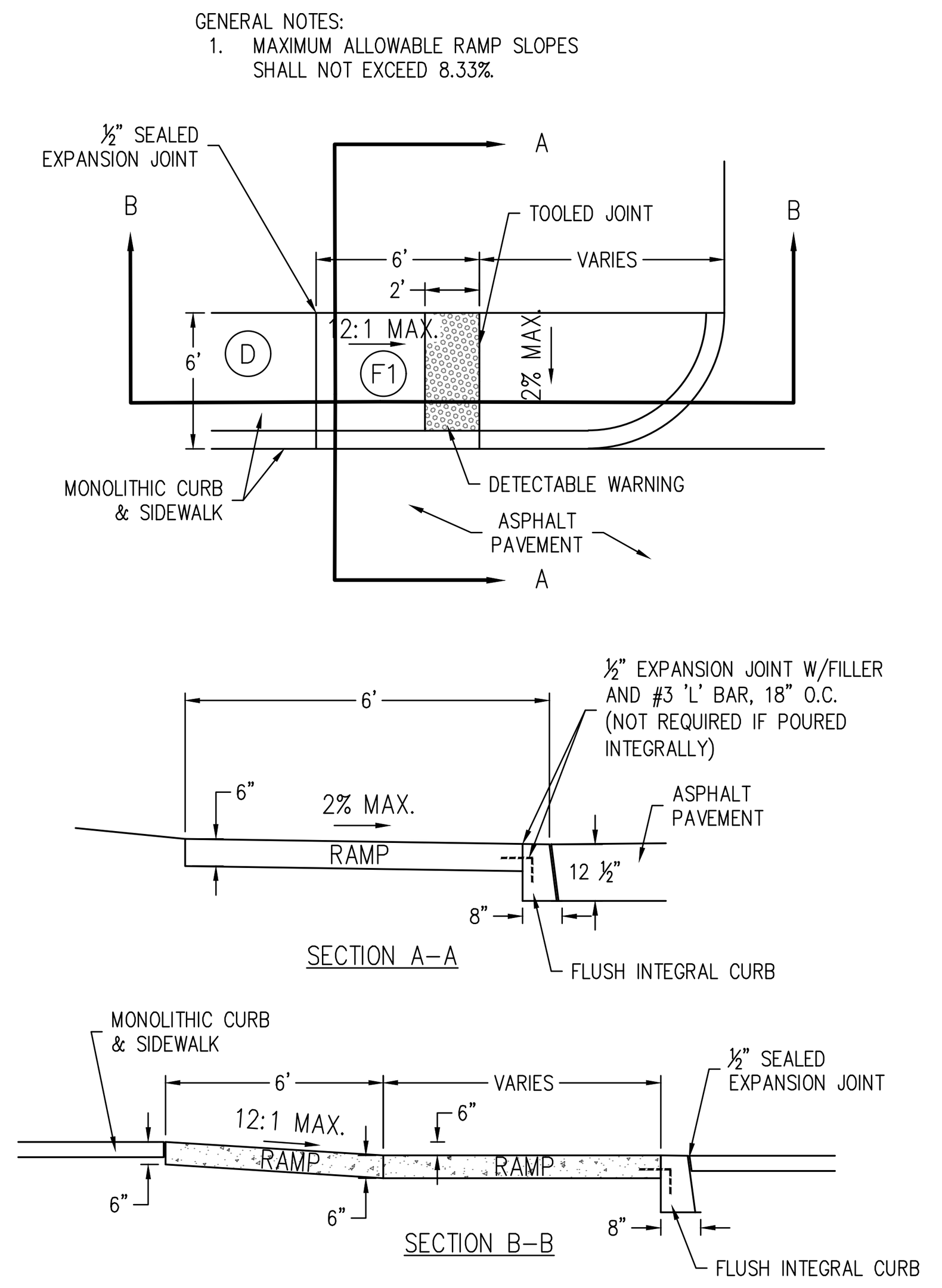
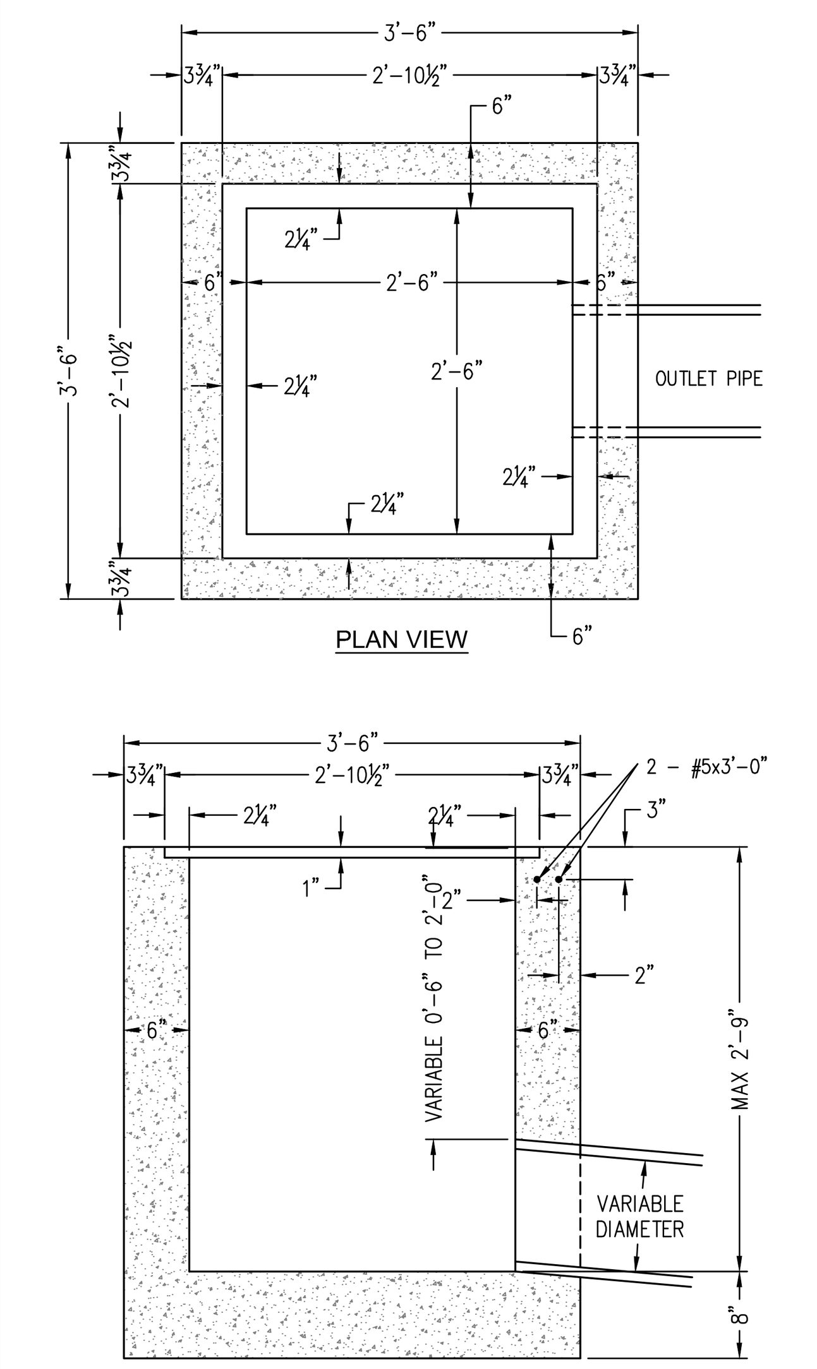
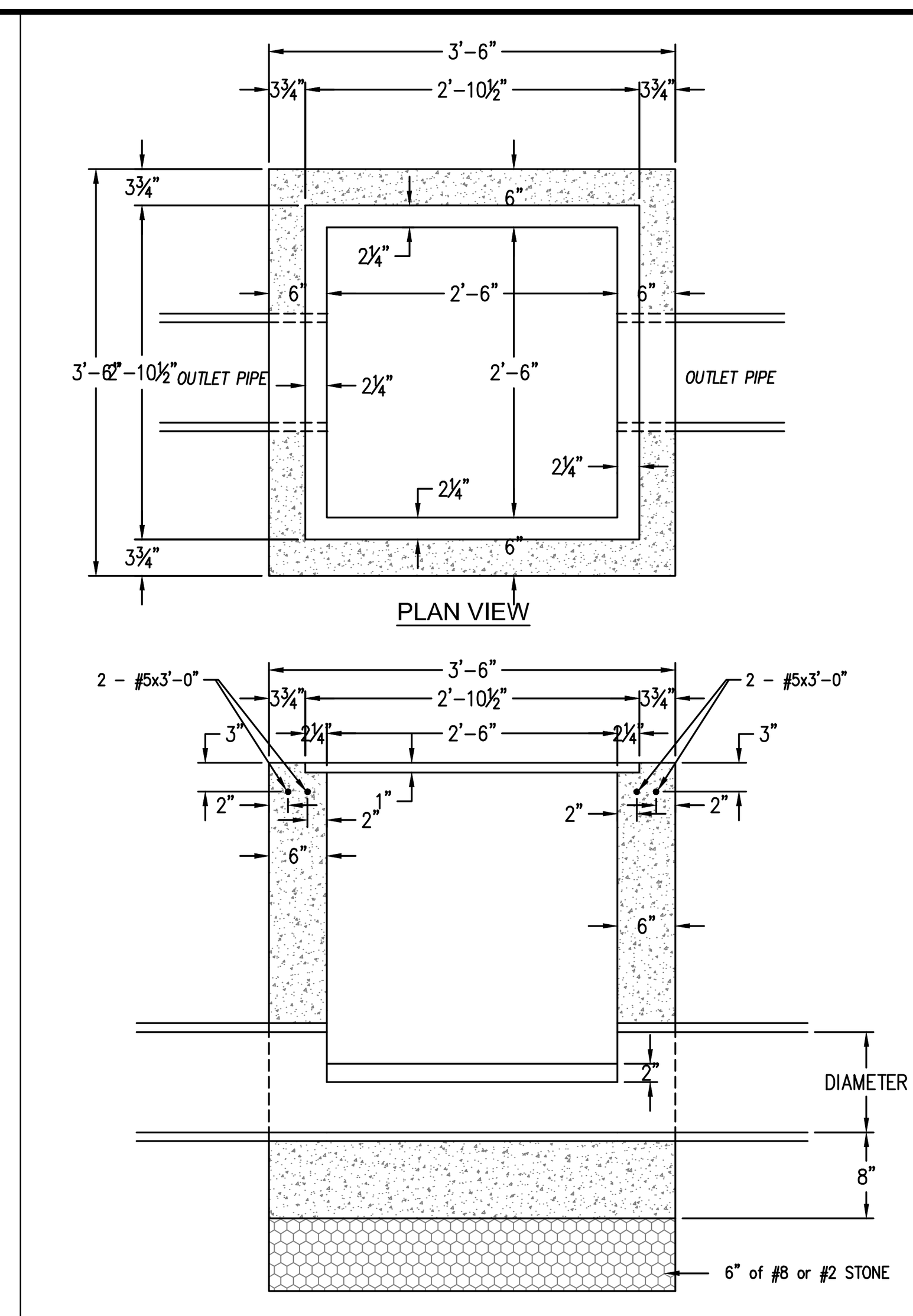
DATE/USER : 5/20/2024 5:45 PM / Bvaughan



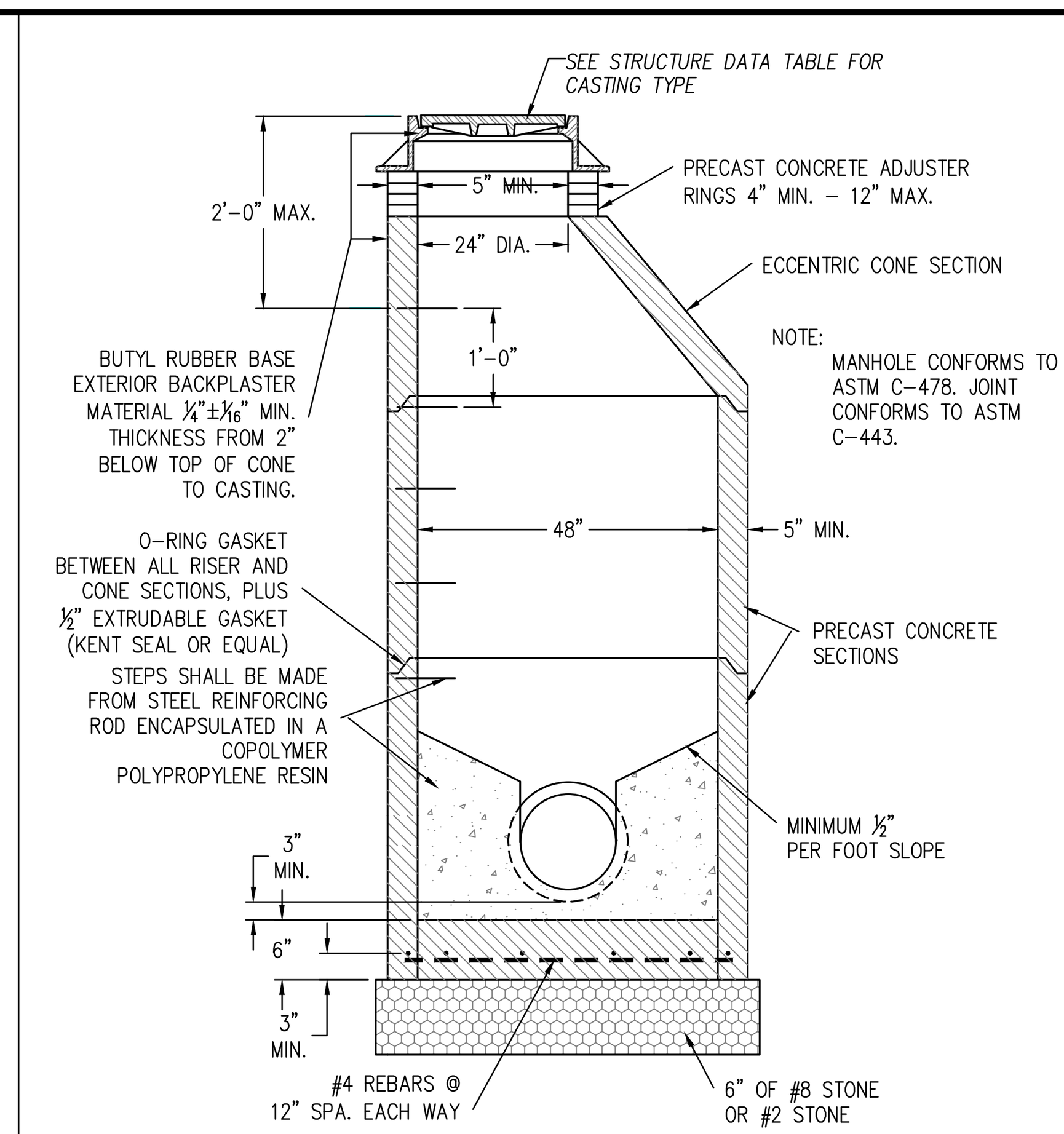
ONE-WAY DIRECTIONAL CURB RAMP (F1)
NOT TO SCALE



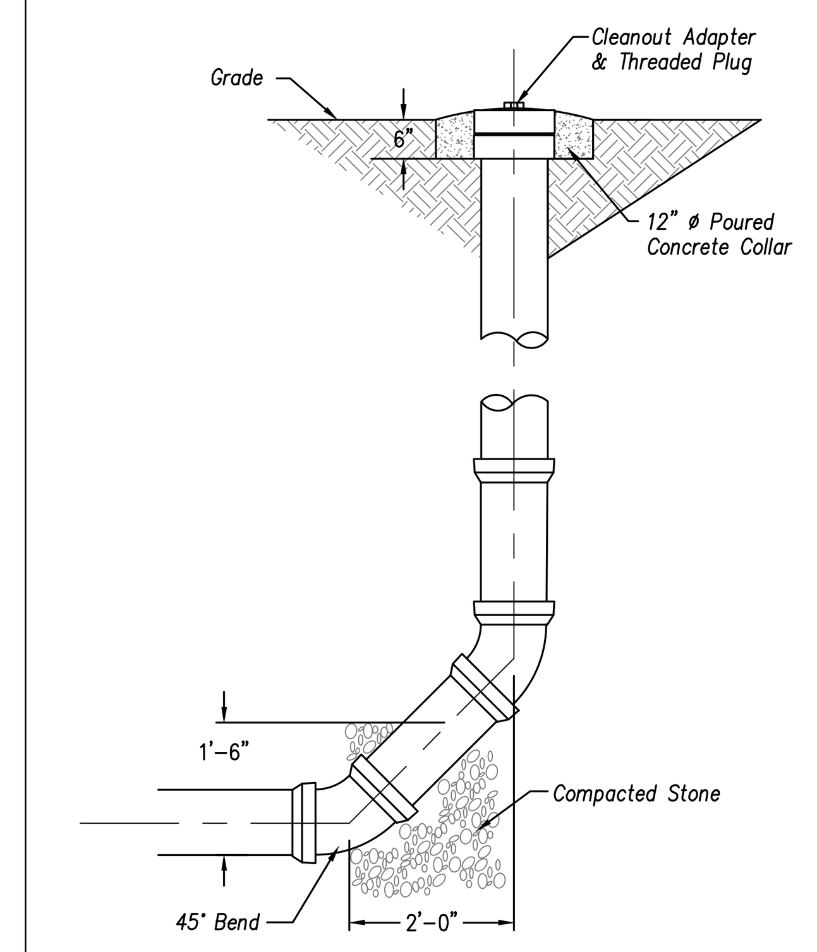
ELEVATION VIEW
INLET TYPE 'E'
NOT TO SCALE



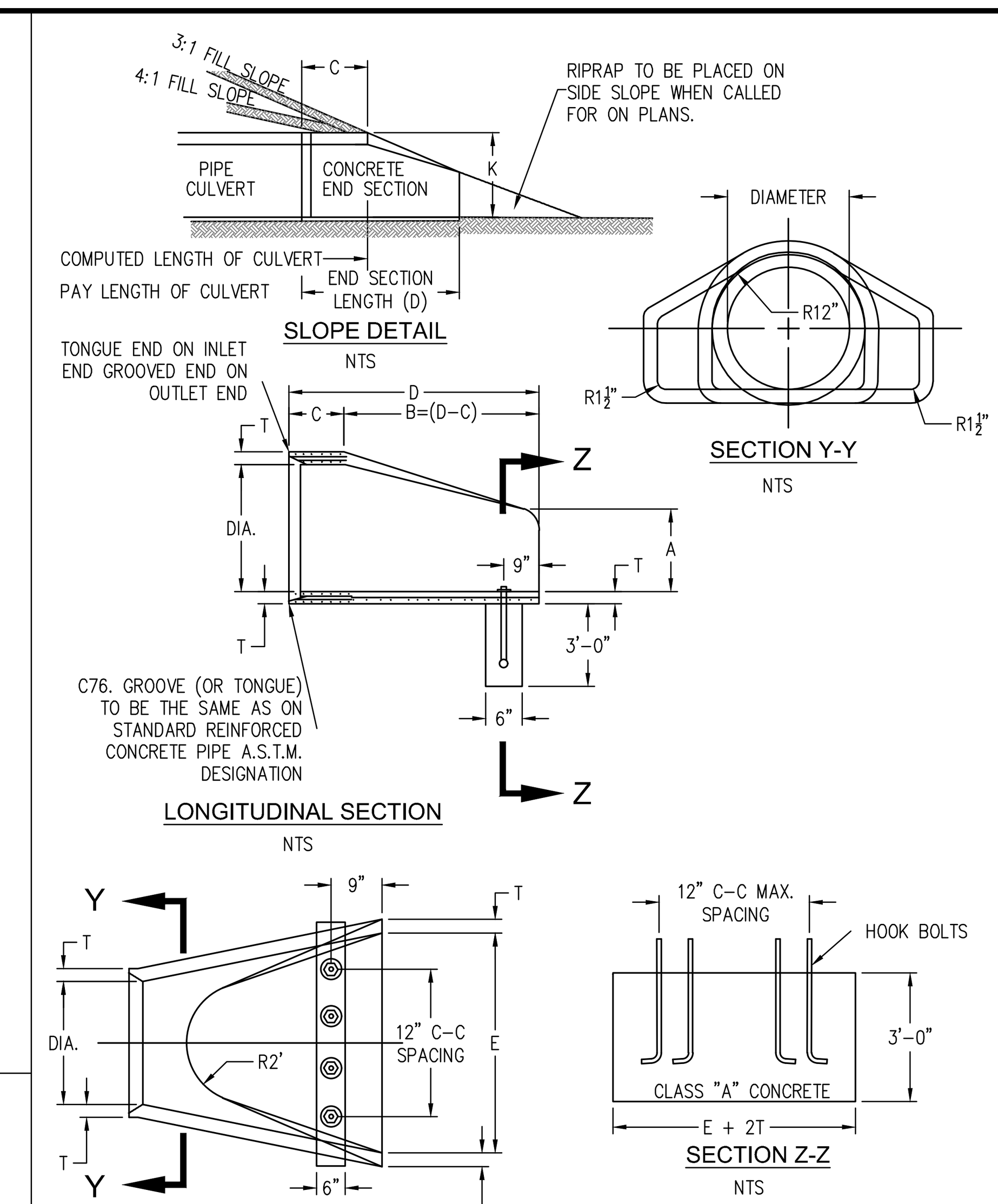
ELEVATION VIEW
INLET TYPE 'F'
NOT TO SCALE



STANDARD SANITARY MANHOLE TYPE 'C'
NOT TO SCALE



STANDARD CLEANOUT DETAIL
NOT TO SCALE

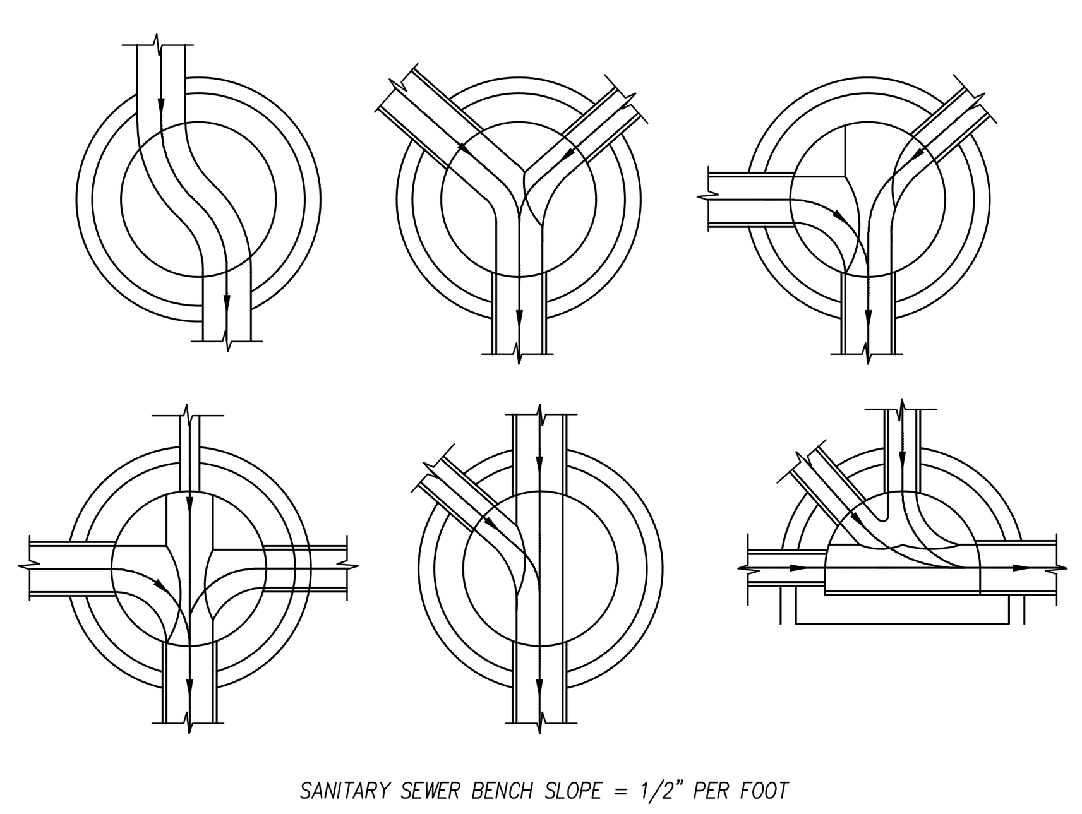


PRECAST CONCRETE END SECTION DETAIL

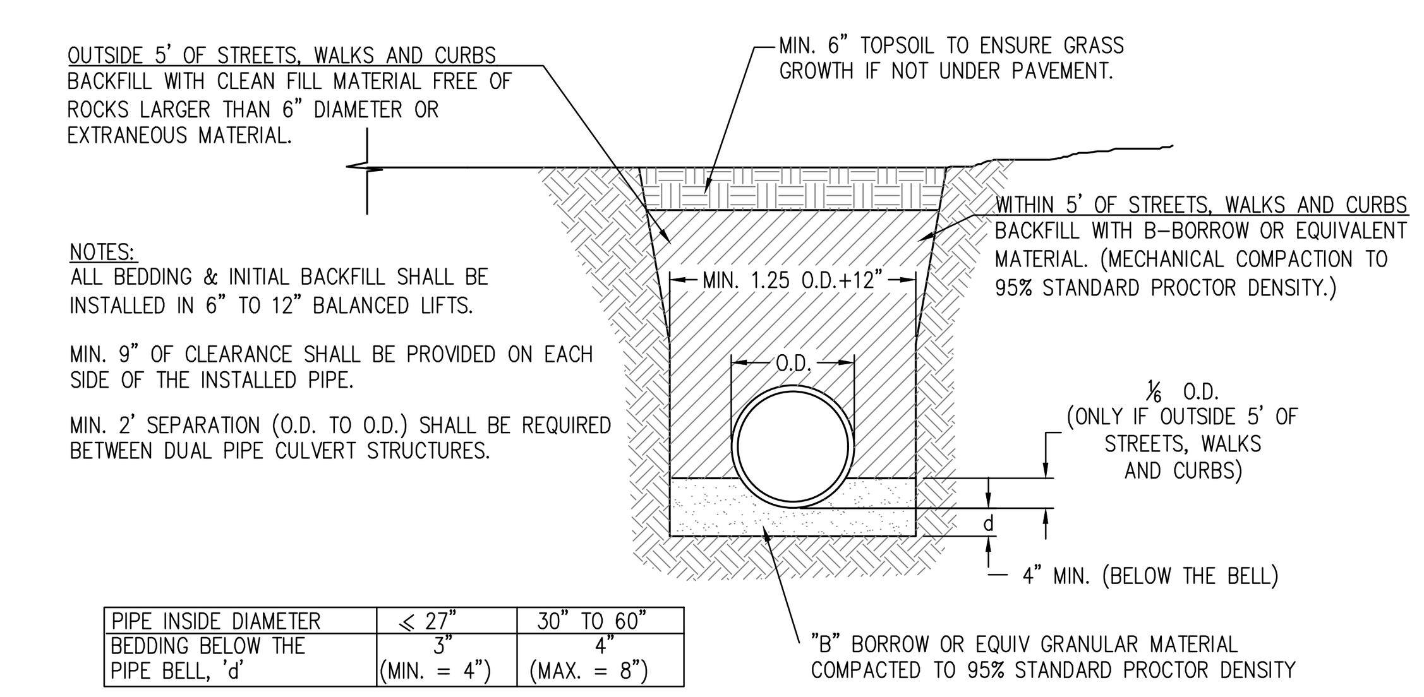
PRECAST CONCRETE END SECTION TABLE

DIA.	WALL	G OR T	WT. SEC.	A	B	C	D	E	DIA.+1	R–1	SKIRT
12	2	1 1/2	530	4	24	48 7/8	72 7/8	24	13	10 1/16	3 1/2
15	2 1/4	2	740	6	27	46	73	30	16	12 1/2	3 1/2
18	2 1/2	2 1/2	990	9	27	46	73	36	19	15 1/2	4
21	2 1/4	2 1/4	1280	9	35	38	73	42	22	16 1/8	4
24	2 1/2	2 1/2	1520	9 1/2	43 1/2	30	73 1/2	48	25	16 11/16	4 1/2
27	2 1/2	2 1/2	1930	10 1/2	48	25 1/2	73 1/2	54	28	17 3/4	4 1/2
30	3	3	2190	12	54	19 3/4	73 3/4	60	31	18 5/16	5
33	3 3/8	3 3/8	3150	13 1/2	58 1/2	39 1/4	97 3/4	66	34	23 3/4	5 1/2
36	3 1/2	3 1/2	4100	15	63	34 3/4	97 3/4	72	37	24 1/16	5 1/2
42	3 3/4	3 3/4	5380	21	63	35	98	78	43	27 1/4	5 1/2
46	4 1/4	4 1/4	6550	24	72	26	98	84	49	28 1/8	5 3/4
54	4 3/4	4 3/4	8040	27	65	35	100	90	55	32 7/8	6 1/4
60	5	5	8750	30	60	39	99	96	61	36 3/4	6 3/4
66	5 1/2	5 1/2	10630	24	78	21	99	102	67	35 11/16	7 1/4
72	6	6	12520	34	78	21	99	108	73	38 5/8	7 3/4
78	6 1/2	6 1/2	14430	24	78	21	99	114	79	41 15/16	8 1/2
84	7	7	16350	24	78	21	99	120	85	44 13/16	9

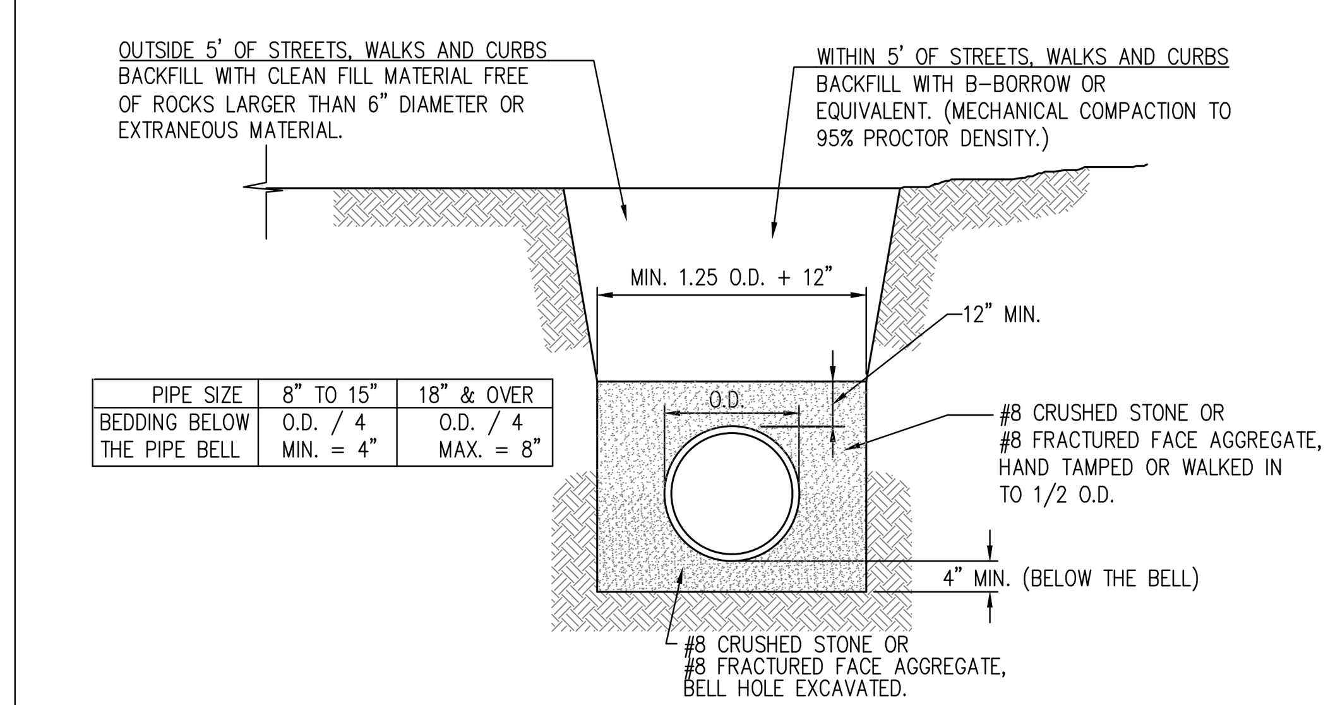
NOTES:
1. MANUFACTURE OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M. SPECIFICATION C76.



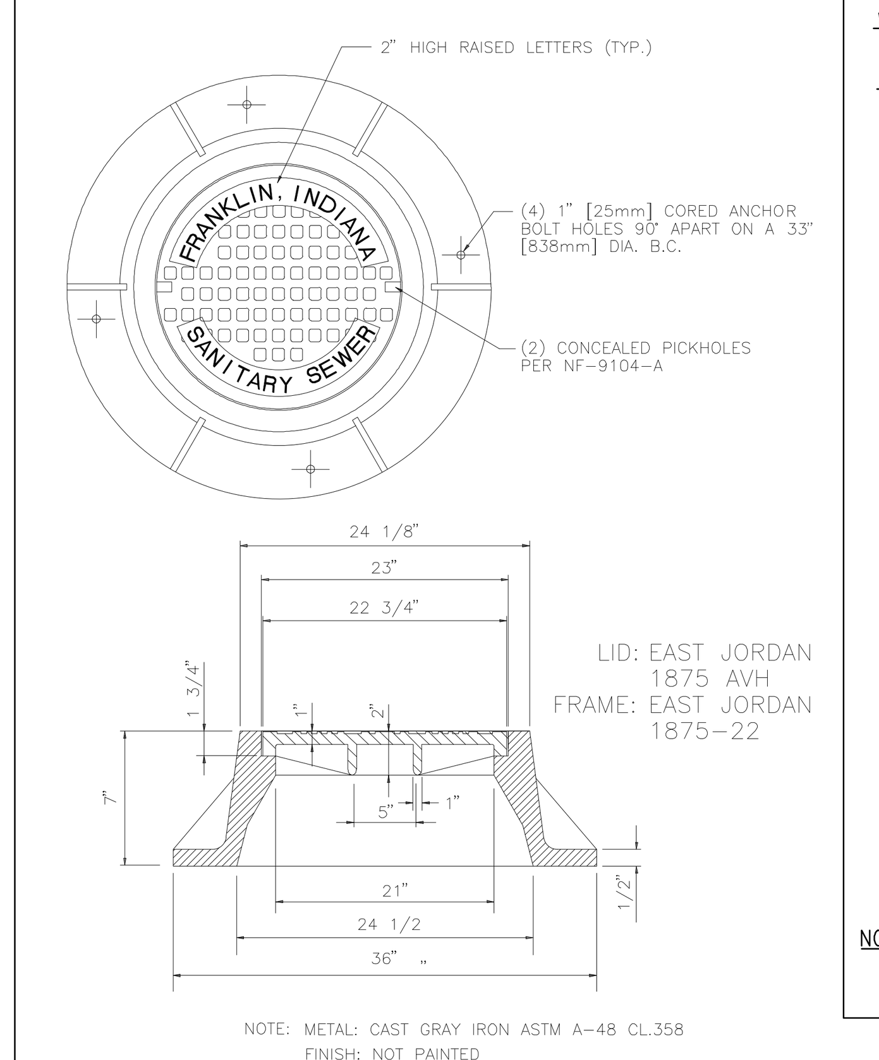
STANDARD MANHOLE BENCHES
NOT TO SCALE



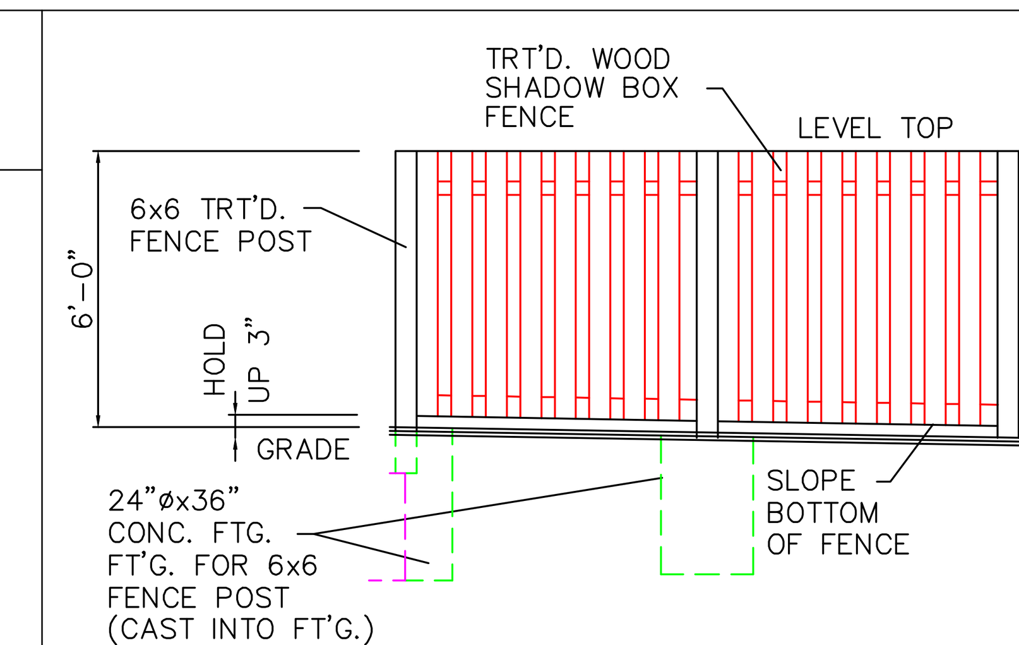
RIGID PIPE BEDDING DETAIL
RCP AND VCP PIPE
NOT TO SCALE



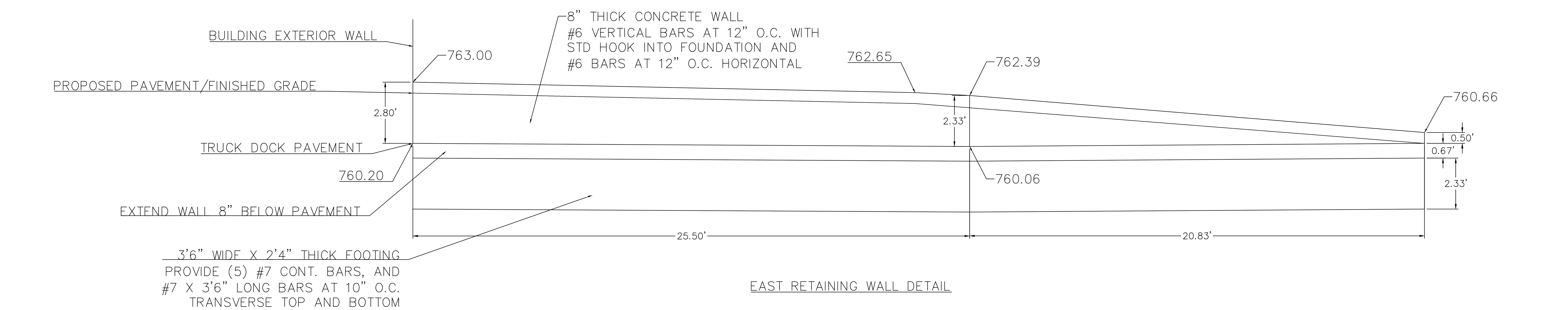
FLEXIBLE PIPE BEDDING DETAIL
PVC AND HDPE PIPE
NOT TO SCALE



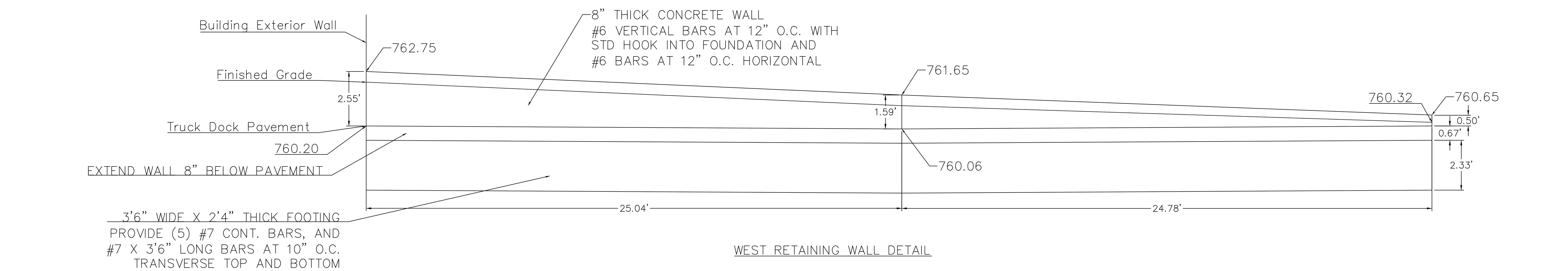
STANDARD SANITARY MANHOLE FRAME & LID
NOT TO SCALE



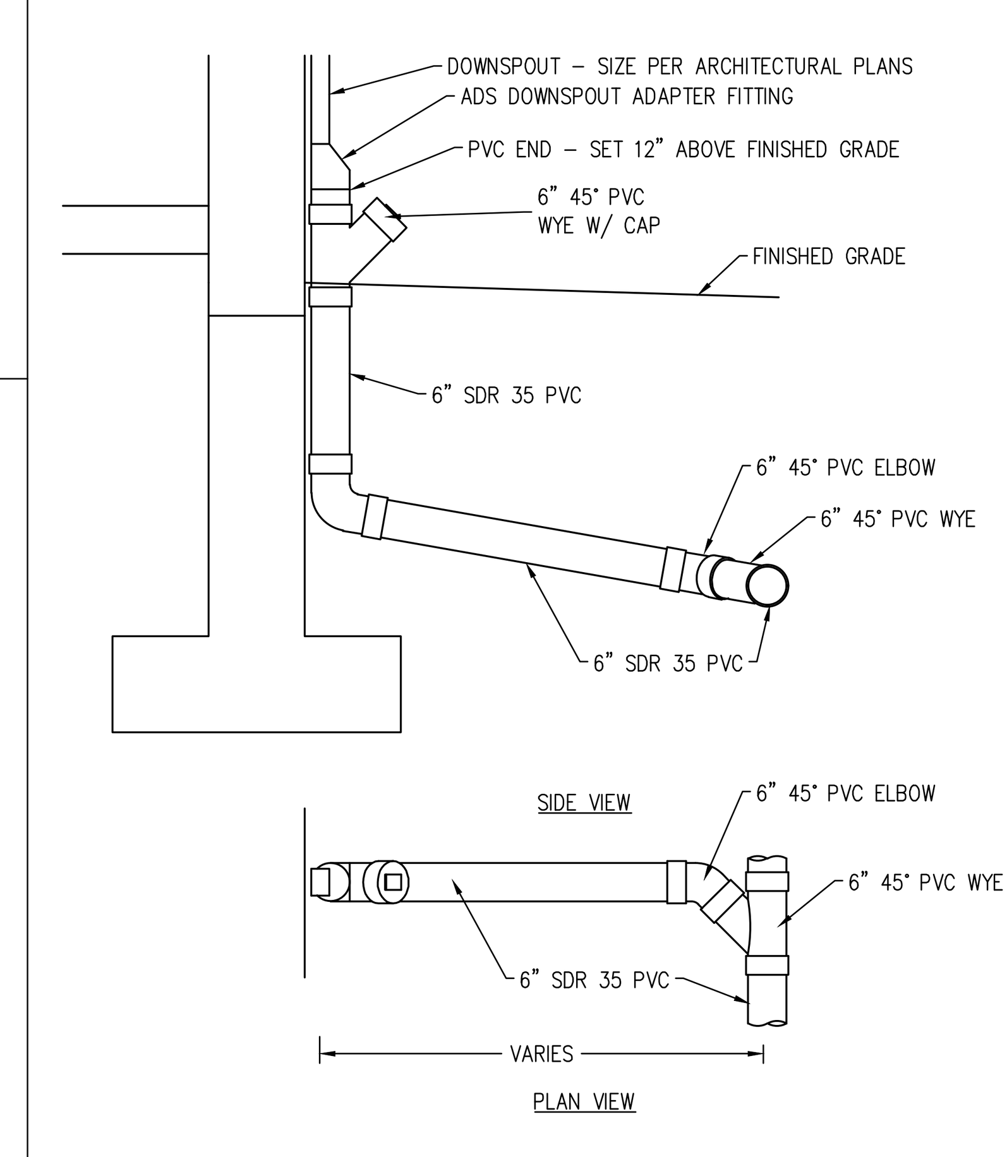
TYPICAL OPAQUE FENCE PANEL DETAIL (L)
NOT TO SCALE



EAST RETAINING WALL DETAIL



WEST RETAINING WALL DETAIL



DOWNSPOUT CONNECTION & HEADER PIPE DETAIL
NOT TO SCALE

MISCELLANEOUS DETAILS

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

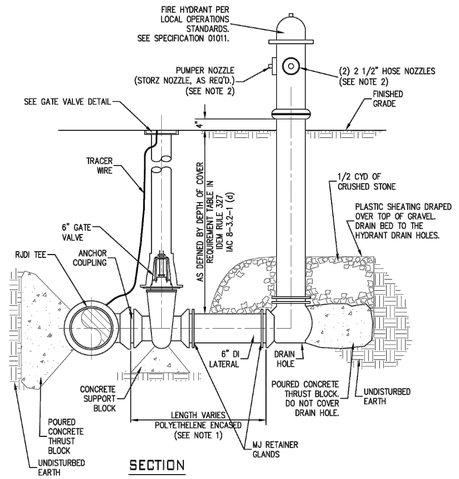
CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
4				
5				
6				
7				
8				
9				

SHEET 1000

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
FILENAME : 1000 MISCELLANEOUS DETAILS.dwg
DATE/USER : 5/1/2024 10:19 AM / fvaughan



SECTION

NOTE:
1. THE FIRE HYDRANT LATERAL, GATE VALVE, AND FIRE HYDRANT BARREL SHALL BE ENCASED IN POLYETHYLENE ENCASEMENT UP TO FINISHED GRADE PER SPECIFICATION 15130. PRIOR TO BACKFILL THE POLYETHYLENE ENCASEMENT SHALL NOT INTERFERE WITH THE DRAIN HOLE.
2. WHEN INSTALLED BEHIND CURB, PUMPER AND HOSE NOZZLES TO BE AT LEAST 18"-24", DEPENDING ON LOCAL REQUIREMENTS, FROM FACE OF CURB.

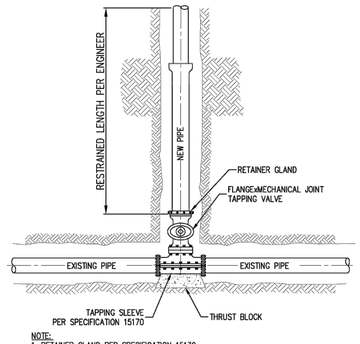
FIRE HYDRANT DETAILS
N.T.S.

INDIANA AMERICAN WATER
ENGINEERING DEPARTMENT
153 N. EMERSON AVENUE
GREENWOOD, INDIANA 46143

STANDARD DETAIL

FIRE HYDRANT DETAIL

DATE: JANUARY, 2018	DRAWN BY: S. FORD
LATEST REV: JULY, 2018	APP'D BY: E.N.



NOTE:
1. RETAINER GLAND PER SPECIFICATION 15130.
2. TAPPING SLEEVE FOR HDPE PIPE MUST BE APPROVED FOR THE APPLICATION BY THE MANUFACTURER AND INAWC.

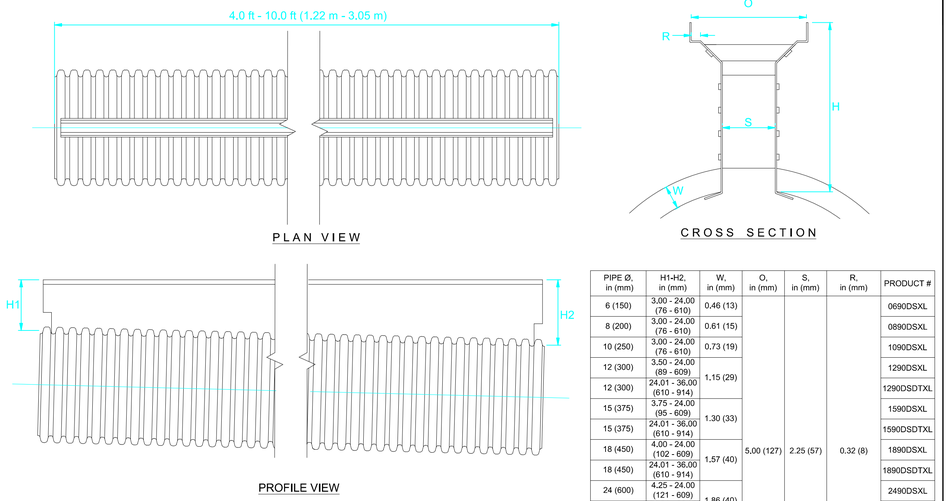
TAPPING SLEEVE AND TAPPING VALVE DETAIL
N.T.S.

INDIANA AMERICAN WATER
ENGINEERING DEPARTMENT
153 N. EMERSON AVENUE
GREENWOOD, INDIANA 46143

STANDARD DETAIL

TAPPING SLEEVE AND TAPPING VALVE

DATE: JANUARY, 2018	DRAWN BY: S. FORD
LATEST REV: JANUARY, 2018	APP'D BY: E.N.



NOTES:
1. SEE GRATING DETAILS FOR SURFACE TREATMENT OPTIONS
2. H1 AND H2 VARY BASED ON PROJECT SPECIFICATIONS AND MAY NOT RESEMBLE THE IMAGES SHOWN ABOVE.

PIPE Ø, in (mm)	H1-H2, in (mm)	W, in (mm)	O, in (mm)	S, in (mm)	R, in (mm)	PRODUCT #
6 (150)	3.00 - 24.00 (76 - 610)	0.46 (13)	5.00 (127)	2.25 (57)	0.32 (8)	0690DSXL
8 (200)	3.00 - 24.00 (76 - 610)	0.61 (15)				0890DSXL
10 (250)	3.00 - 24.00 (76 - 610)	0.73 (19)				1090DSXL
12 (300)	3.50 - 24.00 (89 - 609)	1.15 (29)				1290DSXL
12 (300)	24.01 - 36.00 (610 - 914)					1290DSDTXL
15 (375)	3.75 - 24.00 (95 - 609)	1.30 (33)				1590DSXL
15 (375)	24.01 - 36.00 (610 - 914)					1590DSDTXL
18 (450)	4.00 - 24.00 (102 - 609)	1.57 (40)				1890DSXL
18 (450)	24.01 - 36.00 (610 - 914)					1890DSDTXL
24 (600)	4.25 - 24.00 (121 - 609)	1.86 (40)				2490DSXL
24 (600)	24.01 - 36.00 (610 - 914)					2490DSDTXL
30 (750)	5.00 - 24.00 (127 - 609)	2.55 (65)				3090DSXL
30 (750)	24.01 - 36.00 (610 - 914)					3090DSDTXL
36 (900)	5.25 - 24.00 (133 - 609)	2.85 (72)				3690DSXL
36 (900)	24.01 - 36.00 (610 - 914)					3690DSDTXL

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
1	Updates to dimensions	KJS	05/19/2023	–

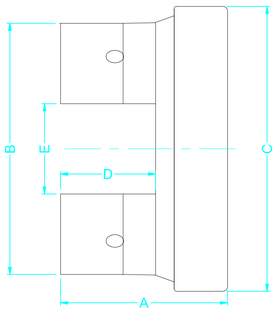
Duraslot XL Pipe Custom Slot Height

DRAWING NUMBER: STD-1401B

ADS Advanced Drainage Systems, Inc.
4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWN BY: KJS
DATE: 04-18-2023
DES BY:
SCALE: NTS
SHEET 1 OF 1

SPIGOT END CAP FOR 6 & 10" PIPE DIAMETER

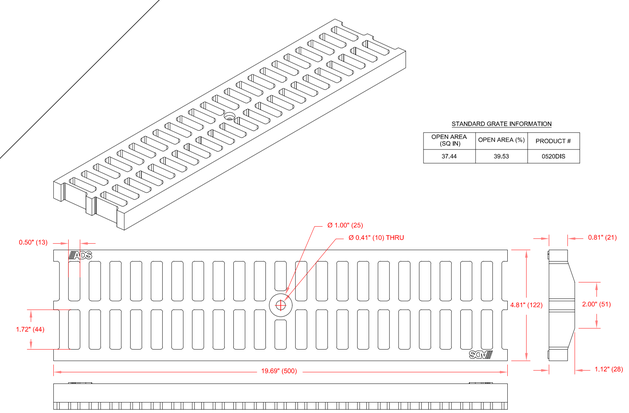


END CAP FOR DURASLOT XL DIMENSIONS

PIPE Ø, in (mm)	A, in (mm)	B, in (mm)	C, in (mm)	D, in (mm)	E, in (mm)	PRODUCT # (Std./Cust. Slot)
6 (150)	4.50 (114)	5.12 (130)	7.63 (194)	3.00 (76)	2.50 (64)	0633DSXL/ 0693DSXL
8 (200)	4.25 (108)	6.95 (177)	N/A	2.50 (64)	2.50 (64)	0833DSXL/ 0893DSXL
10 (250)	5.00 (127)	9.88 (251)	12.13 (308)	3.50 (89)	2.50 (64)	1033DSXL/ 1093DSXL
12 (300)	5.76 (146)	11.56 (294)	N/A	4.25 (108)	2.50 (64)	1233DSXL/ 1293DSXL
15 (375)	7.77 (197)	N/A	N/A	6.25 (159)	2.50 (64)	1533DSXL/ 1593DSXL
18 (450)	8.04 (204)	N/A	N/A	6.50 (165)	2.50 (64)	1833DSXL/ 1893DSXL
24 (600)	9.45 (240)	N/A	N/A	8.00 (200)	2.50 (64)	2433DSXL/ 2493DSXL
30 (750)	N/A	N/A	N/A	N/A	N/A	3033DSXL/ 3093DSXL
36 (900)	N/A	N/A	N/A	N/A	N/A	3633DSXL/ 3693DSXL

NOTES:
1. ALL FITTING DIMENSIONS ARE FOR REFERENCE ONLY.
2. ALL HARDWARE REQUIRED FOR ASSEMBLY IS INCLUDED WITH THE PURCHASE OF A COUPLER BAND, INCLUDING A SLOT END CAP.
3. THE TAYLOR END PLUG IS UTILIZED AS A PERMANENT END TREATMENT WITH DURASLOT PIPE.

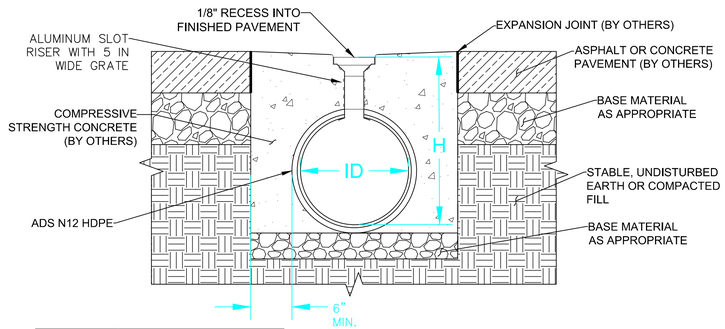
ADS DURASLOT XL END CAP
NOT TO SCALE



STANDARD GRATE INFORMATION

OPEN AREA (SQ IN)	OPEN AREA (%)	PRODUCT #
37.44	39.53	0520DS

ADS DURASLOT XL GRATE DETAIL
NOT TO SCALE



Nominal Diameter, ID, in. (mm)	Depth of Invert, H, in. (mm)	
	Minimum	Maximum
6 (150)	12.50 (318)	30.00 (762)
8 (200)	14.50 (368)	32.00 (813)
10 (250)	16.50 (419)	34.00 (864)
12 (300)	19.00 (483)	48.00 (1219)
15 (375)	22.00 (559)	51.00 (1295)
18 (450)	25.00 (635)	54.00 (1372)
24 (600)	31.25 (794)	60.00 (1524)
30 (750)	38.25 (972)	66.00 (1676)
36 (900)	44.25 (1024)	72.00 (1829)

NOTES:
1. BACKFILL DESIGN SHOULD BE USED FOR HS-20 LOADING APPLICATIONS.
2. SITE ENGINEER TO PROVIDE SITE SPECIFIC DETAILS, SUCH AS CONCRETE STRENGTH.
3. REFER TO ADS TECH NOTE 2.11 FOR ADDITIONAL DESIGN INFORMATION.
4. SLOT RECESS IS NOT INCLUDED IN DEPTH OF INVERT TABLES.

ADS DURASLOT XL HEAVY TRAFFIC INSTALLATION DETAIL
NOT TO SCALE

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 1001

MISCELLANEOUS DETAILS

JOHNSON COUNTY RECYCLE CENTER

JOB No. - | DRAWN LMC | CHECKED BTV
DATE APRIL 11, 2024 | DESIGNED BTV | APPR. GJI

GREGORY J. ILKO NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
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SHEET 1001

DIRECTORY PATH : R:\Active\Johnson Parks\JoCo Recycle Center\Design\CAD\Plans
FILENAME : 1001 MISCELLANEOUS DETAILS.dwg
DATE/USER : 4/5/2024 3:15 PM / jbvaughan

EARTHWORK

1. SCOPE OF WORK
   A. EXTENT: THE WORK REQUIRED UNDER THIS SECTION CONSISTS OF ALL EXCAVATING, FILLING, ROUGH GRADING AND RELATED ITEMS NECESSARY TO COMPLETE THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THE PLANS OR IN THE FIELD, BEFORE WORK IS STARTED OR RESUMED.
      1. IN GENERAL, THE ITEMS OF WORK TO BE PERFORMED UNDER THIS SECTION SHALL INCLUDE CLEARING AND GRUBBING, REMOVAL OF TREES AND STUMPS, STRIPPING AND STORAGE OF TOPSOIL, FILL COMPACTION AND ROUGH GRADING OF ENTIRE SITE. ALL TREES SHALL BE REMOVED UNLESS OTHERWISE NOTED IN PLANS OR DIRECTED BY OWNER.
      2. EXCAVATED MATERIAL THAT IS SUITABLE MAY BE USED FOR FILLS. ALL UNSUITABLE MATERIAL AND ALL SURPLUS EXCAVATED MATERIAL NOT REQUIRED SHALL BE REMOVED FROM THE SITE. THE LOCATION OF DUMP AND LENGTH OF HAUL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
      3. PROVIDE AND PLACE ANY ADDITIONAL FILL MATERIAL FROM OFF THE SITE AS MAY BE NECESSARY TO PRODUCE THE GRADES REQUIRED. FILL OBTAINED FROM OFF SITE SHALL BE OF KIND AND QUALITY AS SPECIFIED FOR FILLS HEREIN AND THE SOURCE APPROVED BY THE OWNER.
      4. THE CONTRACTOR SHALL ACCEPT THE SITE AS HE FINDS IT AND SHALL REMOVE ALL TRASH, RUBBISH AND DEBRIS FROM THE SITE PRIOR TO STARTING EXCAVATION
2. BENCHMARK
   A. MAINTAIN CAREFULLY ALL BENCH MARKS, MONUMENTS AND OTHER REFERENCE POINTS; IF DISTURBED OR DESTROYED, CONTRACTOR SHALL CONTACT ENGINEER.
3. REMOVAL OF TREES
   A. THE INTEGRITY OF THE TOPOGRAPHIC FEATURES (INCLUDING TREES) SHALL BE PERSEVERED AS MUCH AS POSSIBLE THE CONTRACTOR SHALL COORDINATE WITH OWNER AND/OR ENGINEER PRIOR TO CLEARING THE SITE FOR CONSTRUCTION.
   B. ALL BRUSH, STUMPS, WOOD AND OTHER REFUSE FROM THE TREES REMOVED SHALL BE HAULED TO DISPOSAL AREAS OFF OF THE SITE. DISPOSAL BY BURNING SHALL NOT BE PERMITTED UNLESS PROPER PERMITS ARE OBTAINED (WHERE APPLICABLE).
4. HANDLING OF TOPSOIL
   A. REMOVE ALL ORGANIC MATERIAL FROM THE AREAS TO BE OCCUPIED BY BUILDINGS, ROADS, WALKS AND PARKING AREAS. PILE AND STORE TOPSOIL AT A LOCATION WHERE IT WILL NOT INTERFERE WITH CONSTRUCTION OPERATIONS. TOPSOIL SHALL BE REASONABLE FREE FROM SUBSOIL, DEBRIS, WEEDS, GRASS, STONES, ETC.
   B. AFTER COMPLETION OF SITE GRADING AND SUBSURFACE UTILITY INSTALLATION, TOPSOIL SHALL BE REPLACED IN AREAS DESIGNATED ON THE EROSION CONTROL PLAN FOR SEEDING AND/OR SODDING. ANY REMAINING TOPSOIL SHALL BE USED FOR FINISHED GRADING AROUND STRUCTURES AND LANDSCAPING AREAS.
5. DISPOSITION OF UTILITIES
   A. RULES AND REGULATIONS GOVERNING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING ALL WORK UNDER THIS SECTION.
   B. IF ACTIVE UTILITIES ARE ENCOUNTERED BUT NOT SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE ADVISED BEFORE WORK IS CONTINUED.
   C. INACTIVE AND ABANDONED UTILITIES ENCOUNTERED IN EXCAVATING AND GRADING OPERATIONS SHALL BE REPORTED TO THE ENGINEER. THEY SHALL BE REMOVED, PLUGGED OR CAPPED AS DIRECTED BY THE UTILITY COMPANY OR THE ENGINEER.
   D. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERITY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS PHASE OF THE WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED.
6. SITE GRADING
   A. GRADES: CONTRACTOR SHALL PERFORM ALL CUTTING, FILLING, COMPACTING OF FILLS AND ROUGH GRADING REQUIRED TO BRING ENTIRE PROJECT AREA TO GRADE AS SHOWN ON THE DRAWINGS.
   B. ROUGH GRADING: THE TOLERANCE FOR PAVED AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS ABOVE THE ESTABLISHED SUBGRADE. ALL OTHER AREAS SHALL NOT EXCEED 0.10 FEET PLUS OR MINUS THE ESTABLISHED GRADE. ALL BANKS AND OTHER BREAKS IN GRADE SHALL BE ROUNDED AT THE TOP AND BOTTOM.
   C. COMPACTION REQUIREMENTS:
      1. ALL BUILDING PAD AREAS SHALL BE COMPACTED TO STANDARDS SPECIFIED BY LOCAL AND/OR STATE BUILDING CODES.
      2. COMPACTION REQUIREMENTS OF PAVED AREAS SHALL BE 95% OF MAXIMUM DRY DENSITY.
7. EARTH WORK BALANCE
   A. THE CONTRACTOR SHALL CONFIRM ALL EARTHWORK QUANTITIES PRIOR TO START OF CONSTRUCTION. IF AN EXCESS OR SHORTAGE OF EARTH IS ENCOUNTERED, THE CONTRACTOR SHALL CONFIRM WITH THE OWNER AND ENGINEER THE REQUIREMENTS FOR STOCKPILING, REMOVAL OR IMPORTING OF EARTH.

      MINOR ADJUSTMENTS TO THE GRADES MAY BE REQUIRED TO EARTHWORK BALANCES WHEN MINOR EXCESS MATERIAL OR SHORTAGES ARE ENCOUNTERED. IT IS RECOGNIZED BY THE PARTIES HERETO THAT THE CALCULATIONS OF THE ENGINEER IN ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARDS FOR SUCH CALCULATIONS. FURTHER, THAT THESE CALCULATIONS ARE SUBJECT TO THE INTERPRETATIONS OF SOIL BORINGS AS THE PHYSICAL LIMITS IN FINISH GRADE AND COMPACTION PERMITTED THE CONTRACTOR, AND THAT ALL OF THESE PARAMETERS MAY CAUSE EITHER AN EXCESS OR SHORTAGE OF ACTUAL EARTHWORK MATERIALS TO COMPLETE THE PROJECT. IF SUCH AN ACTUAL MINOR EXCESS OR SHORTAGE OF ACTUAL EARTHWORK MATERIALS OCCURS, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO DETERMINE IF ADJUSTMENTS CAN BE MADE TO CORRECT THE IMBALANCE OF EARTH.

STREETS

1. SCOPE OF WORK
   A. THE WORK REQUIRED UNDER THIS SECTION INCLUDES ALL CONCRETE AND BITUMINOUS PAVING AND RELATED ITEMS NECESSARY TO COMPLETE THE WORK INDICATED ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO:
      1. ALL STREETS, PARKING AREAS WITHIN THE CONTRACT LIMITS.
      2. CURBS AND CONCRETE RAMPS.
      3. SIDEWALKS AND CONCRETE SLABS.
      4. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL SPECIFICATIONS THE MORE STRINGENT SHALL APPLY.
   B. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL SPECIFICATIONS THE MORE STRINGENT SHALL APPLY.
2. PAVEMENT CONSTRUCTION
   A. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND CONFORM TO THE MINIMUM STANDARDS OF THE CITY OF FRANKLIN AND ENGINEERING DEPARTMENTS, AND IF THERE ARE AREAS UNDEFINED USE THE CURRENT I.N.D.O.T. STANDARDS SPECIFICATIONS, AS REVISED.
   B. FLEXIBLE PAVEMENT
      1. MATERIALS
         A. GENERAL: USE LOCALLY AVAILABLE MATERIALS AND GRADATIONS WHICH EXHIBIT A SATISFACTORY RECORD OF PREVIOUS INSTALLATIONS.
         B. COMPACTED AGGREGATE BASE: SOUND, ANGULAR CRUSHED LIMESTONE, CRUSHED OR UNCRUSHED GRAVEL, OR CRUSHED OR PROCESSED AIR-COOLED BLAST FURNACE SLAG. COURSE AGGREGATE SHALL BE CLASS A, TYPE "O" AND CONFORM TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 903.
         C. BASE COURT AGGREGATE: SOUND, ANGULAR CRUSHED STONE, CRUSHED OR UNCRUSHED GRAVEL, OR CRUSHED SLAG, SAND, STONE, OR SLAG SCREENINGS. COARSE AGGREGATES SHALL BE CLASS A OR B AND CONFORM TO I.N.D.O.T. STANDARDS SPECIFICATIONS SECTION 903.
         D. COARSE AGGREGATE FOR SURFACE AND BINDER MIXTURES: CRUSHED STONE, CRUSHED GRAVEL, CRUSHED SLAB, AND SHARP EDGED NATURAL SAND. SURFACE COARSE AGGREGATES SHALL BE CLASS A AND CONFORM TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 903.
         E. ASPHALT CEMENT: PETROLEUM ASPHALT CEMENT, AP 5 WITH PENETRATION OF 60-70 OR VISCOSITY GRADED ASPHALT CEMENT AC-20 CONFORMING TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 903.
         F. PRIME COAT: MEDIUM-CURE LIQUID ASPHALT OR ASPHALT EMULSION CONFORMING TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 408.
         G. TACK COAT: RAPID-CURE LIQUID ASPHALT OR ASPHALT EMULSION CONFORMING TO I.N.D.O.T. STANDARD SPECIFICATIONS SECTION 409.
         H. LANE MARKING PAINT: CHLORINATED RUBBER-ALKYD TYPE, AASHTO M248 (FS TT-P-115), TYPE III.
3. ASPHALT-AGGREGATE MIXTURE
   ALL BITUMINOUS MIXTURES ARE TO CONFORM TO CURRENT I.N.D.O.T. SPECIFICATIONS
   A. SURFACE COURSE: HMA SURFACE 9.5mm
   B. BINDER COURSE: HMA INTERMEDIATE 19.0mm
   C. BASE COURSE: TYPE: HMA BASE 25.0mm
   **PROVIDED A JOB MIX FORMULA FOR EACH TYPE OF ASPHALT PRIOR TO THE BEGINNING OF THE CONSTRUCTION PROJECT.
4. SURFACE PREPARATION
   A. REMOVE LOOSE MATERIAL FROM COMPACTED SUBBASE SURFACE IMMEDIATELY BEFORE APPLYING PRIME COAT.
      I) PROOF ROLL SUBGRADE SURFACE WITH LOADED TRI-AXLE TRUCK (48 HOUR NOTICE IS REQUIRED TO BE GIVEN TO THE CITY OF FRANKLIN ENGINEERING DEPT.) TO CHECK FOR UNSTABLE AREAS AND AREAS REQUIRING ADDITIONAL COMPACTION. IF PROOF ROLL EXCEEDS MAXIMUM ¼" DEFLECTION, CONTRACTOR SHALL COORDINATE WITH ENGINEER AND CITY OF FRANKLIN TO DETERMINE IF SUBGRADE STABILIZATION IS REQUIRED.
      II) NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING WORK UNTIL DEFICIENT SUBBASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING.
   B. AGGREGATE BASE: AFTER PLACEMENT, PROOF ROLL COMPACTED AGGREGATE BASE SURFACE TO CHECK FOR UNSTABLE AREAS AND AREAS REQUIRING ADDITIONAL COMPACTION.
      I) NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING WORK UNTIL DEFICIENT AGGREGATE BASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING.
      II) REMOVE LOOSE MATERIAL FROM COMPACTED AGGREGATE BASE SURFACE IMMEDIATELY BEFORE APPLYING PRIME COAT.
5. PLACING THE MIX
   A. GENERAL: PLACE BITUMINOUS AGGREGATE MIXTURE ON PREPARED SURFACE, SPREAD AND STRIKE-OFF. SPREAD MIXTURE AT MINIMUM TEMPERATURE OF 225 DEGREES F.(107 DEGREES C). PLACE INACCESSIBLE AND SMALL AREAS BY HAND. PLACE EACH COURSE TO REQUIRED GRADE, CROSS-SECTION, AND COMPACTED THICKNESS.
   B. BASE COURSE, COMPACTED AGGREGATE: SPREAD AND COMPACT IN TWO LIFTS AS FOLLOWS:
      I) FIRST LIFT: NO. 53'S SHALL BE A MINIMUM OF 4" OR ½ THE TOTAL DEPTH OF AGGREGATE. EXTEND THE FIRST LIFT 4" OR A DISTANCE EQUAL TO THE DEPTH OF THE LIFT BEYOND THE SECOND LIFT.
      II) SECOND LIFT: SIZE NO. 53
   C. PRIME COAT: SUBBASE SURFACE SHALL BE PRIMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 408 OF I.N.D.O.T. STANDARD SPECIFICATIONS.
   D. HOT ASPHALT CONCRETE BINDER COURSE: SPREAD AND ROLL TO MINIMUM FINISH DEPTHS INDICATED ON DETAILS.
   E. TACK COAT: BINDER COURSE SHALL BE TACKED PRIOR TO THE INSTALLATION OF THE SURFACE COURSE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 409 OF I.N.D.O.T. STANDARD SPECIFICATIONS.
   F. SURFACE COURSE: SPREAD AND ROLL TO MINIMUM FINISH DEPTH INDICATED ON DETAILS. FINISH ELEVATION SHALL BE TRUE TO LINE AND GRADE WITHIN ½" OF TRUE ELEVATIONS.
   G. PAVER PLACING: PLACE IN STRIPS NOT LESS THAN 10' WIDE, UNLESS OTHERWISE ACCEPTABLE TO ARCHITECT/ENGINEER. AFTER FIRST STRIP HAS BEEN PLACED AND ROLLED, PLACE SUCCEEDING STRIPS AND EXTEND ROLLING TO OVERLAP PREVIOUS STRIPS. COMPLETE BINDER COURSE FOR A SECTION BEFORE PLACING SURFACE COURSE.
   H. JOINTS: MAKE JOINTS BETWEEN OLD AND NEW PAVEMENTS, OR BETWEEN PAVER PASSES, OR BETWEEN SUCCESSIVE DAYS WORK, TO ENSURE CONTINUOUS BOND BETWEEN ADJOINING WORK. CONSTRUCT JOINTS TO HAVE SAME TEXTURE, DENSITY AND SMOOTHNESS AS OTHER SECTIONS. CLEAN CONTACT SURFACES AND APPLY TACT COAT.
6. ROLLING
   A. GENERAL: BEGIN ROLLING WHEN MIXTURE WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT.
      I) COMPACT MIXTURE WITH HOT HAND TAMPERS OR VIBRATING PLATE COMPACTORS IN AREAS INACCESSIBLE TO ROLLERS.
   B. BREAKDOWN ROLLING: ACCOMPLISH BREAKDOWN OR INITIAL ROLLING IMMEDIATELY FOLLOWING ROLLING OF JOINTS AND OUTSIDE EDGE. CHECK SURFACE AFTER BREAKDOWN ROLLING, AND REPAIR DISPLACED AREAS BY LOOSENING AND FILLING, IF REQUIRED, WITH HOT MATERIAL.
   C. SECOND ROLLING: FOLLOW BREAKDOWN ROLLING AS SOON AS POSSIBLE, WHICH MIXTURE IS HOT. CONTINUE SECOND ROLLING UNTIL MIXTURE HAS BEEN THOROUGHLY COMPACTED.
   D. FINISH ROLLING: PERFORM FINISH ROLLING WHILE MIXTURE IS STILL WARM ENOUGH FOR REMOVAL OF ROLLER MARKS. CONTINUE ROLLING UNTIL ROLLER MARKS ARE ELIMINATED AND COURSE HAS ATTAINED MAXIMUM DENSITY.
   E. PATCHING: REMOVE AND REPLACE PAVING AREAS MIXED WITH FOREIGN MATERIALS AND DEFECTIVE AREAS. CUT OUT SUCH AREAS AND FILL WITH FRESH, HOT BITUMINOUS AGGREGATE MIX. COMPACT BY ROLLING TO MAXIMUM SURFACE DENSITY AND SMOOTHNESS.
   F. PROTECTION: AFTER FINAL ROLLING, DO NOT PERMIT VEHICULAR TRAFFIC ON PAVEMENT UNTIL IT HAS COOLED AND HARDENED.
   G. ERECT BARRICADES TO PROTECT PAVING FROM TRAFFIC UNTIL MIXTURE HAS COOLED ENOUGH NOT TO BECOME MARKED.
7. TRAFFIC AND LANE MARKINGS
   A. CLEANING: SWEEP AND CLEAN SURFACE TO ELIMINATE LOOSE MATERIAL AND DUST.
   B. STRIPPING: USE CHLORINATED RUBBER BASE TRAFFIC LANE-MARKING PAINT, FACTORY MIXED, QUICK-DRYING, AND NON-BLEEDING.
      COLOR: YELLOW
      I) DO NOT APPLY TRAFFIC AND LANE MARKING PAINT UNTIL LAYOUT AND PLACEMENT HAS BEEN VERIFIED WITH ARCHITECT/ENGINEER.
      II) APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE UNIFORM STRAIGHT EDGES. APPLY IN TWO COATS AT MANUFACTURER'S RECOMMENDED RATES.
8. FIELD QUALITY CONTROL
   A. TESTING AND INSPECTION SERVICE:
      I) OWNER SHALL EMPLOY A TESTING LABORATORY TO PERFORM PAVEMENT TESTING AND INSPECTION SERVICE FOR QUALITY CONTROL DURING PAVING OPERATIONS.
      II) TESTING SERVICE SHALL HAVE REPRESENTATIVE PRESENT TO OBSERVE AND PERFORM TESTS AT ALL TIMES PAVING WORK IS IN PROGRESS.
   B. GENERAL: TESTING SERVICE REPRESENTATIVE SHALL TAKE A MINIMUM OF TWO SAMPLES PER LIFT OF BITUMINOUS AGGREGATE MIX EACH DAY BEFORE PAVING OPERATION. LABORATORY TEST SHALL BE PERFORMED ON THESE SAMPLES TO DETERMINE AGGREGATE GRADATION AND ASPHALT CONTENT.
      I) TEST IN-PLACE COMPACTED BITUMINOUS AGGREGATE MIX COURSES FOR COMPLIANCE WITH REQUIREMENTS FOR THICKNESS, DENSITY AND AIR VOIDS AND SURFACE SMOOTHNESS. REPAIR OR REMOVE AND REPLACE UNACCEPTABLE PAVING AS DIRECTED BY ENGINEER.
      II) A TEST SECTION AT A MINIMUM SIZE OF 100'X12' SHALL BE PLACED AT A LOCATION AS DIRECTED BY THE COUNTY PRIOR TO FULL PRODUCTION FOR EACH TYPE OF MIX. THE TEST SECTION SHALL BE COMPACTED TO DETERMINE A TARGET DENSITY FOR THE REMAINDER OF THE PAVEMENT.
   C. THICKNESS: IN-PLACE COMPACTED THICKNESS WILL NOT BE ACCEPTABLE IF EXCEEDING FOLLOWING ALLOWABLE VARIATION FROM REQUIRED THICKNESS:
      AGGREGATE BASE COURSE: ½", PLUS OR MINUS
      BASE COURSE: ½", PLUS OR MINUS
      BINDER COURSE: ¼", PLUS OR MINUS
      SURFACE COURSE: ¼", PLUS OR MINUS
      I) A MINIMUM OF TWO PAVEMENT CORES PER COMPACTED LIFT SHALL BE TAKEN. CORES ARE TO BE TAKEN AT LOCATIONS AND AT TIMES OF DAY AS DIRECTED BY THE TESTING SERVICE. THE FOLLOWING TESTS SHALL BE PERFORMED BY THE TESTING SERVICE, ON EACH PAVEMENT CORE:
      II) A TEST SECTION AT A MINIMUM SIZE OF 100'X12' SHALL BE PLACED AT A LOCATION AS DIRECTED BY THE COUNTY PRIOR TO FULL PRODUCTION FOR EACH TYPE OF MIX. THE TEST SECTION SHALL BE COMPACTED TO DETERMINE A TARGET DENSITY OF THE REMAINDER OF THE PAVEMENT.
   D. PAVEMENT THICKNESS
      DENSITY
      AIR VOIDS
      I) TESTING SERVICE SHALL SUBMIT CERTIFIED RESULTS TO THE OWNER AND ARCHITECT/ENGINEER WITHIN 72 HOURS AFTER TESTS ARE MADE, WITH THEIR COMMENTS AND RECOMMENDATIONS FOR ACTION.
      II) PAVEMENT WHICH FAILS TO COMPLY WITH APPROVED JOB MIX FORMULA SHALL BE REPLACED AS DIRECTED BY THE ARCHITECT/ENGINEER.
   E. SURFACE SMOOTHNESS: TEST FINISHED SURFACE FOR SMOOTHNESS, USING 10' STRAIGHTEDGE APPLIED PARALLEL WITH, AND AT RIGHT ANGLES TO CENTERLINE OF PAVED AREA. SURFACE WILL NOT BE ACCEPTABLE IF EXCEEDING THE FOLLOWING TOLERANCES FOR SMOOTHNESS.
      AGGREGATE BASE COURSE SURFACE:1/4"
      BASE COURSE SURFACE: 1/4"
      BINDER COURSE SURFACE: 1/8"
      WEARING COURSE SURFACE: 1/8"
      I) CHECK SURFACED AREAS AT INTERVALS AS DIRECTED BY TESTING SERVICE.
   F. DENSITY TESTS: DENSITY TESTS SHALL BE MADE AT EACH LIFT. TEST SHALL BE AS FOLLOWS:
      I) TESTS WILL BE REQUIRED AT VARIOUS TIMES AND LOCATIONS FOR SUBGRADE AND BASE COURSES FOR ASPHALT PAVING AREAS.
   G. TESTING SERVICE SHALL SUBMIT CERTIFIED RESULTS TO THE OWNER AND ENGINEER WITHIN 72 HOURS AFTER TESTS ARE MADE WITH THEIR COMMENTS AND RECOMMENDATIONS FOR ACTION.
      I) SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH I.N.D.O.T. STANDARD SPECIFICATIONS, SECTION 207 AND SUBSECTION 501.07. NO TRAFFIC SHALL BE PERMITTED ON THE PREPARED SUBGRADE PRIOR TO PAVING.
      II) SEE SITE GRADING, UNDER THE 'EARTHWORK' SECTION FOR ADDITIONAL COMPACTION REQUIREMENTS.
9. APPLICATION
   A. GRADING: DO ANY NECESSARY GRADING IN ADDITION TO THAT PERFORMED IN ACCORDANCE WITH EARTHWORK SECTION TO BRING SUBGRADES, AFTER FINAL COMPACTION, TO THE REQUIRED GRADES AND SECTIONS FOR SITE IMPROVEMENTS.
   B. PREPARATION OF SUBGRADE: REMOVE SPONGY AND OTHERWISE UNSUITABLE MATERIAL AND REPLACE WITH STABLE MATERIAL. NO TRAFFIC WILL BE ALLOWED ON PREPARED SUBGRADE PRIOR TO PAVING.
   C. COMPACTION OF SUBGRADE: THE FIRST 6 INCHES BELOW THE SUBGRADE SHALL BE COMPACTED TO AT LEAST 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE PROVISIONS OF AASHO T-99. WATER SHALL BE PREVENTED FROM STANDING ON THE COMPACTED SUBGRADE.
   D. UTILITY STRUCTURES: CHECK FOR CORRECT ELEVATION OF ALL MANHOLE COVERS, VALVE BOXES AND SIMILAR STRUCTURES LOCATED WITHIN AREAS TO BE PAVED, AND MAKE, OR HAVE MADE, ANY NECESSARY ADJUSTMENTS IN SUCH STRUCTURES.
   E. PLACING CONCRETE
      1. SUBGRADE: PLACE CONCRETE ONLY ON A MOIST, COMPACTED SUBGRADE OR BASE FREE FROM LOOSE MATERIAL. PLACE NO CONCRETE ON A MUDDY OR FROZEN SUBGRADE.
      2. FORMS: ALL FORMS SHALL BE FREE FROM WARP, TIGHT ENOUGH TO PREVENT LEAKAGE AND SUBSTANTIAL ENOUGH TO MAINTAIN THEIR SHAPE AND POSITION WITHOUT SPRINGING OR SETTLING, WHEN CONCRETE IS PLACED. FORMS SHALL BE CLEAN AND SMOOTH IMMEDIATELY BEFORE CONCRETING.
      3. PLACING CONCRETE: CONCRETE SHALL BE DEPOSITED SO AS TO REQUIRE AS LITTLE REHANDLING AS PRACTICABLE. WHEN CONCRETE IS TO BE PLACED AT AN ATMOSPHERIC TEMPERATURE OF 35 DEGREES F. OR LESS, PARAGRAPH 702.10 OF THE I.N.D.O.T. SPECIFICATIONS LATEST REVISIONS SHALL BE FOLLOWED.
   F. CONCRETE CURB
      1. EXPANSION JOINTS: SHALL BE 1/2 INCH THICK PREMOULDED AT ENDS OF ALL RETURNS AND AT A MAXIMUM SPACING OF 100 FEET.
      2. CONTRACTION JOINTS UNLESS OTHERWISE PROVIDED, CONTRACTION JOINTS SHALL BE SAWED JOINTS SPACED 10 FEET ON CENTER.
      3. FINISH: TAMP AND SCREED CONCRETE AS SOON AS PLACED, AND FILL ANY HONEY COMBED PLACES. FINISH SQUARE CORNERSTONE 1/4 INCH RADIUS AND OTHER CORNERS TO RADII SHOWN.
   G. CONCRETE WALKS AND EXTERIOR STEPS
      1. SLOPES: PROVIDE ¼ INCH PER FOOT CROSS SLOPE. MAKE ADJUSTMENTS ON SLOPES AT WALK INTERSECTIONS AS NECESSARY TO PROVIDE PROPER DRAINAGE.
      2. DIMENSIONS: WALKS AND STEPS SHALL BE ONE COURSE CONSTRUCTION AND OF WIDTHS AND DETAILS SHOWN ON THE DRAWINGS.
      3. FINISH: SCREED CONCRETE AND TROWEL WITH A STEEL TROWEL TO A HARD DENSE SURFACE AFTER SURFACE WATER HAS DISAPPEARED. APPLY MEDIUM BROOM FINISH AND SCRIBE TRANSVERSE JOINTS AT 6 FOOT SPACING. PROVIDE ½ INCH EXPANSION JOINTS WHERE SIDEWALKS INTERSECT, AND AT A MAXIMUM SPACING OF 48 FEET BETWEEN EXPANSION JOINTS.
   H. CURING CONCRETE FOR WALKS AND CURBS: EXCEPT AS OTHERWISE SPECIFIED, CURE ALL CONCRETE BY ONE OF THE METHODS DESCRIBED IN SECTION 501.17 OF THE I.N.D.O.T. SPECIFICATIONS, LATEST REVISION.
   I. BITUMINOUS PAVEMENT: HOT MIX ASPHALT PAVEMENT SHALL BE AS SPECIFIED IN SECTION 402 OF THE I.N.D.O.T. SPECIFICATIONS LATEST REVISIONS. PAVING WILL NOT BE PERMITTED DURING UNFAVORABLE WEATHER OR THEN THE TEMPERATURE IS 40 DEGREES F. AND FALLING.
   J. COMPACTED AGGREGATE SUBBASE: THE THICKNESS SHOWN ON THE DRAWINGS IS THE MINIMUM THICKNESS OF THE FULL COMPACTED SUBBASE. COMPACTION SHALL BE ACCOMPLISHED BY ROLLING WITH A SMOOTH WHEELED ROLLER WEIGHING 8 TO 10 TONS. COMPACT TO 95% COMPACTION USING STANDARD TESTING PROCEDURES. ALONG CURBS, HEADERS AND WALLS AND AT ALL PLACES NOT ACCESSIBLE TO THE ROLLER, THE AGGREGATE MATERIAL SHALL BE TAMPED WITH MECHANICAL TAMPERS OR WITH APPROVED HAND TAMPERS.
   K. CONCRETE RAMPS
      1. CONCRETE RAMPS FOR THE DISABLED SHALL BE REQUIRED AS SPECIFIED IN THE PLANS AND SHALL CONFORM WITH CURRENT SPECIFICATIONS ESTABLISHED BY THE AMERICAN DISABILITIES ACT (ADA), SECTION 4.7, "CURB RAMPS."
      2. THE CONCRETE RAMP SHALL BE FLUSH AND FREE OF ABRUPT CHANGES WITH SIDEWALKS, GUTTERS OR STREETS, AND PROVIDE A MAXIMUM SLOPE OF 1:12.
      3. THE MINIMUM WIDTH OF A CONCRETE RAMP SHALL BE (48) INCHES EXCLUSIVE OF FLARED SIDES.
      4. SIDES OF CONCRETE RAMPS SHALL HAVE FLARED SIDES AS SHOWN IN THE PLANS.

STORM SEWER SYSTEMS

1. SCOPE OF WORK
   A. THE WORK UNDER THIS SECTION INCLUDES ALL STORM SEWERS, STORM WATER INLETS, AND RELATED ITEMS, INCLUDING EXCAVATING AND BACKFILLING NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS.
   B. IN THE CASE OF ANY CONFLICTS WITH THESE SPECIFICATIONS AND LOCAL, STATE, FEDERAL SPECIFICATIONS THE MORE STRINGENT SHALL APPLY.
2. STORM SEWER CONSTRUCTION
   A. STORM SEWERS
      1. STORM SEWER STRUCTURES SHALL COMPLY WITH CURRENT SPECIFICATIONS OF THE CITY OF FRANKLIN PLANNING AND ALL OTHER RESPONSIBLE AGENCIES IN RESPECT TO DESIGN AND QUALITY OF CONSTRUCTION.
      2. ALL STORM SEWER CONSTRUCTION INSIDE PUBLIC RIGHT-OF-WAY, EITHER EXISTING OR TO BE DEDICATED, SHALL BE IN ACCORDANCE WITH THE MOST CURRENT I.N.D.O.T. STANDARD SPECIFICATION.
      3. WHERE REINFORCED CONCRETE PIPE IS SHOWN ON THE CONSTRUCTION PLANS, IT SHALL BE IN ACCORDANCE WITH A.S.T.M. C-76 CLASS III WALL "B" UNLESS OTHERWISE SPECIFIED ON THE PLANS.
      4. WHERE CORRUGATED METAL PIPE IS SHOWN ON THE CONSTRUCTION PLANS, IT SHALL BE 14 GAUGE ALUMINIZED UNLESS OTHERWISE SPECIFIED AND SHALL HAVE THE CONNECTING BANDS AND SEALS AS SPECIFIED BY THE MANUFACTURER. C.M.P. SHALL BE ALUMINIZED PIPE IN ACCORDANCE WITH A.S.T.M. A-444.
      5. WHERE HIGH DENSITY POLYETHYLENE (HDPE) PIPE IS SHOWN ON THE CONSTRUCTION PLANS, IT SHALL BE SOIL TIGHT, N-12 DUAL WALL HDPE PIPE AS MANUFACTURED BY ADS DRAINAGE SOLUTIONS OR AN APPROVED EQUAL.
      6. MANHOLES, CATCH BASINS AND INLETS SHALL BE PRECAST CONCRETE. USE OF BRICK OR BLOCK WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE ENGINEER AND APPROVED IN WRITING BY THE CITY OF FRANKLIN PLANNING AND ENGINEERING DEPARTMENTS PRIOR TO CONSTRUCTION. IF THE CONTRACTOR ELECTS TO USE ALTERNATE PRECAST STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO ANY CONSTRUCTION.
      7. PRECAST CONCRETE AND STEEL FOR MANHOLES AND INLETS SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478.
      8. CASTINGS SHALL BE AS SHOWN ON THE DETAIL SHEET(S) FOR MANUFACTURER, TYPE AND MODEL NUMBER.
      9. GRANULAR BACKFILL SHALL BE REQUIRED UNDER ALL PAVEMENT AREAS AND TRENCHES WITHIN FIVE(5) FEET OF THE EDGE OF PAVEMENT.
      10. ALL TRENCHES UNDER PAVEMENT SHALL BE COMPACTED TO 95 PERCENT MODIFIED PROCTOR.
3. APPLICATION
   A. PERMITS AND CODES: THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. THE CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO EXISTING SEWERS.
   B. LOCAL STANDARDS: THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.
   C. EXISTING IMPROVEMENTS: THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES, SEWERS AND OTHER DRAINS ENCOUNTERED IN THE SEWER INSTALLATION. THE CONTRACTOR SHALL REPAIR TO THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.
   D. WORKMANSHIP: THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION.
   E. TRENCHING: LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. OF PIPE. SHEET AND BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.
   F. SPECIAL SUPPORTS: WHENEVER, IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE IS UNSUITABLE FOR SUPPORTING SEWERS AND APPURTENANCES SPECIFIED IN THIS SECTION, SUCH SPECIAL SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT WILL BE ADJUSTED.
   G. BACKFILLING: BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. NOTE THAT PVC & HDPE PIPE SHALL BE COVERED WITH 12" MINIMUM OF #8 STONE. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND STREETS SHALL BE "B" BORROW OR EQUIVALENT GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS.
   H. MANHOLE INVERTS: CONSTRUCT MANHOLE FLOW CHANNELS OF CONCRETE SEWER PIPE OR BRICK, SMOOTHLY FINISHED AND OF SEMICIRCULAR SECTION CONFORMING TO THE INSIDE DIAMETER OF THE CONNECTING SEWERS. MAKE CHANGES IN SIZE OR GRADE GRADUALLY AND CHANGES INDIRECTION BY TRUE CURVES. PROVIDE SUCH CHANNELS FOR ALL CONNECTING SEWERS AT EACH MANHOLE.
   I. SUBDRAINS: ALL SUBDRAINS SHALL BE OF THE SIZE SHOWN ON THE PLANS AND SHALL BE CONSTRUCTED TO THE GRADES SHOWN. ALL DRAINS CONSTRUCTED OFF-SITE AS PART OF THE OUTLET DRAIN WILL BE LOCATED AS SHOWN.
   J. UTILITIES: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERITY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.

WATER LINE SYSTEM

1. SCOPE OF WORK
   A. THE WORK UNDER THIS SECTION INCLUDES ALL WATER MAIN, FIRE HYDRANTS, SERVICES AND RELATED ITEMS, INCLUDING EXCAVATING AND BACKFILLING NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS.
2. MATERIALS
   A. ALL MATERIALS SHALL CONFORM TO ALL LOCAL, STATE, AND NATIONAL CODES AND SHALL BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION. ALL C-900 PVC WATER MAIN SHALL BE DR-14 CLASSIFICATION.
3. APPLICATION
   A. PERMITS AND CODES: THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. THE CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO EXISTING WATER MAINS.
   B. LOCAL STANDARDS: THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.
   C. EXISTING IMPROVEMENTS: THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES, SEWERS AND OTHER DRAINS ENCOUNTERED IN THE WATER LINE INSTALLATION. THE CONTRACTOR SHALL REPAIR TO THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.
   D. WORKMANSHIP: THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION. THIS INCLUDES ALL REQUIRED CLEANING AND TESTING PROCEDURES REQUIRED BY THE STATE AND LOCAL AGENCIES.
   E. TRENCHING: LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. OF PIPE. SHEET AND BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.
   F. SPECIAL SUPPORTS: WHENEVER, IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE IS UNSUITABLE FOR SUPPORTING PIPE AND APPURTENANCES SPECIFIED IN THIS SECTION, SUCH SPECIAL SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT WILL BE ADJUSTED.
   G. BACKFILLING: BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. NOTE THAT PVC & HDPE PIPE SHALL BE COVERED WITH 12" MINIMUM OF #8 STONE. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND STREETS SHALL BE "B" BORROW OR EQUIVALENT GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS.
   H. UTILITIES: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.

SANITARY SEWER SYSTEMS

1. SCOPE OF WORK
   A. THE WORK UNDER THIS SECTION INCLUDES ALL SANITARY SEWERS, MANHOLES, CLEANOUTS AND RELATED ITEMS INCLUDING EXCAVATING AND BACKFILLING, NECESSARY TO COMPLETE THE WORK SHOWN IN THE DRAWINGS, STARTING OUTSIDE THE BUILDING WALLS. THE END OF SEWERS SHALL BE TIGHTLY PLUGGED OR CAPPED AT THE TERMINAL POINTS, ADJACENT TO THE BUILDING DRAIN AS SPECIFIED IN THE PLUMBING SPECIFICATIONS AND/OR ARCHITECTURAL DRAWINGS.
2. MATERIALS
   A. SANITARY SEWERS
      1. ALL GRAVITY PLASTIC SEWER PIPE FITTINGS SHALL CONFORM TO ASTM D3034 WITH A CELL CLASSIFICATION OF 12454-B OR 12454-C. FLEXIBLE GASKETED COMPRESSION JOINTS SHALL BE USED FOR PVC & PVC TRUSS PIPE. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED.
      2. ABS SEWER PIPE AND FITTINGS SHALL CONFORM TO ASTM D2680 LATEST REVISION.
      3. TRACER WIRE SHALL BE INSTALLED WITH ALL NEW SANITARY PIPE.
   B. MANHOLES
      1. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS AND STEPS SHALL CONFORM TO ASTM C-478 LATEST REVISION. EXTERIOR OF THE MANHOLE SHALL BE WATERPROOFED WITH BISMATIC MATERIAL.
      2. CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOW HOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTION OR OTHER DEFECTS. THEY SHALL BE SMOOTH AND WELL-CLEANED BY SHOT-BLASTING OR BY SOME OTHER APPROVED METHOD. THEY SHALL BE COATED WITH ASPHALT PAINT WHICH SHALL RESULT IN A SMOOTH COATING, TOUGH AND TENACIOUS WHEN COLD, NOT TACKY OR BRITTLE. THEY SHALL BE GRAY IRON MEETING ASTM A-48 LATEST REVISION. MANHOLE COVERS FOR SANITARY SEWER SHALL BE NEENAH TYPE R-1722 W/R-1712-B-SP FRAME W/SELF-SEALING APPLICATION.
      3. JOINTS: MANHOLE SECTIONS SHALL BE JOINED WITH A NOMINAL ½ INCH SIZE BUTYL RUBBER BASE GASKET MATERIAL, CONFORMING TO AASHTO M-198 AND FEDERAL SPECIFICATION SS-S-210A. JOINT CONFORMS TO ASTM C-443.
      4. MANHOLES SHALL INCLUDE STEPS. SANITARY SEWER STANDARDS REVISIONS SHALL BE THAT STEPS ARE TO BE POLYPROPYLENE COATED STEEL REINFORCING OR AN APPROVED NON-CORROSIVE FIBERGLASS MATERIAL. THE COPOLYMER POLYPROPYLENE SHALL MEET THE REQUIREMENTS OF ASTMD-4101 WITH DEFORMED ⅜ INCH DIAMETER OR LARGER REINFORCING STEEL CONFORMING TO ASTM A-615, GRADE 60. STEPS SHALL BE A MAXIMUM OF 24 INCHES FROM TOP, 24 INCHES FROM BOTTOM AND 16 INCHES SPACING BETWEEN.
   C. SANITARY FORCE MAINS
      1. ALL SANITARY FORCE MAIN PIPE AND FITTINGS SHALL CONFORM TO ASTM D2241, STANDARD SPECIFICATION FOR POLY VINYL CHLORIDE (PVC) PRESSURE-RATED PIPE, (SDR 21, GREATER THAN 4 INCH DIAMETER).
      2. TRACER WIRE SHALL BE INSTALLED WITH ALL SANITARY FORCE MAIN PIPE.
   D. CASING
      1. SANITARY SEWERS CONSTRUCTED WITH POLYVINYL CHLORIDE (PVC) AND INSTALLED UNDER RAILROADS SHALL BE CASED IN CONFORMANCE WITH AWWA STANDARD C900-89, STANDARD FOR POLYVINYL CHLORIDE (PVC) PRESSURE PIPE, 4 IN. THROUGH 12 IN. FOR WATER DISTRIBUTION, APPENDIX A.
3. APPLICATION
   A. PERMITS AND CODES:
      THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK COVERED HEREIN SHALL BE BASED UPON THE DRAWINGS AND SPECIFICATIONS BUT THAT THE WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS AS AMENDED BY ANY WAIVERS. CONTRACTOR SHALL FURNISH ALL BONDS NECESSARY TO GET PERMITS FOR CUTS AND CONNECTIONS TO EXISTING SEWERS.
   B. LOCAL STANDARDS:
      THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.
   C. EXISTING IMPROVEMENTS:
      THE CONTRACTOR SHALL MAINTAIN IN OPERATING CONDITION ALL ACTIVE UTILITIES, SEWERS AND OTHER DRAINS ENCOUNTERED IN THE SEWER INSTALLATION. THE CONTRACTOR SHALL REPAIR TO THE SATISFACTION OF THE OWNER ANY DAMAGE TO EXISTING ACTIVE IMPROVEMENTS.
   D. WORKMANSHIP:
      THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION.
   E. TRENCHING:
      LAY ALL PIPE IN OPEN TRENCHES, EXCEPT WHEN THE LOCAL AUTHORITY GIVES WRITTEN PERMISSION FOR TUNNELING. OPEN THE TRENCH SUFFICIENTLY AHEAD OF PIPE-LAYING TO REVEAL ANY OBSTRUCTIONS. THE MIN. WIDTH OF TRENCH SHALL BE 1.25 TIMES THE OUTSIDE DIA. PLUS 12 INCHES. SHEET AND BRACE TRENCH AS NECESSARY TO PROTECT WORKMEN AND ADJACENT STRUCTURES. ALL TRENCHING TO COMPLY WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS. KEEP TRENCHES FREE FROM WATER WHILE CONSTRUCTION IS IN PROGRESS. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.
   F. SPECIAL SUPPORTS:
      WHENEVER, IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE IS UNSUITABLE FOR SUPPORTING SEWERS AND APPURTENANCES SPECIFIED IN THIS SECTION, SUCH SPECIAL SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT WILL BE ADJUSTED.
   G. BACKFILLING:
      BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO DISTURB THE PIPE. BACKFILL UNDER AND WITHIN 5 FEET OF WALKS, PARKING AREAS, DRIVEWAYS AND STREETS SHALL BE GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS.
   H. FLOW CHANNELS:
      THE FLOW CHANNELS WITHIN MANHOLES SHALL BE AN INTEGRAL PART OF THE PRECAST BASE. THE CHANNELS SHALL BE SHAPED AND FORMED FOR A CLEAN TRANSITION WITH PROPER HYDRAULICS TO ALLOW THE SMOOTH CONVEYANCE OF FLOW THROUGH THE MANHOLE. THE BENCH WALL SHALL BE FORMED TO THE CROWN OF THE INLET AND OUTLET PIPES TO FORM A "U" SHAPED CHANNEL. THE BENCH WALL SHALL SLOPE BACK FROM THE CROWN AT ½ INCH PER FOOT TO THE MANHOLE WALL.
   I. LEAKAGE TESTING:
      THE CONTRACTOR SHALL FURNISH THE NECESSARY EQUIPMENT TO TEST SEWERS FOR INFILTRATION. ALL SANITARY SEWER GRAVITY LINES, UPON COMPLETION, SHALL BE REQUIRED TO PASS ONE OF THE FOLLOWING TESTS:
   J. HYDROSTATIC TEST:
      A HYDROSTATIC TEST SHALL BE PERFORMED WITH A MINIMUM OF TWO (2) FEET OF POSITIVE HEAD. THE RATE OF EXFILTRATION OR INFILTRATION SHALL NOT EXCEED TWO HUNDRED (200) GALLONS PER INCH OF PIPE DIAMETER PER LINEAR MILE PER DAY.
   K. LOW PRESSURE AIR TEST:
      A LOW PRESSURE AIR TEST SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F1417, STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR, FOR PLASTIC PIPE.
   L. ALL SANITARY FORCE MAIN LINES, UPON COMPLETION, SHALL BE REQUIRED TO PASS A LEAKAGE TEST CONDUCTED IN ACCORDANCE WITH AWWA STANDARD C605-94, AWWA STANDARD FOR UNDERGROUND INSTALLATION OF POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS FOR WATER.
   M. ALL SANITARY SEWER MANHOLES SHALL ALSO BE AIR TESTED IN ACCORDANCE WITH ASTM C1244-93, STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE AIR PRESSURE (VACUUM) TEST.
   N. FLUSHING SEWERS:
      FLUSH ALL SANITARY SEWERS EXCEPT BUILDING SEWERS WITH WATER TO OBTAIN FREE FLOW THROUGH EACH LINE. REMOVE ALL SILT AND TRASH FROM APPURTENANCES JUST PRIOR TO ACCEPTANCE OF WORK.
   O. PLASTIC SEWER PIPE INSTALLATION:
      PLASTIC SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 PER LATEST REVISION. PIPES SHALL BE TESTED AFTER THIRTY DAYS, USING A MANDREL THAT IS 95% OF THE INSIDE DIAMETER OF THE PIPE BEING TESTED. SAID MANDREL SHALL BE PULLED BY HAND THROUGH EACH PIPE SECTION TO ENSURE DEFLECTION IS LESS THAN ACCEPTABLE LIMITS.
   P. STORM WATER CONNECTIONS:
      NO ROOF DRAINS, FOOTING DRAINS AND/OR SURFACE WATER DRAINS MAY BE CONNECTED TO THE SANITARY SEWER SYSTEMS, INCLUDING TEMPORARY CONNECTIONS DURING CONSTRUCTION.
   Q. WATERLINE CROSSING:
      WHERE WATER LINES AND SANITARY SEWERS CROSS AND WATER LINES CANNOT BE PLACED ABOVE THE SEWER WITH A MINIMUM OF 18 INCHES VERTICAL CLEARANCE, THE SEWER MUST BE CONSTRUCTED OF WATER WORKS GRADE DUCTILE IRON PIPE WITH MECHANICAL JOINTS WITHIN 10 FEET OF THE WATER LINE.
   R. UTILITIES:
      IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERITY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS WORK. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNERS OF THE VARIOUS UTILITIES BEFORE WORK IS STARTED. THE CONTRACTOR SHALL NOTIFY IN WRITING THE OWNER AND THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.
   S. SERVICE LATERALS:
      INDIVIDUAL BUILDING LINES SHALL BE 6 INCHES IN DIAMETER AND OF MATERIAL EQUAL TO THAT SPECIFIED IN 2A OF THIS SECTION. SERVICE LINES SHALL BE CONNECTED TO THE MAIN SEWER AT LOCATIONS SHOWN IN THESE PLANS.

THESE CONSTRUCTION PLANS AND SECONDARY PLAT ARE BASED UPON INFORMATION FROM AN ALTA/ACSM LAND TITLE SURVEY PERFORMED BY SEA GROUP, LLC WITH PROJECT NUMBER C11-6272 AND DATED DECEMBER 13, 2016 (LATEST VERSION).

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

SHEET 1100

SPECIFICATIONS

JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DRAWN	LMC	CHECKED	BTV
DATE	APRIL 11, 2024	DESIGNED	BTV	APPR.	GJI

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
4				
5				
6				
7				
8				
9				

SHEET 1100

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
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DATE/USER : 3/29/2024 12:19 PM / Lcox

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE, CITY OR COUNTY OFFICIALS

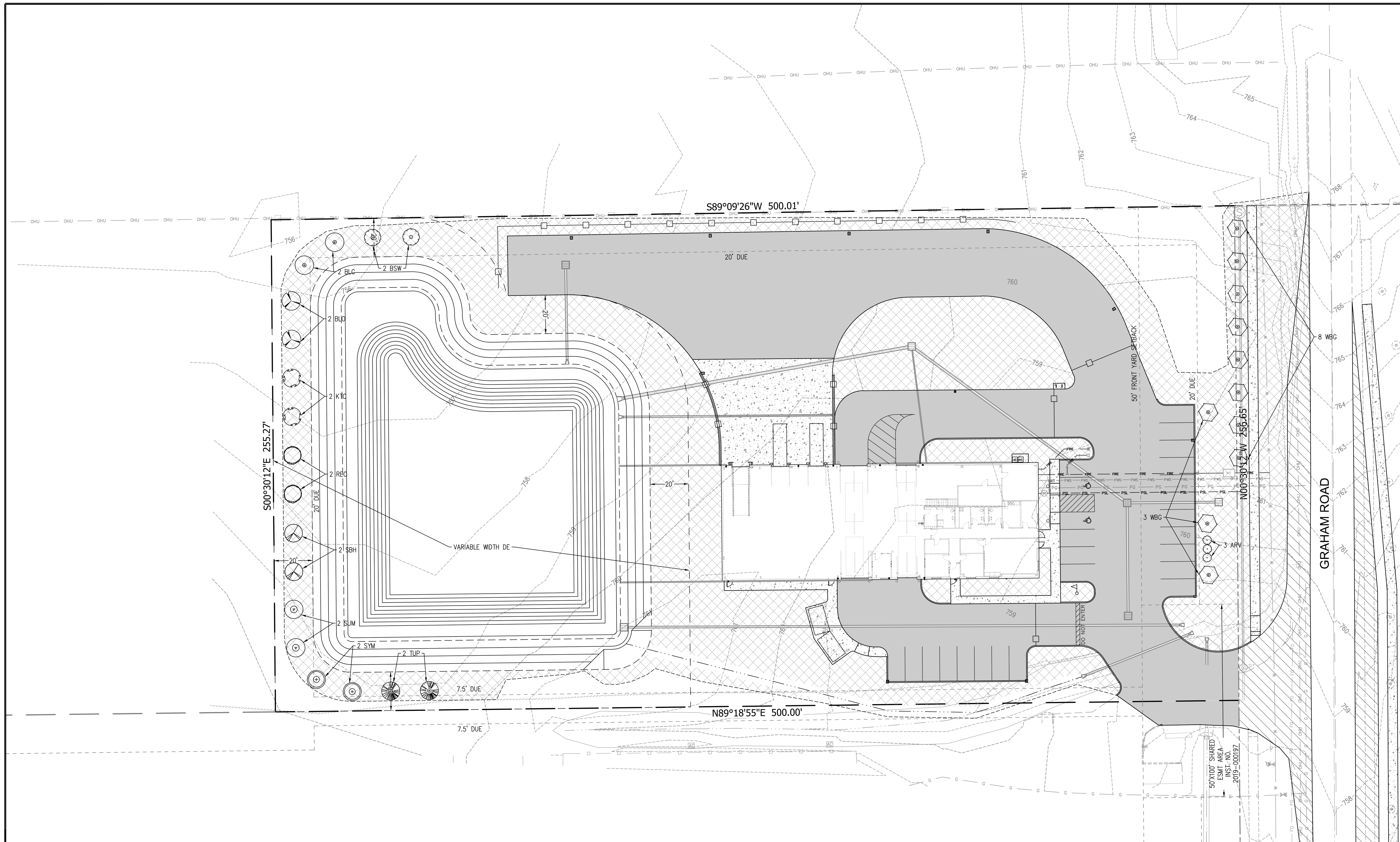
NOTE: NO EARTHWORK DISTURBING ACTIVITY MAY COMMENCE UNTIL A STORM WATER MANAGEMENT PERMIT IS OBTAINED.

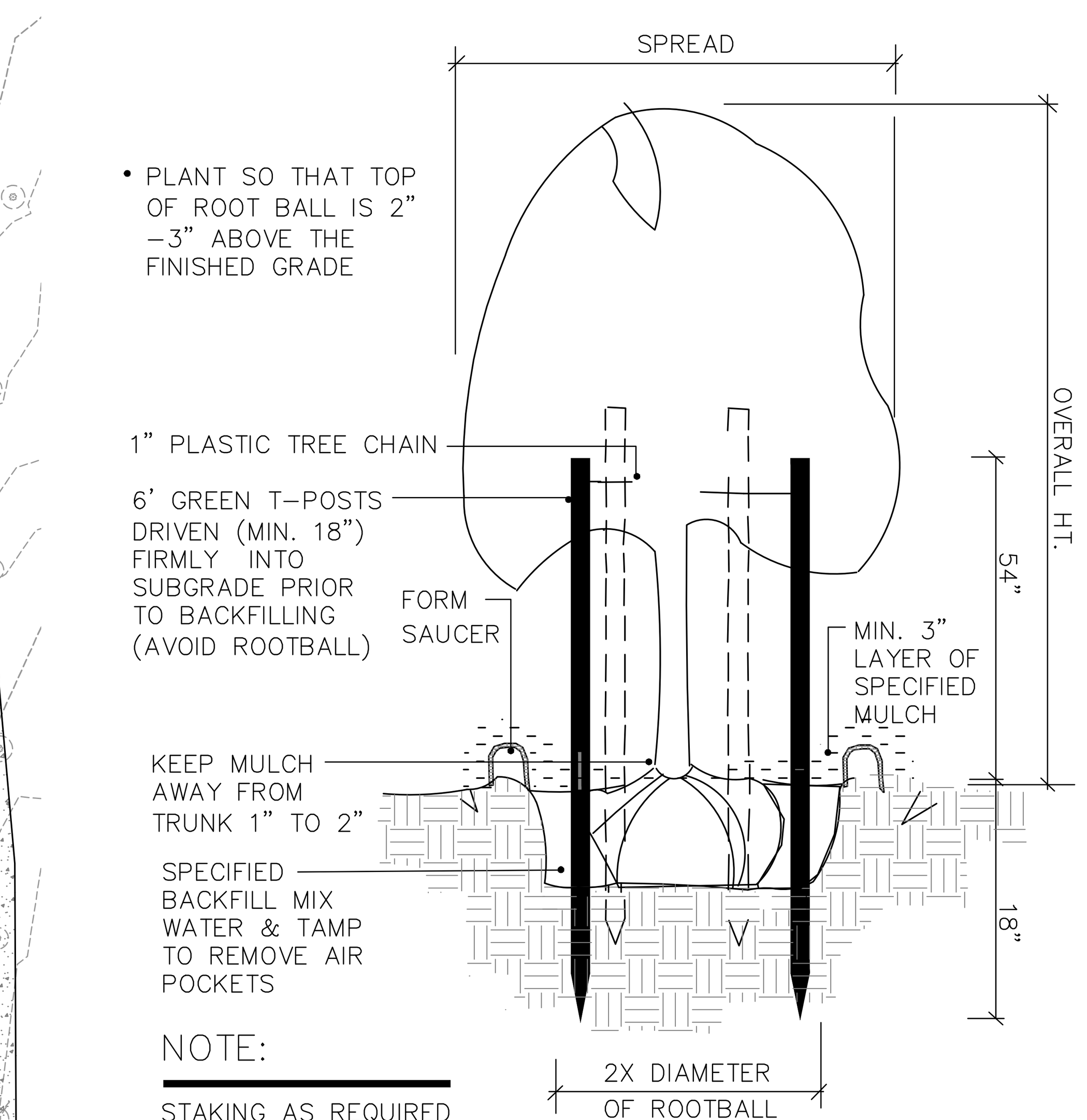
NORTH

30 0 30 60

SCALE: 1" = 30'

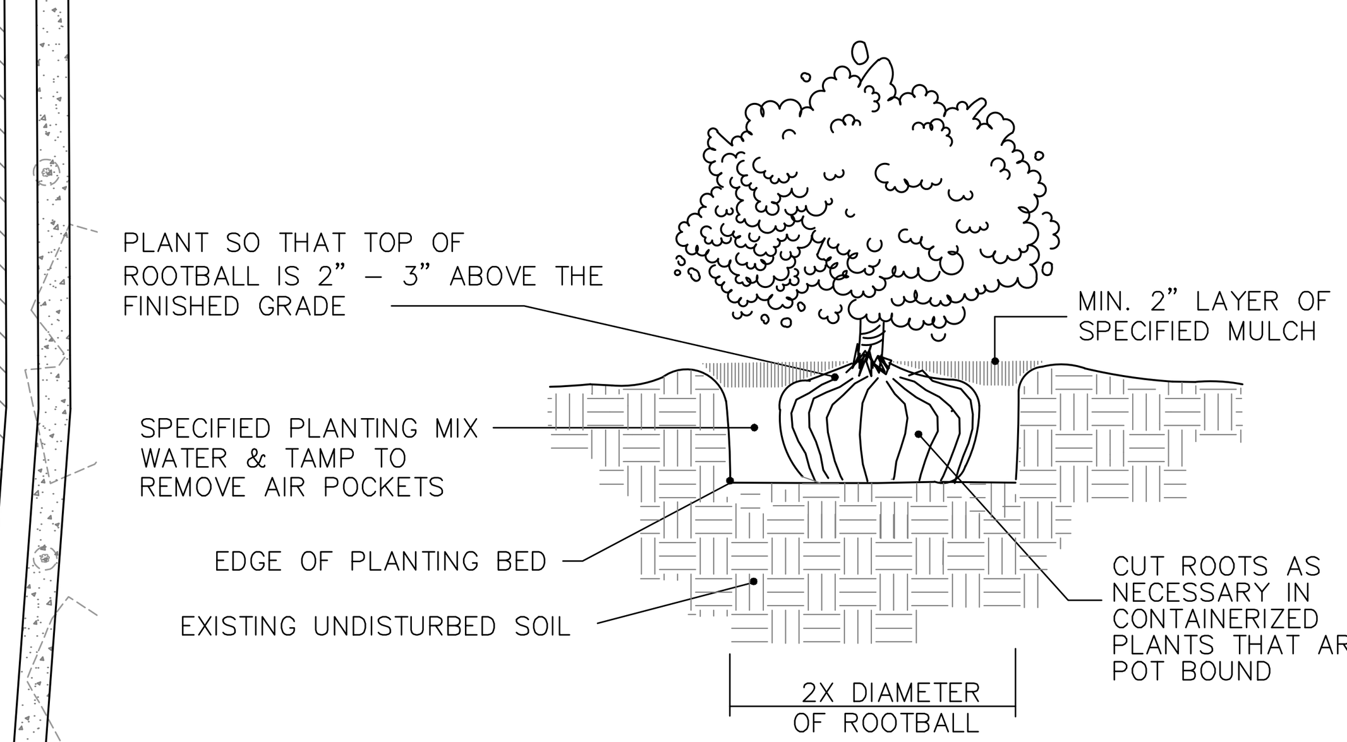
EXISTING CONTOUR INTERVAL = 1'
PROPOSED CONTOUR INTERVAL = 1'





TREE PLANTING AND STAKING DETAIL

SCALE: NOT TO SCALE



SHRUB/GROUNDCOVER PLANTING DETAIL

SCALE: NOT TO SCALE

LANDSCAPE LEGEND

SHADE TREES

Code	Qty	Plant
WBG	11	WILDFIRE BLACK GUM NYSSA SYLVATICA 2.5" CALIPER 6" CLEAR TRUNK
BSW	2	BASSWOOD TILIA AMERICANA 2.5" CALIPER 6" CLEAR TRUNK
BLC	2	BLACK CHERRY PRUNUS SEROTINA 2.5" CALIPER 6" CLEAR TRUNK
BLO	2	BLACK OAK QUERCUS VELUTINA 2.5" CALIPER 6" CLEAR TRUNK
KTC	2	KENTUCKY COFFEE GYMNOCLADUS DIOICUS 2.5" CALIPER 6" CLEAR TRUNK
REO	2	RED OAK QUERCUS BOREALIS 2.5" CALIPER 6" CLEAR TRUNK
SBH	2	SHAGBARK HICKORY CARYA OVATA 2.5" CALIPER 6" CLEAR TRUNK

SHADE TREES

Code	Qty	Plant
SUM	2	SUGAR MAPLE ACER SACCHRUM 2.5" CALIPER 6" CLEAR TRUNK
SYM	2	SYCAMORE PLATAUS OCCIDENTALIS 2.5" CALIPER 6" CLEAR TRUNK
TUP	2	TULIP POPLAR LIRIODENDRON TULIPIFERA 2.5" CALIPER 6" CLEAR TRUNK

SHRUBS

Code	Qty	Plant
ARV	3	ARROWWOOD VIBURNUM VIBURNUM DENTATUM 3 GAL. 72" O.C

EROSION CONTROL

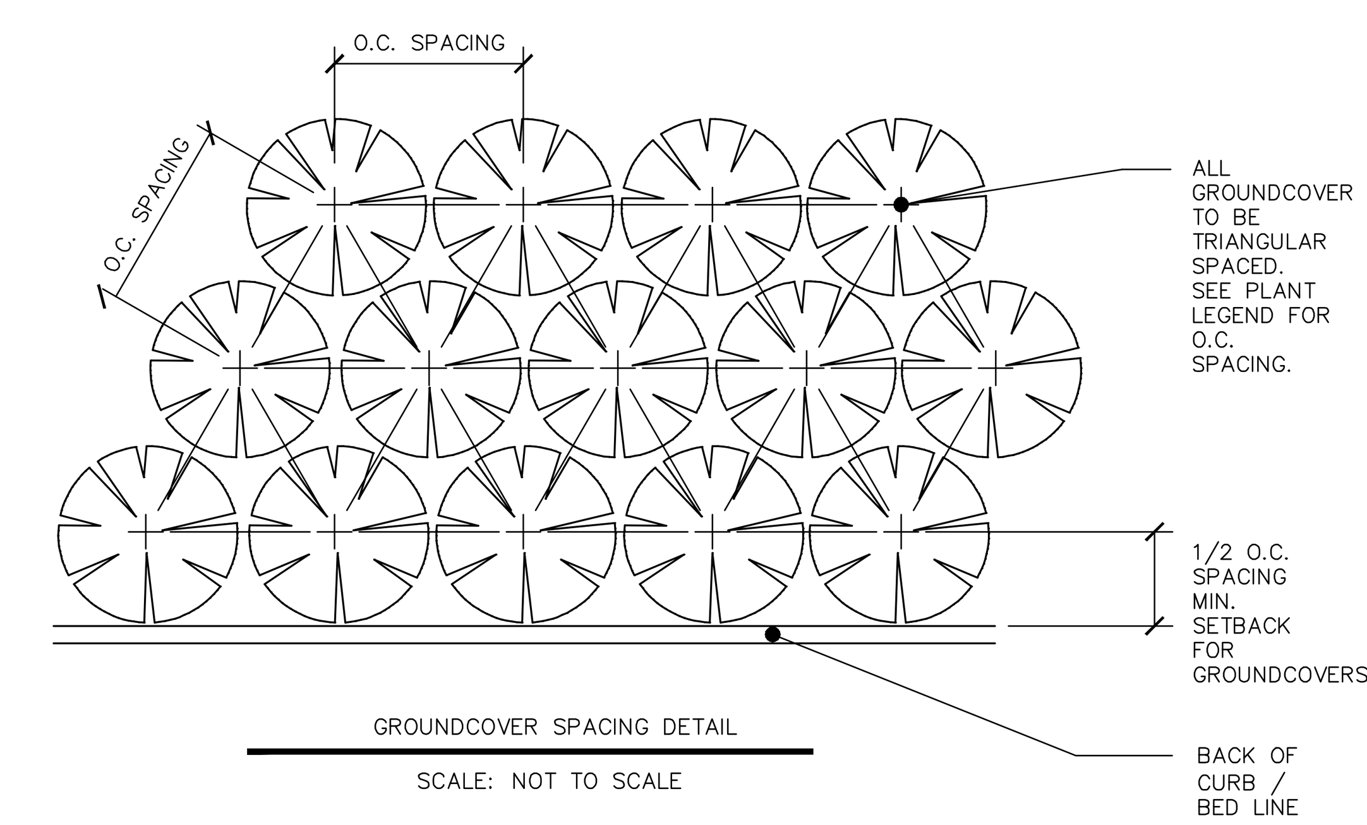
REVETMENT RIPRAP
(SEE DETAIL – EROSION CONTROL PLAN SHEET 900)

GROUNDCOVER

SEED AND MULCH S.F. ± 40,647
LOW MAINTENANCE MIX AS AVAILABLE FROM INDIANA SEED SOLUTIONS 65% TALL FESCUE, 25% PRG, 10% CR FESCUE

LANDSCAPE NOTES

1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL VEGETATION AND LEAVING ALL LANDSCAPE AREAS AT TWO INCHES BELOW FINAL GRADE. THE LANDSCAPE CONTRACTOR WILL PROVIDE AND SPREAD A COMPACTED TWO INCH DEPTH OF LOAMY TOPSOIL IN ALL TURF AREAS – BRINGING THESE AREAS TO TOP OF CURB/FINAL GRADE (COMPACTED). THE LANDSCAPE CONTRACTOR WILL PROVIDE AND INSTALL A FOUR INCH DEPTH OF PLANTING MIX TO ALL PLANTING BEDS – CROWNING FOR PROPER DRAINAGE. (SEE SPECIFICATIONS FOR MORE DETAILED INSTRUCTION ON TURF AREA AND PLANTING BED PREPARATION.)
2. A THREE INCH DEPTH OF SHREDDED HARDWOOD BARK MULCH WILL BE USED AS A TOP DRESSING FOR ALL PLANTING BEDS AND TREE RINGS.
3. LANDSCAPE CONTRACTOR SHALL MAKE OWN PLANT QUANTITY TAKEOFFS USING DRAWINGS, SPECIFICATIONS AND PLANT SCHEDULE. PLANT SCHEDULE REQUIREMENTS (I.E. SPACING) DICTATE, UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE DESIGNER. LANDSCAPE CONTRACTOR TO VERIFY BED MEASUREMENTS AND INSTALL APPROPRIATE QUANTITIES AS GOVERNED BY THE THE PLANT SPACING PER THE SCHEDULE. ENSURE ALL MINIMUM REQUIREMENTS OF THE LOCAL GOVERNING AUTHORITY ARE MET (I.E. MINIMUM PLANT QUANTITIES.)
4. NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED. IF PLANTS ARE NOT AVAILABLE, THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE DESIGNER IN WRITING (VIA PROPER CHANNELS). PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOBSITE BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
5. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE LANDSCAPE MAINTENANCE OF THIS PROJECT UNTIL FINAL ACCEPTANCE. TURF AREAS WILL NOT BE ACCEPTED UNTIL THEY AREA AT A MINIMUM OF 1-1/2 INCHES TALL, AND NO BARE AREAS LARGER THAN 12 SQUARE INCHES.
6. TREES SHALL BE PLANTED AT LEAST TWO AND ONE-HALF FEET (2'-6") FROM SIDEWALK OR CURB EDGE.



GROUNDCOVER SPACING DETAIL

SCALE: NOT TO SCALE

LANDSCAPE PLANTING DETAILS

NOT TO SCALE

INDIANA 811 Know what's below. Call before you dig

DIRECTORY PATH : R:\Active\Lancer+Beebe\JoCo Recycle Center\Design\CAD\Plans
FILENAME : 1200 LANDSCAPE PLAN.dwg
DATE/USER : 5/20/2024 5:44 PM / Bvaughan

CROSSROAD ENGINEERS, PC
Transportation & Development Consultants
115 N. 17th AVENUE, BEECH GROVE, IN 46107 (317) 780-1555

LANDSCAPE PLAN

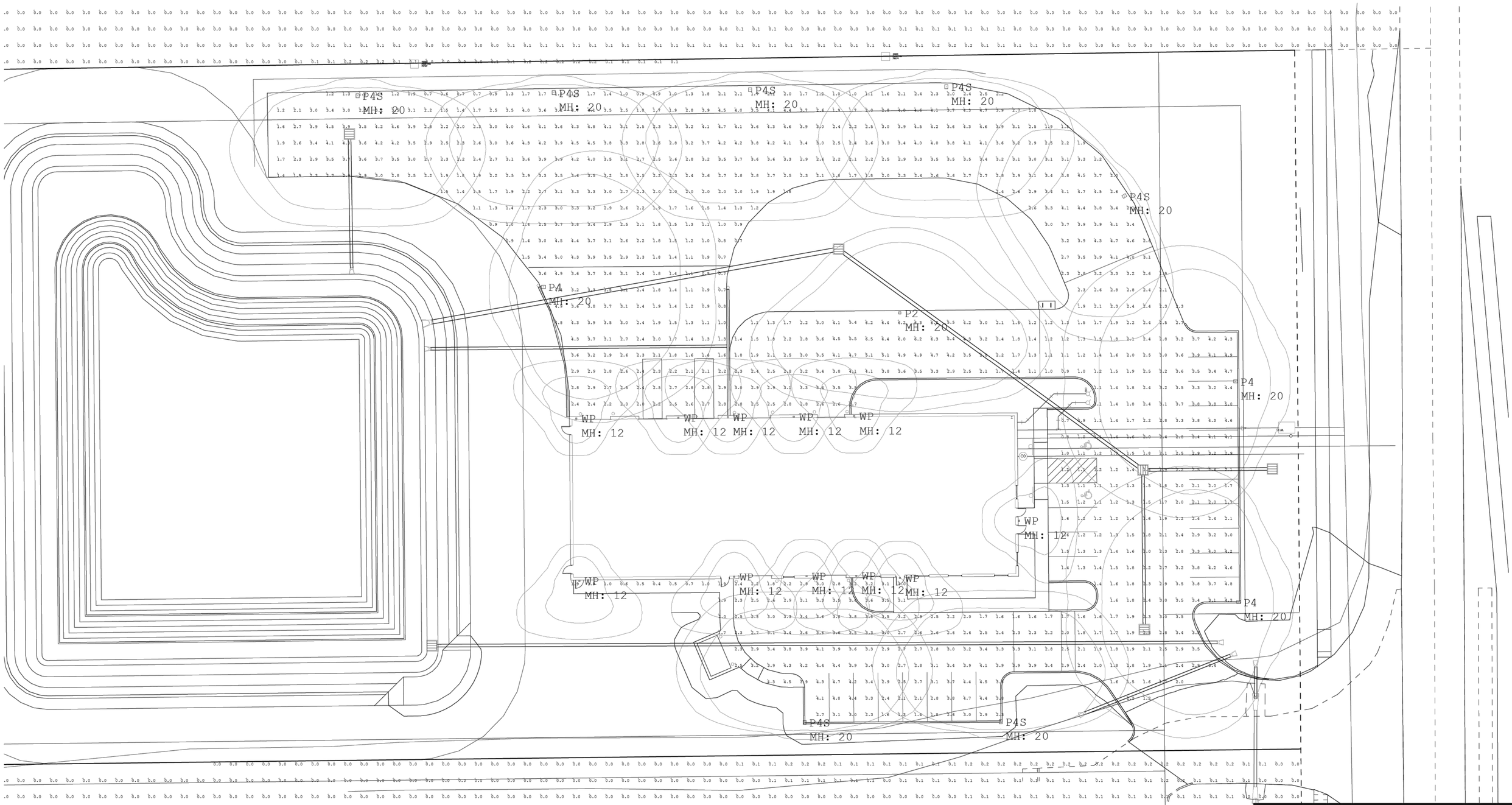
JOHNSON COUNTY RECYCLE CENTER

JOB No.	.	DATE	APRIL 11, 2024
DRAWN	LMC	DESIGNED	BTV
CHECKED	BTV	APPR.	GJI

GREGORY J. ILKO REGISTERED NO. 10300059 STATE OF INDIANA PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY	APPR.
1	05.09.24	REVISIONS PER JCDB OUTSIDE REVIEW COMMENTS	BTV	GJI
2	05.21.24	REVISIONS PER CITY OF FRANKLIN REVIEW COMMENTS	BTV	GJI
3				
4				
5				
6				
7				
8				
9				

SHEET 1200



1 SITE LIGHTING AND PHOTOMETRIC PLAN

SCALE: 1/16" = 1'-0" (24 x 36 sheet)

National Lighting Vendor:

For pricing and technical assistance contact: Rob Thomson of CBMC INC, tel# 317-828-4119 / rthomson@cbmcinc.com

CBMC · LIGHTING SOLUTIONS

5855 KOPETSKY DR. SUITE G. | INDIANAPOLIS, IN 46217
317-780-8350| WWW.CBMCINC.COM

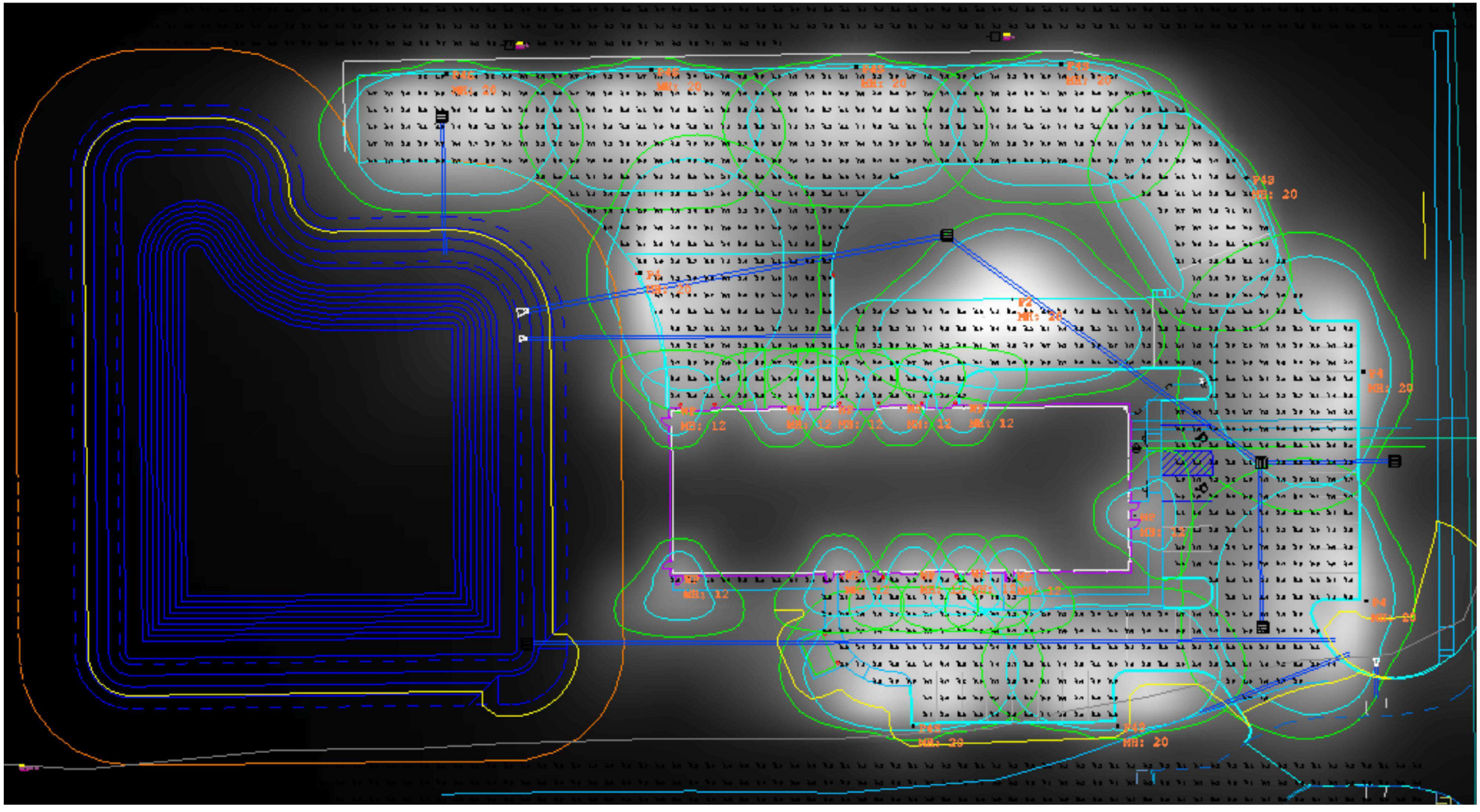
This lighting pattern represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with IESNA approved methods. Actual performance of any manufacturer's luminaire may vary due to variation in electrical voltage, tolerance in lamps and LED lumen package, location adjustments, and other variable field conditions.

Contractor to check and verify all dimensions on site before commencing any work shown.

JOHNSON COUNTY RECYCLE CENTER

SITE LIGHTING & PHOTOMETRIC PLAN

Scale:	1/16"=1'-0"	Project No: E00	Revision
Date:	4/05/24	Drawing No: E00	1
Drawn By:	FG		
Checked By:	RT		



1 **GREY SCALE RENDERING**
SCALE: NONE

National Lighting Vendor:

For pricing and technical assistance contact: Rob Thomson of CBMC INC, tel# 317-828-4119 / rthomson@cbmcinc.com

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Contractor to check and verify all dimensions on site before commencing any work shown.

JOHNSON COUNTY RECYCLE CENTER

GREY SCALE RENDERING

Scale:	NONE	Project No:	E00
Date:	4/05/24	Drawing No:	E01
Drawn By:	FG		
Checked By:	RT		

Revision: 1

Catalog # : _____ Project : _____
Prepared By : _____ Date : _____

Mirada Small Area (MRS)

Outdoor LED Area Light

IP66 IK08

OVERVIEW	
Lumen Package	6,000 - 30,000
Wattage Range	39 - 209
Efficacy Range (LPW)	112 - 163
Weight lbs(kg)	20 (9.1)
Control Options	IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 27 lbs in carton.

Optical System
- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated seal.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, 4, 5W, FT, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical
- High-performance driver features over-voltage, under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 30L lumen packages rated to +40°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance and complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls
- Optional integral passive infrared Bluetooth™ motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7.

Installation
- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional B3 drill pattern.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- RoHS compliant
- Suitable for wet locations.
- IP66 rated Luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- IK08 rated luminiare per IEC 66262 me-chanical impact code
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Catalog # : _____ Project : _____
Prepared By : _____ Date : _____

Mirada Small Area (MRS)
Outdoor LED Area Light

IP66 IK08

OVERVIEW
Lumen Package 6,000 - 30,000
Wattage Range 39 - 209
Efficacy Range (LPW) 112 - 163
Weight lbs(kg) 20 (9.1)
Control Options IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS
Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 27 lbs in carton.

Optical System
- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated seal.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, 4, 5W, FT, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical
- High-performance driver features over-voltage, under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 30L lumen packages rated to +40°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance and complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls
- Optional integral passive infrared Bluetooth™ motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7.

Installation
- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional B3 drill pattern.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
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- RoHS compliant
- Suitable for wet locations.
- IP66 rated Luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
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Catalog # : _____ Project : _____
Prepared By : _____ Date : _____

Mirada Small Area (MRS)
Outdoor LED Area Light

IP66 IK08

OVERVIEW
Lumen Package 6,000 - 30,000
Wattage Range 39 - 209
Efficacy Range (LPW) 112 - 163
Weight lbs(kg) 20 (9.1)
Control Options IMSBT, ALB, ALS, 7-Pin, PCI

QUICK LINKS
Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 27 lbs in carton.

Optical System
- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated seal.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, 4, 5W, FT, and LC/RC.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93-95%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical
- High-performance driver features over-voltage, under-voltage, short-circuit and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 30L lumen packages rated to +40°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance and complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls
- Optional integral passive infrared Bluetooth™ motion and photocell sensor. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7.

Installation
- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional B3 drill pattern.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- RoHS compliant
- Suitable for wet locations.
- IP66 rated Luminaire per IEC 60598-1.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
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SPEC.1046.B.1122

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Catalog # : _____ Project : _____ Type : _____
Prepared By : _____ Date : _____

Mirada Small Wall Sconce Silicone (XWS SIL)

Outdoor LED Wall Light

IP65

OVERVIEW	
Lumen Package (lm)	2,000 - 8,000
Wattage Range (W)	13 - 61
Efficacy Range (LPW)	126 - 162
Weight lbs (kg)	10 (4.5)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction
- Rugged die-cast aluminum housing
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: TBD lbs in carton.
- Max luminaire shipping weight: 12 lbs in carton (20 lbs w/EH option)

Optical System
- State-of-the-Art one piece silicone optic provides industry leading optical control while also acting as an integrated gasket reducing system complexity and improving fixture reliability.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, and FT.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377.
- Minimum CRI of 70

Electrical
- High-performance driver features over-voltage under-voltage, short-circuit, and over temperature protection.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 VAC) Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L70 Calculated Life: >60k Hours
- Total harmonic distortion (THD): <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F).
- Power factor (PF): >.90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Driver is fully encased in potting material for moisture resistance. Driver complies with FCC standards. Accessible driver and electrical components.
- Optional battery backup provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance. Standard battery rated for 0°C to 50°C with cold weather battery rated for -20°C to 50°C (40°C max for 8L). 120-277V Only.

Controls
- Optional integral passive infrared Bluetooth™ motion. Fixtures operate independently and can be commissioned via iOS or Android configuration app.
- Optional button photocell turns fixtures on and off based on ambient light levels for dusk to dawn lighting.
- LSI's AirLink Blue wireless control system options allow for fixture and motion sensor grouping while reducing energy and maintenance costs.

Installation
- Universal wall mounting plate mounts directly to vertical surface or 4" junction box (octagonal or square).
- Luminaire hinges to the top of the mounting plate and is secured via two flush mount screws that help to conceal the hardware and prevent over tightening during installation.

Warranty
- LSI luminaires carry a 5-year limited warranty. Refer to https://www.lsicorp.com/resources/terms-conditions-warranty/ for more information.

Listings
- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- IK08 rated luminaire per IEC 66262 mechanical impact code.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

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Contractor to check and verify all dimensions on site before commencing any work shown.

JOHNSON COUNTY RECYCLE CENTER

SITE LIGHTING DETAILS

Scale:	1/16"=1'-0"	Project No: E00	Revision
Date:		Drawing No: E02	1
Drawn By:	4/05/24 FG		
Checked By:	RT		

PATRIOT
ENGINEERING AND ENVIRONMENTAL, INC.

June 4, 2024

Ms. Melissa Miller
Lancer Associates
145 North East Street
Indianapolis, Indiana 46204

Re: Addendum of Pavement Design
Johnson County Recycle Center
County Road 250 East
Franklin, Indiana
Patriot Project No.: 24-0566-01G

Dear Melissa:

Submitted here is the addendum of a pavement design for the above referenced project. This addendum letter has been prepared in accordance with your request for a pavement design for the Johnson County Recycle Center in Franklin, Indiana.

Pavement Design Evaluation

The near surface or shallow subgrade soils encountered within the proposed pavement areas generally consist of medium stiff clays and loose to medium dense sands, which if properly prepared are suitable for pavement support. ***However, very soft clays were encountered from 0 to 6 feet below the ground surface in some of the borings. Soft clays and other unsuitable materials must be removed and replaced with well-compacted structural fill.***

If construction is performed during a wet or cold period, the contractor will need to exercise care during the grading and fill placement activities in order to achieve the necessary subgrade soil support for the pavement section (Refer to Section 5.0 "Construction Considerations"). The base soil for the pavement section will need to be firm and dry. The subgrade should be sloped properly in order to provide good base drainage. To minimize the effects of groundwater or surface water conditions, the base section for the pavement system should be sufficiently high above adjacent ditches and properly graded to provide pavement surface and pavement base drainage.

Our recommended minimum pavement design sections provided below are based on a soil support evaluation performed in accordance with generally accepted procedures set forth by the American Association of State Highway and Transportation Officials (AASHTO) "*Guide for Design of Pavement Structures, 1993*". **No traffic study was conducted in the area around the site. Therefore, we estimated the traffic loading for the pavement design values based on our past experience and knowledge of vehicle types anticipated provided by the Client:**

- Design Life or 15 years
- 18-kips Equivalent Single Axle Loading (ESAL) *estimated* design value:
    - Rigid Pavement (3,000 passenger vehicle, 10 box truck, 2 trash truck, and 1 semi-truck passes per day) = 247,369
    - Flexible Pavement (3,000 passenger vehicle, 10 box truck, 2 trash truck, and 1 semi-truck passes per day) = 225,633
- Initial Serviceability:
    - Flexible Pavement = 4.2
    - Rigid Pavement = 4.5
- Terminal Serviceability of 2.0 (for both flexible and rigid pavement)
- Reliability of 80 percent (%) (for both flexible and rigid pavement)
- Standard Deviation
    - Flexible Pavement = 0.45
    - Rigid Pavement = 0.35
- Estimated California Bearing Ratio (CBR) of 3
- The crushed stone base course will not contain more than 10 percent (%) fines and will be compacted to at least 100 percent (%) of the maximum Standard Proctor dry density.
- Asphalt will be placed and compacted in accordance with the INDOT 2016 Standard Specification Requirements.
- Good to Excellent Drainage Condition – Assumes water in subgrade is removed within 1 day. Please note, the shallow subgrade soils encountered at the site generally consist of clays with Relatively low permeability's; which means the soils have relatively poor drainage characteristics. Therefore, we recommend installing longitudinal subsurface drains throughout the length of the proposed pavement areas. Additionally, we recommend the installation of series of finger drains within the proposed pavement areas; which if

appropriate and feasible could be connected to storm-sewer inlets. In addition to providing good drainage, the installation of underdrains underlying pavement sections founded over low permeability soils will generally aid in improving long-term performance of the pavement sections, as well as helping lower maintenance costs.

Based on the above design parameters, provided below are the calculated minimum pavement design thicknesses for rigid (concrete) pavement loading and flexible (asphalt) pavement for the provided loading. Refer to Appendix "B" "*Pavement Design Evaluation & Design Sections*" for detailed design calculations.

Table 1: Standard Duty Rigid Pavement Design (Minimum Thicknesses)

Traffic Loading Conditions[1]	Concrete (Inches)[2]	Aggregate Base Course (Inches)[3]	Modulus of Subgrade Reactions (psi)	Design Life (Years)[1]
247,369 ESAL's	6	7	75	15

[1] Estimated ESAL based on estimated number of truck passes per day

[2] Minimum of 4,000 pounds per square inch (psi) concrete strength with suitable reinforcement

[3] Indiana Department of Transportation (INDOT) No. 53 Crushed Stone, containing no more than 10 percent (%) fines.

Table 2: Standard Duty Flexible Pavement Design (Minimum Thicknesses)

Traffic Loading Conditions[1]	Asphalt Surface Course HMA 9.5 mm (Inches)[2]	Asphalt Base Course HMA 19 mm (Inches)[2]	Aggregate Sub-Base (Inches)[3]	Design Life (Years)[1]
225,633 ESAL's	2	4	7	15

[1] Estimated ESAL based on estimated number of truck passes per day

[2] Indiana Department of Transportation (INDOT) Specified Hot Mix Asphalt (HMA)

[3] Indiana Department of Transportation (INDOT) No. 53 Crushed Stone, containing no more than 10 percent (%) fines.

The pavement analysis does not include conditions for loading of dumpster trucks which generate high stresses in the pavement. For the dumpster loading area, we recommend using a reinforced concrete pad at least 8 inches thick underlain by at least 8 inches of crushed stone. Prior to placing the crushed base for the rigid pavement, the dumpster and truck approach areas should be thoroughly proofrolled. We recommend the concrete pad be large enough to accommodate the entire length of the truck while loading. In addition, we recommend a thickened curb be constructed around the perimeter of the dumpster pad to reduce the potential for further pad damage typically associated with overstressing of the pad edges.

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report or if we may be of any additional assistance, please do not hesitate to contact our office.

Respectfully submitted,
Patriot Engineering and Environmental, Inc.

Ian Grafe, E.I.
Geotechnical Engineer

WILLIAM D. DUBOIS
REGISTERED
60018167
STATE OF
INDIANA
PROFESSIONAL ENGINEER

William D. Dubois, P.E.
Senior Principal Engineer

Appendix A: Pavement Design Evaluations
General Qualifications
Standard Clause for Unanticipated Subsurface Conditions

APPENDIX A

PAVEMENT DESIGN SECTIONS

GENERAL QUALIFICATIONS

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Rigid Design Inputs

Project Name: Johnson County Recycle Center
Route: County Road 250 East
Location: Franklin, Indiana
Owner/Agency:
Design Engineer: Patriot Engineering

Rigid Pavement Design/Evaluation

Concrete Thickness	6.00	**inches**	**Load Transfer Coefficient**	3.20	
Total Rigid ESALs	247,369		**Modulus of Subgrade Reaction**	75	**psi/in.**
Reliability	80.00	**percent**	**Drainage Coefficient**	1.00	
Overall Standard Deviation	0.35		**Initial Serviceability**	4.50	
Flexural Strength	650	**psi**	**Terminal Serviceability**	2.00	
Modulus of Elasticity	4,400,000	**psi**			

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	3,000.0	**psi**
Unadjusted Modulus of Subgrade Reaction	1	**psi/in**
Depth to Rigid Foundation	0.00	**feet**
Loss of Support Value (0,1,2,3)	0.0	

Modulus of Subgrade Reaction	75	**psi/in.**

Engineer: _____

WinPAS

Pavement Thickness Design According to

1993 AASHTO Guide for Design of Pavements Structures

American Concrete Pavement Association

Flexible Design Inputs

Project Name: Johnson County Recycle Center
Route: County Road 250 East
Location: Franklin, Indiana
Owner/Agency:
Design Engineer: Patriot Engineering

Flexible Pavement Design/Evaluation

Structural Number	3.06		**Subgrade Resilient Modulus**	4,500.00	**psi**
Total Flexible ESALs	225,633		**Initial Serviceability**	4.20	
Reliability	80.00	**percent**	**Terminal Serviceability**	2.50	
Overall Standard Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.39	1.00	2.00	0.78
Asphalt Cement Concrete	0.36	1.00	4.00	1.44
Crushed Stone Base	0.14	1.00	6.00	0.84
			Σ SN	3.06

Engineer: _____

GENERAL QUALIFICATIONS

of Patriot Engineering's Geotechnical Engineering Investigation

This report has been prepared at the request of our client for his use on this project. Our professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test borings logs regarding vegetation types, odors or staining of soils, or other unusual conditions observed are strictly for the information of our client and the owner.

This report may not contain sufficient information for purposes of other parties or other uses. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field and laboratory data presented in this report. Should there be any significant differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The recommendations provided herein were developed from the information obtained in the test borings, which depict subsurface conditions only at specific locations. The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration. Subsurface conditions at other locations may differ from those occurring at the specific drill sites. The nature and extent of variations between borings may not become evident until the time of construction. If, after performing on-site observations during construction and noting the characteristics of any variation, substantially different subsurface conditions from those encountered during our explorations are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that Patriot be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage (Standard Clause for Unanticipated Subsurface Conditions) be included in the project contract.

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

"The owner has had a subsurface exploration performed by a soils consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during construction operations that the contractor encounters conditions that are different than those anticipated by the soils consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contract agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and materials basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg, published in ASCE Construction Division Journal, No. CO2, September 1964, page 37.