

[illegible]

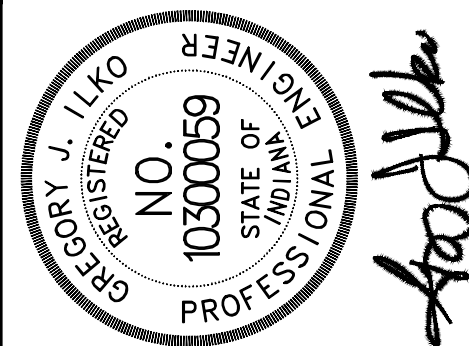
WILSON FARM PROPERTIES, LLC
622 N. MADISON AVENUE, SUITE 11
GREENWOOD, IN 46142
PHONE: (317) 710-7741
CONTACT: SID BLAZEK
EMAIL: sblazek@dsinvestments.net

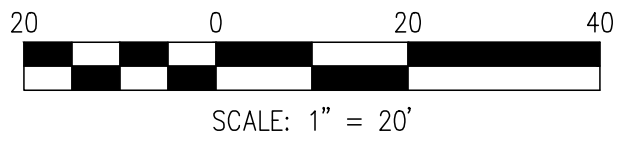
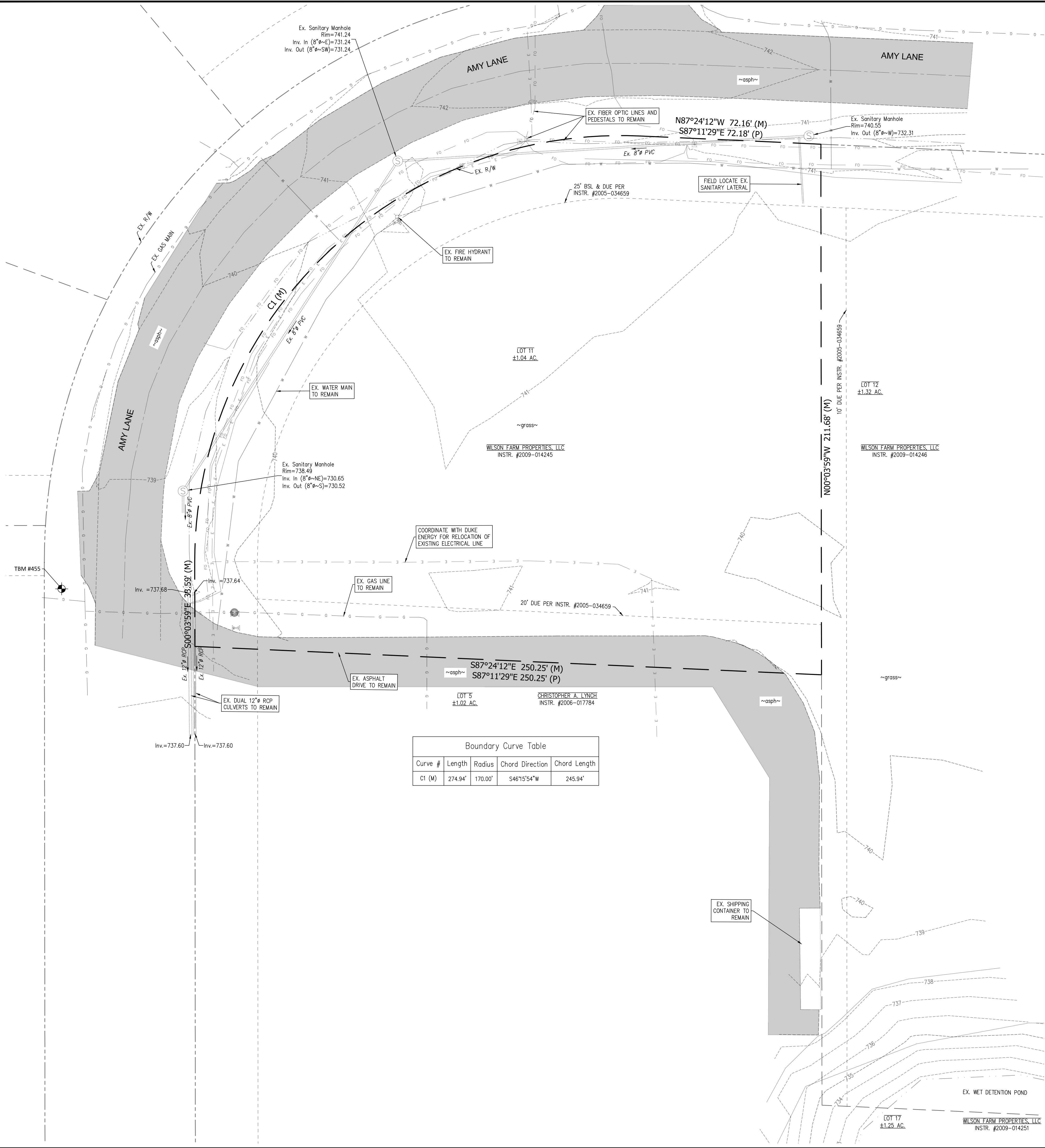
CROSSROAD ENGINEERS, PC
3417 SHERMAN DRIVE
BEECH GROVE, IN 46107
PHONE: (317) 780-1555
CONTACT: GREG J. ILKO
EMAIL: gilko@crossroadengineers.com

AVERA COMMERCIAL, LLC
 1584 E. COUNTY ROAD 600 SOUTH
 FRANKLIN, IN 46131
 PHONE: (317) 443-9608
 CONTACT: ADRIAN SODREL
 EMAIL: asodrel@gmail.com



PLAN INDEX	
SHEET #	SUBJECT
100	TITLE SHEET
200	TOPOGRAPHICAL SURVEY
300	SITE DIMENSION PLAN
400	UTILITY PLAN
500	GRADING PLAN
600	EROSION CONTROL PLAN
601	STORMWATER POLLUTION PREVENTION PLAN
700	LANDSCAPE PLAN
800	MISCELLANEOUS DETAILS
900	SPECIFICATIONS

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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.

BENCHMARK INFORMATION

THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) WAS ASCERTAINED FROM UIC5 AND GS SECOND ORDER BENCHMARK DNR TBM HC 8 A 1988

DESIGNATION - DNR TBM HC 8 A 1988
VERT. ORDER - SECOND

DESCRIPTION:
DNR TBM HC 8 A 1988
IN JOHNSON COUNTY, FRANKLIN QUADRANGLE, IN THE NE 1/4 OF SECTION 13, TOWNSHIP 12 NORTH, RANGE 4 EAST, 2nd P.M.; AT FRANKLIN; AT THE 100 NORTH ROAD BRIDGE OVER HURRICANE CREEK; SET IN THE TOP OF THE NORTHEAST CONCRETE WINGWALL OF THE BRIDGE, 15.2 FEET NORTH OF THE CENTERLINE OF THE ROAD, 1.2 FEET NORTH OF THE NORTH FACE OF THE BRIDGE DECK, 0.9 FOOT EAST OF THE WEST FACE OF THE WINGWALL, 0.8 FOOT SOUTH OF THE NORTH FACE OF THE WINGWALL, 0.3 FOOT BELOW THE ROAD; A "PK" NAIL SET IN A DRILL HOLE, INSIDE A CUT CIRCLE.

ELEV.=730.449 (NGVD 29)

TBM #455
CUT SQUARE ATOP CONCRETE END SECTION
ELEV.=738.08

FLOODPLAIN INFORMATION

BY GRAPHIC PLOTTING ONLY, THIS TRACT OF LAND DESCRIBED HEREON LIES WITHIN ZONE "X" (AREAS DETERMINED TO BE 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. 18081C02310, WHICH BEARS AN EFFECTIVE DATE OF AUGUST 02, 2007.

LEGAL DESCRIPTION

PER INSTR. #2009-014245
LOT 11 IN HURRICANE INDUSTRIAL PARK, SECTION 3, AS PER PLAT THEREOF, RECORDED DECEMBER 14, 2005, IN PLAT BOOK D, PAGE 619 A&B, AS INSTRUMENT NO. 2005-034659 IN THE OFFICE OF THE RECORDER OF JOHNSON COUNTY, INDIANA.

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.

EXISTING LEGEND

POWERPOLE	CONTOURS
POWERPOLE W/RISER	PROPERTY LINE
POWERPOLE W/LIGHT	EASEMENT LINE
LIGHT POLE	RIGHT-OF-WAY
ELECTRIC METER	ADJONER LINE
ELECTRIC BOX	PAVEMENT LINE
YARD LIGHT	FIELD LINE
GUIDE WIRE	DITCH
TELEPHONE MANHOLE	GAS LINE
TELEPHONE RISER	TELEPHONE LINE
WATER VALVE	WATER LINE
FIRE HYDRANT	FIBER OPTIC LINE
WELL	ELECTRIC LINE
WATER MANHOLE	TREE LINE
WATER METER	SANITARY SEWER
GAS VALVE	W/MANHOLE
GAS VALVE	STORM SEWER
CABLE TV RISER	W/MANHOLE
CLEANOUT	END SECTION
SIGN	
MAILBOX	
STORM ROUND INLET	
STORM CURB INLET	
RIGHT-OF-WAY MARKER	
TREE, BUSH & STUMP	
TEMP. BENCHMARK	
MONUMENT FOUND	

(D) DEEDED	(M) MEASURED	(P) PLATTED
ASPHALT	BUILDING	CONCRETE
GRAVEL	WOODS	REMOVAL/DEMOLISH

UTILITIES

Note: Listed below are the Indiana Underground Plant Protection Services Contacts; Others not listed may exist.

- SEWER**
CITY OF FRANKLIN
DEPARTMENT OF PUBLIC WORKS
796 S. STATE STREET
FRANKLIN, IN 46131
PHONE: (317) 736-3648
CONTACT: SALLY BROWN
EMAIL: sbrown@franklin.in.gov
- GAS**
VECTREN ENERGY
600 INDUSTRIAL DRIVE
FRANKLIN, IN 46131
PHONE: (765) 287-2150
CONTACT: MOSTAFA KHALILAD
EMAIL: mostafa.khalilad@enterpointenergy.com
- WATER**
INDIANA AMERICAN WATER
153 N. EMERSON AVENUE
GREENWOOD, IN 46143
PHONE: (317) 893-3560
CONTACT: ADAM BOONE
EMAIL: adam.boone@amwater.com
- FIRE DEPARTMENT**
CITY OF FRANKLIN FIRE DEPARTMENT
1800 THORNBURO LANE
FRANKLIN, IN 46131
PHONE: (317) 736-3650
CONTACT: BRYNE PURSFULL
EMAIL: bpursfull@franklin.in.gov
- FIBER OPTIC**
CENTURY LINK
50 N. JACKSON STREET
FRANKLIN, IN 46131
PHONE: (317) 736-4863
CONTACT: EDDIE FIELDS
EMAIL: paul.e.fields@centurylink.com
- METRONET**
8036 COLE WOOD BLVD.
INDIANAPOLIS, IN 46239
PHONE: (317) 809-8067
CONTACT: DOUG RECKART
EMAIL: doug.reckart@metronetinc.com
- ELECTRIC**
DUKE ENERGY (SERVICE)
2515 N. MORTON STREET
FRANKLIN, IN 46131
PHONE: (317) 736-2017
CONTACT: TAYLOR AUSTIN
EMAIL: taylor.austin@duke-energy.com

NOTE: 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.



CROSSFORD ENGINEERS PC
REGISTERED PROFESSIONAL ENGINEERS
DEVELOPMENT CONSULTANTS
10000 N. STATE STREET
SUITE 200
GREENWOOD, IN 46143
(317) 893-3560
CROSSFORDENGINEERS.COM

TOPOGRAPHICAL SURVEY
HURRICANE INDUSTRIAL PARK - LOT 11

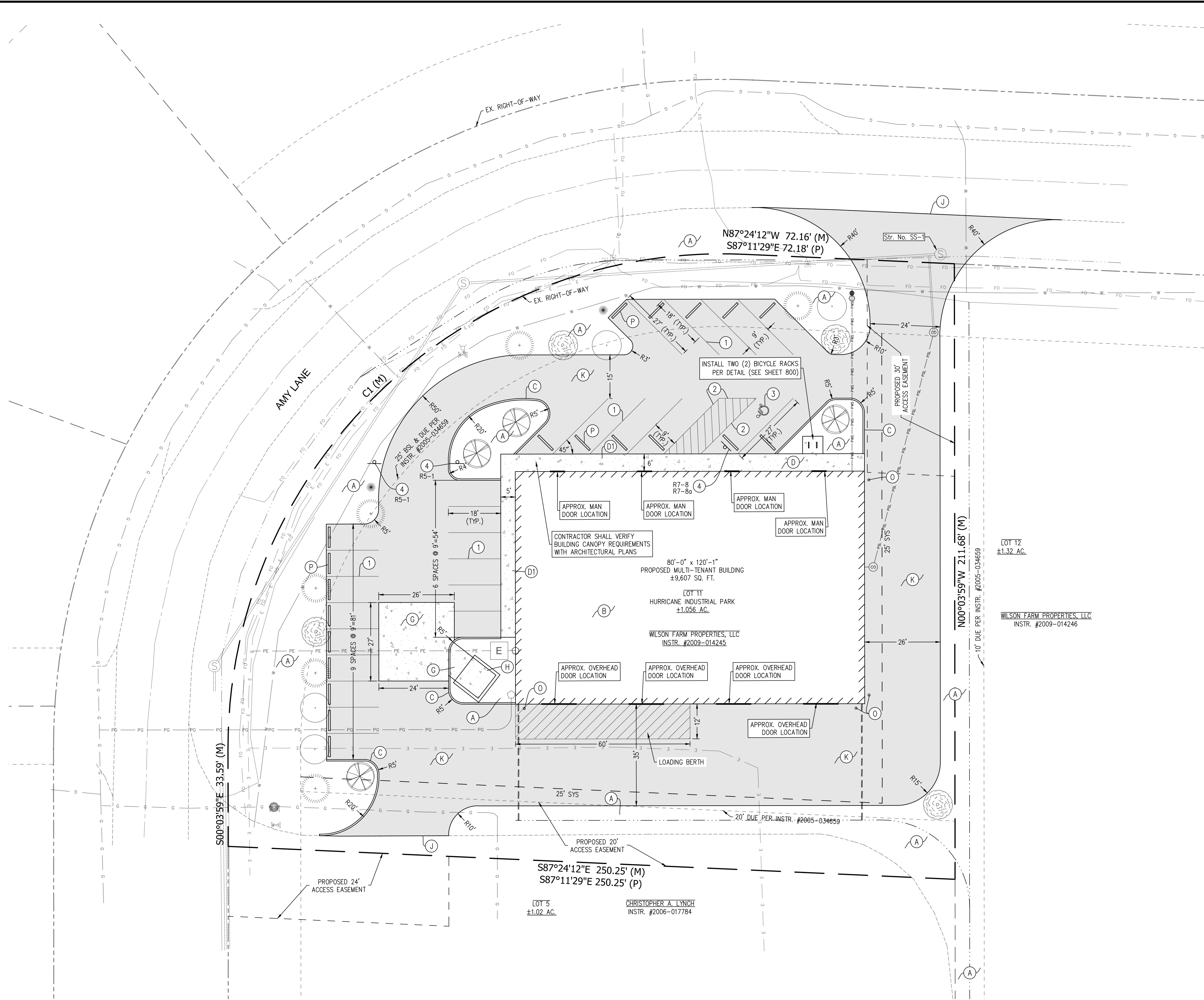
JOB NO.	DRAWN	LWC/KLF	CHECKED	TEN
DATE	DECEMBER 5, 2019	DESIGNED	APPR.	CJ

NO.	1	2	3	4	5	6	7	8	9
DATE	01.06.20								
REVISIONS PER ITC COMMENTS DATED 12.26.19									
REVISIONS									

SHEET















200

200



Boundary Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C1 (M)	274.94'	170.00'	S46°15'54"W	245.94'

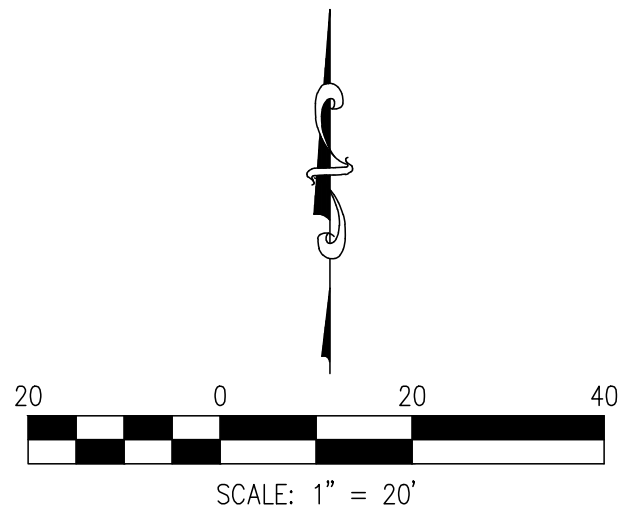
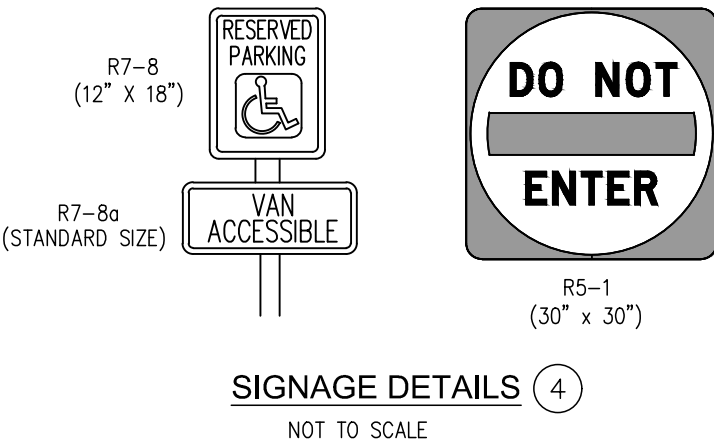
EXISTING LEGEND			
	POWERPOLE		CONTOURS
	POWERPOLE W/RISER		PROPERTY LINE
	LIGHT POLE		EASEMENT LINE
	ELECTRIC METER		RIGHT-OF-WAY
	ELECTRIC BOX		ADJOINER LINE
	YARD LIGHT		PAVEMENT LINE
	GUIDE WIRE		FIELD LINE
	TELEPHONE MANHOLE		DITCH
	TELEPHONE RISER		GAS LINE
	WATER VALVE		TELEPHONE LINE
	FIRE HYDRANT		WATER LINE
	WELL		FIBER OPTIC LINE
	WATER MANHOLE		ELECTRIC LINE
	WATER METER		TREE LINE
	GAS VALVE		SANITARY SEWER W/MANHOLE
	CABLE TV RISER		STORM SEWER W/MANHOLE
	CLEANOUT		END SECTION
	SIGN		
	MAILBOX		
	STORM ROUND INLET		
	STORM CURB INLET		
	RIGHT-OF-WAY MARKER		
	(D) DEEDED (M) MEASURED (P) PLATTED		
	TEMP. BENCHMARK		ASPHALT
	MONUMENT FOUND		GRAVEL
			BUILDING
			WOODS
			CONCRETE
			REMOVAL
			DEMOLISH

PROPOSED LEGEND	
	PROPERTY LINE
	SECTION LINE
	SETBACK LINE
	EASEMENT LINE
	DITCH LINE
 PSL PSL PSL PSL	SANITARY SEWER LATERAL WITH CHIMNEY
	ROOF DRAIN
	ELECTRIC LINE
 PWS PWS PWS PWS PWS	WATER SERVICE LINE
 PG PG PG PG PG	GAS LINE
	WATER VALVE
	WATER VALVE
	ELECTRIC TRANSFORMER
	SIGN

PARKING ANALYSIS		
INDUSTRIAL USE		
EMPLOYEES	=	5 EMPL./TENANT
REQUIRED RATIO	=	1 SPCS/EMPL.
BUSINESS VEHICLE	=	1 SPCS/TENANT
TOTAL REQUIRED SPACES	=	24 SPACES
STANDARD PARKING SPACES	=	25 SPACES
HANDICAP ACCESSIBLE SPACES	=	1 SPACES
TOTAL PROPOSED PARKING SPACES	=	26 SPACES

SITE DIMENSION LEGEND		
(A)	MULCH SEEDING/LANDSCAPE AREAS	
(B)	STRUCTURE FOUNDATION - PER BUILDING PLANS	
(C)	STRAIGHT CONCRETE CURB (SEE DETAIL-SHEET 800)	
(D)	4" CONCRETE SIDEWALK (SEE DETAIL-SHEET 800)	
(DI)	MONOLITHIC CONCRETE CURB AND SIDEWALK (SEE DETAIL-SHEET 800)	
(G)	TYPICAL CONCRETE SECTION	
(H)	6" PORTLAND CEMENT CONCRETE PAVEMENT ON 7" COMPACTED AGGREGATE #53 ON COMPACTED SUBGRADE (SEE DETAIL-SHEET 800)	
(J)	TRASH ENCLOSURE (SEE DETAIL-SHEET 800)	
(K)	SAWCUT	
(L)	TYPICAL ASPHALT SECTION	
(M)	1.5" HMA SURFACE TYPE 'B' 9.5mm, ON 3.5" HMA INTERMEDIATE TYPE 'B' 19.0mm, ON 8" COMPACTED AGGREGATE #53, ON COMPACTED SUBGRADE (SEE DETAIL-SHEET 800)	
(N)	PIPE BOLLARD (SEE DETAIL-SHEET 800)	
(O)	CONCRETE PARKING BARRIER (SEE DETAIL-SHEET 800)	
(P)	LINE, PAINTED, SOLID WHITE, 4"	
(Q)	LINE, PAINTED, SOLID BLUE, 4"	
(R)	HANDICAP SYMBOL, PAINTED, SOLID BLUE, 4" (SEE DETAIL-SHEET 800)	
(S)	SIGNAGE (SEE DETAIL THIS SHEET)	

SITE DIMENSION NOTES		
1.	THE BUILDING FOOTPRINT SHOWN HEREON IS BASED ON ARCHITECTURAL DRAWINGS DATED MARCH 30, 2019 WHICH WERE PROVIDED AND PREPARED BY AVERA COMMERCIAL, LLC. CONTRACTOR SHALL VERIFY BUILDING DIMENSIONS, DOOR LOCATIONS, UTILITY SERVICE REQUIREMENTS, ETC. WITH AVERA COMMERCIAL PRIOR TO CONSTRUCTION.	
2.	CONTRACTOR SHALL NOTIFY ENGINEER, IF PROOF ROLL OF SUBGRADE FAILS, TO DETERMINE IF LIME STABILIZATION OF SUBGRADE IS NECESSARY.	
3.	ALL RADII DIMENSIONS ARE TO THE FACE OF PROPOSED CURB OR EDGE OF PAVEMENT.	
4.	SIGNAGE SHALL INCLUDE ALL NECESSARY HARDWARE AND FITTINGS, INCLUDING 10 FT. OF 11 GAUGE FLANGED CHANNEL SIGN POST.	
5.	REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL SIGNAGE. VERIFY CONFLICTS WITH OWNER.	
6.	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.	
7.	CONTRACTOR SHALL VERIFY ALL NECESSARY REQUIREMENTS FOR TRASH ENCLOSURE WITH OWNER AND/OR ARCHITECT PRIOR TO CONSTRUCTION.	
8.	CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANY AND BUILDING PLANS FOR WATER, CABLE, ELECTRIC, GAS, AND TELEPHONE CONNECTION SERVICE POINTS.	
9.	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.	



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



TRANSPORTATION & DEVELOPMENT CONSULTANTS

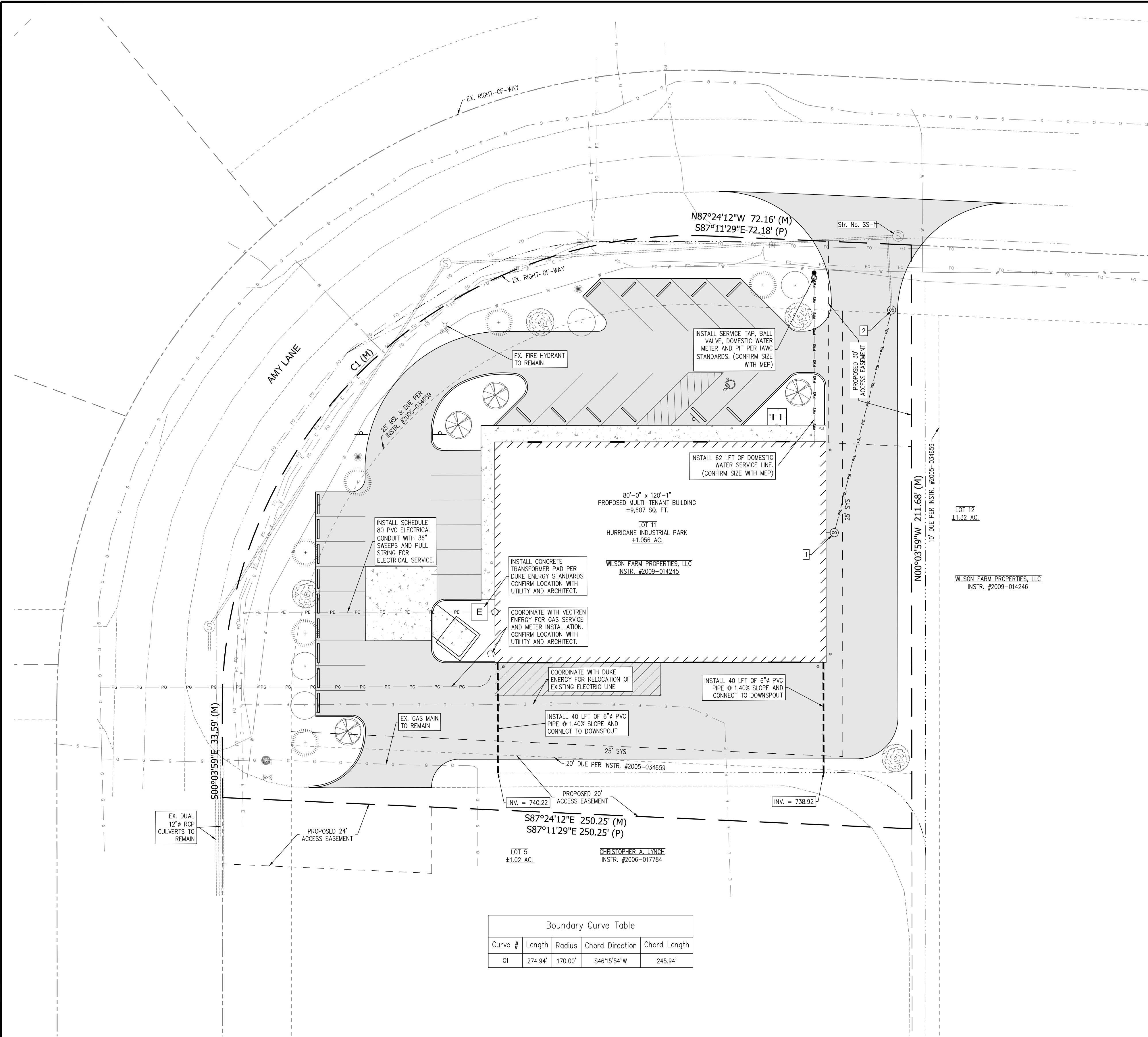
SITE DIMENSION PLAN

HURRICANE INDUSTRIAL PARK - LOT 11

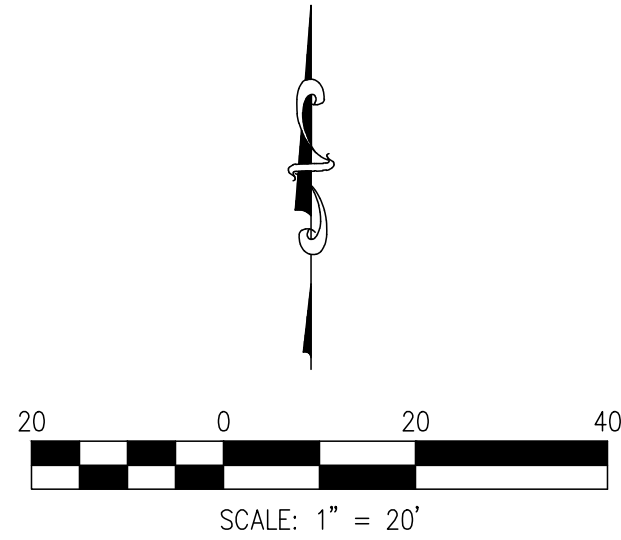
JOB No.	TECN	CJJ
DATE	DECEMBER 5, 2019	
DRAWN	LWC/KLF	DMS
DESIGNED		
NO.	1	DATE
2	01.06.20	
3		
4		
5		
6		
7		
8		
9		

REVISIONS
REVISIONS PER TRC COMMENTS DATED 12.26.19

SHEET 300



Boundary Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C1	274.94'	170.00'	S46°15'54"W	245.94'



- UTILITIES NOTES
1. THE UTILITY SERVICE POINT ENTRY LOCATIONS SHOWN HEREON ARE CONCEPTUAL. THE CONTRACTOR SHALL VERIFY ALL SERVICE POINTS WITH THE UTILITY COMPANY, ARCHITECT AND AVERA COMMERCIAL, LLC PRIOR TO CONSTRUCTION.

2. CONTRACTOR SHALL CONFIRM DOMESTIC WATER METER REQUIREMENTS, INCLUDING BUT NOT LIMITED TO THE LOCATION AND SIZE, WITH THE ARCHITECT AND INDIANA AMERICAN WATER COMPANY (IAWC) PRIOR TO CONSTRUCTION.

3. WATER SERVICE, METER PIT AND METER INSTALLATIONS SHALL BE IN ACCORDANCE WITH INDIANA AMERICAN WATER COMPANY (IAWC) STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL CONTACT IAWC (1-800-492-8373) FOR NEW SERVICE REQUEST AND WATER METER APPLICATION.

4. 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.

5. CONTRACTOR SHALL COORDINATE WITH APPLICABLE UTILITY COMPANIES AND BUILDING PLANS FOR WATER, CABLE, ELECTRIC, AND TELEPHONE CONNECTION SERVICE POINTS.

6. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW DRAINAGE FACILITIES.

7. CONTRACTOR SHALL VERIFY LOCATION OF DOWNSPOUTS WITH THE ARCHITECT PRIOR TO INSTALLING ROOF DRAIN PIPE. ALL ROOF DRAIN PIPE SHALL BE NON-PERFORATED PVC EQUIPPED WITH ANIMAL GUARDS AT THE OUTLETS.

8. 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.

PROPOSED LEGEND

	PROPERTY LINE
	SECTION LINE
	SETBACK LINE
	EASEMENT LINE
	DITCH LINE
	SANITARY SEWER LATERAL WITH CLEANOUT
	ROOF DRAIN
	ELECTRIC LINE
	WATER SERVICE LINE
	GAS LINE
	WATER VALVE
	WATER VALVE
	ELECTRIC TRANSFORMER
	SIGN

SANITARY STRUCTURE DATA TABLE

STR. NO. SS-1

RECONSTRUCT EXISTING SANITARY SEWER MANHOLE TO GRADE

EX. RIM=740.55
PROP. RIM=741.47

SANITARY LATERAL DATA TABLE

INSTALL SANITARY CLEANOUT AND PVC (SDR-35) SANITARY LATERAL AT 1.50% MIN. SLOPE. CONTRACTOR SHALL CONFIRM LATERAL INVERT AND EXIT LOCATION WITH BUILDING PLANS.

RUN	U.S. INVERT	DIAMETER	LENGTH	SLOPE
1	738.00	6"	83'	1.50%
2	MATCH EXISTING	6"	N/A	MATCH EXISTING

NOTE: CONTRACTOR SHALL INSTALL CLEANOUT #2 AND CONNECT TO EXISTING LATERAL. VERIFY DEPTH PRIOR TO CONSTRUCTION AND REPORT TO ENGINEER IF THE MINIMUM SLOPE CANNOT BE PROVIDED.



CROSSROAD ENGINEERS, PC
TRANSPORTATION & DEVELOPMENT
11770 N. 11TH AVENUE
SUITE 100
CROSSVALE, INDIANA 46033
317.780.3333
CROSSROADENGINEERS.COM

400
SHEET

UTILITY PLAN

HURRICANE INDUSTRIAL PARK - LOT 11

JOB No.

DATE

DECEMBER 5, 2019

DRAWN

DESIGNED

DMS

APPR.

CJJ

9

8

7

6

5

4

3

2

1

NO.

DATE

REVISIONS

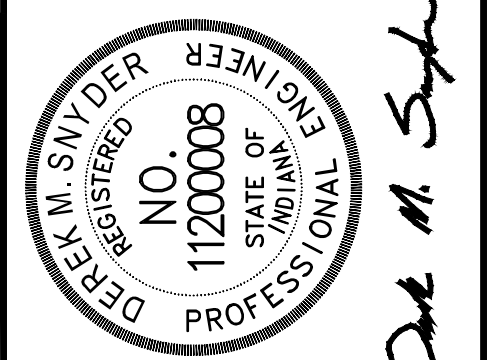
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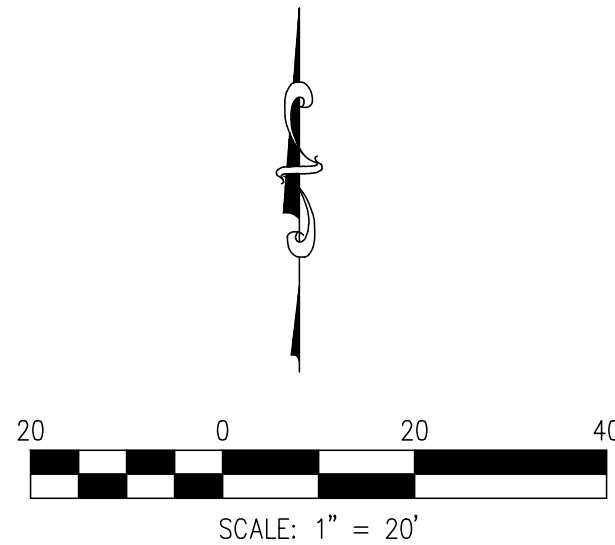
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APPR.

CJJ

DMS





1. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING IN FINAL GRADING OF SITE. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT TO DETERMINE PROPER FOUNDATION EXPOSURE FOR THE BUILDING, HOWEVER, IN NO INSTANCE SHALL DRAINAGE TOWARDS THE BUILDING FOUNDATION BE ALLOWED.
2. CONTRACTOR SHALL NOT ALLOW DRAINAGE FROM PROJECT SITE TO DISCHARGE ONTO ADJACENT PROPERTIES IN FINAL GRADING OF SITE. CONTRACTOR SHALL PLACE A BERM WHERE NECESSARY. SEE DITCH DETAIL (SHEET 800).

X	860.00	CURB	PROPOSED ELEVATIONS
X	852.50	EDGE OF PAVEMENT	
X	860.00	FINISH GRADE	
X	860.00	*	PROPOSED ELEVATIONS
X	852.50	*	(TO BE FIELD VERIFIED)
X	860.00	*	
	F.F. ELEV. = XXX.XX		PROPOSED FINISH FLOOR ELEVATION
-----			PROPOSED DRAINAGE SWALE
-----	- 800		EXISTING CONTOURS
-----	- 800		PROPOSED CONTOURS

THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) WAS ASCERTAINED FROM UCS AND GS SECOND ORDER BENCHMARK DNR TM HC 8 A 1988

DESIGNATION - DNR TM HC 8 A 1988
VERT. ORDER - SECOND

DESCRIPTION:
DNR TM HC 8 A 1988

IN JOHNSON COUNTY, FRANKLIN QUADRANGLE, IN THE NE $\frac{1}{4}$ OF SECTION 13, TOWNSHIP 12 NORTH, RANGE 4 EAST, 2ND P.M.; AT FRANKLIN, AT THE 100 NORTH ROAD BRIDGE OVER HURRICANE CREEK, SET IN THE TOP OF THE CONCRETE CONTOUR WINGWALL OF THE BRIDGE, 15.2 FEET NORTH OF THE CENTERLINE OF THE ROAD, 1.2 FEET NORTH OF THE NORTH FACE OF THE BRIDGE DECK, 0.9 FOOT EAST OF THE WEST FACE OF THE WINGWALL, 0.8 FOOT SOUTH OF THE NORTH FACE OF THE WINGWALL, 0.3 FOOT BELOW THE ROAD; A "PK" NAIL SET IN A DRILL HOLE, INSIDE A CUT CURVE.

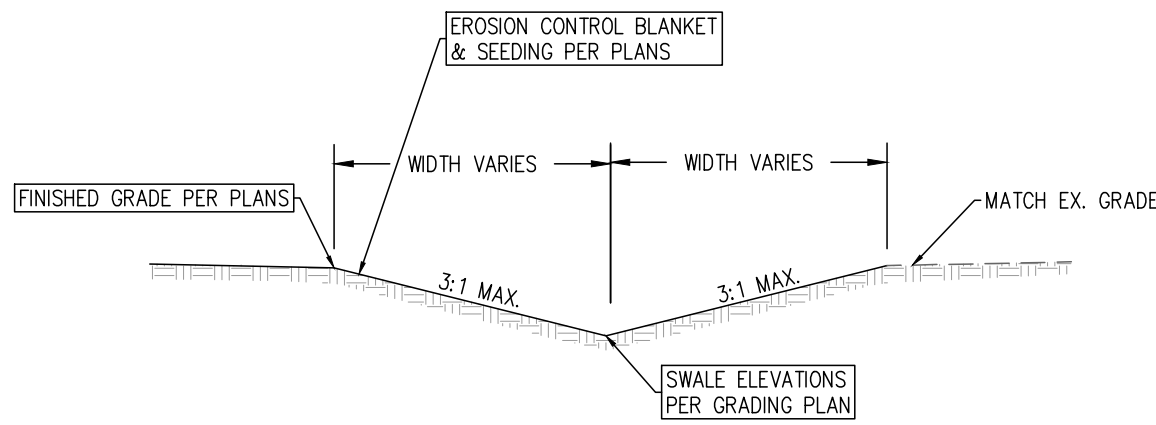
ELEV.=730.449 (NGVD 29)

TM #455
CUT SQUARE ATOP CONCRETE END SECTION

ELEV.=738.08

BY GRAPHIC PLOTTING ONLY, THIS TRACT OF LAND DESCRIBED HEREON LIES WITHIN ZONE 'X' (AREAS DETERMINED TO BE 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. 18081C0231D, WHICH BEARS AN EFFECTIVE DATE OF AUGUST 02, 2007.

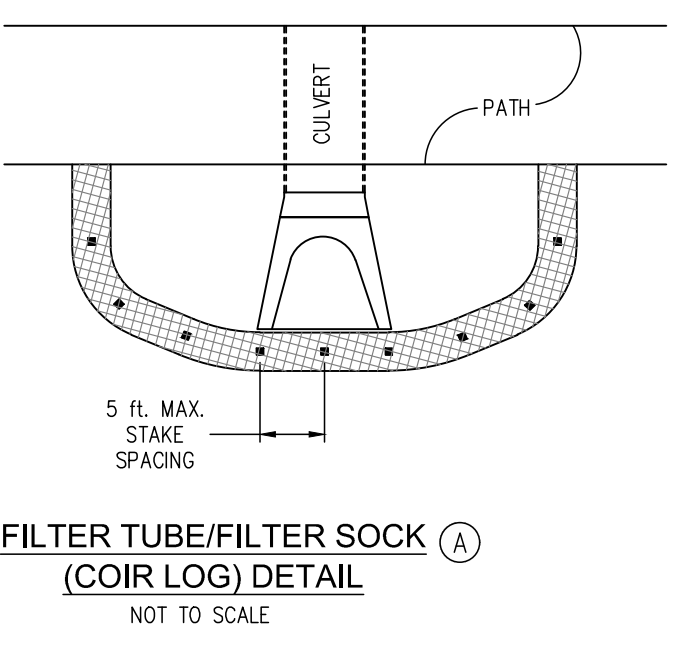
Boundary Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C1 (M)	274.94'	170.00'	S46°15'54"W	245.94'



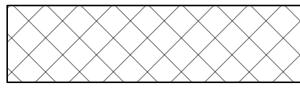
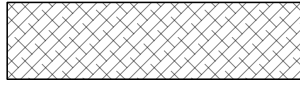
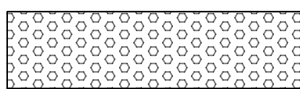


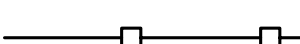

TYPICAL SWALE SECTION

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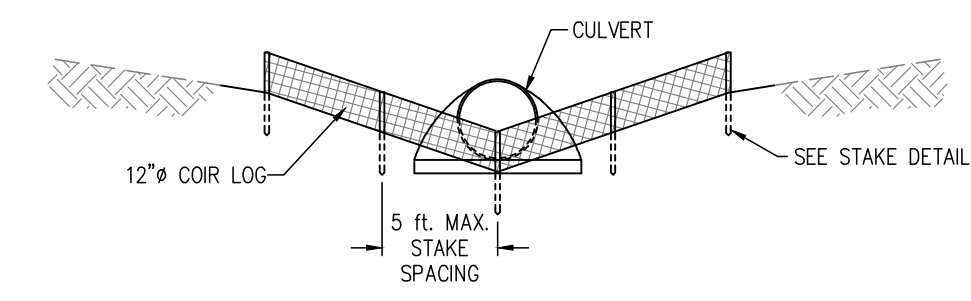
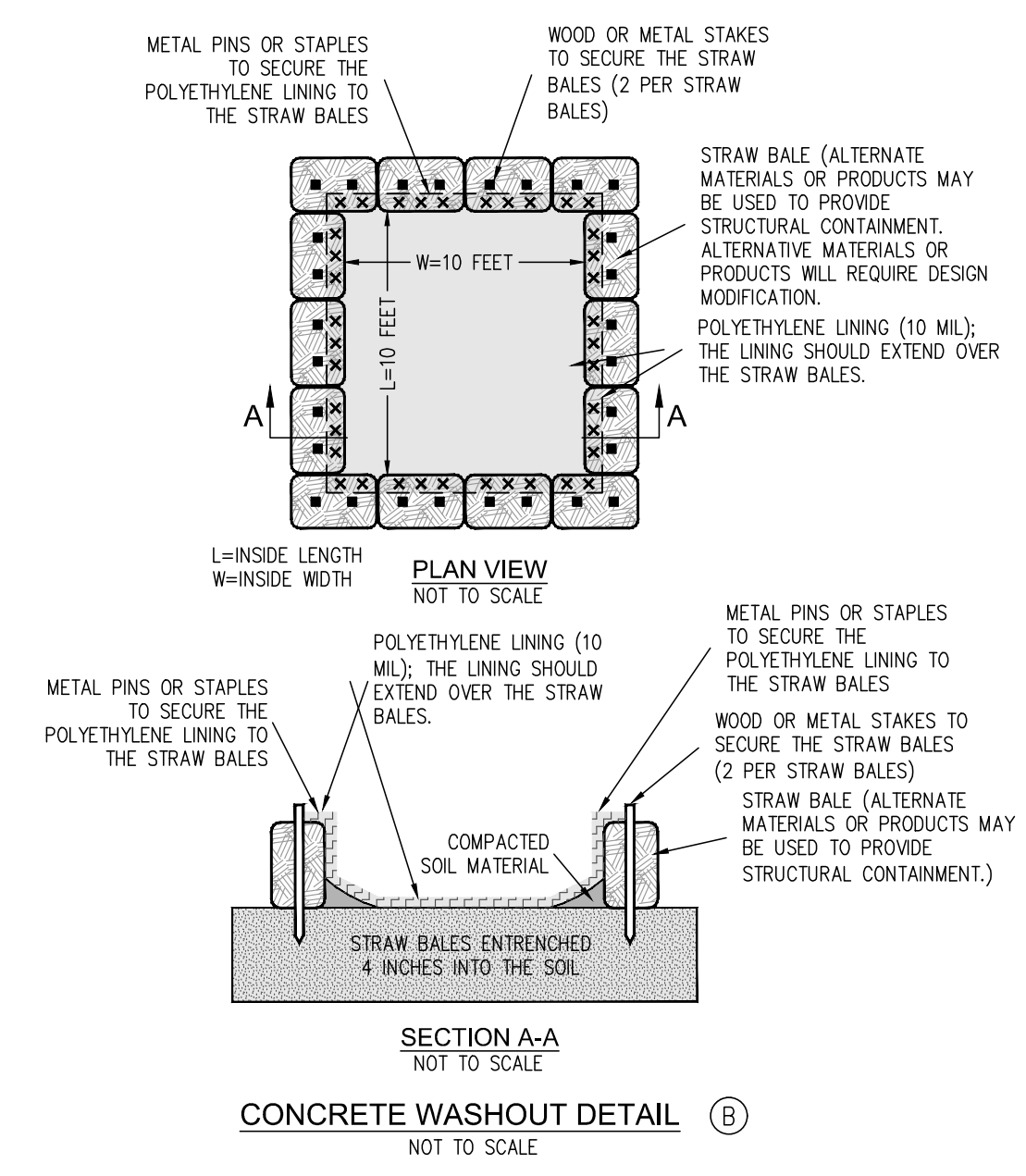
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DATE/USER : 1/3/2020 2:16 PM / Kfigg



Boundary Curve Table				
Curve #	Length	Radius	Chord Direction	Chord Length
C1 (M)	274.94'	170.00'	S46°15'54"W	245.94'

- # EROSION CONTROL LEGEND
- | | |
|---|--|
|  | MULCHED SEEDING |
|  | EROSION CONTROL BLANKET (NORTH
AMERICAN GREEN SC-150 OR EQUAL)
AND MULCHED SEEDING |
|  | CONSTRUCTION ENTRANCE (SEE DETAIL—THIS SHEET) |
|  | EXISTING CONTOURS |
|  | PROPOSED CONTOURS |
|  | SILT FENCE SLOPE CHECK
(NUTEC 3 NWS-6 OR APPROVED EQUAL) |
|  | CONSTRUCTION LIMITS |
| (A) | FILTER TUBE/COIR LOG (SEE DETAIL—THIS SHEET) |
| (B) | CONCRETE WASHOUT AREA (SEE DETAIL—THIS SHEET) |
| (C) | ROCK CHECK DAM (SEE DETAIL—THIS SHEET) |

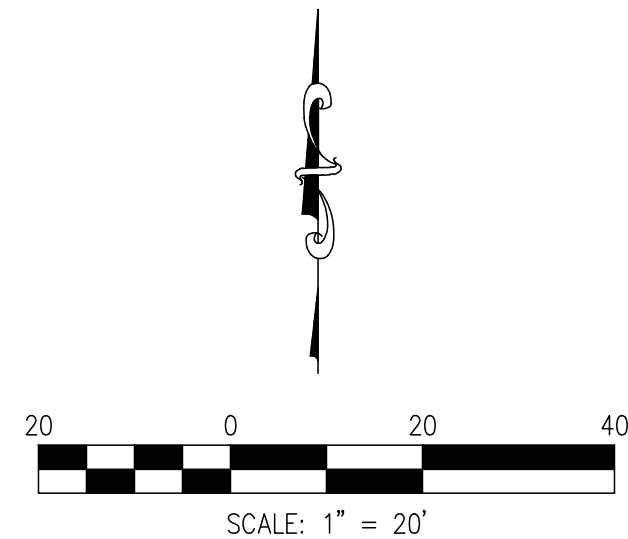
- # EROSION CONTROL NOTES
1. THE TOTAL LAND DISTURBANCE FOR THIS PROJECT IS APPROXIMATELY _____ ACRES.
 2. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE, COUNTY, OR LOCAL OFFICIALS.
 3. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED IN THE FIELD BY THE INSPECTOR.
 4. THERE SHALL BE NO DIRT, DEBRIS, OR STORAGE OF MATERIALS IN THE STREET.
 5. STAGING AREA TO INCLUDE NO POSTING, PORT-O-LETS, TRASH CONTAINER, AND FUELING TANKS. CONTRACTOR TO SELECT SUITABLE LOCATION FOR STAGING AREA.
 6. ALL PORT-O-LETS MUST BE ANCHORED DOWN TO PREVENT SLIPS.
 7. A TRAINED INDIVIDUAL MUST PERFORM AN INSPECTION ONE WEEK AND AFTER 2ND OR MORE RAIN EVENT. A LOG OF THE INSPECTION REPORTS MUST BE KEPT AND MADE AVAILABLE TO THE TOWN INSPECTOR UPON REQUEST.
 8. ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE INDIANA STORM WATER QUALITY MANUAL.
 9. TEMPORARY MULCHING SEEDING SHALL BE UTILIZED IN AREAS LEFT UNDISTURBED FOR MORE THAN 7 DAYS.
 10. CONTRACTOR SHALL INSTALL ALL REQUIRED EROSION CONTROL MEASURES MAY BE REQUIRED BY THE APPROXIMATE AUTHORITY IN THE FIELD.





PROPOSED LEGEND	
	PROPERTY LINE
	SECTION LINE
	SETBACK LINE
	EASEMENT LINE
	DITCH LINE
	SANITARY SEWER LATERAL WITH CLEANOUT
	ROOF DRAIN
	ELECTRIC LINE
	WATER SERVICE LINE
	GAS LINE
	WATER VALVE
	WATER VALVE
	ELECTRIC TRANSFORMER
	SIGN

Boundary Curve Table			
Curve #	Length	Radius	Chord Direction
C1 (M)	274.94'	170.00'	S46°15'54"W
			245.94'



LANDSCAPE NOTES

- CONTRACTOR SHALL REMOVE ALL EXISTING VEGETATION AND STRIP TOPSOIL FOR STOCKPILING. CONTRACTOR SHALL LEAVE ALL PROPOSED LANDSCAPE AREAS SIX INCHES BELOW FINAL GRADE AND SPREAD A LIGHTLY COMPACTED SIX INCH LIFT OF TOPSOIL IN ALL LANDSCAPE AREAS - BRINGING THESE AREAS TO TOP OF CURB/FINAL GRADE (COMPACTED).
- CONTRACTOR SHALL INSTALL THREE INCHES OF SHREDDED HARDWOOD BARK MULCH AS A TOP DRESSING FOR ALL TREE RINGS.
- PLANT MATERIALS FROM THE CITY OF FRANKLIN'S "QUALIFYING BROAD LEAF/DECIDUOUS TREES" LIST MAY BE SUBSTITUTED FOR THOSE SHOWN HEREON WITH PRIOR APPROVAL OF THE ENGINEER.
- PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOBSITE BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE LANDSCAPE MAINTENANCE OF THIS PROJECT UNTIL FINAL ACCEPTANCE. TURF AREAS WILL NOT BE ACCEPTED UNTIL THEY ARE AT A MINIMUM OF 1-1/2 INCHES TALL AND NO BARE AREAS LARGER THAN 12 SQUARE INCHES.
- TREES SHALL BE PLANTED AT LEAST TWO AND ONE-HALF FEET (2'-6") FROM SIDEWALK OR CURB EDGE.

LANDSCAPE LEGEND

SHRUBS

DY ● (2) TOTAL - 18" MIN. HEIGHT
TAXUS X M 'DENSIFORMIS'
DENSE SPREADING YEW

TREES

WH (4) TOTAL - 2 1/2" CALIPER
CRATAEGUS PHAENOPYRUM
WASHINGTON HAWTHORNE

RM (6) TOTAL - 2 1/2" CALIPER
ACER RUBRUM 'RED SUNSET'
RED SUNSET MAPLE

RO (4) TOTAL - 2 1/2" CALIPER
QUERCUS BOREALIS
RED OAK

BO (4) TOTAL - 2 1/2" CALIPER
QUERCUS MACROCARPA
BUR OAK

GROUND COVER

SEED AND MULCH ±18,538 SQ. FT.
LOW MAINTENANCE MIX AS AVAILABLE FROM
INDIANA SEED SOLUTIONS 65% TALL FESCUE,
25% PRG, 10% OR FESCUE

STREET TREE LANDSCAPING
(1 STREET TREE PER 35 LINEAR FEET OF STREET FRONTAGE)

LENGTH	TREES REQUIRED	TREES PROVIDED	SHRUBS REQUIRED	SHRUBS PROVIDED
381'	11	11	2	2

PARKING LOT PERIMETER LANDSCAPING
(1 DECIDUOUS/EVERGREEN TREE & 1 SHRUB PER 80 LINEAR FEET OF LANDSCAPE AREA)

LENGTH	TREES REQUIRED	TREES PROVIDED	SHRUBS REQUIRED	SHRUBS PROVIDED
160'	2	2	2	2

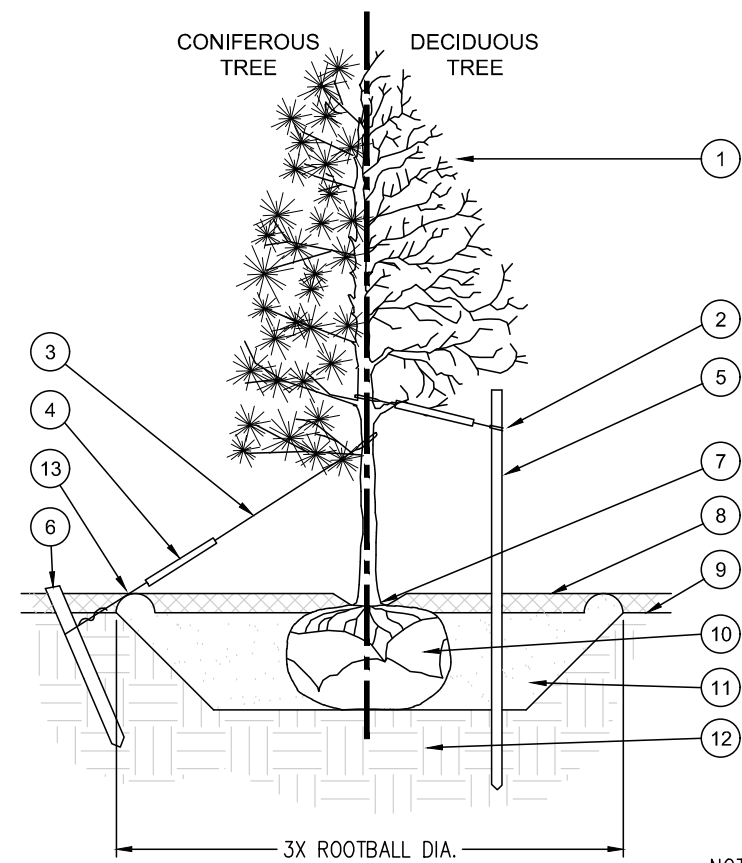
INTERIOR PARKING LOT LANDSCAPING
(5% MIN. INTERIOR PARKING LOT LANDSCAPING W/1 DECIDUOUS TREE PER 300 S.F. LANDSCAPE AREA REQUIRED)

PAVED SURFACE AREA	INTERIOR LANDSCAPE PROVIDED	TREES REQUIRED	TREES PROVIDED
21,076 S.F.	1,310 S.F. (6.2%)	4	4

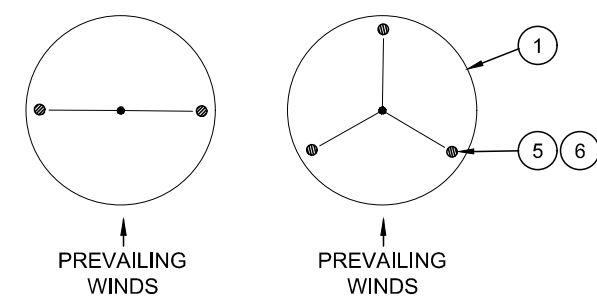
PROPERTY INTERIOR LANDSCAPING
(1 DECIDUOUS OR EVERGREEN TREE PER 5,000 S.F. YARD AREA REQUIRED)

REQUIRED OPEN SPACE	YARD AREA	TREES REQUIRED	TREES PROVIDED
11,503 S.F.	6,313 S.F.	1	1

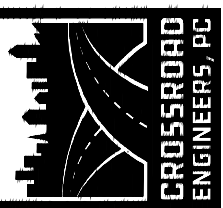
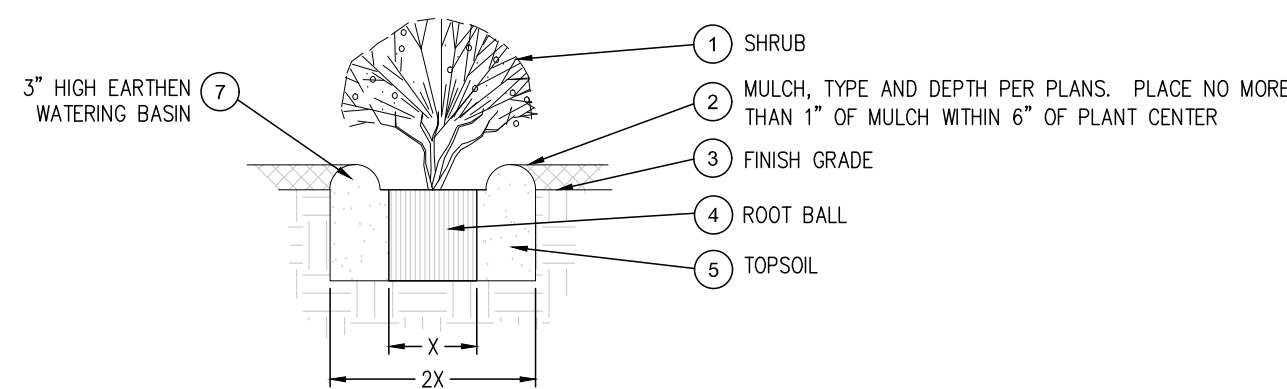
NOTE: OPEN SPACE CALCULATION BASED ON 75% MAX. LOT COVERAGE. YARD AREA CALCULATION BASED ON OPEN SPACE MINUS INTERIOR LANDSCAPE AND PERIMETER PARKING AREAS PER ORDINANCE.



STAKING EXAMPLES (PLAN VIEW)



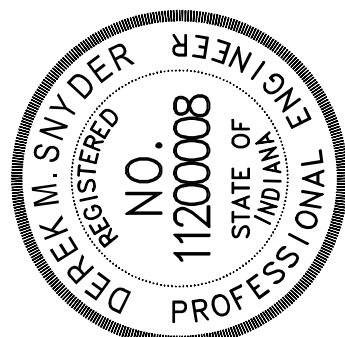
TREE PLANTING DETAILS
NOT TO SCALE



LANDSCAPE PLAN

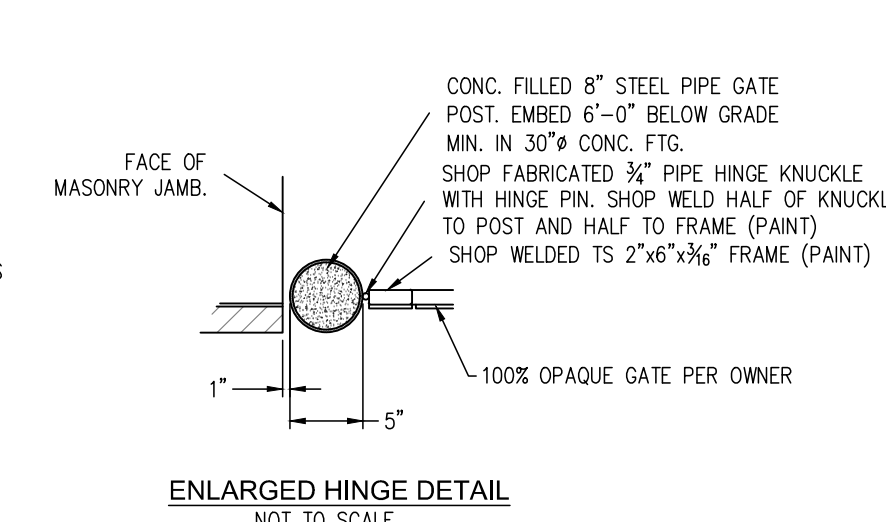
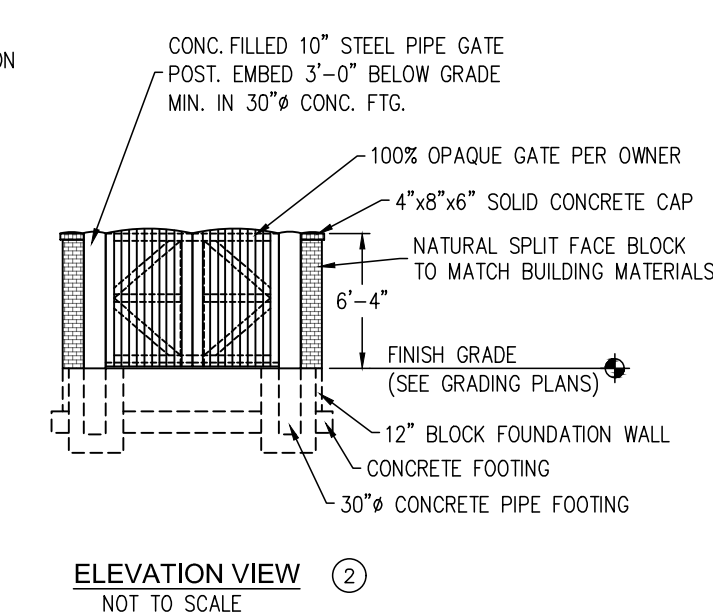
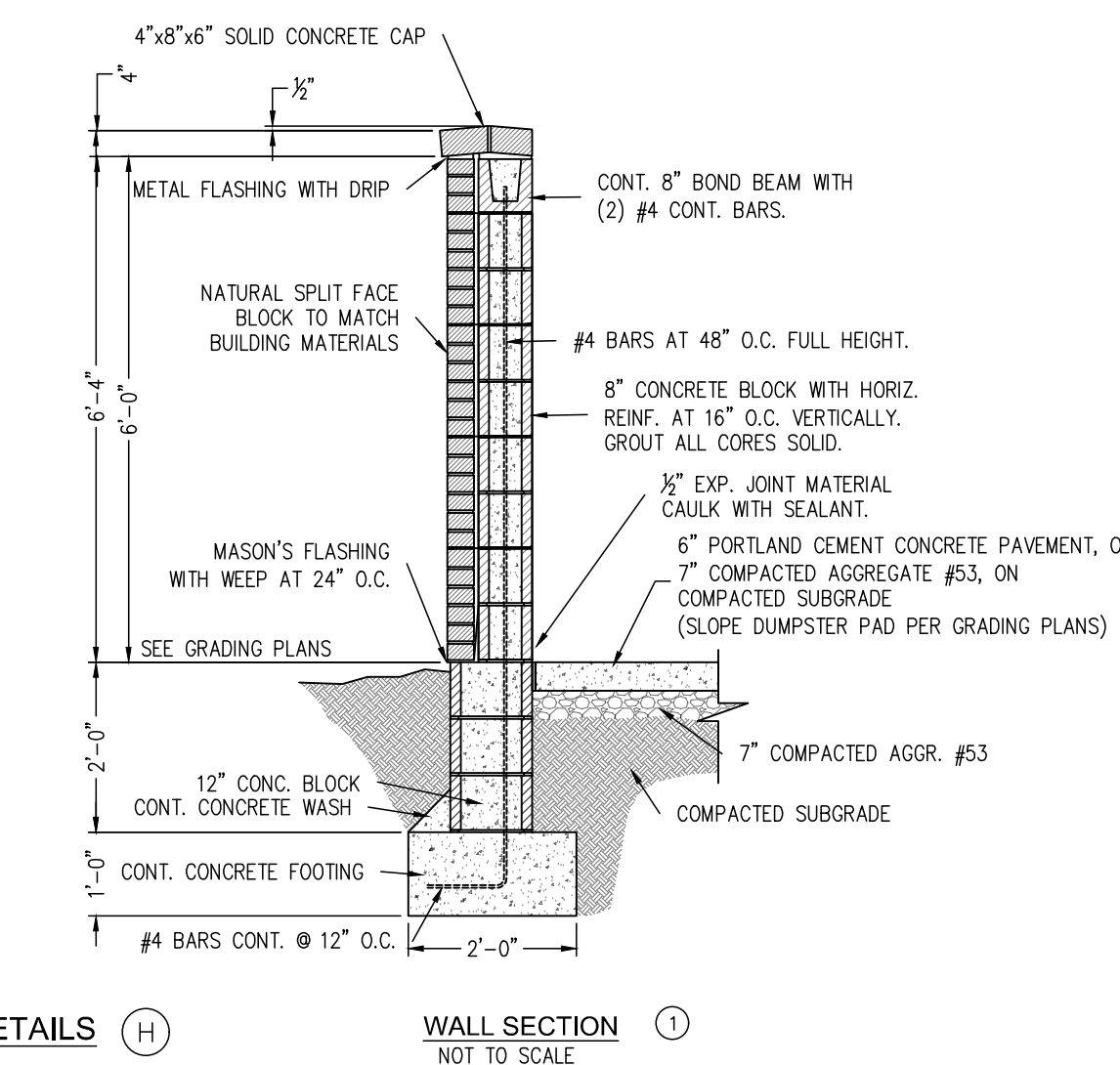
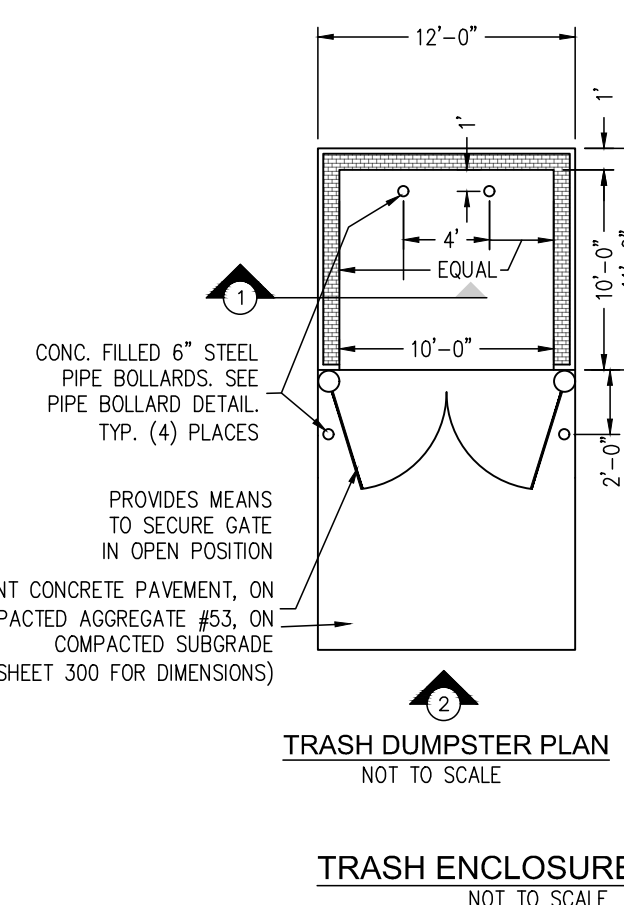
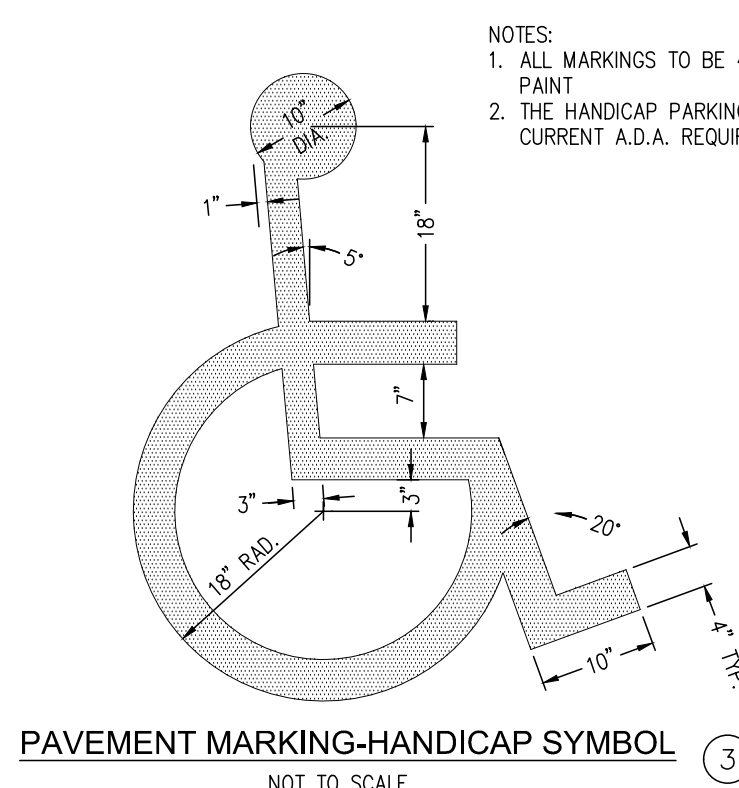
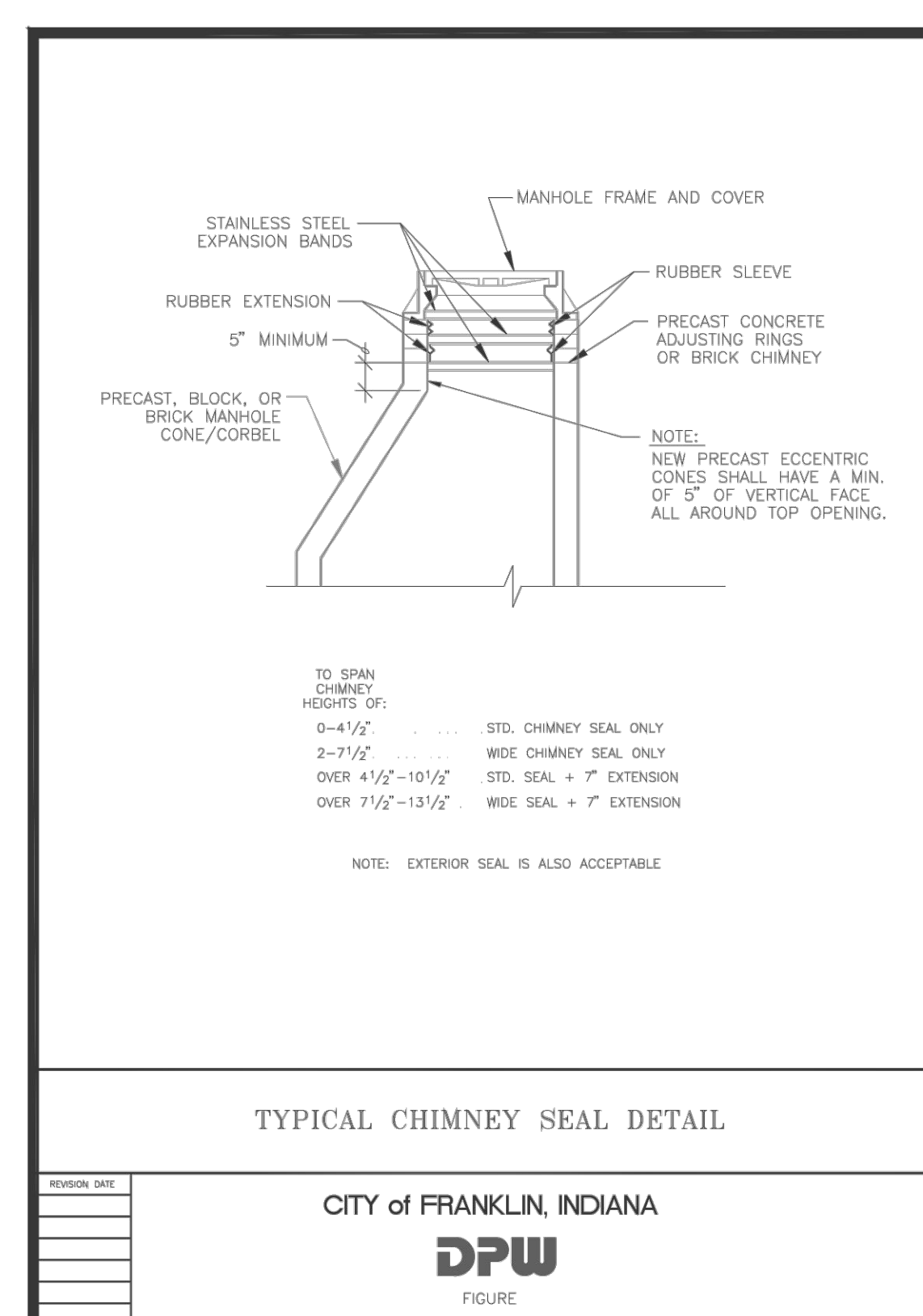
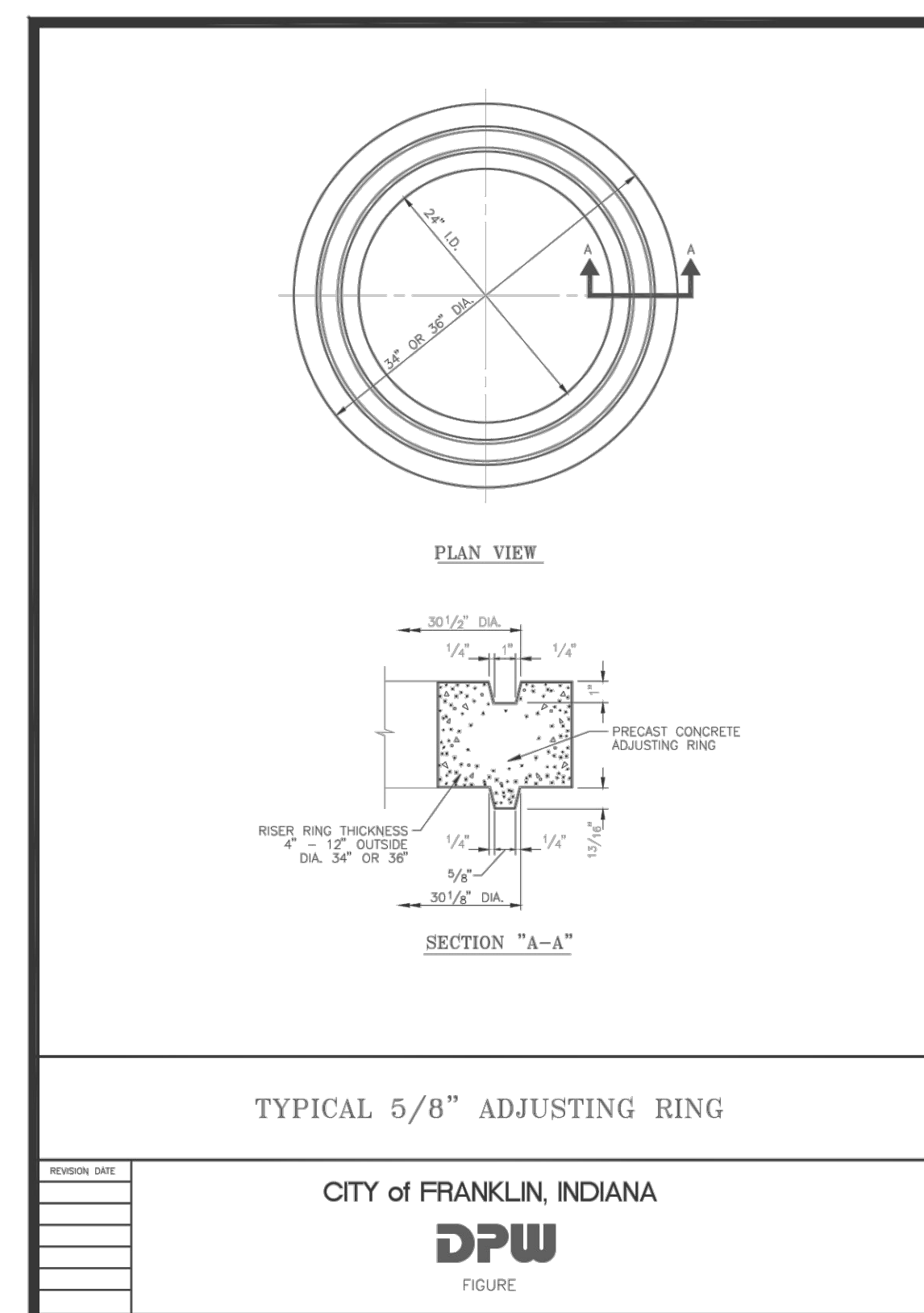
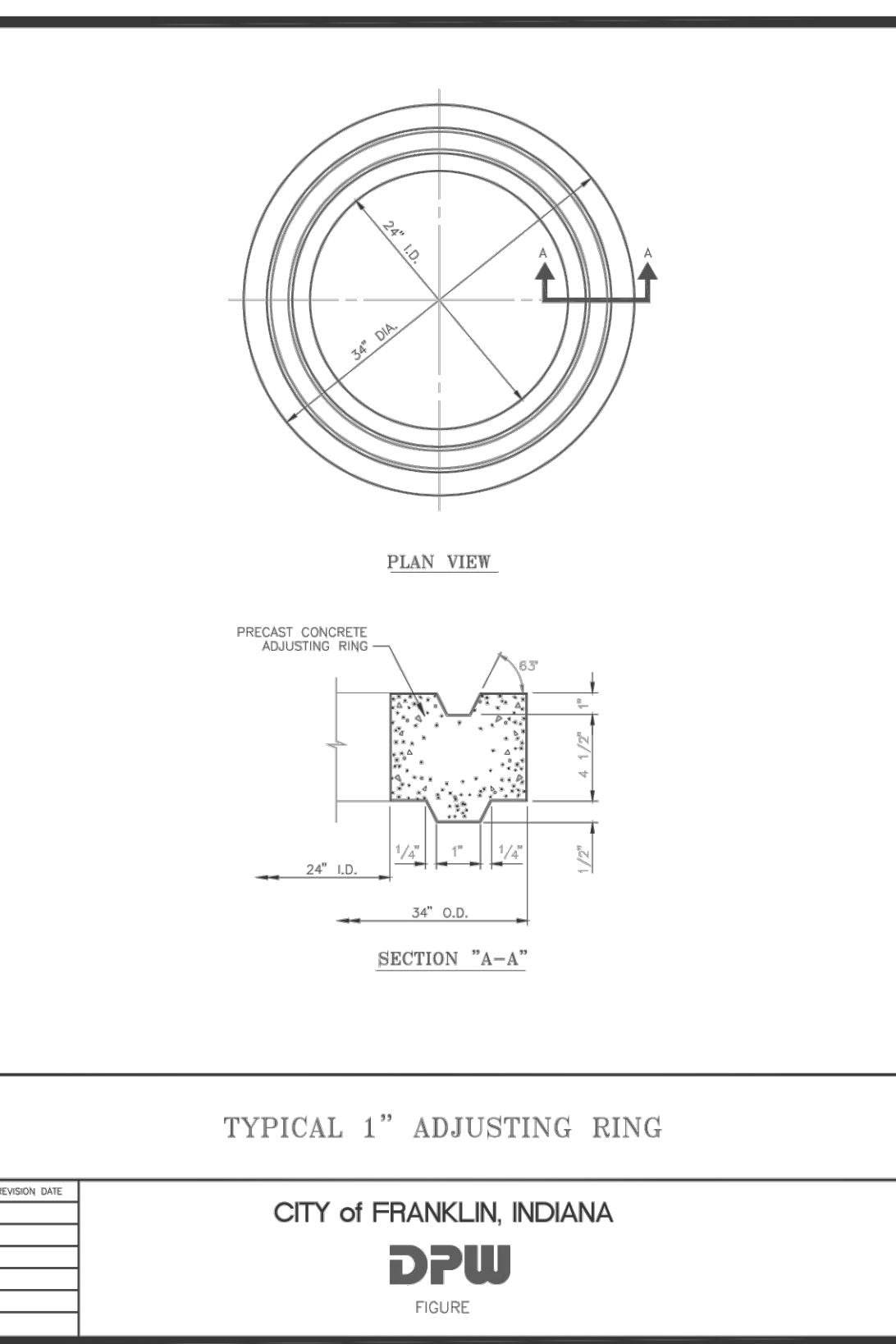
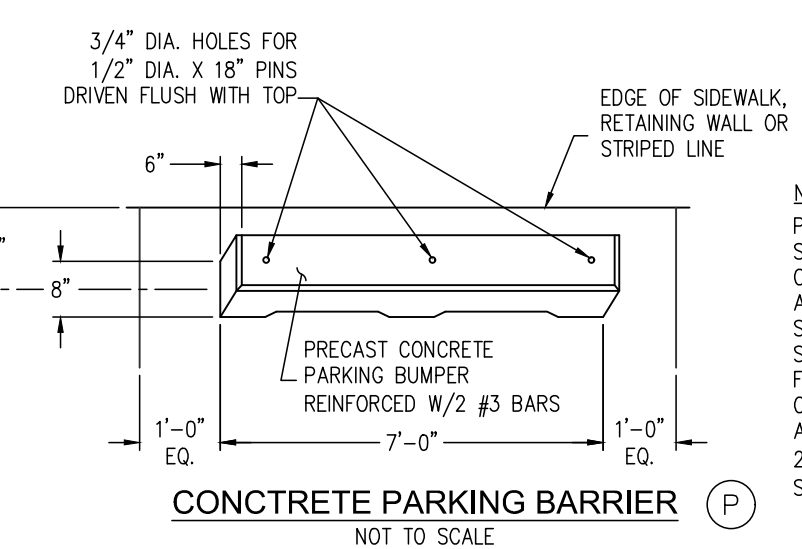
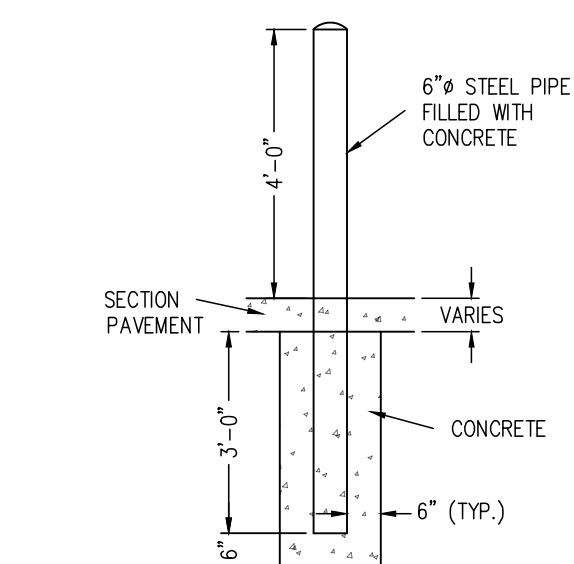
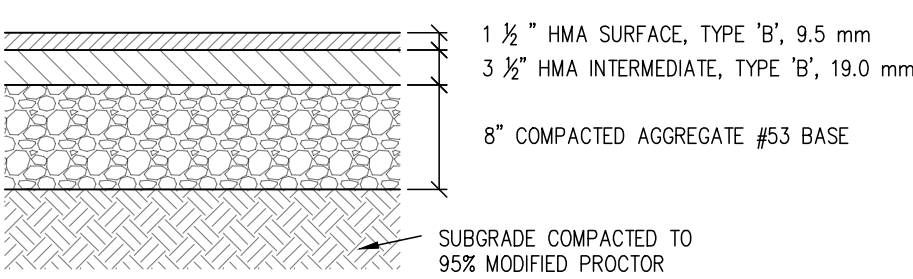
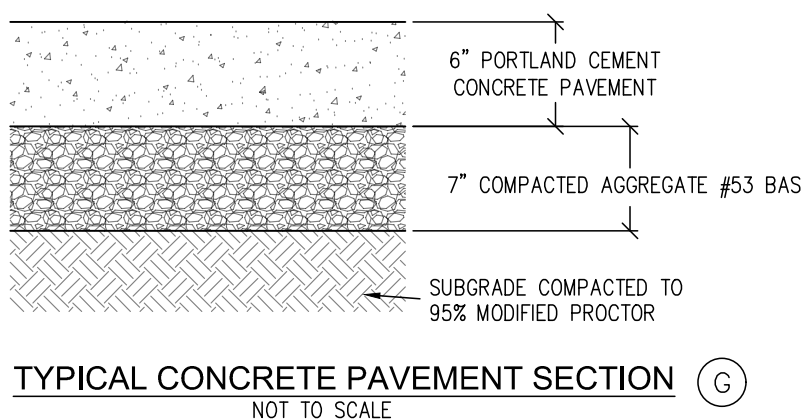
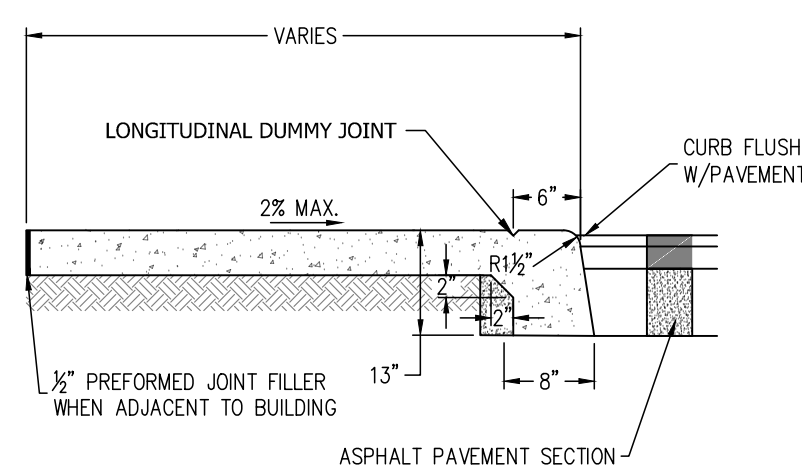
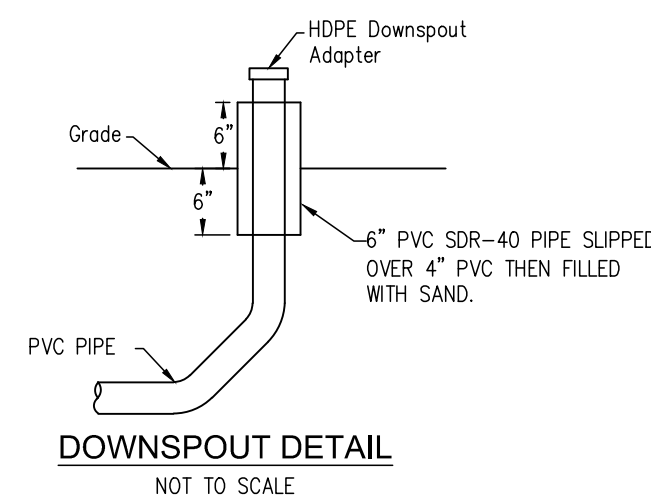
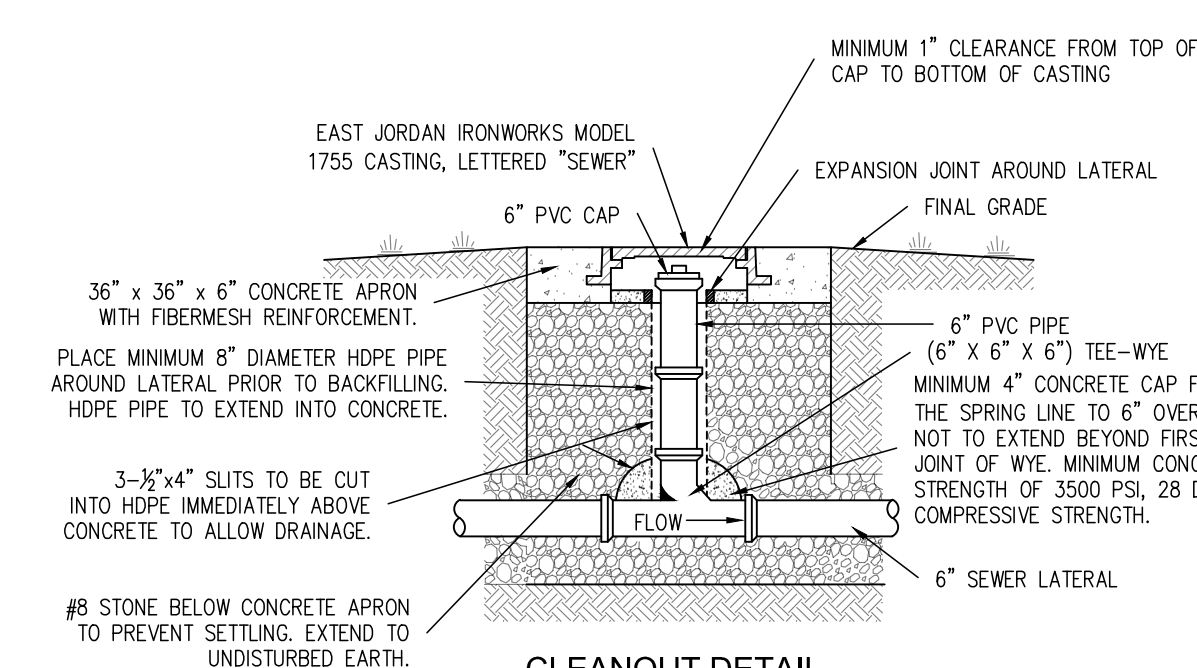
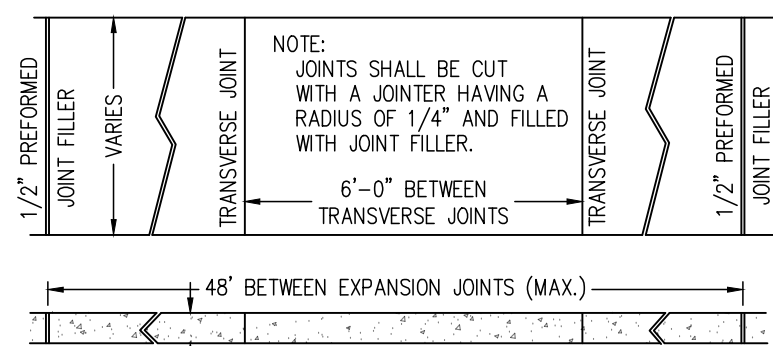
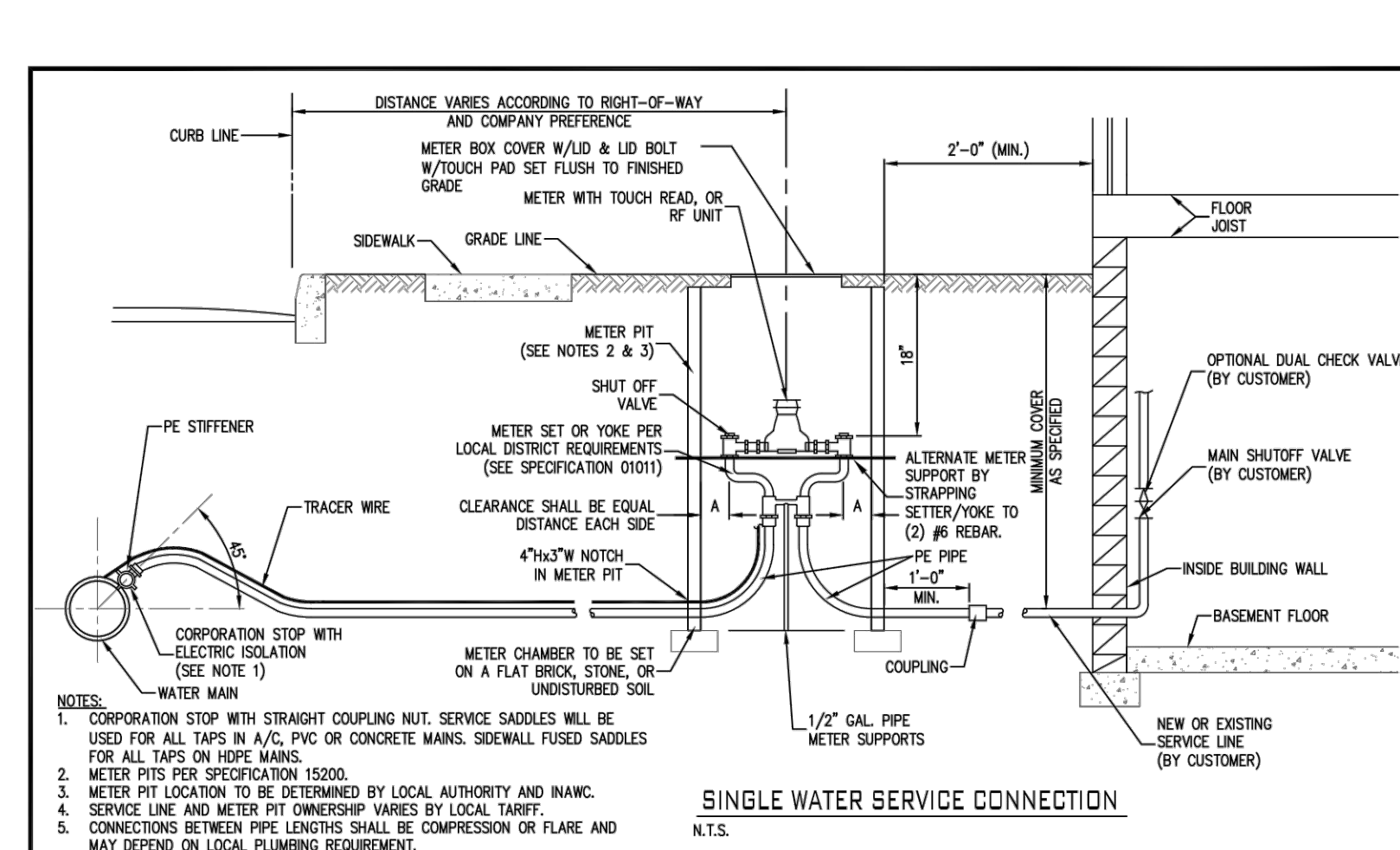
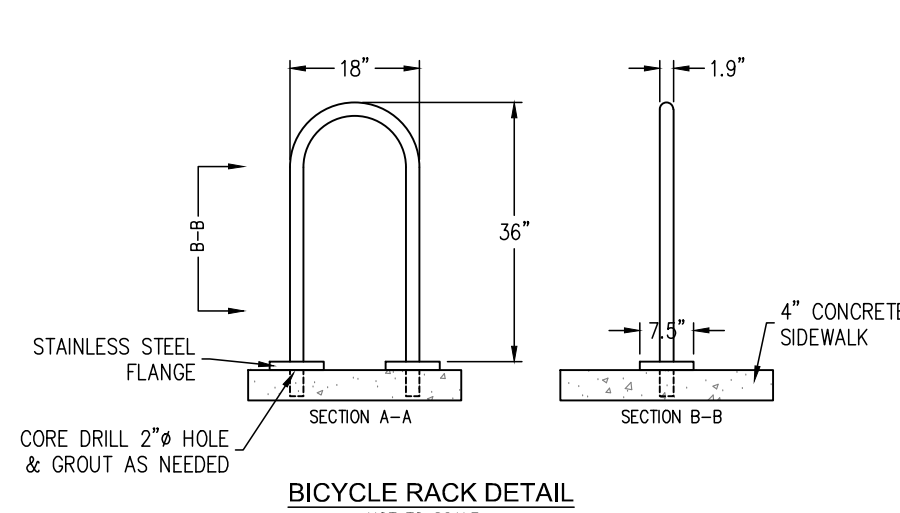
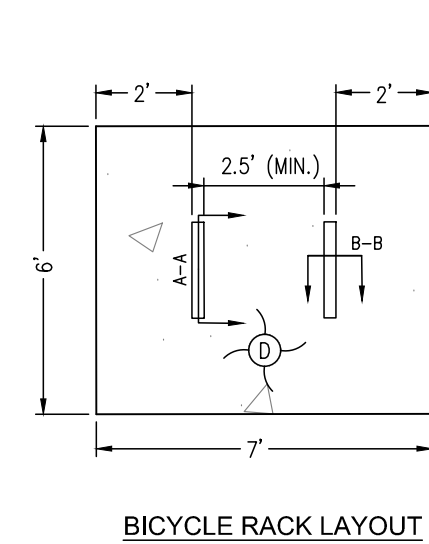
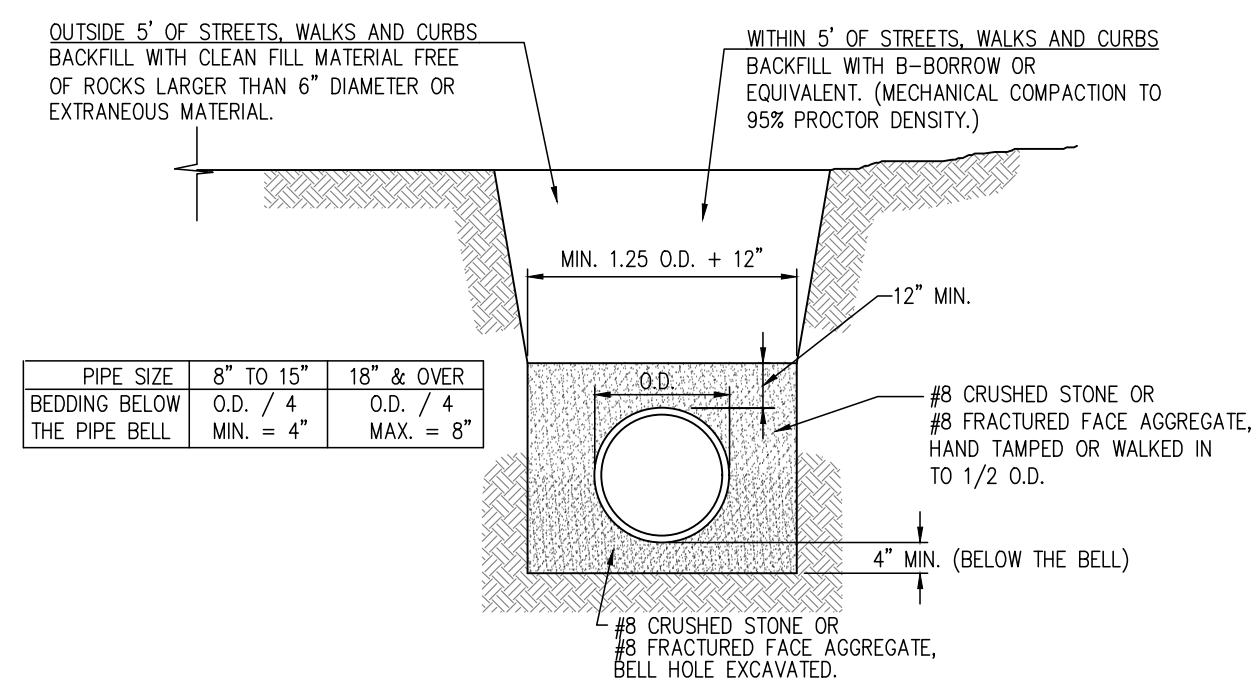
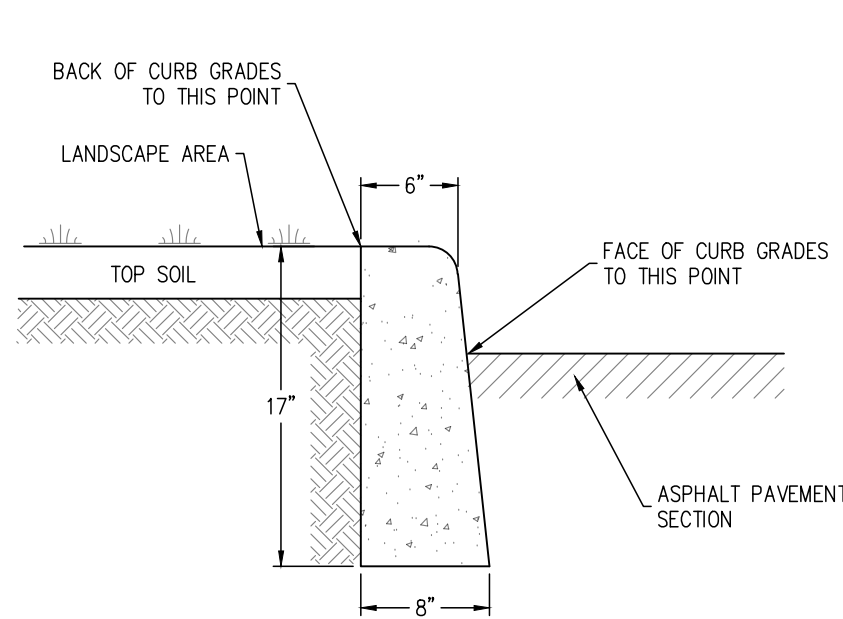
HURRICANE INDUSTRIAL PARK - LOT 11

JOB NO.	DRAWN	DESIGNED	DATE	APPR.	SHEET
			DECEMBER 5, 2019		700



Date: 11/5/19

NO.	DATE	REVISIONS	BY	APPR.
9				
8				
7				
6				
5				
4				
3				
2				
1	01.06.20	REVISIONS PER PRC COMMENTS DATED 12.26.19		



EARTHWORK

- 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 FILL, 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 SITE AS NECESSARY TO PROVIDE THE GRADES REQUIRED. FILL OBTAINED FROM OFF SITE SHALL BE OF KIND AND QUALITY AS SPECIFIED FOR FILL 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 PRESERVED 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 OF THE SITE. DISPOSAL BY BURNING SHALL NOT BE PERMITTED UNLESS PROPER PERMITS ARE OBTAINED (WHERE APPLICABLE).
4. HANDLING OF TOPSOIL
- A. PRESERVE ALL PLANTING MATERIAL FROM THE AREAS TO BE LOCATED 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 REASONABLY FREE OF SUBSOIL, DEBRIS, WEEDS, GRASS, STONES, ETC.
- B. AFTER COMPLETION OF SITE GRADING AND SUBSURFACE UTILITY INSTALLATION, TOPSOIL BE REPLACED IN AREAS DESIGNATED ON THE EROSION CONTROL PLAN FOR SEEDING AND/OR SOODING. 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, COVERED OR CAPPED AS DIRECTED BY THE UTILITY COMPANY OR THE ENGINEER.
- D. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO VERIFY ALL EXISTING UTILITIES AND CONDITIONS PERTAINING TO HIS PHASE OF THE PROJECT. 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 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. GENERAL: PAVING PLACEMENT SHALL BE LESS THAN 10" DEEP, UNLESS OTHERWISE ACCEPTABLE. ARCHITECT/ENGINEER SHALL FIRST STRIP SHALL BE BEEN PLACED AND ROLLED. PLACE SUFFICIENT STRIPS AND EXTEND ROLLING TO OVERLAP PREVIOUS STRIPS, COMPLETE BEND COURSE FOR A SECTION BEFORE PAVING SURFACE COURSE.
- B. JOINTS: MAKE JOINTS BETWEEN OLD AND NEW PAVEMENTS, OR BETWEEN PAVES, PASSES, OR BETWEEN SUCCESSION DAYS WHEN PAVING. JOINTS SHALL BE PLACED IN SUCH A MANNER AS TO AVOID JOINTS TO HAVE SAME TEXTURE, DENSITY AND SMOOTHNESS AS OTHER SECTIONS. CLEAN CONTACT SURFACES AND APPLY TACK COAT.
6. ROLLING
- A. GENERAL: BEGIN ROLLING WHEN MIXTURE WILL BEAR ROLLER WEIGHT WITHOUT EXCESSIVE DISPLACEMENT.
1. COMPACT MIXTURE WITH HOT HAND TAMPERS OR VIBRATING PLATE COMPACTORS IN AREAS INACCESSIBLE TO ROLLERS.
2. BREAKDOWN ROLLING: ACCOMPLISH BREAKDOWN OR INITIAL ROLLING IMMEDIATELY FOLLOWING ROLLING OF JOINTS AND OUTSIDE AREAS. CHECK SURFACE AFTER BREAKDOWN ROLLING, AND REPAIR DISPLACED AREAS BY LOOSING AND REGRADING IF REQUIRED, WITH HOT MATERIAL.
3. SECOND ROLLING: FOLLOW BREAKDOWN ROLLING AS SOON AS POSSIBLE, WHICH MIXTURE IS HOT. CONTINUE SECOND ROLLING UNTIL MIXTURE HAS BEEN THOROUGHLY COMPACTED.
4. FINISH ROLLING: PERFORM FINISH ROLLING WHILE MIXTURE IS HOT. ROLL ENOUGH FOR REMOVAL OF ROLLER MARKS; CONTINUE ROLLING UNTIL ROLLER MARKS ARE ELIMINATED AND COURSE HAS ATTAINED MAXIMUM DENSITY.
5. 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.
6. PROTECTION: AFTER FINAL ROLLING, DO NOT PERMIT VEHICULAR TRAFFIC ON PAVEMENT UNTIL IT HAS COOLED AND HARDENED.
7. 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. STRIPING: USE CHLORINATED RUBBER BASE FRICT LANE-MARKING PAINT, FACTORY MIXED QUIK-DRYING AND NON-BLEEDING.
- C. COLOR: WHITE, BLUE
- 1) DO NOT APPLY TRAFFIC AND LANE MARKING PAINT UNTIL LAYOUT AND PLACEMENT HAS BEEN VERIFIED WITH ARCHITECT/ENGINEER.
- 2) APPLY PAINT WITH APPROPRIATE EQUIPMENT TO PRODUCE UNIFORM STRAIGHT EDGES. APPLY IN TWO COATS AT MANUFACTURER'S RECOMMENDED RATES.
8. FIELD QUALITY CONTROL
- A. TESTING AND INSPECTION SERVICE:
- 1) OWNER SHALL EMPLOY A TESTING LABORATORY TO PERFORM PAVEMENT TESTING AND INSPECTION SERVICE FOR QUALITY CONTROL DURING PAVING OPERATIONS.
- 2) 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 LOT OF BITUMINOUS AGGREGATE SERVICE FOR EACH PAVING OPERATION. LABORATORY TESTS SHALL BE PERFORMED ON THESE SAMPLES TO DETERMINE ADEQUATE GRADATION AND ASPHALT CONTENT.
- 1) 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.
- 2) TEST SECTION A₁ TO 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: $\frac{1}{8}"$, PLUS OR MINUS
- BASE COURSE: $\frac{1}{4}"$, PLUS OR MINUS
- SURFACE COURSE: $\frac{1}{8}"$, PLUS OR MINUS
- 1) 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 COURSE:

MINOR ADJUSTMENTS TO THE GRADES MAY BE REQUIRED TO ACHIEVE EARTHWORK BALANCES WHEN 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' STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION, AND 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 EXCESS OR SHORTAGE OF ACTUAL EARTHWORK MATERIALS OCCURS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF ADJUSTMENTS CAN BE MADE TO CORRECT THE IMBALANCE OF EARTH.

STREETS

- 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. ITEMS NOT LIMITED TO:
1. ALL STREETS, PARKING AREAS WITHIN THE CONTRACT LIMITS.
2. CURBS AND CONCRETE RAMPS.
3. SIDEWALKS AND CONCRETE SLABS.
- 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 REQUIREMENTS 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: SAND, 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 COURSE AGGREGATE: SAND, ANGULAR CRUSHED STONE, CRUSHED OR UNCRUSHED GRAVEL OR CRUSHED SLAB, SAND, STONE, OR SLAG SCREENINGS. COARSE AGGREGATES SHALL BE CLASS A OR B AND CONFORM TO I.N.D.O.T. STANDARD 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 GRADE 4 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).
3. ASPHALT-AGGREGATE MIXTURE
- A. ALL BITUMINOUS MIXTURES ARE TO CONFORM TO CURRENT I.N.D.O.T. SPECIFICATIONS
- B. SURFACE COURSE: HMA SURFACE 9.5mm
- C. BINDER COURSE: HMA INTERMEDIATE 19.0mm
- D. BASE COURSE: TYPE HMA BASE 25.0mm
- *MODIFIED 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 SUBGRADE SURFACE IMMEDIATELY BEFORE APPLYING PRIME COAT.
- 1) 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 $\frac{1}{4}$ " DEFLECTION, CONTRACTOR SHALL COORDINATE WITH ENGINEER AND CITY OF FRANKLIN TO DETERMINE IF SUBGRADE STABILIZATION IS REQUIRED.
- 2) 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.
- 1) NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING WORK UNTIL DEFICIENT AGGREGATE BASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING.
- 2) 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 $\frac{3}{4}$ 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: SURFACE: SUBGRADE SHALL BE PRIMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 408 OF I.N.D.O.T. STANDARD SPECIFICATIONS.
- D. HOT ASPHALT CEMENT 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.
- WEARING COURSE SURFACE: 1/8"
- i) CHECK SURFACE AREAS AT INTERVALS AS DIRECTED BY TESTING SERVICE.
- F. DENSITY TESTS: DENSITY TESTS SHALL BE MADE AT EACH LIFT. TEST SHALL BE AS FOLLOWS:
- 1) DENSITY 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) SUBMIT 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 AASHTO T-99. WATER SHALL BE PREVENTED FROM STANDING ON THE COMPACTED SUBGRADE.
- D. UNIFORM STRUCTURES: THE CORRECT ELEVATION OF ALL CURBS, GUTTERS, VALVE BOXES AND ANY 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. MATERIAL: PLACE NO CONCRETE ON A WOODY OR FROZEN SUBGRADE.
2. FORMS: ALL FORMS SHALL BE FREE FROM WARP, TILT 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 702.01 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 SAVED JOINTS SPACED TO FEET ON CENTER.
3. FINISH: TAMP AND SLORED CONCRETE AS SOON AS PLACED, AND FILL ANY HONEY COMBED PLACES WITH FINISH SQUARE CONCRETE. PROVIDE 1/4 INCH RADIUS AND OTHER CORNERS TO RADIUS SHOWN.
4. CONCRETE WALKS AND EXTERIOR STIPS
- 1) SLOPES: PROVIDE $\frac{1}{4}$ INCH PER FOOT CROSS SLOPE. MAKE ADJUSTMENTS ON SLOPES AT WALK INTERSECTIONS AS NECESSARY TO PROVIDE PROPER DRAINAGE.
- 2) DIMENSIONS: WALKS AND STIPS SHALL BE ONE COURSE CONSTRUCTION AND OF WIDTHS AND DETAILS SHOWN ON THE DRAWINGS.
- 3) FINISH: SOREDED CONCRETE AND TROWEL WITH A STEEL TROWEL TO A HARD SNEED SURFACE AFTER SURFACE WATER HAS DISAPPEARED. APPLY MEDIUM BROOM FINISH AND SCREE TRANSVERSE JOINTS AT 6' FOOT SPACING. PROVIDE $\frac{1}{4}$ INCH EXPANSION JOINTS BETWEEN 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 UNDER UNFAVORABLE WEATHER OR WHEN THE TEMPERATURE IS 40 DEGREES F. AND FALLING.
- J. COMPACTED AGGREGATE SUBGRADE: THE THICKNESS SHOWN ON THE DRAWINGS IS THE MINIMUM THICKNESS OF THE FULL COMPACTED SUBGRADE. 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) IN 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, SUCH AS PRECAST CONCRETE AND CAST-IN-PLACE CONCRETE 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 (N.D.O.T.) STANDARD SPECIFICATION.
 3. WHEN PRECAST 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 ALUMINUM UNLESS OTHERWISE SPECIFIED AND SHALL HAVE TO BE CORNER HANDS AND SEALS AS SPECIFIED BY THE MANUFACTURER. C.M.P. SHALL BE ALUMINIZED PIPE IN ACCORDANCE WITH A.S.T.M. A-444.
 5. MANHOLES, CHUTE 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 HIGHWAY DEPARTMENTS DRAINAGE PROJECT TO CONSTRUCTION.
 6. FOR ALL CONTRACTOR ELECTIONS OF PRECAST STRUCTURES, HE SHALL SUBMIT SHOP DRAWINGS 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-115.
 8. CASTINGS SHALL BE AS SHOWN ON THE DETAIL SHEET(S) FOR MANUFACTURER, TYPE AND MODEL NUMBER.
 9. NUMBER 63 STONE BACKFILL SHALL BE REQUIRED UNDER ALL PAVEMENT AREAS AND TRENCHES WITHIN THE 4' TO 6' DEPTH OF THE EDGE OF THE PAVEMENT.
 10. ALL TRENCHES UNDER PAVEMENT SHALL BE COMPACTED TO 95 PERCENT MODIFIED PROCTOR.

A. PERMITS AND CODES: THE

- 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 CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ANY HAZARDS. 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 UTILITY SEWERS AND OTHER DRAINS ENCOUNTERED IN THE SEWER INSTALLATION. THE CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION ALL EXISTING SEWERS AND OTHER DRAINS DAMAGED BY THE WORK.
- 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 TO TRENCH PIPE IN PLACE OF PIPE LAYING TO AVOID EXISTING 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 BE DONE IN ACCORDANCE WITH THE LOCAL AND STATE STANDARDS. ALL TRENCHES SHALL BE PROTECTED WITH WATER WHEEL CONSTRUCTION IS IN PLACE. UNDER NO CIRCUMSTANCES SHALL PIPE OR APPURTENANCES BE LAID IN STANDING WATER. TRENCH DISCHARGE FROM TRENCH DEWATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.
- F. SOILS: THE CONTRACTOR, 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.
- G. BACKFILL: THE CONTRACT SHALL BE ADJUSTED AS FOLLOWS:
1. BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. NOTE THAT PVC & HDPE PIPE SHALL BE COVERED WITH 12" MINIMUM OF #8 STONE. COVER THIS BACKFILL THOROUGHLY, TAKING CARE NOT TO DISTURB THE PIPE, BACKFILL UNDER AND WITHIN 5 FEET OF WALLS, PARKING AREAS, DRIVEWAYS AND STREETS SHALL BE "B" BORROW OR EQUIVALENT GRANULAR MATERIAL, ONLY AND THOROUGHLY COMPACTED.
2. BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS.
- 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 SEWER. MANHOLE INVERTS SHALL BE LOCATED AT THE CORRECT ELEVATION AND SLOPE INDICATION BY TRUE CURVES.
- I. SUBORDRANS: PROVIDE CHANNELS FOR ALL CONNECTING SEWERS AT EACH MANHOLE.
- J. 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.
- K. 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 ALL UTILITIES OF HIS PLANS, AND ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE UTILITIES OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.

WATER LINE SYSTEM

- 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 6-900 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 BE RESPONSIBLE FOR OBTAINING ALL NECESSARY 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 CONDITIONS: THE CONTRACTOR SHALL MAINTAIN IN OPERATION ALL EXISTING UTILITIES, 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. WORK COVERED: THIS WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY ALL LOCAL AND STATE AGENCIES HAVING JURISDICTION. THE CONTRACTOR SHALL FOLLOW 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 TRENCHING UNDER EXISTING STRUCTURES. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING 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. WHEN CONSTRUCTION IS IN PROGRESS, UNDER NO CIRCUMSTANCES SHALL PIPE BE ALLOWED TO BE LAID IN STANDING WATER. CONDUCT THE DISCHARGE FROM TRENCH DE-WATERING TO DRAINS OR NATURAL DRAINAGE CHANNELS.
 - F. SPECIAL REQUIREMENTS: IF IN THE OPINION OF THE ENGINEER, THE SOIL AT OR BELOW THE PIPE GRADE IS UNSUITABLE FOR SUPPORTING PIPE AND APPURTEANCES SPECIFIED IN THIS SECTION, SUCH SPECIAL SUPPORT, IN ADDITION TO THOSE SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT.
 - 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 DRIVEWAYS SHALL BE BUILT UP TO THE FINISHED GRADE. THE CONTRACTOR SHALL BACKFILL 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 OWNER OF THE UTILITIES TO BE LOCATED PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR 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

- ## 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 PLANS. STARTING CURB, CURB CUTS, BUTTS AND JOINTS OF SEWERS SHALL BE THOROUGHLY PUGHED 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. ALL SDR PIPE AND FITTINGS SHALL CONFORM TO ASTM D3080 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.
 2. THE EXTERIOR OF THE MANHOLE SHALL BE WATERPROOFED WITH BISMATIC MATERIAL.
 3. 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 OTHER MEANS APPROVED BY THE ENGINEER. ALL CASTINGS SHALL BE FINISHED WITH 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-3P FRAME W/ASHT-S SEALING APPLICATION.
 4. ALL MANHOLE SECTIONS SHALL BE JOINED WITH A NOMINAL 1/2 INCH SIZE BUTYL RUBBER BASE GASKET MATERIAL CONFORMING TO M/SFTO M-198 AND FEDERAL SPECIFICATION SS-5-210A. JOINTS SHALL CONFORM TO ASTM C-443.
 5. MANHOLES SHALL INCLUDE STEPS. SANITARY SEWER STANDARDS REQUIRE THAT THAT STEPS ARE TO BE POLYPROPYLENE COATED STEEL, REINFORCING OR AN APPROVED NON-CORROSIVE FIBERGLASS MATERIAL. THE COPOLYMER POLYPROPYLENE SHALL MEET THE REQUIREMENTS OF ASTM-D4011 WITH DEFORMED 3/8 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. JOINTARY SEWERS CONSTRUCTED WITH POLY VINYL CHLORIDE (PVC) AND INSTALLED UNDER RAILROADS SHALL BE CASED IN CONFORMANCE WITH AWWA STANDARD C900-89, STANDARD FOR POLY VINYL CHLORIDE (PVC) PRESSURE PIPE, 4 IN. THROUGH 12 IN. FOR WATER DISTRIBUTION, APPENDIX A.

1. APPLICATION
2. PERMITS AND CODES:
- THE INTENT OF THIS SECTION OF THE SPECIFICATIONS IS THAT THE CONTRACTOR'S BID ON THE WORK 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.
3. LOCAL STANDARDS:
- THE TERM "LOCAL STANDARDS" AS USED HEREIN MEANS THE STANDARDS OF DESIGN AND CONSTRUCTION OF THE RESPECTIVE MUNICIPAL DEPARTMENT OR UTILITY COMPANY.
4. 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.
5. WORKMANSHIP:
- THE WORK SHALL CONFORM TO ALL LOCAL, STATE AND NATIONAL CODES AND TO BE APPROVED BY THE LOCAL AND STATE AGENCIES HAVING JURISDICTION.
6. 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 ALL SAFETY AND SHIELDING STANDARDS. KEEP TRENCHES FREE FROM WATER. WHEN WATER MAIN 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.
7. 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 THAT SHOWN OR SPECIFIED, SHALL BE PROVIDED AS THE ENGINEER MAY DIRECT, AND THE CONTRACT SHALL BE ADJUSTED.
8. BACKFILLING:
- BACKFILL SHALL BE PLACED AS SHOWN IN THE PLANS. COMPACT THIS BACKFILL THOROUGHLY, TAKING CARE TO NOT DISTURB THE PIPE BACKFILL UNDER AND WITHIN 6 FEET OF WALLS, PARKING AREAS, DRIVEWAYS AND STREETS SHALL BE GRANULAR MATERIAL ONLY AND THOROUGHLY COMPACTED BY APPROVED METHODS.
9. FLOW CHANNELS:
- UNDER MANHOLES WITH 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 INLET PIPE TO FORM A "U" SHAPED CHANNEL. THE BENCH WALL SHALL SLOPE DOWN FROM THE CROWN AT 1/2 INCH PER FOOT TO THE MANHOLE WALL.
10. 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:
11. HYDROSTATIC TEST:
- A. 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.
12. LOW PRESSURE AIR TEST:
- A. LOW PRESSURE AIR TEST SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F1417, STANDARD TEST METHOD FOR INFILTRATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR, FOR PLASTIC PIPE.
13. SANITARY FLOW MAIN LINES, UPON COMPLETION, SHALL BE REQUIRED TO PASS A LEAKAGE TEST CONDUCTED IN ACCORDANCE WITH AWWA STANDARD C605-94, AWWA STANDARD FOR UNDERGROUND PIPE FOR FLOW MAINS AFTER THIRTY-DAY (30) PRESSURE PIPE AND FITTING TEST OF WATER.
14. 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.
15. FLUSHING SEWERS:
- THE CONTRACTOR SHALL PROVIDE PUMPING SEWERS WITH WATER TO OBTAIN FREE FLOW THROUGH EACH LINE. REMOVE ALL SILT AND TRASH FROM APURTENANCES JUST PRIOR TO ACCEPTANCE OF WORK.
16. PLASTIC SEWER PIPE INSTALLATION:
- A. PLASTIC SEWER PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D3251 PER LATEST REVISION. PIPES SHALL BE LAYED AFTER THIRTY-DAY (30) PRESSURE PIPE AND FITTING TEST OF WATER.
17. THE PIPE BEING TESTED, SAID MANHOLE, SHALL BE PULLED BY HAND THROUGH EACH PIPE SECTION TO ENSURE DEFLECTION IS LESS THAN ACCEPTABLE LIMITS.
18. CONNECTIONS:
- A. NO ROOF DRAINS, FOOTING DRAINS AND/OR SURFACE WATER DRAINS MAY BE CONNECTED TO THE SANITARY SEWER SYSTEMS, INCLUDING TEMPORARY CONNECTIONS DURING CONSTRUCTION.
19. WATERLINE CROSSING:
- A. 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 WARE DUCTILE IRON PIPE WITH MECHANICAL JOINTS WITHIN 10 FEET OF THE WATER LINE.
20. UTILITIES:
- A. 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 OF THE ENGINEER OF ANY CHANGES, ERRORS OR OMISSIONS FOUND ON THESE PLANS OR IN THE FIELD BEFORE WORK IS STARTED OR RESUMED.
21. SERVICE LATERALS:
- A. INDIVIDUAL BUILDING LINES SHALL BE 8 INCHES IN DIAMETER AND OF MATERIAL EQUAL TO THAT SPECIFIED IN THIS SECTION. SERVICE LINES SHALL BE CONNECTED TO THE MAIN SEWER AT LOCATIONS SHOWN ON THESE PLANS.

[illegible]