

# CITY OF DES MOINES

## KENT DES MOINES RD / 16TH AVE S

### PIPE REPLACEMENT STORMWATER IMPROVEMENT PROJECT

**MAYOR**

Tracy Buxton

**DEPUTY MAYOR**

Harry Steinmetz

**CITY COUNCIL**

Gene Achziger  
 JC Harris  
 Matt Mahoney  
 Jeremy Nutting  
 Yoshiko Grace Matsui

**INTERIM CITY MANAGER**

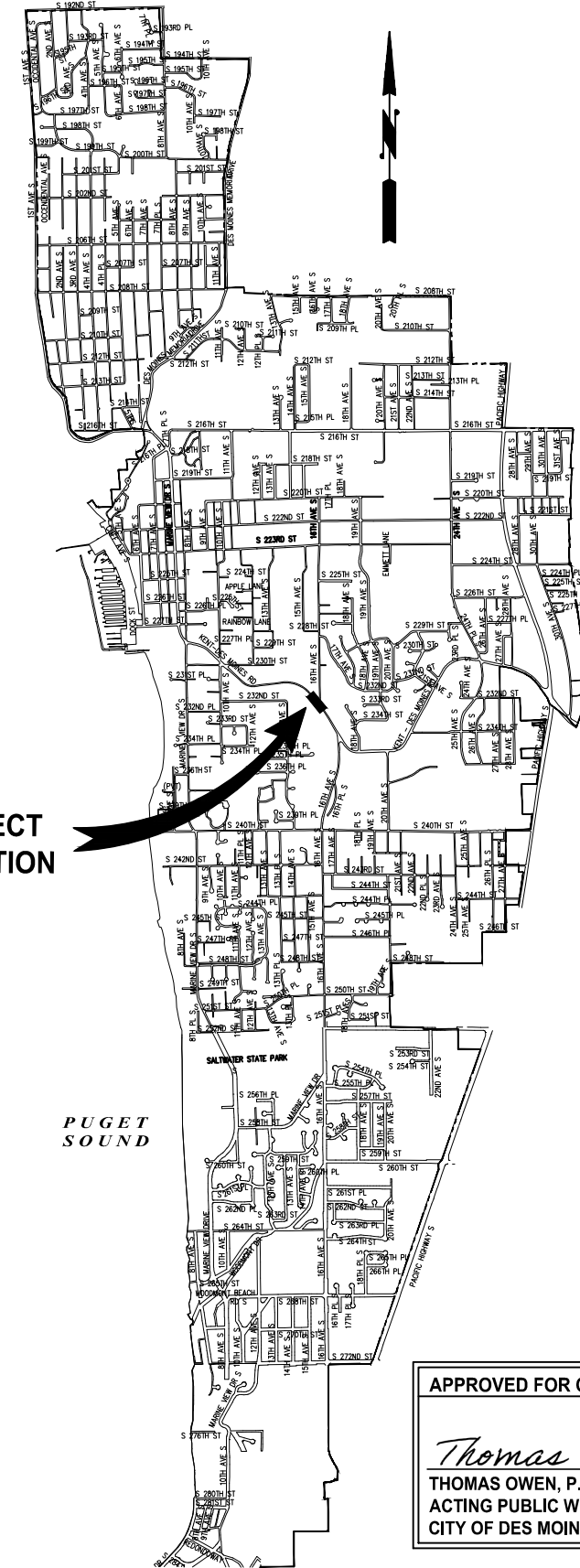
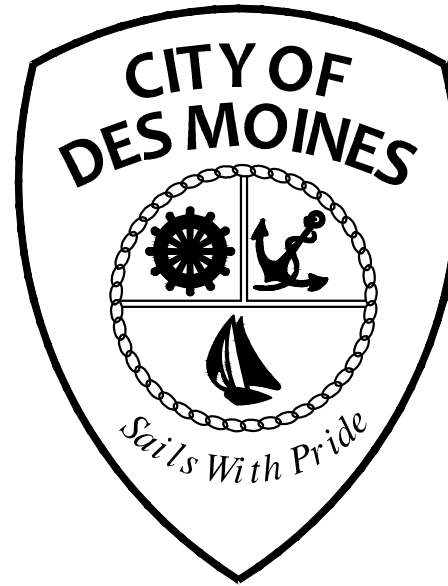
Tim George

**ACTING PUBLIC WORKS DIRECTOR**

Thomas Owen, P.E., PTOE

**ACTING CITY ENGINEER**

Khai Le, P.E.



**SCHEDULE OF DRAWINGS**

SHEET NO.	TITLE
1	COVER
2	INDEX, ALIGNMENT PLAN & SURVEY CONTROL
3	LEGEND & ABBREVIATIONS
4	STORM DETAILS
5	SITE PREP & TESC PLAN
6	STORMWATER PLAN & PROFILE
7-8	TRAFFIC CONTROL PLAN

**BID DOCUMENT**      **CALL 2 WORKING DAYS BEFORE YOU DIG**  
 1-800-424-5555

APRIL 2024

**APPROVED FOR CONSTRUCTION:**  
*Thomas Owen*      4/1/2024  
 THOMAS OWEN, P.E., PTOE      DATE  
 ACTING PUBLIC WORKS DIRECTOR  
 CITY OF DES MOINES

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NO.	DATE	BY	APPR.	REVISIONS

Approved By		21121W1COV.dwg
ENGINEERING MANAGER	DATE	FILENAME
PROJECT MANAGER	DATE	DESIGNED BY
PROJECT ENGINEER	DATE	DRAWN BY
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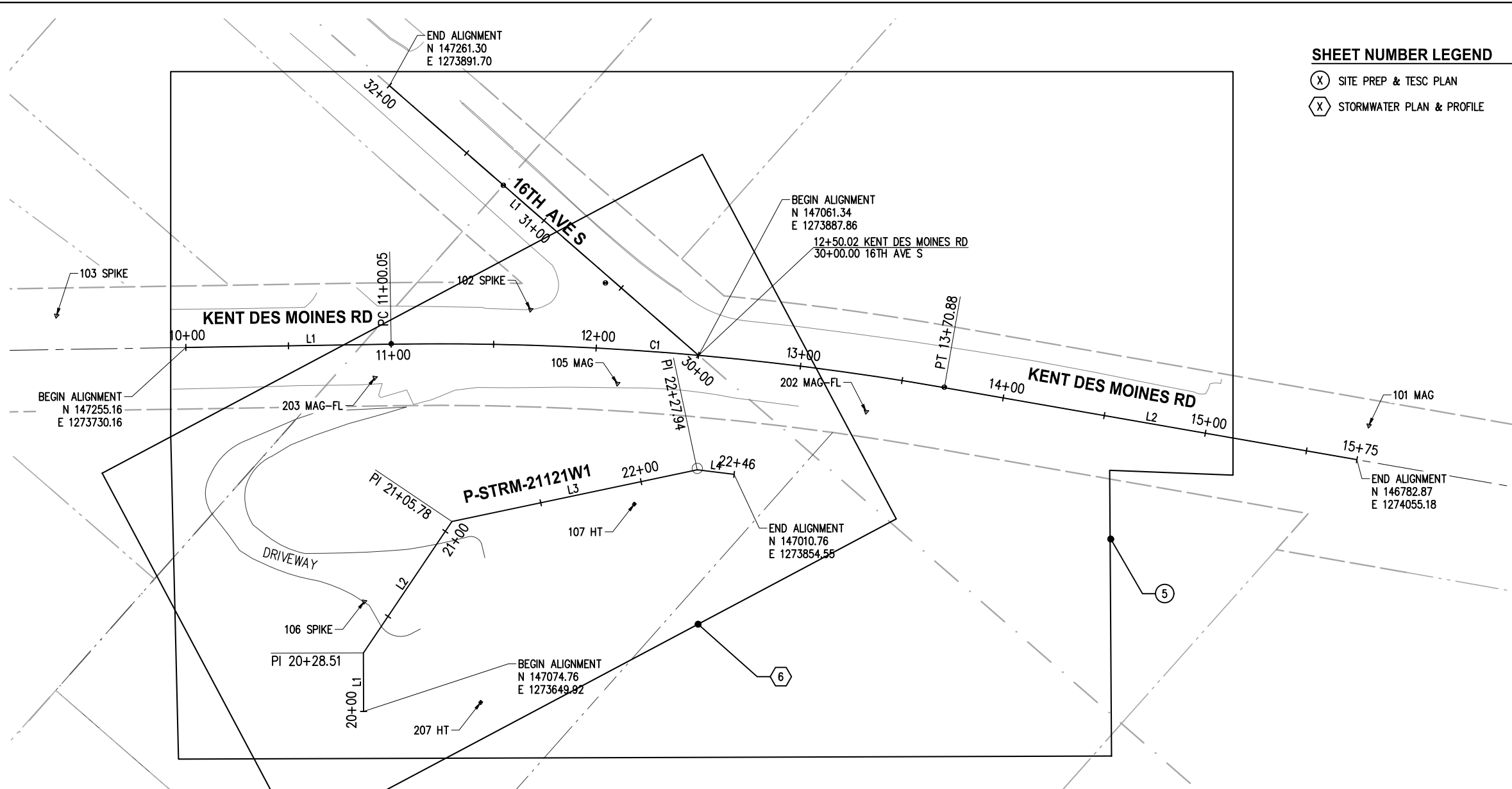
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**CITY OF DES MOINES KDM PIPE REPLACEMENT STORMWATER IMPROVEMENT PROJECT**

COVER  
 KPG PROJECT No. 21121W1 SHT 1 OF 8

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**SHEET NUMBER LEGEND**

- (X) SITE PREP & TESC PLAN
- (X) STORMWATER PLAN & PROFILE

**NOTES**

1. THE PURPOSE OF THIS TOPOGRAPHIC SURVEY IS FOR CIVIL ENGINEERING DESIGN. THIS IS NOT A BOUNDARY SURVEY. SOURCES OF BOUNDARY INFORMATION AS SHOWN INCLUDE FIELD-TIED MONUMENTATION, PLATS, COUNTY RECORDS OF SURVEY, AND AUDITOR INDEXING INFORMATION.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITY SYSTEMS, AS SHOWN HEREON, ARE TAKEN FROM UTILITY LOCATE PAINT MARKS OR AS-BUILT PLANS AND ARE SHOWN IN AN APPROXIMATE WAY ONLY.  
  
THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. ALL LOCATOR SERVICES SHOULD BE CONTACTED PRIOR TO ANY CONSTRUCTION OR SUBSURFACE EXPLORATION. CALL 1-800-424-5555.
3. FIELD SURVEY: KPG, OCTOBER, 2022. LICENSEE MICHAEL R. BOWEN, P.L.S. NO. 29294/RONALD D. REICHEL, P.L.S. NO. 38015.
4. CONTOUR INTERVAL = 1 FOOT, ±0.5 FOOT PER NATIONAL MAPPING STANDARDS. CONTOURS DERIVED FROM DIRECT FIELD OBSERVATIONS.
5. STORM AND SEWER CONNECTIONS HAVE BEEN DRAWN FROM CENTER OF LID TO CENTER OF LID.
6. THE LOCATIONS AND DIMENSIONS OF UNDERGROUND VAULTS HAVE NOT BEEN VERIFIED AND ARE APPROXIMATE.
7. DUCTS ARE NOTED AS INDICATED IN THE FIELD BY UTILITY LOCATORS. MULTIPLE LINES AND/OR UTILITIES MAY SHARE DUCT RUNS; THIS MAY NOT BE SHOWN IN THE DRAWING.

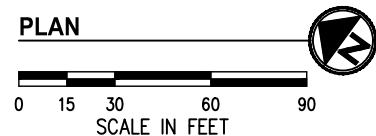
**HORIZONTAL AND VERTICAL DATUM**

HORIZONTAL DATUM: NAD 83/11  
 VERTICAL DATUM: NAVD 88  
 HORIZONTAL AND VERTICAL DATUMS ESTABLISHED BY RTK GPS OBSERVATION UTILIZING WSRN (WASHINGTON STATE REFERENCE NETWORK) WITH CHECKS TO WSDOT CONTROL POINT HC17-12

**SURVEY CONTROL LEGEND**

- MIC ● MONUMENT IN CASE
- MON ⊙ SURFACE MONUMENT
- △ MAG NAIL/SPIKE
- HUB AND TACK

P-STRM-21121W1								
NUMBER	START STA	NORTHING	EASTING	LENGTH	BRNG/DELTA	RADIUS	PI STA	TAN
L1	20+00.00	147074.76	1273649.92	28.51'	N 49°50'13" E			
L2	20+28.51	147093.15	1273671.71	77.27'	N 83°56'22" E			
L3	21+05.78	147101.31	1273748.54	122.16'	S 51°54'12" E			
L4	22+27.94	147025.94	1273844.68	18.11'	S 33°01'19" E			



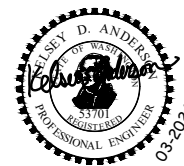
KENT DES MOINES RD								
NUMBER	START STA	NORTHING	EASTING	LENGTH	BRNG/DELTA	RADIUS	PI STA	TAN
L1	10+00.00	147255.16	1273730.16	100.05'	S 40°55'56" E	-	-	-
C1	11+00.05	147179.58	1273795.70	270.83'	10°49'51" E	1432.69'	12+35.87	135.82'
L2	13+70.88	146959.46	1273952.81	204.13'	S 30°06'05" E	-	-	-

16TH AVE S								
NUMBER	START STA	NORTHING	EASTING	LENGTH	BRNG/DELTA	RADIUS	PI STA	TAN
L1	30+00.00	147061.34	1273887.86	200.00'	N 1°05'57" E			

CONTROL POINT LIST				
PT #	DESCRIPTION	NORTHING	EASTING	ELEVATION
9	SPIKE	147342.95	1276124.50	207.86'
10	SPIKE	147403.77	1275970.51	217.46'
11	SPIKE	146083.72	1275155.40	151.33'
12	SPIKE	146147.24	1274812.07	141.68'
100	SPIKE	146430.85	1274216.86	111.84'
101	MAG	146789.13	1274071.66	97.64'
102	SPIKE	147138.42	1273852.24	84.37'
103	SPIKE	147313.43	1273701.48	76.19'
104	SPIKE	147197.39	1273674.30	62.70'
105	MAG	147082.78	1273851.89	84.54'
106	SPIKE	147108.91	1273691.13	55.38'
107	HT	147038.69	1273812.16	65.37'
202	MAG-FL	146981.09	1273919.32	88.89'
203	MAG-FL	147175.13	1273778.03	80.47'
207	HT	147033.86	1273689.99	55.61'

NO.	DATE	BY	APPR.	REVISIONS

Approved By		21121W1INDX.dwg
ENGINEERING MANAGER	DATE	FILENAME
PROJECT MANAGER	DATE	AO
PROJECT ENGINEER	DATE	DESIGNED BY
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		DRAWN BY
		KDA
		CHECKED BY
		DATE



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**CITY OF DES MOINES KDM  
 PIPE REPLACEMENT STORMWATER  
 IMPROVEMENT PROJECT**

**GENERAL  
 INDEX, ALIGNMENT PLAN & SURVEY CONTROL**

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**EXISTING LEGEND**

□	CATCH BASIN	---	SECTION LINE
⊕	STORM DRAIN MANHOLE	---	RIGHT-OF-WAY CENTERLINE
^	CULVERT	---	RIGHT-OF-WAY LINE
○	SEWER MANHOLE	---	PROPERTY LINE
⚡	POWER POLE W/UNDERGROUND CONNECT	— P —	PAINTED POWER
⊠	JUNCTION BOX	— T —	PAINTED TELEPHONE
⊗	STREET LIGHT (LUMINAIRE)	— FO —	PAINTED FIBER OPTIC
⊠	TELEPHONE RISER	— W —	PAINTED WATER
⊗	WATER VALVE	— G —	PAINTED GAS
⊠	WATER METER	— SD —	STORM
⊕	UTILITY MANHOLE (GENERIC/UNKNOWN)	— S —	SEWER
⊠	SIGN	— x — x — x —	FENCE
⊠	MAILBOX (# OF BOXES)	~~~~~	HEDGE (HEIGHT NOTED)
⊠	SHRUB	//////	BUILDING
∨	PLANTED AREA	=====	PAINTED STRIPE
⊙	DECIDUOUS TREE, DIAMETER (# OF TRUNKS)	.....	RAISED-BUTTON SKIP STRIPE
⊙	CONIFEROUS TREE, DIAMETER (# OF TRUNKS)	-----	EDGE OF PAVEMENT
		-----	FLOWLINE
		-----	CONTOUR
		~~~~~	WETLAND/WATERLINE (RECORDED OCT 2022)
		⊠	CONCRETE
		⊠	GRAVEL
		⊠	ROCKERY
		⊠	METAL GRATE
		AC	ASPHALT/CONCRETE
		CHLK	CHAINLINK

**PROPOSED LEGEND**

⊠	HMA CL 1/2" PG 58H-22 FOR NEW PAVEMENT
⊠	CSTC
---	SAWCUT LINE

**STORMWATER LEGEND**

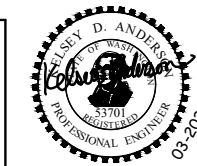
##	STORM DRAIN STRUCTURE ID NUMBER
---	STORM DRAIN PIPE
⊙	CATCH BASIN TYPE 2
⊠	CATCH BASIN TYPE 1 & TYPE 1L
➤	DIRECTIONAL FLOW ARROW

**ABBREVIATIONS**

AC	ASPHALT CONCRETE	MIC	MONUMENT IN CASE
ACP	ASPHALT CONCRETE PAVEMENT	MJ	MECHANICAL JOINT
ADA	AMERICANS WITH DISABILITIES ACT	MON	MONUMENT
AP	ANGLE POINT	N	NORTH OR NORTHING
APPROX	APPROXIMATE	NAVD	NORTH AMERICAN VERTICAL DATUM
BLDG	BUILDING	NO	NUMBER
CB	CATCH BASIN	NTS	NOT TO SCALE
CCP	CEMENT CONCRETE PAVEMENT	OC	ON CENTER
CDF	CONTROLLED DENSITY FILL	OD	OUTSIDE DIAMETER
CHLK	CHAINLINK	PC	POINT OF CURVE
⊕	CENTERLINE	PCC	POINT OF COMPOUND CURVATURE
CL	CLASS	PCCP	PERVIOUS CEMENT CONCRETE PAVEMENT
CO	CLEANOUT	PI	POINT OF INTERSECTION
COD	CITY OF DES MOINES	POB	POINT OF BEGINNING
COL	COLUMN CONC CONCRETE	POE	POINT OF ENDING
CSBC	CRUSHED SURFACING BASE COURSE	PRC	POINT OF REVERSE CURVATURE
CSTC	CRUSHED SURFACING TOP COURSE	PT	POINT OF TANGENT
DI	DUCTILE IRON	PVC	POLYVINYL CHLORIDE OR
DIAM.	DIAMETER		POINT OF VERTICAL CURVATURE
DW	DRIVEWAY	PVT	POINT OF VERTICAL TANGENT
E	EAST OR EASTING	PVI	POINT OF VERTICAL INTERSECTION
EA	EACH	R	RADIUS
ELEV	ELEVATION	ROW	RIGHT OF WAY
EOP	EDGE OF PAVEMENT	RT	RIGHT
EW	EACH WAY EXIST EXISTING	S	SLOPE OR SOUTH
FF	FINISHED FLOOR	SD	STORM DRAIN
FL	FLOW LINE	SDMH	STORM DRAIN MANHOLE
FO	FIBER OPTIC	SE	SOUTHEAST
FOC	FACE OF CURB	SHT	SHEET
HMA	HOT MIX ASPHALT	SQ	SQUARE
HORIZ	HORIZONTAL	SS	SANITARY SEWER
HP	HIGH POINT	SSMH	SANITARY SEWER MANHOLE
ID	INSIDE DIAMETER	ST	STREET
IE	INVERT ELEVATION	STA	STATION
IN	INCH/INCHES	STD	STANDARD
JB	JUNCTION BOX	STCR	STRUCTURE
L	LENGTH LT LEFT	SW	SOUTHWEST
LF	LINEAR FEET	TYP	TYPICAL
LP	LOW POINT	VERT	VERTICAL
MAX	MAXIMUM	W	WEST
MIN	MINIMUM	YD	YARD DRAIN
MH	MANHOLE		

NO.	DATE	BY	APPR.	REVISIONS

Approved By		21121WIINDX.dwg
ENGINEERING MANAGER	DATE	FILENAME AO 9/23
DESIGNED BY	DATE	AO 9/23
PROJECT MANAGER	DATE	DRAWN BY KDA 9/23
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PROJECT ENGINEER	DATE	



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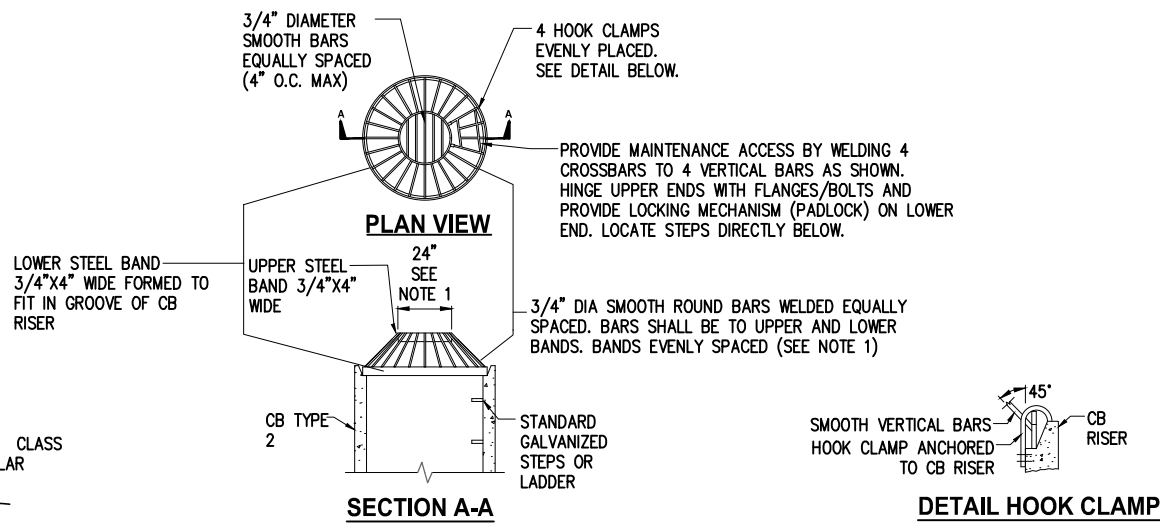


**CITY OF DES MOINES KDM PIPE REPLACEMENT STORMWATER IMPROVEMENT PROJECT**

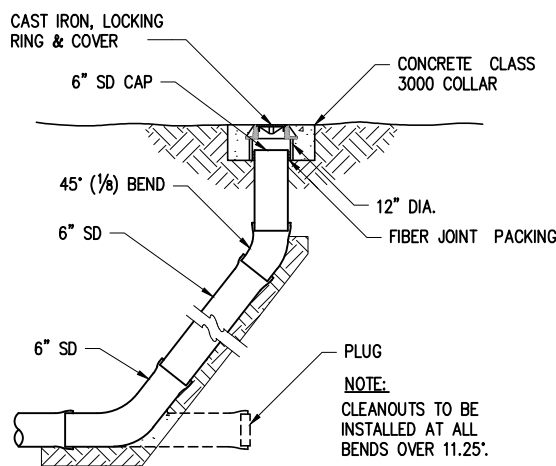
GENERAL LEGEND & ABBREVIATIONS	
KPG PROJECT No. 21121WI	SHT <u>3</u> OF <u>8</u>

**GENERAL NOTES**

- CONTRACTOR SHALL PROVIDE CONTINUOUS ACCESS TO ALL DRIVEWAYS AND WALKWAYS BOTH INSIDE AND OUTSIDE OF THE WORKING AREA UNLESS OTHERWISE AGREED WITH PROPERTY OWNER.
- GAS, WATER, AND SEWER SERVICES TO INDIVIDUAL HOMES OR BUSINESSES ARE TYPICALLY NOT SHOWN. THE CONTRACTOR SHALL LOCATE SERVICES AND COORDINATE WITH UTILITY OWNER TO RELOCATE SERVICES THAT CONFLICT WITH NEW STORM DRAIN AS NECESSARY.
- HAND DIG WITHIN 2 FT OF ALL EXISTING UTILITIES. INSTALL ETHOFOAM PAD AT ALL UTILITY CROSSINGS WITH LESS THAN 6" CLEARANCE TO NEW STORM DRAIN.
- PIPE INVERTS AND RIM ELEVATIONS ARE SPECIFIED TO THE PROJECTED CENTER OF THE STRUCTURE. CATCH BASIN STATION AND OFFSETS ARE APPROXIMATED TO THE CENTER OF STRUCTURE. PIPE LENGTHS ARE APPROXIMATED AS 2 DIMENSIONAL PLAN VIEW DIMENSIONS.
- REMOVE EXISTING STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE PROPOSED STORM DRAIN ALIGNMENT CONFLICTS WITH THE EXISTING STORM DRAIN ALIGNMENT. FILL AND ABANDON PIPE SEGMENTS LEFT IN PLACE PER SPECIFICATIONS.
- CLEAR AND GRUB EXISTING VEGETATION AS NECESSARY FOR CONSTRUCTION. PRESERVE AND PROTECT TREES LARGER THAN 4" DIAMETER UNLESS OTHERWISE NOTED ON THE PLANS. STABILIZE AND RESTORE DISTURBED AREAS IN-KIND TO EXISTING CONDITIONS. SEE RESTORATION TABLE, SHEET 6.
- UNLESS OTHERWISE NOTED, PIPE PROFILES ARE SHOWN ALONG THE PIPE CENTERLINE ALIGNMENT.
- FURNISH AND INSTALL INLET PROTECTION, SILT FENCE, WATTLES, AND OTHER EROSION CONTROL MEASURES TO MINIMIZE SEDIMENT MIGRATION INTO STREAMS AND STORM DRAINAGE SYSTEMS.
- IF PIPE CONNECTIONS ARE DISCOVERED THAT ARE NOT NOTED ON THE PLANS, CONTRACTOR SHALL INSTALL CONNECTION OF EXISTING PIPE TO THE NEW SYSTEM.
- POTHOLE EXISTING UTILITY CROSSINGS. POTHOLING OF EXISTING UTILITIES SHALL BE APPROVED BY THE ENGINEER PRIOR TO POTHOLING.
- PIPES LABELED "SD" SHALL BE HDPE UNLESS OTHERWISE NOTED ON PLANS OR PROFILES.
- PIPES LABELED "DIP" SHALL BE DUCTILE IRON UNLESS OTHERWISE NOTED ON THE PLANS OR PROFILES.

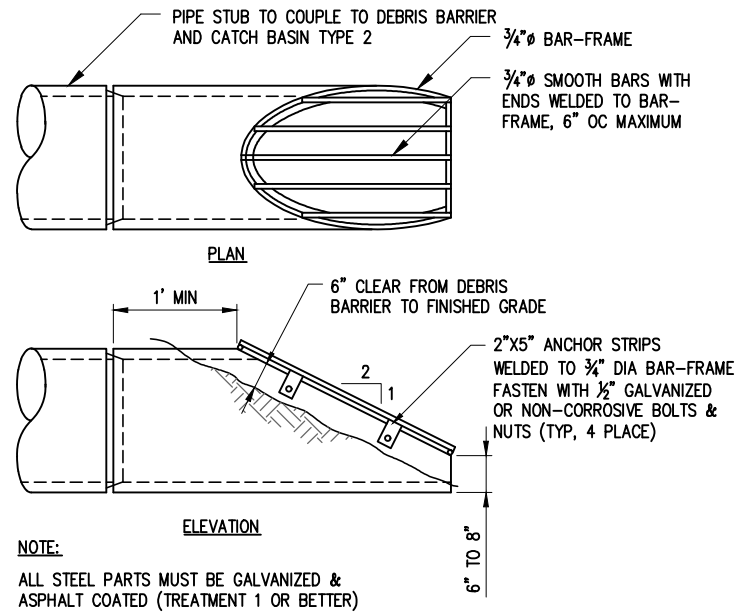


- NOTES:**
- DIMENSIONS ARE FOR ILLUSTRATION ON 54 IN. DIAMETER CB. FOR DIFFERENT DIAMETER CB'S, ADJUST TO MAINTAIN 45° ANGLE ON "VERTICAL" BARS AND 4 IN. O.C. MAXIMUM SPACING OF BARS AROUND LOWER STEEL BAND.
  - METAL PARTS MUST BE CORROSION RESISTANT, STEEL BARS MUST BE GALVANIZED.
  - THIS DEBRIS BARRIER IS ALSO RECOMMENDED FOR USE ON THE INLET TO ROADWAY CROSS-CULVERTS WITH HEIGHT POTENTIAL FOR DEBRIS COLLECTION (EXCEPT ON TYPE 2 STREAMS)
  - USE OF THIS STRUCTURE WITHIN THE ROAD RIGHT-OF-WAY SHALL MEET THE MINIMUM CLEAR ZONE REQUIREMENTS.



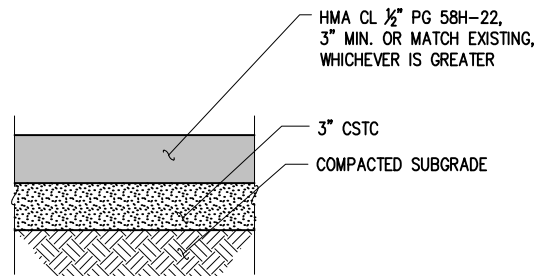
**UNDERDRAIN STORM CLEANOUT DETAIL** 2  
NTS

**CATCH BASIN TYPE 2 48 IN. DIAM. DEBRIS CAGE DETAIL** 4  
NTS

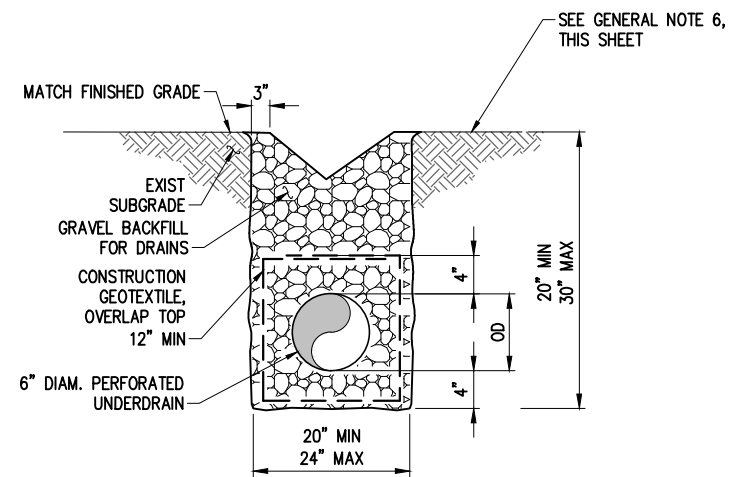


**NOTE:**  
ALL STEEL PARTS MUST BE GALVANIZED & ASPHALT COATED (TREATMENT 1 OR BETTER)

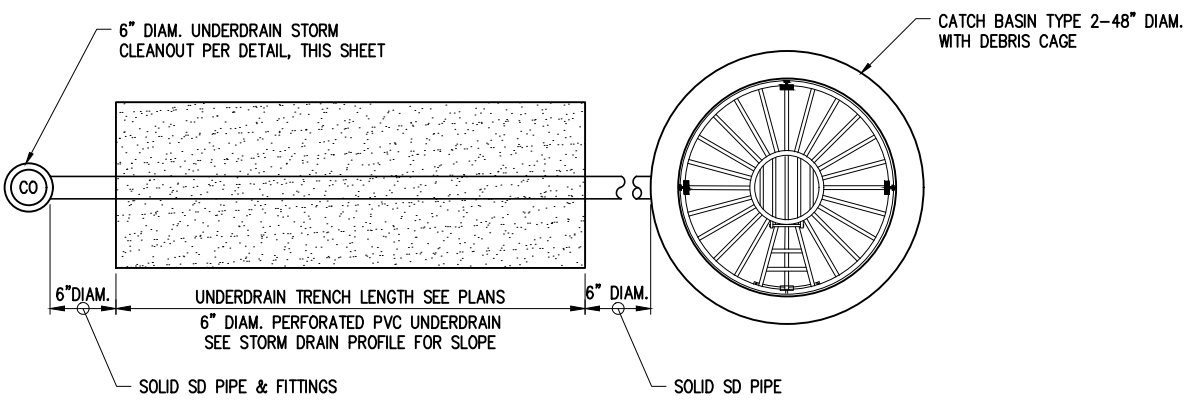
**DEBRIS BARRIER DETAIL** 5  
NTS



**HMA DRIVEWAY SECTION** 6  
NTS



**PERFORATED UNDERDRAIN TRENCH SECTION** 1  
NTS



**PERFORATED UNDERDRAIN TRENCH DETAIL** 3  
NTS

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PROJECT MANAGER	DATE	KS
PROJECT ENGINEER	DATE	DESIGNED BY
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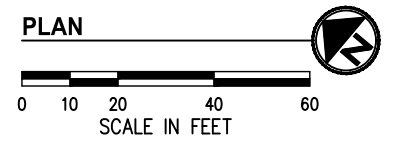
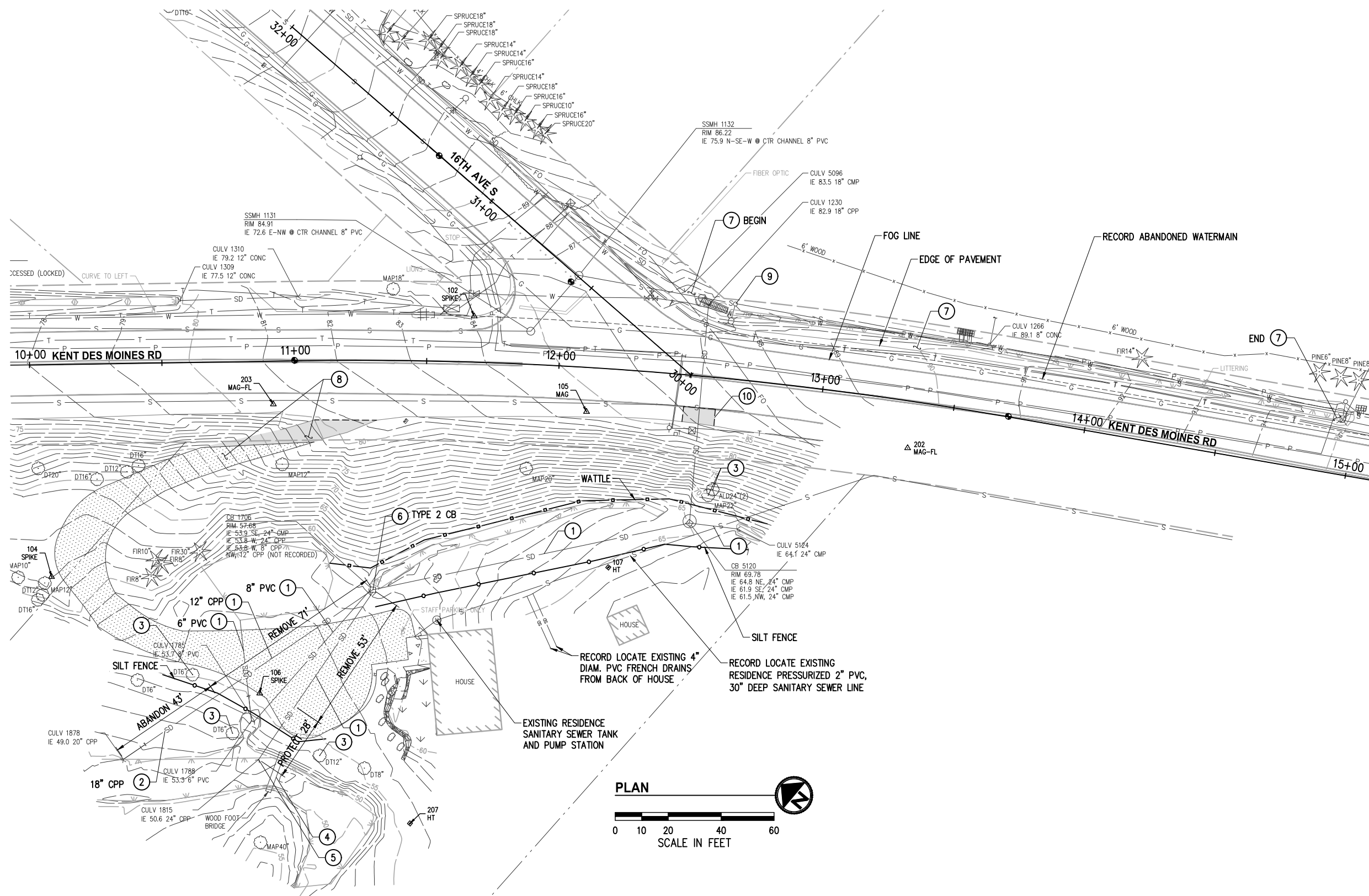
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**CITY OF DES MOINES KDM PIPE REPLACEMENT STORMWATER IMPROVEMENT PROJECT**

<b>DETAILS</b> STORM DETAILS	
KPG PROJECT No. 21121W1	SHT 4 OF 8

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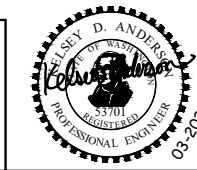
- ### GENERAL TESC NOTES
1. THE CONTRACTOR SHALL PROVIDE TESC MEASURES IN ACCORDANCE WITH THE 2021 KING COUNTY STORMWATER DESIGN MANUAL (KCSWDM), AS WELL AS SECTION 8-01. WATTLES AND OTHER EROSION AND SEDIMENTATION CONTROL DEVICES HAVE BEEN OMITTED FROM THE PLAN FOR CLARITY. ADJUST SILT FENCE LOCATIONS IN THE FIELD TO DOWNSTREAM SURFACE EROSION RUNOFF.
  2. THE CONTRACTOR SHALL IN NO WAY CONTRIBUTE TO THE DEGRADATION OF THE ENVIRONMENT.
  3. TESC MEASURES SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF EXCAVATION ACTIVITIES.

- ### TEMPORARY STORMWATER BYPASS
1. MANAGE FLOW THROUGH EXISTING CB 1706 WHILE CONSTRUCTING PROPOSED DOWNSTREAM OUTFALL STORMWATER CONVEYANCE IMPROVEMENTS.
  2. PROVIDE TEMPORARY BYPASS DIVERSION TO INSTALL PROPOSED STORMWATER CONVEYANCE IMPROVEMENTS.
  3. MODIFY BYPASS CONFIGURATION AS REQUIRED FOR CHANGING SITE CONDITIONS.
  4. PROVIDE TEMPORARY BYPASS OF ENCOUNTERED GROUNDWATER WHILE CONSTRUCTING IMPROVEMENTS. ALLOW WATER TO DISSIPATE THROUGH PROPERTY. DO NOT OUTLET DIRECTLY INTO CREEK.

- ### CONSTRUCTION NOTES
- 1 REMOVE EXISTING STORM DRAIN PIPE.
  - 2 ABANDON EX STORM DRAIN PIPE. CUT AND CAP UPSTREAM END OF PIPE.
  - 3 PROTECT TREE.
  - 4 PROTECT WOOD BRIDGE.
  - 5 PRESERVE AND PROTECT OUTFALL PIPE. INSTALL TEMPORARY BYPASS DIVERSION WHILE CONSTRUCTING STORM IMPROVEMENTS.
  - 6 REMOVE EXISTING DRAINAGE STRUCTURE.
  - 7 REMOVE SURFACE DEBRIS AND BUILT UP CANOPY AND SHRUB GROUND COVER ALONG CHANNEL AND BANKS BETWEEN EDGE OF PAVEMENT AND RIGHT OF WAY TO RE-ESTABLISH POSITIVE FLOW IN DITCH LINE TO INLET CULVERT ID# 1230 AT STA 12+55 LT.
  - 8 THE ACCESS TO PROPOSED STORMWATER CONVEYANCE IMPROVEMENTS IS THROUGH EASEMENT AND PRIVATE PROPERTY OWNER DRIVEWAY. THE CONTRACTOR SHALL MAINTAIN RESIDENCE DRIVEWAY ACCESS DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE DRIVEWAY SURFACE WITH MINIMUM 3" THICK CRUSHED SURFACING AND HMA DRIVEWAY ENTRANCE PER TYPICAL HMA DRIVEWAY SECTION, SHEET 4 TO THE LIMITS DIRECTED BY THE ENGINEER POST STORMWATER IMPROVEMENTS AND DEMOBILIZATION. THE CITY WILL COORDINATE WITH PROPERTY OWNERS.
  - 9 PROTECT LIGHT POLE, FOUNDATION, AND POWER SOURCE CONDUIT AND WRING ALONG KENT DES MOINES RD.
  - 10 SAWCUT AND REMOVE PAVEMENT FOR STORMWATER IMPROVEMENTS. RESTORE HMA SHOULDER PER DES MOINES STD DETAIL DM.A7.1.

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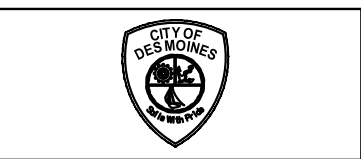
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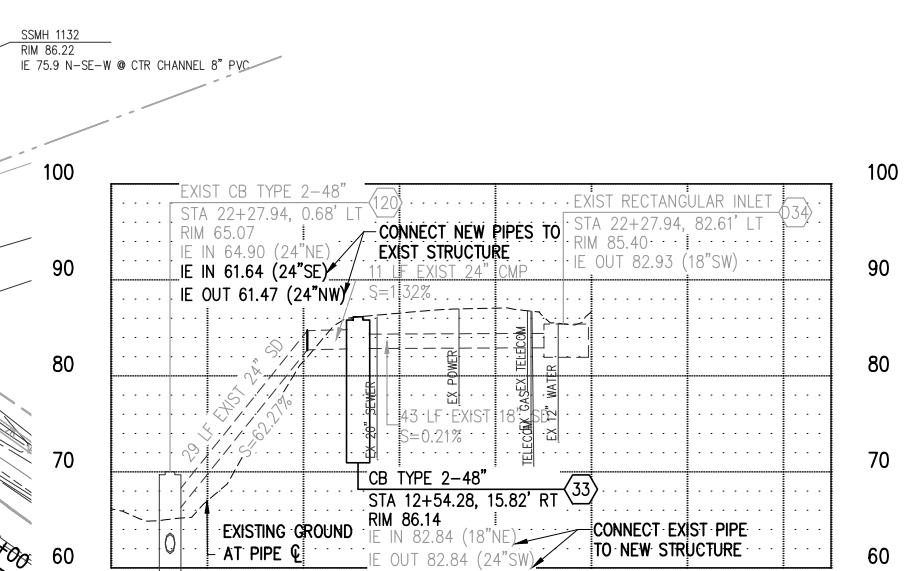
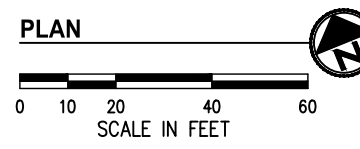
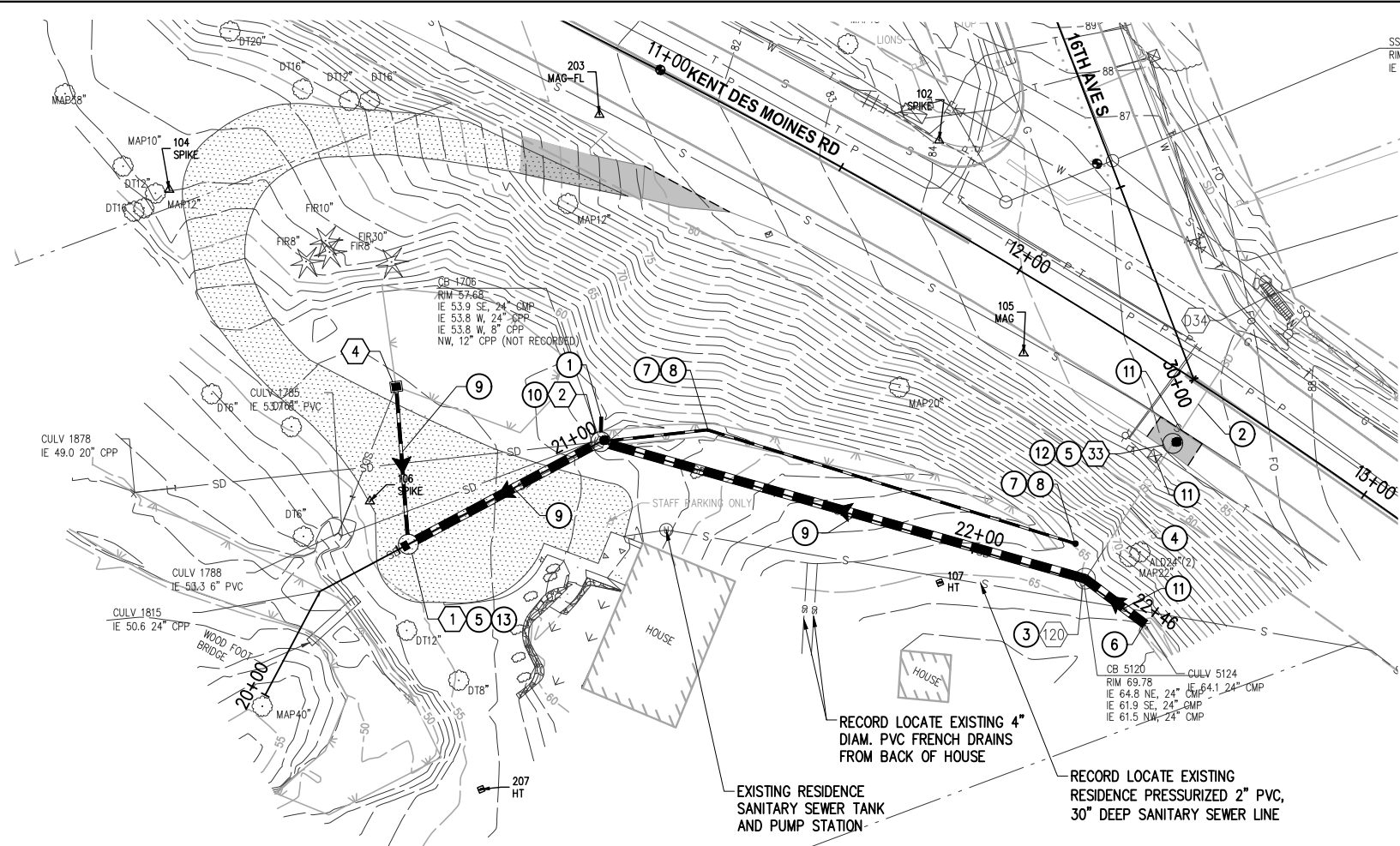
**CITY OF DES MOINES KDM PIPE REPLACEMENT STORMWATER IMPROVEMENT PROJECT**

**SITE PREP & TESC PLAN**

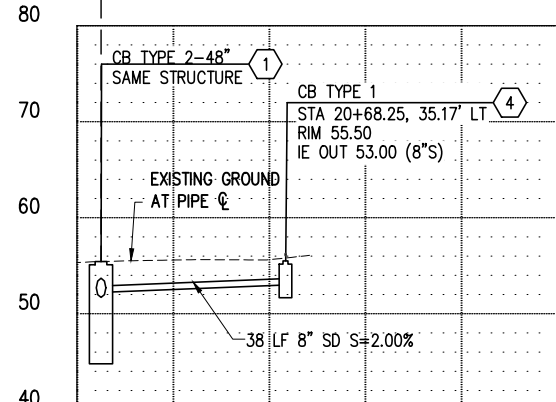
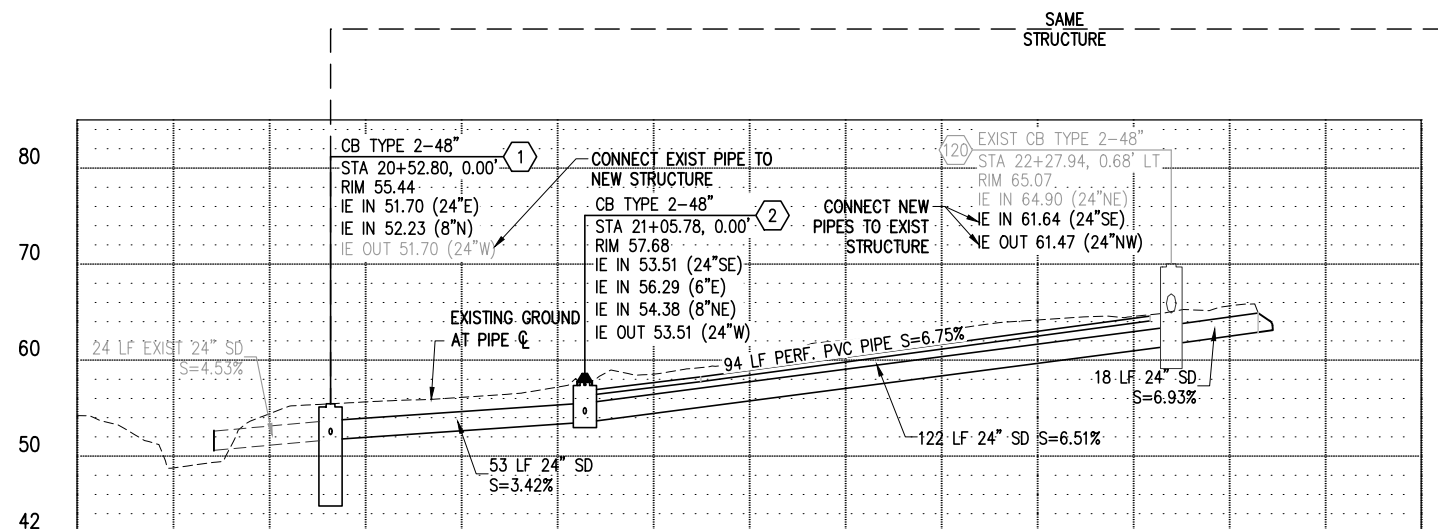
KPG PROJECT No. 21121WI | SHT 5 OF 8



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- ### GENERAL NOTES
- SEE SHEET 4 FOR GENERAL NOTES.
- ### CONSTRUCTION NOTES
- CAP PIPE END FOR FUTURE PROPERTY OWNER CONNECTION. DESIGNATE PIPE END WITH SURVEY SURFACE STAKE FOR FUTURE LOCATE.
  - REHABILITATE 42 LF OF EXISTING 18 IN. DIAM. CMP STORM DRAIN PIPE. FURNISH AND INSTALL 18 IN. DIAM. CIPP LINER.
  - CONNECT NEW STORM DRAIN PIPE TO EXISTING DRAINAGE STRUCTURE.
  - REHABILITATE 40 LF OF EXISTING 24 IN. DIAM. CMP STORM DRAIN PIPE. FURNISH AND INSTALL 24 IN. DIAM. CIPP LINER.
  - CONNECT EXISTING STORM DRAIN PIPE TO NEW DRAINAGE STRUCTURE.
  - INSTALL DEBRIS BARRIER PER DES MOINES STD DETAIL DM.B1.6, SHEET 4.
  - INSTALL 6" DIAM. CLEANOUT PER UNDERDRAIN STORM CLEANOUT DETAIL, SHEET 4.
  - INSTALL 6" DIAM. PERFORATED PIPE UNDERDRAIN PER SECTION AND DETAIL, SHEET 4.
  - EXCAVATE AND INSTALL STORM DRAIN SYSTEM PER CITY OF DES MOINES STD DETAIL DM.A7.1 FOR PIPE TRENCH BACKFILL REQUIREMENTS. STABILIZE AND RESTORE DISTURBED AREAS IN-KIND TO EXISTING CONDITIONS. SEE RESTORATION TABLE, THIS SHEET.
  - INSTALL CATCH BASIN TYPE 2 48 IN. DIAM. WITH DEBRIS CAGE PER STD DETAIL AND SPECIFICATIONS, SHEET 4.
  - LOCATE AND POTHOLE EXISTING UTILITY PRIOR TO PLACEMENT OF PROPOSED STORM IMPROVEMENTS.
  - INSTALL CATCH BASIN TYPE 2, 48 IN. DIAM. WITH CIRCULAR FRAME AND SOLID COVER PER WSDOT STD PLAN B-30.70. COVER SHALL READ "STORM". RESTORE HMA SHOULDER PER DES MOINES STD DETAIL DM.A7.1.
  - INSTALL CATCH BASIN TYPE 2, 48 IN. DIAM. WITH CIRCULAR FRAME AND SOLID COVER PER WSDOT STD PLAN B-30.70. COVER SHALL READ "STORM".



### RESTORATION TABLE

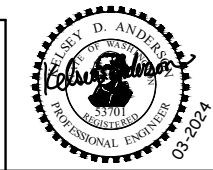
EXISTING CONDITIONS	RESTORATION
GRAVEL	3" CSTC*
LAWN / UNIMPROVED AREA	AMEND SOIL WITH 3" FINE COMPOST AND SEED PER SPECIAL PROVISIONS
LANDSCAPED AREA / MULCH	AMEND SOIL WITH 3" FINE COMPOST AND TOPDRESS WITH 2" BARK OR WOOD CHIP MULCH PER SPECIAL PROVISIONS

\*INCREASE DEPTH OF CSTC/SOIL AMENDMENT AS REQUIRED TO BRING FINISHED GRADE FLUSH WITH ADJACENT SURFACES

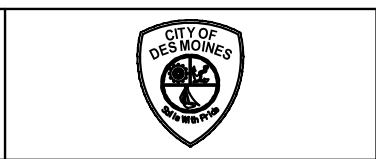
NO.	DATE	BY	APPR.	REVISIONS

Approved By

ENGINEERING MANAGER	DATE	21121\WIPLN01.dwg	9/23
PROJECT MANAGER	DATE	KS	9/23
PROJECT ENGINEER	DATE	DESIGNED BY	9/23
		DRAWN BY	9/23
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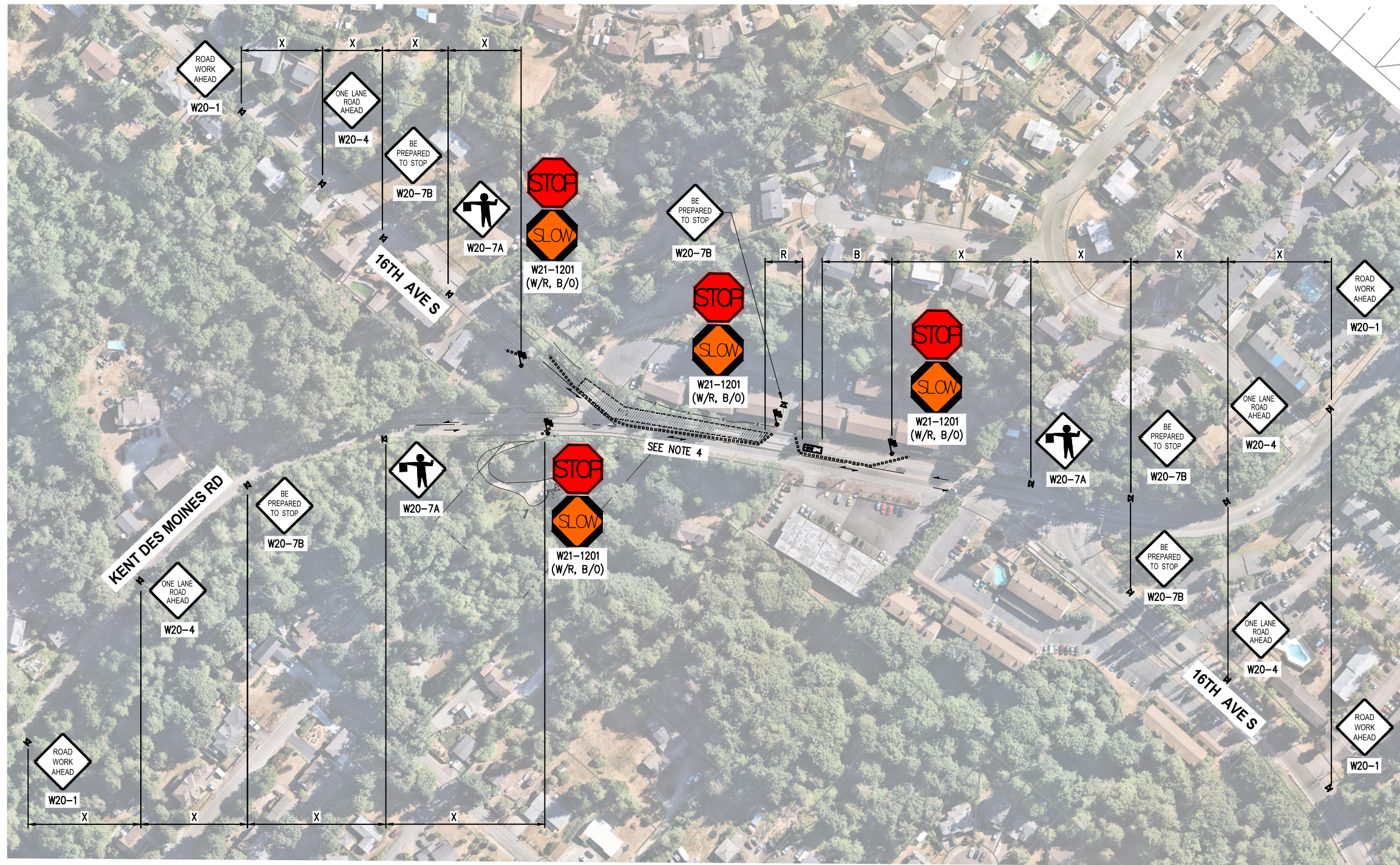
CITY OF DES MOINES KDM  
PIPE REPLACEMENT STORMWATER  
IMPROVEMENT PROJECT

STORMWATER PLAN & PROFILE

KPG PROJECT No. 21121W1 SHT 6 OF 8



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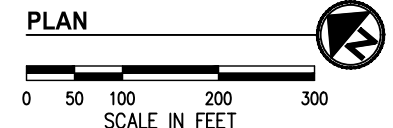


**NOTES:**

1. THE TEMPORARY TRAFFIC CONTROL PLANS ARE INTENDED TO PROVIDE A FRAMEWORK AND GENERAL COURSE OF ACTION. PRECISE LOCATIONS OF THE TRAFFIC DRUMS AND SIGNAGE IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO MUTCD AND WSDOT STANDARD PLANS. CONFLICTING CHANNELIZATION AND SIGNAGE SHALL BE TEMPORARILY COVERED OR REMOVED. ADVANCED WARNING SIGNAGE OUTSIDE CONSTRUCTION AREAS ARE NOT SHOWN ON THESE PLANS. THESE TEMPORARY TRAFFIC CONTROL PLANS ARE FOR BIDDING PURPOSES ONLY. CONTRACTOR TO SUBMIT FINAL PROPOSED TRAFFIC CONTROL PLANS FOR APPROVAL 10 CALENDAR DAYS PRIOR TO WORK. SEE SPECIAL PROVISIONS.
2. AVOID PLACING LANE CLOSURE TAPERS WITHIN OR IMMEDIATELY FOLLOWING HORIZONTAL & VERTICAL CURVES BY ADJUSTING LONGITUDINAL BUFFER SPACE.
3. PROTECTIVE VEHICLE MAY ALWAYS BE USED ON ROADWAYS 40 MPH OR LESS, EVEN IF THE LONGITUDINAL BUFFER SPACE IS REDUCED OR ELIMINATED. ADDITIONAL PVs MAY BE ADDED AT SEPARATE WORK CREWS.
4. MAY SHIFT LATERALLY. 36" TRAFFIC CONES, 42" TALL CHANNELIZATION DEVICES, OR TRAFFIC SAFETY DRUMS OK.
5. PEDESTRIAN & BICYCLIST ACCOMMODATIONS (ENGINEER TO ACCEPT ANY ALTERNATIVE STRATEGIES):
  - (A) ALLOW PEDESTRIANS TO USE THE PAVED SHOULDER OR ADJACENT PATH OPPOSITE THE WORK AREA
  - (B) COMBINE BIKES & VEHICULAR TRAFFIC. BIKES TO CLEAR PRIOR TO RELEASING ONCOMING TRAFFIC
  - (C) PROVIDE FREE SHUTTLE (WORK TRUCK, VAN, OR BUS MAY BE USED)
6. SEE STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS:
  - 1-07.8(1) HIGH-VISIBILITY APPAREL
  - 1-10.3(1)A FLAGGERS AND NIGHTTIME ILLUMINATION
  - 1-10.3(2)A TRAFFIC CONTROL PROCEDURES
  - 9-35.1 24-INCH STOP/SLOW PADDLE SIZE
7. FOR PROJECT-SPECIFIC REQUIREMENTS, SEE SPECIAL PROVISIONS.
8. SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE INDICATED.
9. EXISTING PAVEMENT MARKINGS MAY VARY.

**LEGEND:**

- ⊠ TEMPORARY SIGN LOCATION
- ⋯⋯⋯ 28" REFLECTIVE TRAFFIC CONE (SEE NOTE 3)
- 🚚 PROTECTIVE VEHICLE (SEE NOTE 2)
- 🚧 FLAGGER
- ▨ WORK AREA
- ▭ WORK AREA LIMITS



RECOMMENDED SIGN SPACING = X (1)		
RURAL ROADS & URBAN ARTERIALS	35-40 MPH	350' ±
RURAL ROADS & URBAN ARTERIALS RESIDENTIAL & BUSINESS DISTRICTS	25-30 MPH	200' ±
URBAN STREETS	25 MPH OR LESS	100' ±

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMP, AT-GRADE INTERSECTIONS AND DRIVEWAYS.

(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MAXIMUM CHANNELIZATION DEVICE SPACING (feet)	
MPH	TAPER   TANGENT
35 - 40	10   20   60
20 - 30	10   20   40

OPTIONAL LONGITUDINAL BUFFER SPACE =B	
SPEED (MPH)	20   25   30   35   40
B (feet)	115   155   200   250   305

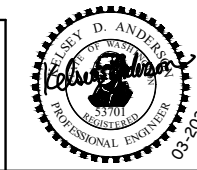
BUFFER SPACE MAY BE ADJUSTED (B) BASED ON FIELD CONDITIONS.

PROTECTIVE VEHICLE ROLL AHEAD DISTANCE = R  
STRATEGICALLY POSITION WORK VEHICLE TO PROTECT WORK CREW.  
40' - 80' RECOMMENDED.

NO.	DATE	BY	APPR.	REVISIONS

**Approved By**

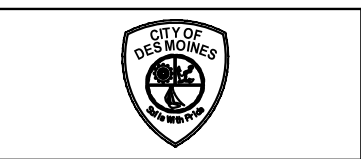
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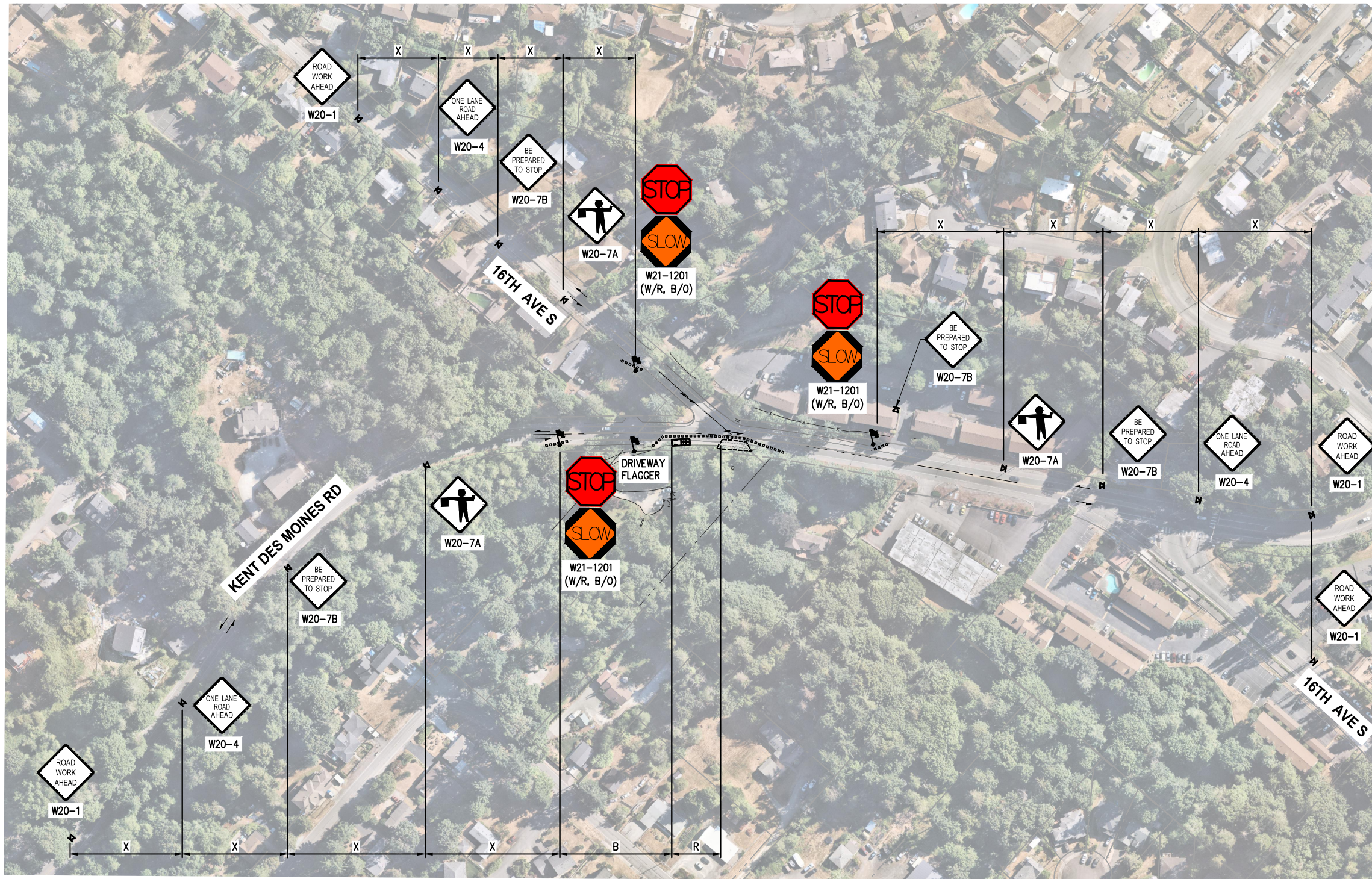


**CITY OF DES MOINES KDM  
PIPE REPLACEMENT STORMWATER  
IMPROVEMENT PROJECT**

TRAFFIC CONTROL PLAN STAGE 1	
KPG PROJECT No. 21121W1	SHT <u>7</u> OF <u>8</u>



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**NOTES:**

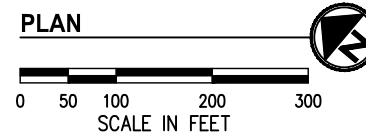
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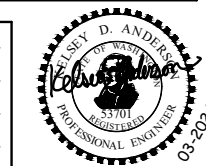
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PROJECT ENGINEER	DATE	EA
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		JO
		CHECKED BY
		DATE



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**CITY OF DES MOINES KDM  
 PIPE REPLACEMENT STORMWATER  
 IMPROVEMENT PROJECT**

TRAFFIC CONTROL PLAN STAGE 2	
KPG PROJECT No. 21121\W1	SHT 8 OF 8