

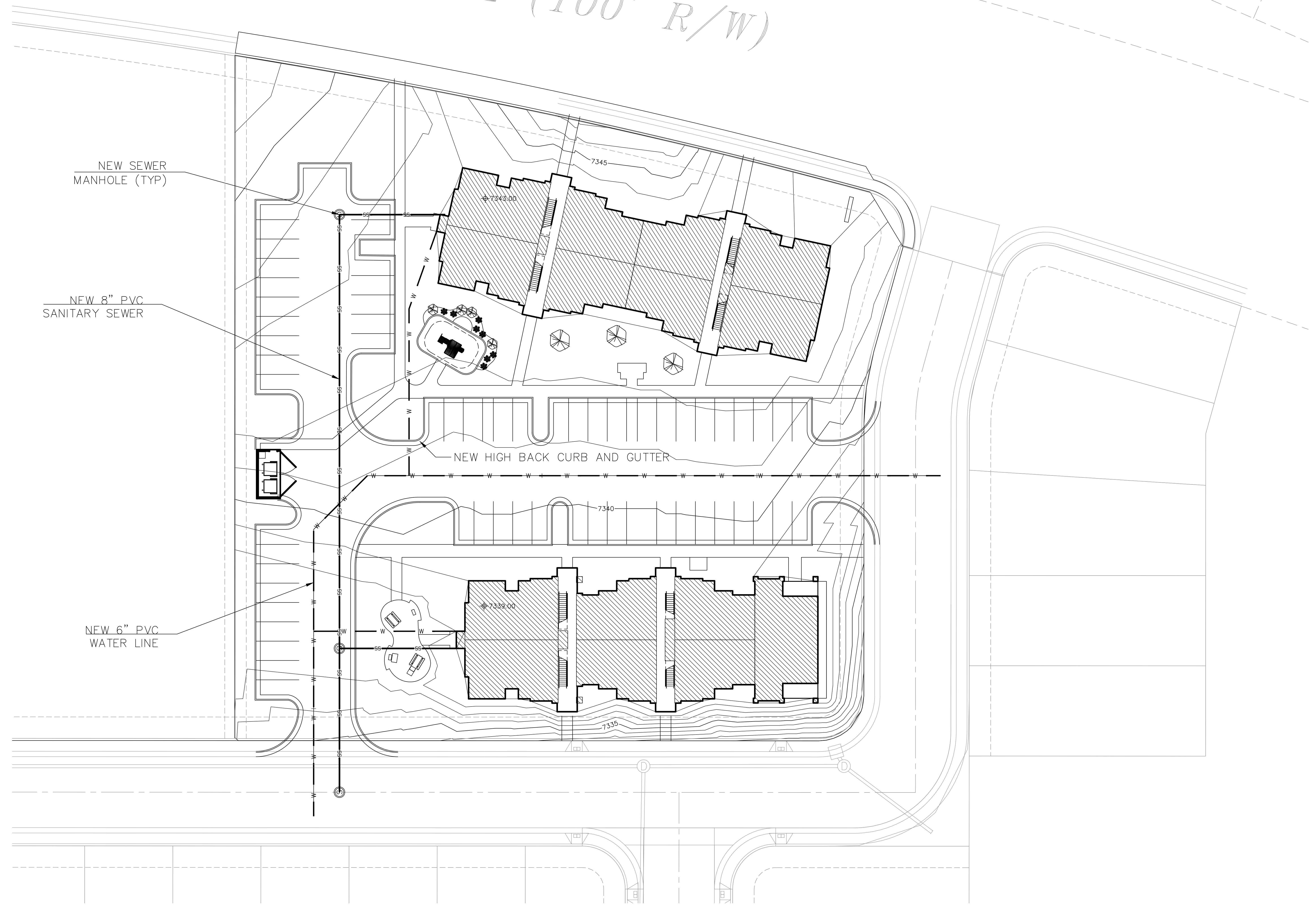
AVENUE (100' R/W)

NEW SEWER
MANHOLE (TYP)

NEW 8" PVC
SANITARY SEWER

NEW 6" PVC
WATER LINE

NEW HIGH BACK CURB AND GUTTER

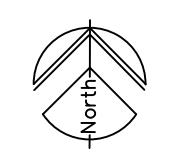


REVISION:

DATE: 5-23-2024

JOB: 22-3262

SHEET NO.:



A SITE PLAN
 1" = 20'-0"

C1.0

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100' R/W

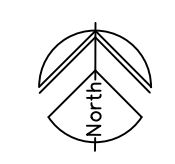
7343.00

7345

7340

7339.00

7335



C GRADING PLAN
1" = 20'-0"

**PRELIMINARY
DRAWING**
NOT FOR
CONSTRUCTION

REVISION:

DATE: 5-23-2024

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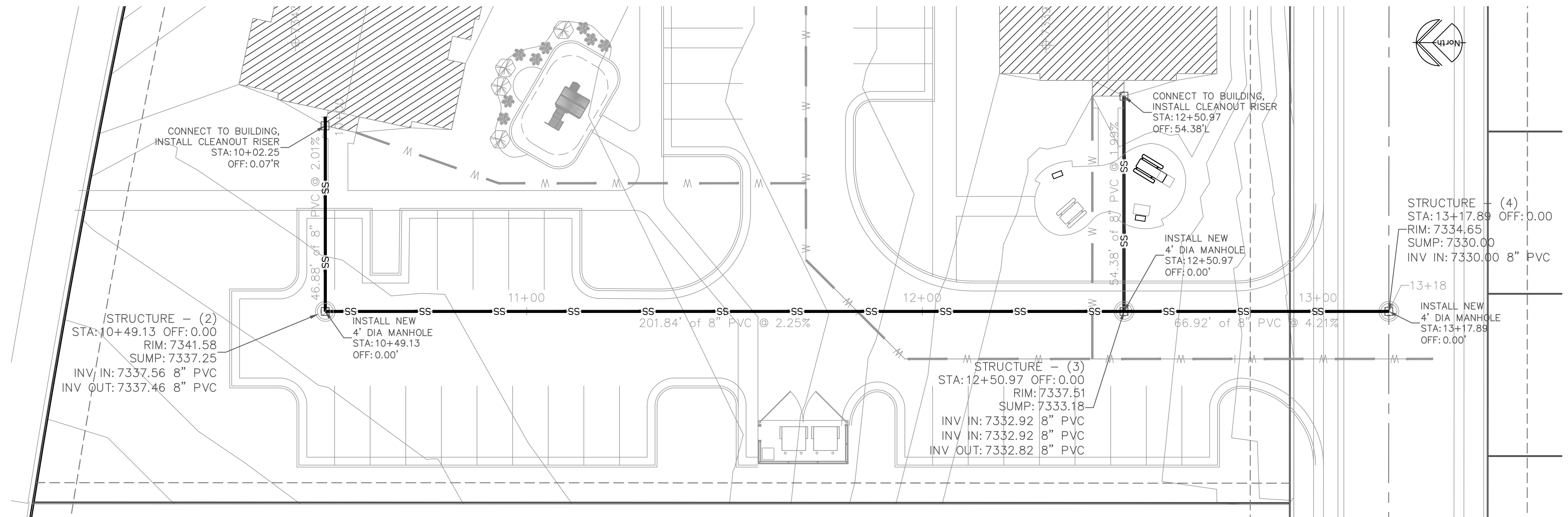
SHEET NO.:

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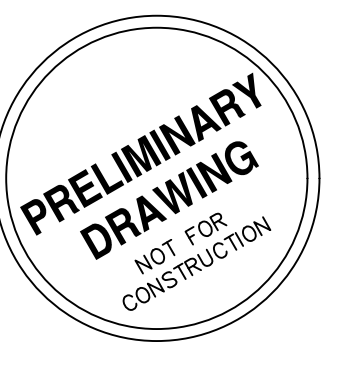
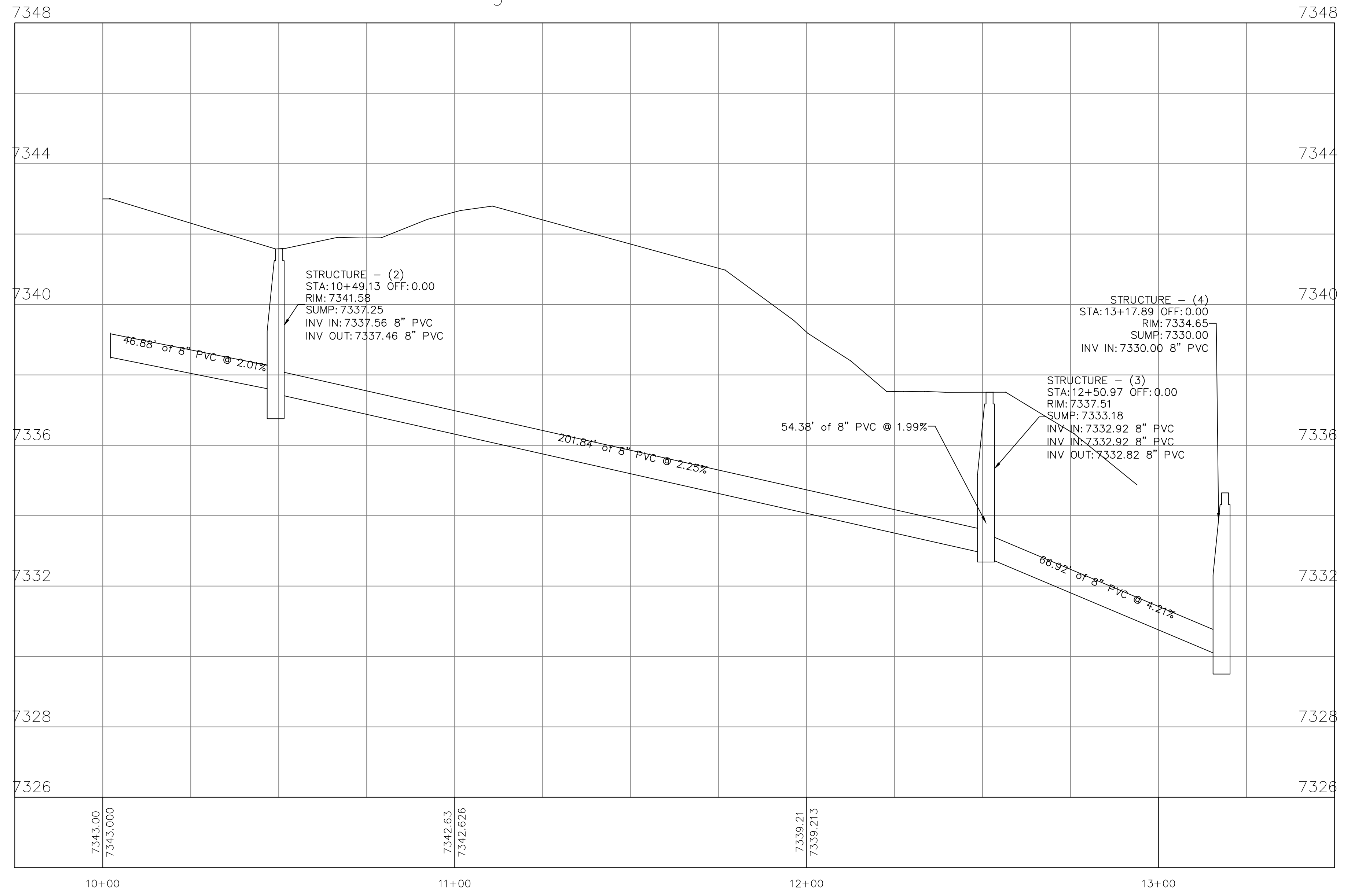
THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

JGR JonesGillamRenz
730 N. Ninth 1881 Main Street, Suite 301
Salina, KS 67401 Kansas City, MO 64108
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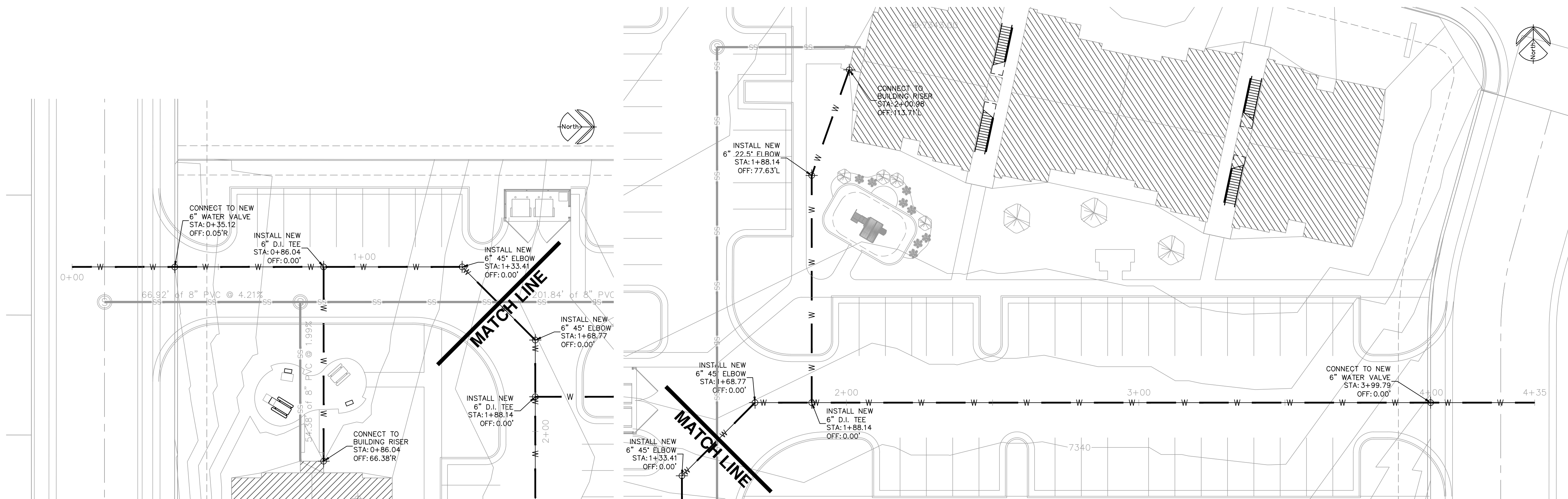


Alignment – SANITARY PROFILE

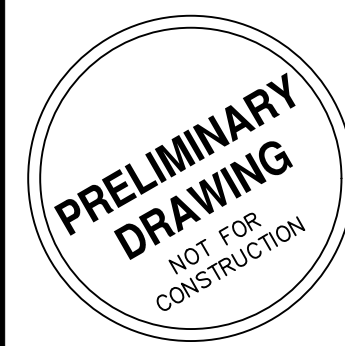
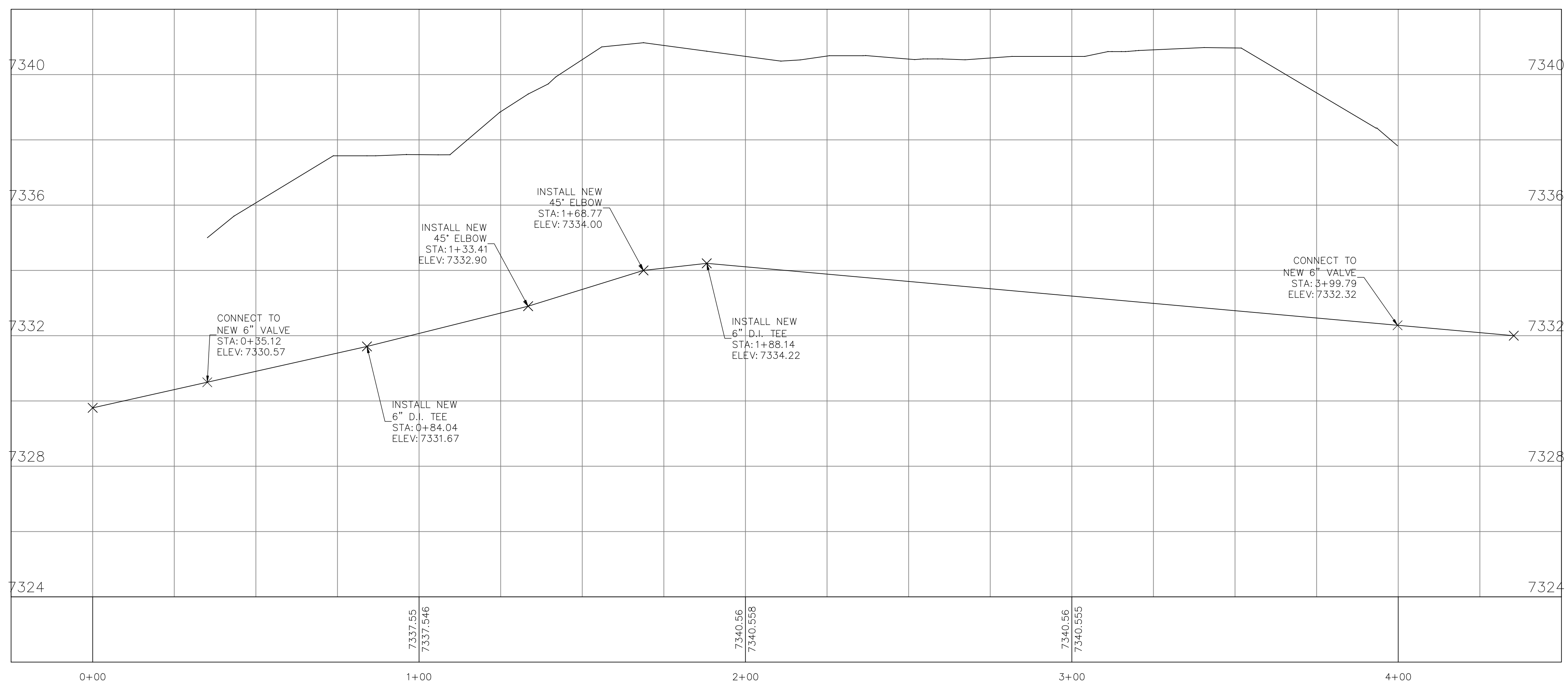


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JOB:	22-3262
SHEET NO.:	



Alignment – WATER PROFILE



REVISION:	
DATE:	5-23-2024
JOB:	22-3262
SHEET NO.:	

January 2023

TYPICAL CROSS SECTIONS

CON-2

January 2023

**8" VALLEY GUTTER FOR LOCAL STREET-60 FEET RIGHT-OF-WAY
12" VALLEY GUTTER FOR COLLECTOR & ARTERIAL-80 FEET & 100 FEET RIGHT-OF-WAY**

SECTION A-A

- ELEVATIONS SHOWN ARE RELATIVE FLOW LINE ACROSS INTERSECTION.
- A LONGITUDINAL JOINT SHALL BE CREATED IN THE CENTER OF THE VALLEY PAN, THEN CENTER OF THE REMAINING CONCRETE SLAB.
- EXPANSION JOINTS SHALL BE USED WHERE VALLEY GUTTER IS ADJACENT TO CURB FILLETS.
- CONCRETE SHALL BE FIBER REINFORCED.

VALLEY GUTTER AND CURB FILLETS

CON-7

January 2023

AGGREGATE FOR HOT PLANT MIX BITUMINOUS PAVEMENT

SIEVE DESIGNATION	% BY WEIGHT PASSING		
	INCHES	mm	3/4" Max. (19mm)
1"	25	100	-
3/4"	9.5	100	100
12"	13.5	100	100
3/8"	9.5	60-65	85-100
#4	4.75	40-45	45-70
#8	2.36	25-35	25-55
#30	0.60	10-35	15-40
#200	0.075	2-10	2-11

AGGREGATE GRADATION FOR DRYKITED SUB-BASE & BASE

SIEVE DESIGNATION	% BY WEIGHT PASSING		
	INCHES	mm	Grading
2"	-	-	-
1 1/2"	100	100	100
1"	100	100	100
3/4"	100	100	100
3/8"	100	100	100
#4	100	100	100
#8	100	100	100
#30	100	100	100
#200	100	100	100

- AGGREGATE GRADATION SPECIFICATIONS ABOVE ARE SHOWN AS CRUSHER SPECIFICATIONS.
- CRUSHED BASE SHALL BE GRADING "1" OR "W". AGGREGATE SOURCE AND SIEVE ANALYSIS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO USE.
- CRUSHED BASE FOR SURFACE APPLICATION SHALL HAVE AN L. A. ABRASION (ASHMOIT 1-96) RATING OF 40% OR LESS.
- AGGREGATE FOR HOT PLANT MIX SHALL MEET COMPOSITION OF MIXTURES AS DETAILED IN WPWS 2532 AND THE CITY OF LARAMIE PAVEMENT STUDY, 2ND EDITION, MAY 2017.
- ALL SUB-SURFACE COURSES OF HOT PLANT MIX BITUMINOUS PAVEMENT SHALL BE A MAXIMUM MATERIAL GRADING SPECIFICATION OF 3/4" INCH. ALL SURFACE COURSES OF HOT PLANT MIX BITUMINOUS PAVEMENT SHALL BE A MAXIMUM GRADING SPECIFICATION OF 1/2" INCH.

ROADWAY MATERIALS

PV-1

January 2023

TYPICAL 48" DIA MANHOLE ASSEMBLY

- ALL MANHOLE RING AND COVER AND TRAFFIC MATED LIDS MUST MEET OR EXCEED HS-20 LOAD RATINGS.
- STEPS SHALL BE NON-CORROSIVE STEPS OF RUBBER ENCASED STEEL, ALUMINUM, OR INODIN. STEPS SHALL WITHSTAND VERTICAL LOADS OF 800 POUNDS AND HORIZONTAL LOADS OF 400 POUNDS.
- ALL INLETS, OUTLETS, RING AND COVER, CONCRETE ADJUSTMENT RINGS, SERVICES, AND ALL OTHER OPENINGS INTO THE MANHOLE SHALL BE GRADUATED TO BE FLUSH WITH THE INNER SURFACE OF THE MANHOLE.
- JOINT MATERIAL SHALL BE "RAM-NET" OR EQUAL. CONCRETE ADJUSTMENT RINGS SET IN MORTAR REQUIRED. BRICKS, WOOD, OR ANY OTHER SUBSTANCE IS NOT ACCEPTABLE.
- CONCRETE CHANNELS AND SHELVES SHALL BE SMOOTH FINISHED.
- CONCRETE CHANNEL INVERT SHALL HAVE 0.1 FOOT MINIMUM DROP ACROSS MANHOLE UNLESS OTHERWISE APPROVED BY WYDOT.
- THE MAXIMUM DISTANCE BETWEEN THE TOP OF THE UPPERMOST STEP AND THE TOP OF THE RING & COVER SHALL BE PER GHA.
- MANHOLE BASE THICKNESS SHALL BE 6 INCHES MINIMUM ON 48 INCHES DIAMETER, 8 INCHES MINIMUM ON LARGER DIAMETERS. BASE RADIUS SHALL BE 6 INCHES UNLESS OTHERWISE SPECIFIED.
- ACTUAL MANHOLE SIZE SHALL BE DETERMINED THROUGH DESIGN. SHOP DRAWINGS FOR ALL MANHOLES SHALL BE SENT TO AND APPROVED BY THE CITY ENGINEER.

PRECAST MANHOLE

SA-1

January 2023

SECTION A-A

- RING & COVER SHALL BE CAST IRON, 24 INCHES COVER WITH MATCHING RING, 10-20 LOAD RATING, WITH RECESSED SQUARE PATTERN, PICK DOT SET IN LINE WITH SEWER LINES OR 10, OR EQUAL, PICK DOT SHALL BE 3/32 INCH AND EXTEND THROUGHOUT THE LID.
- ALL MANHOLES MUST HAVE BOTTOMS AND CHANNELS.
- CONNECTIONS TO EXISTING SANITARY MANHOLES BY REBAR OR NEW MAN SHALL BE EXTERNAL TO MANHOLE, OR CONTRACTOR SHALL REPLACE MANHOLE.
- MANHOLES STEPS SHALL BE INSTALLED PER OSHA GUIDELINES.
- SANITARY SERVICE LINES SHALL CONNECT A MINIMUM OF 8 FEET FROM A MANHOLE.
- NO 90 DEGREE MANHOLES IN PIPES LARGER THAN 34 INCHES.

PRECAST MANHOLE - CONTINUED

SA-2

January 2023

ORDINARY COMPACTED FILL TO FINISHED GRADE AS REQUIRED (TYP)

SECTION A-A

- TRENCH MUST BE OVER EXCAVATED 6 INCHES TO ALLOW FOR TYPE 1 BEDDING.
- SEE PIPE MANUFACTURER'S RECOMMENDATIONS FOR TYPE OF PIPE INSTALLATIONS.
- BACKFILL DETAILS FOR PIPE SIZES OVER 24 INCHES SHALL BE ADDRESSED WITHIN THE PLAN SET AND APPROVED BY THE CITY ENGINEER.

WATER & SEWER BACKFILL AND BEDDING

ST-1

January 2023

SECTION A-A

- FITTINGS TO BE SEPARATED FROM BLOCKS WITH AN APPROVED BOND BREAKER, SUCH AS POLYWRAP.
- ALL BLOCKS TO BEAR AGAINST UNDISTURBED MATERIAL.
- DESIGN IS BASED ON 150 PSI MAIN PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
- THRUST BLOCK SHALL BE OF ADEQUATE SIZE AND STRENGTH TO PREVENT MOTION OF FITTINGS UNDER MAXIMUM PRESSURE.

FITTING DIA (INCH)	TYPE 1 BLOCKS			90° BENDS			REDUCED R. BENDS			T-TEE		
	A	B	A	A	B	A	A	B	A	B	A	B
4"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
6"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"
8"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
10"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"
12"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
14"	42"	42"	42"	42"	42"	42"	42"	42"	42"	42"	42"	42"
16"	48"	48"	48"	48"	48"	48"	48"	48"	48"	48"	48"	48"
18"	54"	54"	54"	54"	54"	54"	54"	54"	54"	54"	54"	54"
20"	60"	60"	60"	60"	60"	60"	60"	60"	60"	60"	60"	60"
24"	72"	72"	72"	72"	72"	72"	72"	72"	72"	72"	72"	72"
30"	90"	90"	90"	90"	90"	90"	90"	90"	90"	90"	90"	90"
36"	108"	108"	108"	108"	108"	108"	108"	108"	108"	108"	108"	108"

THRUST BLOCKS

WA-1

January 2023

SECTION A-A

- SIZING OF VERTICAL THRUST BLOCKS DETERMINED BY TABLES ON THIS PAGE.
- WHEN RESTRAINING PIPE BY MEANS OF RODDING JOINTS, 3/4" TIE RODS, NUTS, AND WASHERS SHALL BE USED AND ARE TO BE STAINLESS STEEL. TWO RODS REQUIRED FOR 12" PIPE AND SMALLER.
- INSULATION SHALL BE REQUIRED UNDER STORM SEWER CROSSINGS OR OPEN PIPES LARGER THAN 8 INCHES IN DIAMETER.
- ALL MEGA LIDS SHALL HAVE ANODE JUMPERS TO A CATHODICALLY PROTECTED FITTING. JUMPER WIRE SHALL BE THE SAME GAUGE AS CATHODE WIRES AND COATED TO PROTECT FROM OXIDIZATION.

SOIL TYPE	ESTIMATED BEARING STRENGTH (PSF)
CLAY	1,500
SAND	1,500
SAND AND GRAVEL	2,000
SAND AND GRAVEL WITH CLAY	2,000
HARD PAN	3,000

VERTICAL THRUST BLOCKS / WATER MAIN LOWERING

WA-2

January 2023

SECTION A-A

THICKNESS (T) OF INSULATION:

AMOUNT OF BACKFILL	THICKNESS (INCHES)
2"	2.0
4"	1.5
6"	1.0
8"	1.0
10"	1.0

- INSULATION TYPE TO BE THERMAX EXTERIOR INSULATION, BY DOW CHEMICAL OR EQUIVALENT, UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
- HORIZONTAL LAYER INSULATION IS TO BE USED EXCEPT WHERE REQUIRED WIDTH IS NOT AVAILABLE OR OTHERWISE SPECIFIED BY CITY ENGINEER.
- TYPE I BEDDING MATERIAL SHALL BE COMPACTED A MINIMUM OF 6 INCHES ABOVE AND BELOW PIPE.
- A MINIMUM OF 18 INCHES OF COMPACTED BACKFILL IS REQUIRED ABOVE INSULATION FOR LOAD PROTECTION.
- INSTALLATION IN ROCK SHALL INCLUDE INSULATION ON ALL FOUR SIDES.
- INSULATION SHALL BE REQUIRED UNDER STORM SEWER MAINS OR OPEN PIPES LARGER THAN 8 INCHES IN DIAMETER.

WATERLINE INSULATION

WA-3

January 2023

SECTION A-A

- 2 FOOT OF ACCESS SPACE IS REQUIRED ON ALL SIDES OF ALL APPARATUS.
- VALVES OVER 2 INCHES SHALL BE GATE VALVES, OTHERWISE BALL VALVES SHALL BE USED.
- CURB STOPS/CONTROL VALVES SHALL BE PLACED ON THE PROPERTY LINE, OR IN THE PARKWAY WITH DETACHED SIDEWALKS, AND OUTSIDE OF DRAWEAYS, VALVE PANS ETC.
- THE PRIMARY SHUTOFF VALVE SHALL BE LOCATED WITHIN CITY RIGHT-OF-WAY.
- ALL METERS SHALL BE INSTALLED HORIZONTALLY.
- SERVICE SIZES MUST BE ONE OF THE FOLLOWING: 3/4 INCH, 1 INCH, 1-1/2 INCH, 2 INCH, 4 INCH, 6 INCH OR 8 INCH.
- COMMERCIAL INTERIOR METER SETS SHALL INCLUDE A FLOOR DRAIN WITH CAPACITY EQUAL TO TWICE THE SIZE OF REDUCED PRESSURE BACK FLOW DEVICE FOR DRAINAGE.
- IF FIRE SUPPRESSION IS REQUIRED, IT IS ACCEPTABLE TO COMBINE THE FIRE AND WATER SERVICE CONNECTION.

RESIDENTIAL & COMMERCIAL INTERIOR METER SETS

WA-7

January 2023

SECTION A-A

- CONCRETE COLLAR SHALL BE 3 FOOT x 2 FOOT x 8 INCHES, SET DIAGONALLY TO DIRECTION OF TRAFFIC, ADJUSTED TO CROWN AND GRADE OF STREET, AND 2 INCH BELOW ADJACENT PAVEMENT. SEE CON-2 FOR CONCRETE REQUIREMENTS.
- VALVE MARKER LIDS SHALL BE FREE FROM CONCRETE, CLEAN & ACCESSIBLE.
- BASE SHALL BE TYLER # 180 OR APPROVED EQUAL. LOWER EDGE OF BASE SHALL BE PLACED 6 INCHES BELOW TOP OF VALVE NUT AND SHALL BE SET ON PROPERLY COMPACTED SOIL.
- VALVES SHALL BE RIGHT HAND OPEN 12 INCH SQUARE RED WRENCH NUT AND SHALL BE IN CONFORMANCE WITH SECTION C-200 OF THE ANSWER STANDARDS. NON-RISING STEM VALVES SHALL BE USED IN ALL UNDERGROUND APPLICATIONS WITH MECHANICAL JOINTS. VALVES SHALL BE RESILIENT SEATED.
- VALVES SHALL BE PLACED ON PROPERLY COMPACTED SOIL WITH THE SAME BEDDING SPECIFICATIONS APPLYING AS FOR THE ADDING PIPELINE. PERMANENT BEDDING SHALL NOT BE PLACED UNDER THE VALVE.
- VALVE BOXES SHALL BE CASTINGS INC. MODEL 550, 5-1/4 INCH DIA. ADJUSTABLE SCREW TYPE AND OF SUFFICIENT LENGTH FOR THE DEPTH OF BURR SPECIFIED, AND SHALL BE CENTERED AND PLUMB OVER THE WRENCH NUT, UNLESS EQUAL APPROVED BY THE CITY ENGINEER.
- IF VALVE IS LOCATED OUTSIDE OF PAVEMENT, THE VALVE SHALL BE MARKED WITH A FLUORINE FIBERGLASS POST.
- TRACER WIRE MUST BE INSTALLED WITH ALL VALVES AND HYDRANTS, INCLUDING BLOWOFF HYDRANTS. TRACER WIRE SHALL BE EXTENDED 1 FOOT BELOW THE FINISHED GRADE SURFACE FOR EASE OF ACCESS.
- TRACER WIRE SHALL BE A MINIMUM OF 12 GAUGE, SOLID STRAND COPPER CONDUCTOR WITH A POLYVINYL CHLORIDE (PVC) INSULATION, OVER WHICH A NYLON (POLYAMIDE) JACKET RATED FOR 600 VOLTS, IS APPLIED.
- ALL VALVE BOXES AND FITTINGS SHALL BE WRAPPED IN A MINIMUM OF 6 MIL POLYETHYLENE WRAP.

WATER LINE VALVE, VALVE BOX, AND TRACER WIRE

WA-10

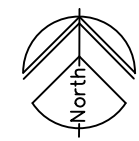
January 2023

SECTION A-A

- BONNET SHALL BE TYLER NO. 100 OR APPROVED EQUAL. BASE OF BONNET SHALL BE 6 INCHES BELOW TOP OF WRENCH NUT AND SHALL BE SET ON PROPERLY COMPACTED SOIL.
- VALVES SHALL BE RIGHT HAND OPEN 12 INCH SQUARE RED WRENCH NUT AND SHALL BE IN CONFORMANCE WITH SECTION C-200 OF THE ANSWER STANDARDS. NON-RISING STEM VALVES SHALL BE USED IN ALL UNDERGROUND APPLICATIONS WITH MECHANICAL JOINT. VALVES SHALL BE RESILIENT SEATED.
- MECHANICAL JOINT RESTRAINT SHALL BE MEGALUG EBBA 1100 SERIES, OR APPROVED EQUAL, FOR SIZE, TYPE AND CLASS OF PIPE USED, AS APPROVED BY CITY ENGINEER BY THE CITY ENGINEER.
- VALVE BOX SHALL BE CAST IRON, 5-1/4 INCH DIA. ADJUSTABLE SCREW TYPE AND OF SUFFICIENT LENGTH FOR THE TYPE OF BURR SPECIFIED, AND SHALL BE CENTERED AND PLUMB OVER THE WRENCH NUT.
- ALL COP SCREWS AND BOLTS BELOW FINISH GRADE SHALL BE STAINLESS STEEL.
- 2 1/2 INCH NOZZLES SHALL BE BRASS WITH NEW YORK CORPORATION THREAD.
- 4 1/2 INCH NOZZLE SHALL BE NATIONAL STANDARD THREAD, AND SHALL ALWAYS FACE STREET.
- OPERATING NUT AND CAP NUTS SHALL BE 1 INCH SQUARE, RIGHT HAND OPEN.
- FIRE HYDRANT SHALL BE APPROPRIATELY CATHODICALLY PROTECTED USING A MINIMUM 17# PACKAGED ANODE. ANODES SHALL BE CONNECTED TO THE HYDRANT BY THREATMITE WIRE LOCATED IN THE APPLICATION.
- TRACER WIRE ON FIRE HYDRANT ASSEMBLY SHALL BE CONNECTED TO AND PROVIDE ELECTRICAL CONTINUITY WITH THE TRACER WIRE ON THE MAIN LINE. TRACER WIRE SHALL BE LOCATED IN TRACER WIRE ACCESS BOX. SEE DETAIL WA-11.
- ALL FITTINGS, VALVES, AND FIRE HYDRANT ASSEMBLIES SHALL USE MECHANICAL RESTRAINTS FOR CONNECTION TO THE SYSTEM. BOLTS AND NUTS USED SHALL BE STAINLESS STEEL ONLY.

FIRE HYDRANT & VALVE ASSEMBLY

WA-12



C

DETAILS
NO SCALE