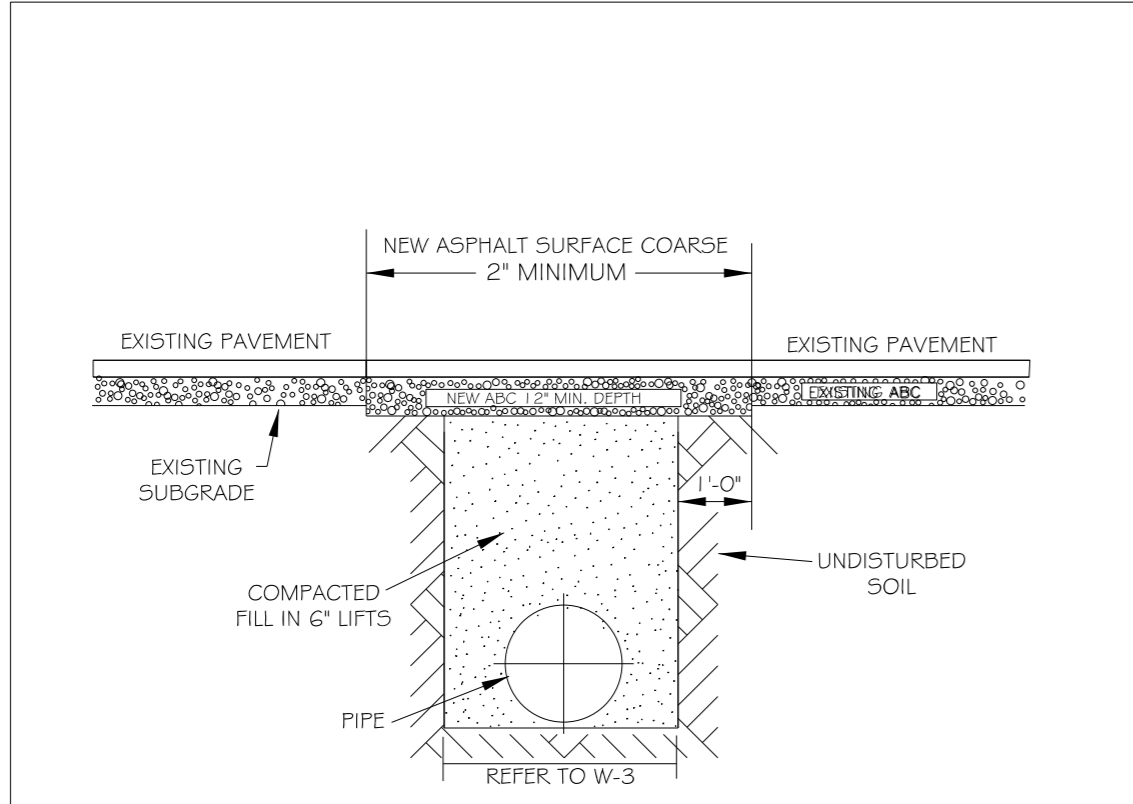


Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600
RALEIGH, N.C. 27601

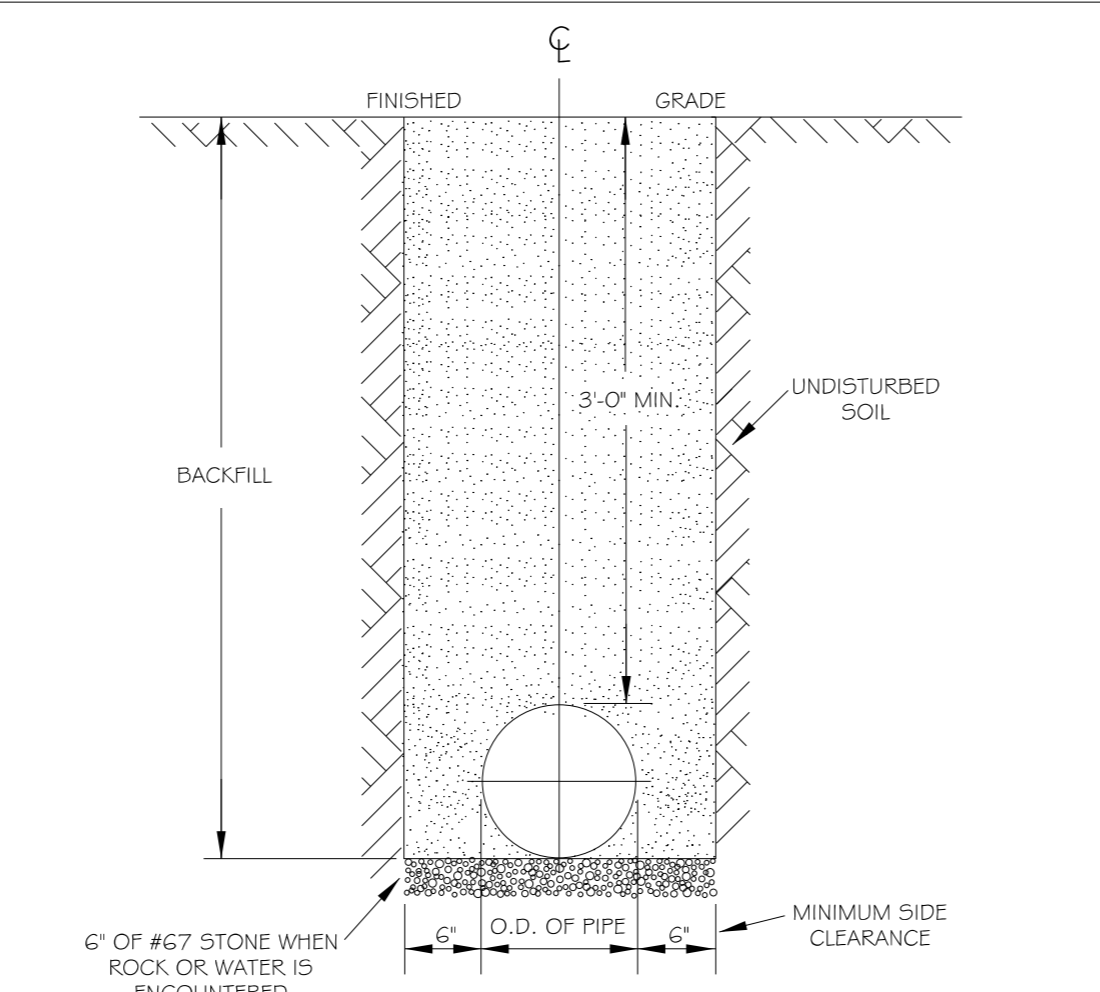
| | |
|---|---------------------------|
| PROJECT REFERENCE NO. P-5720 | SHEET NO. UC-3A |
| DESIGNED BY: DGB | |
| DRAWN BY: DGB | |
| CHECKED BY: ZGP | |
| APPROVED BY: NDR | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | |

UTILITY CONSTRUCTION



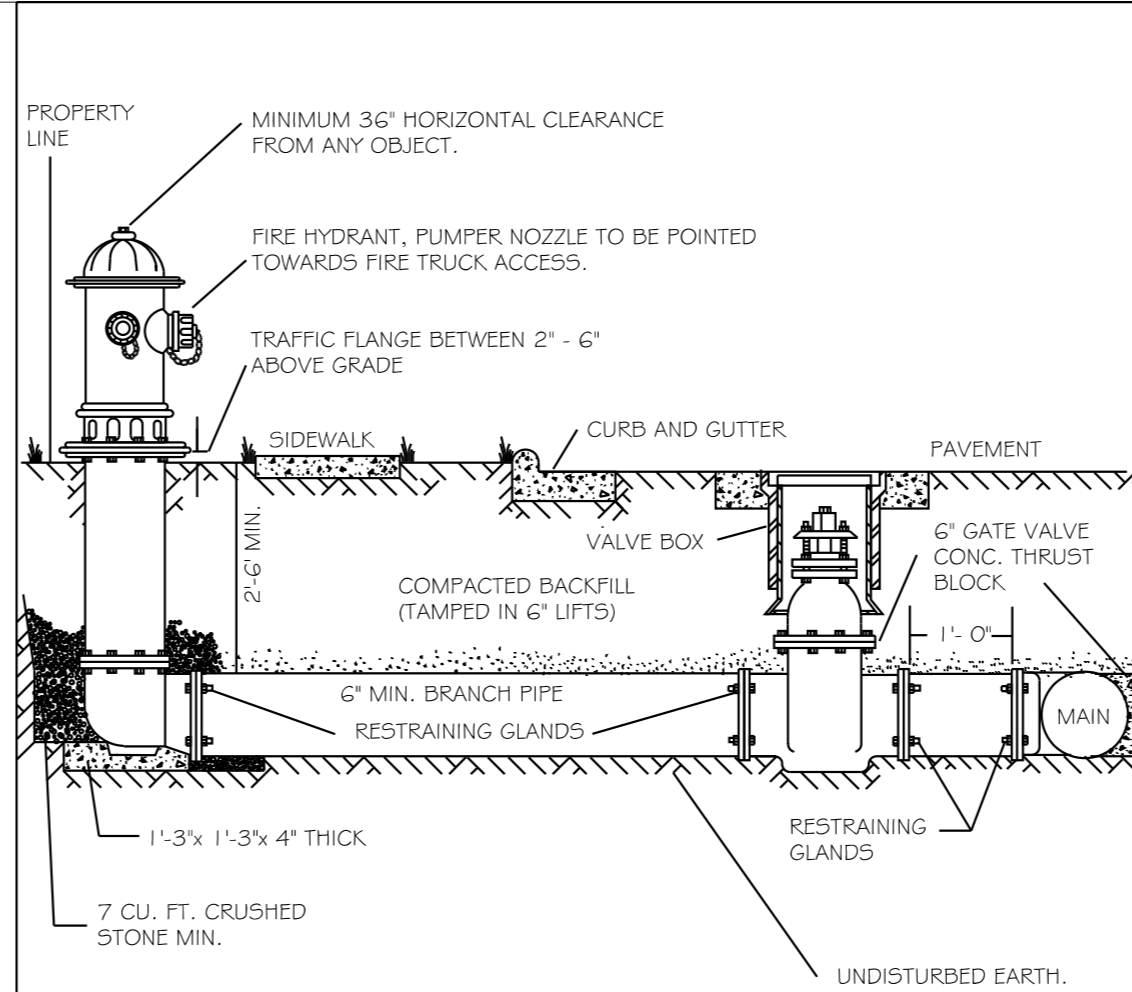
- NOTES:
1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAW CUT MACHINE.
 2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
 3. THE FINAL 1" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
 4. THE ENTIRE THICKNESS/ VERTICAL EDGE OF CUT SHALL BE TACKED.
 5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 2" THICK.
 6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
 7. REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING, W-3, FOR ADDITIONAL DETAILS.
 8. NO HAND PATCHING ALLOWED.
 9. PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| STANDARD ASPHALT PAVEMENT PATCH DETAIL | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-2 | RRH | 3-31-00 | A.B.B. 4-16-04 |
| | D.W.C. | 1-1-99 | J.P.S. 10-29-10 |



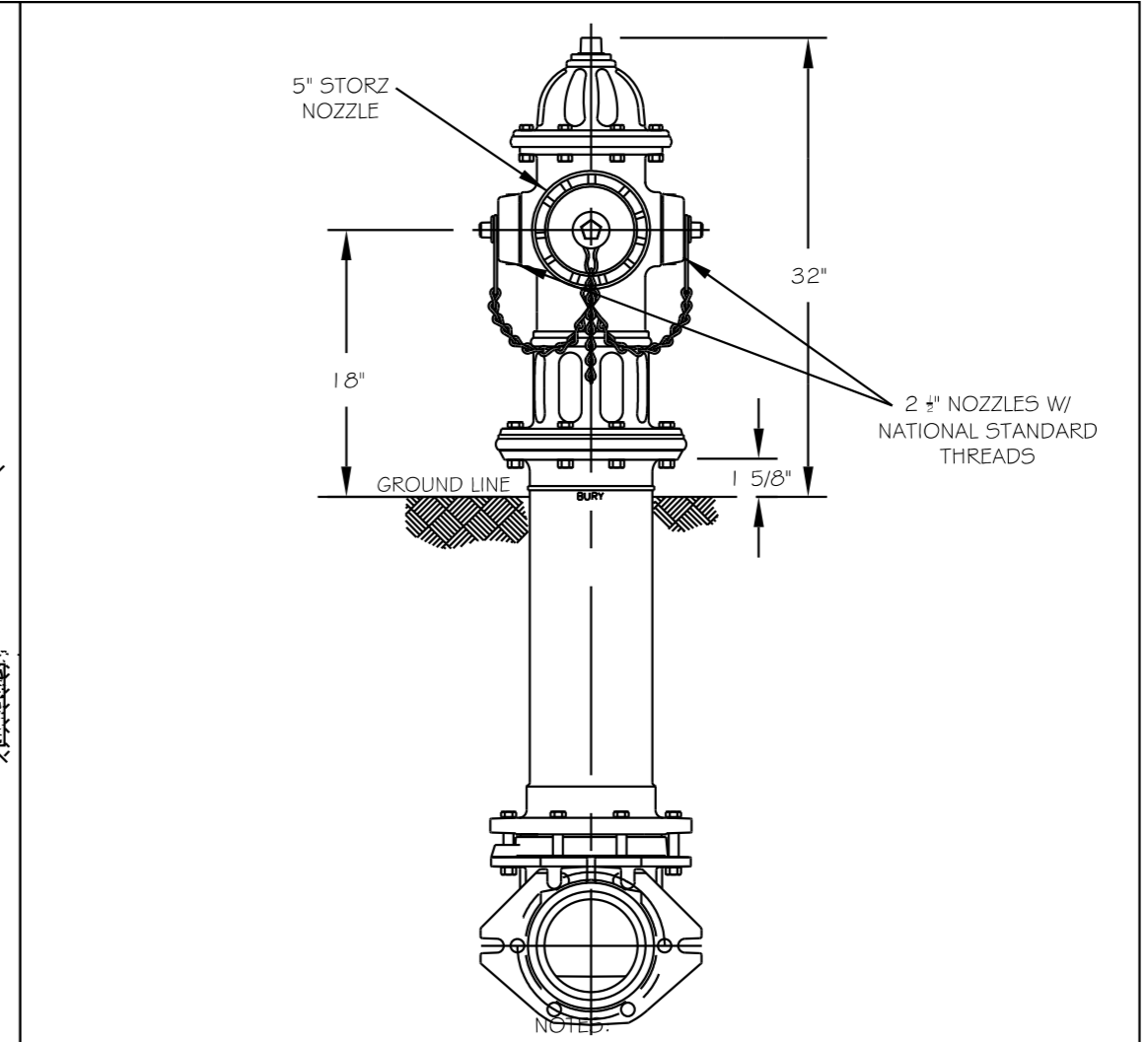
- NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
 5. ACHIEVE 95% COMPACTION IN BACKFILL.

| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-3 | RRH | 3-3-99 | A.B.B. 2-15-05 |
| | D.W.C. | 3-31-00 | J.P.S. 10-29-10 |



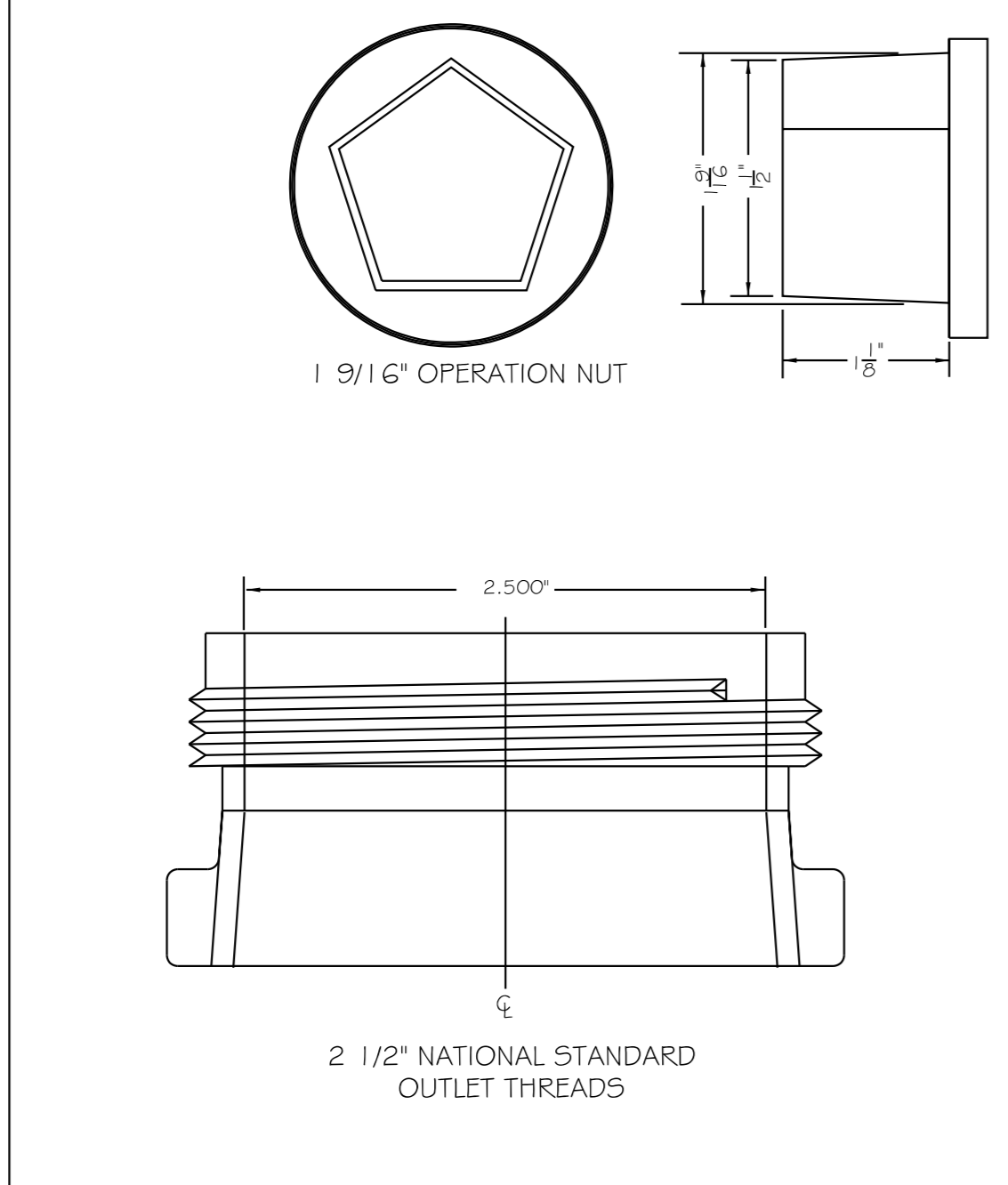
- NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, MHI, WATERLOUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
 2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
 3. 6" GATE VALVE SHALL BE AWWA C500-86 OPEN LEFT
 4. STEEL RODS AND BOLTS SHALL BE #4 HOT DIPPED GALVANIZED
 5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
- RODS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CAGE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
- FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW

| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| STANDARD FIRE HYDRANT INSTALLATION DETAIL | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-4 | RRH | 4-4-04 | P.F.P. 2-17-02 |
| | D.H.L. | 2/14/08 | |

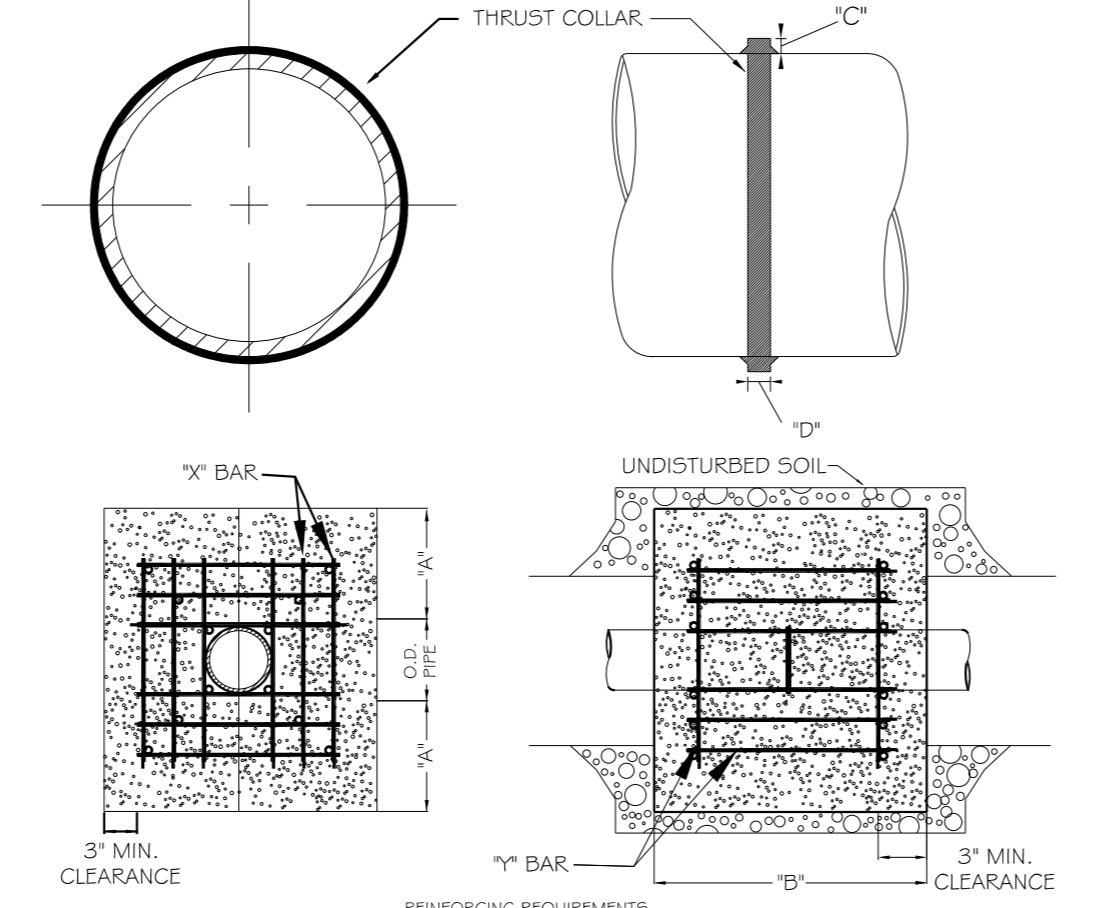


- NOTES:
1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED
 2. KNIGHTDALE PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED
 3. ZEBULON PUBLIC HYDRANTS SHALL BE PAINTED RED W/ SILVER BONNETS AND OPERATING NUTS.
 4. WENDELL PUBLIC HYDRANTS SHALL BE PAINTED SAFETY YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS, AND OPERATING NUTS
 5. WAKE FOREST AND GARNER PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/ SILVER CAPS AND OPERATING NUTS.
 6. ROLESVILLE PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.
 7. OPERATING NUTS NUTS ON HYDRANTS CONNECTED TO PUBLIC MAINS 12" OR LARGER SHALL BE PAINTED BLACK. OPERATING NUTS ON HYDRANTS ANY OTHER SIZE SHALL BE PAINTED SILVER.

| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-5 | RRH | 3-1-87 | A.B.B. 7-2-05 |
| | D.H.L. | 3-31-00 | |



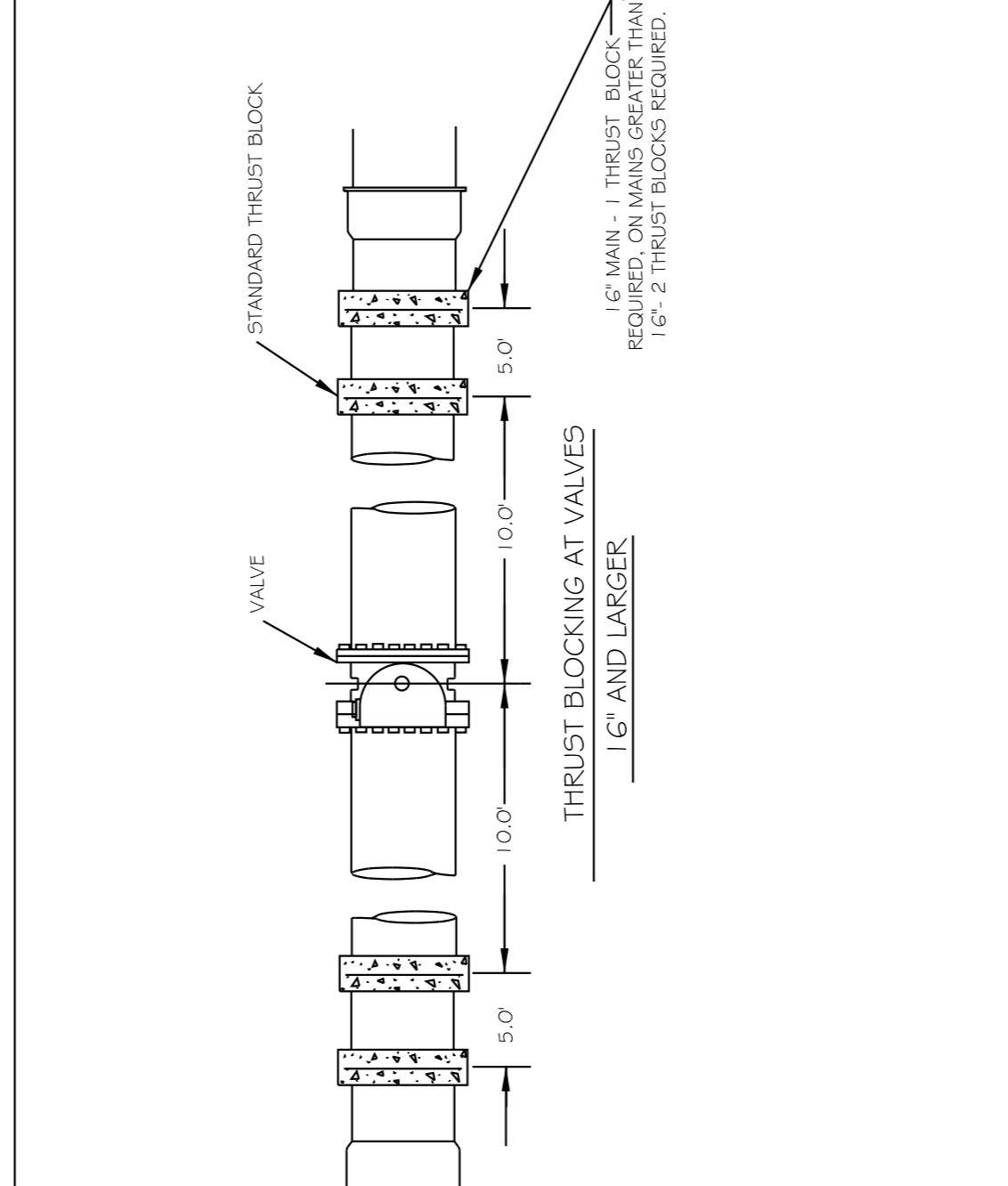
| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| HYDRANT OPERATING NUT AND 1/2" OUTLET THREADS | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-6 | RRH | 3-31- | D.H.L. 2-18-08 |
| | A.B.B. | 4-03-04 | J.P.S. 11-1-10 |



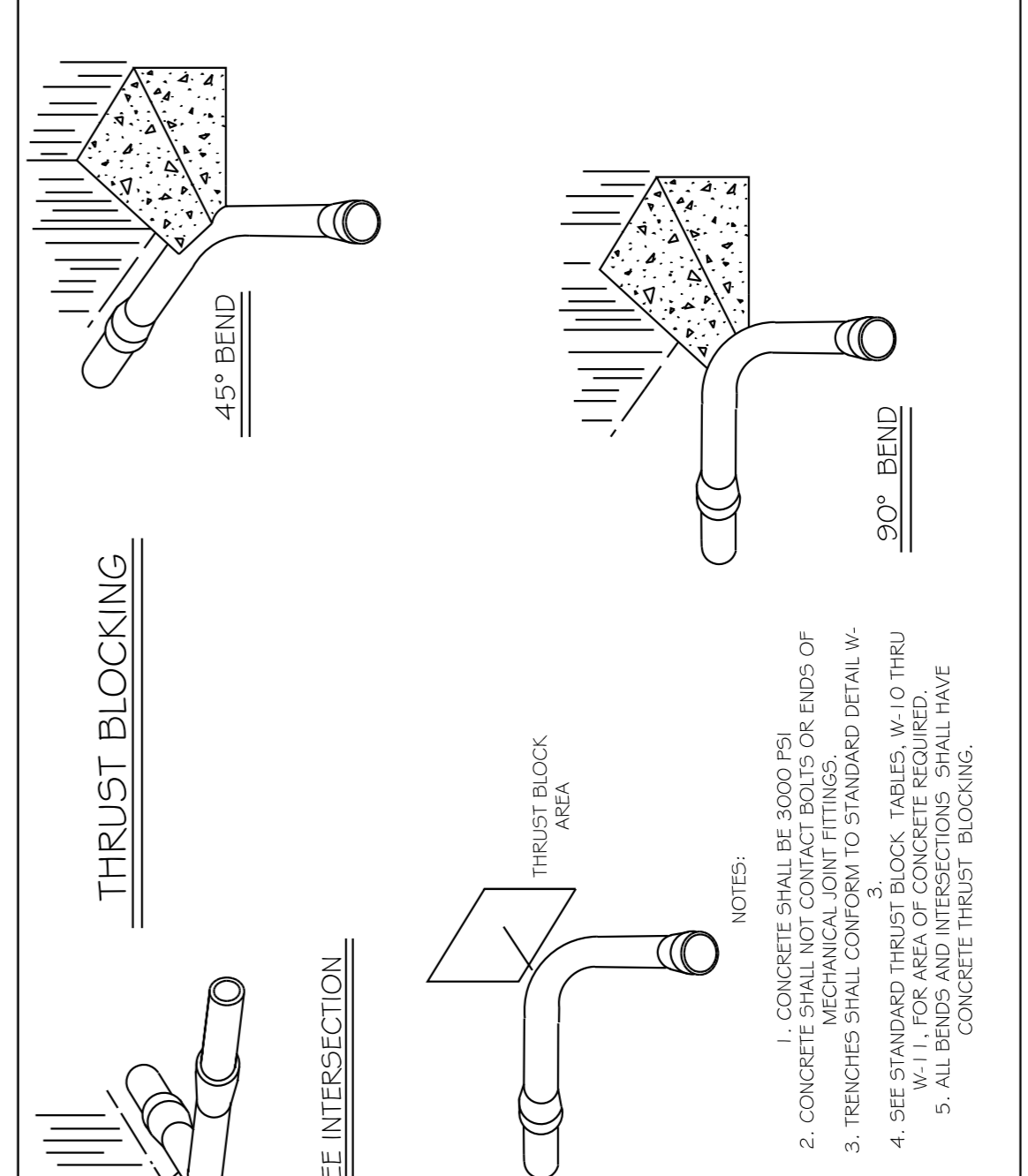
| I.D. PIPE | REBAR SIZE | "X" BAR LENGTH | "Y" BAR WEIGHT | "Y" BAR LENGTH | "Y" BAR WEIGHT | NO. REQUIRED |
|---------------|------------|-------------------|----------------|----------------|----------------|--------------|
| 6" - 16" | #5 | 2'-2" x O.D. PIPE | 1.043 LBS/FT | 1'-1" | 1.1 LBS. EACH | X-24, Y-12 |
| 48" & greater | #6 | 3'-0" x O.D. PIPE | 1.502 LBS/FT | 1'-3" | 1.9 LBS. EACH | X-24, Y-12 |

- NOTES:
1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
 2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
 3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
 4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
 5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
 6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| THRUST BLOCKING DESIGN DATA FOR WATER MAINS | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-7 | RRH | 1-21-00 | J.P.S. 11-1-10 |
| | D.H.L. | 6-18-08 | |



| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| STANDARD THRUST BLOCK INSTALLATION FOR 16" AND LARGER VALVES AND DEAD END MAINS | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-8 | Y.C.A. | 4-12-90 | D.W.C. 9-7-99 |
| | | 6-92 | RRH 3-31-00 |



| CITY OF RALEIGH | | | |
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| DEPARTMENT OF PUBLIC UTILITIES | | | |
| STANDARD THRUST BLOCKING VIEWS | | | |
| DWG. NO. | REVISIONS | DATE | DATE |
| W-9 | D.W.C. | 3-1-87 | RRH 3-31-00 |
| | | 9-7-99 | D.H.L. 6-18-08 |

- NOTES:
1. CONCRETE SHALL BE 3000 PSI
 2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS
 3. TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3
 4. SEE STANDARD THRUST BLOCK TABLES, W-10 THRU W-11, FOR AREA OF CONCRETE REQUIRED.
 5. ALL BLOCKING SHALL HAVE CONCRETE THRUST BLOCKING.

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # S-4499

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3582

The City of Raleigh consents to the connection and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # N/A

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
City of Raleigh Review Officer _____