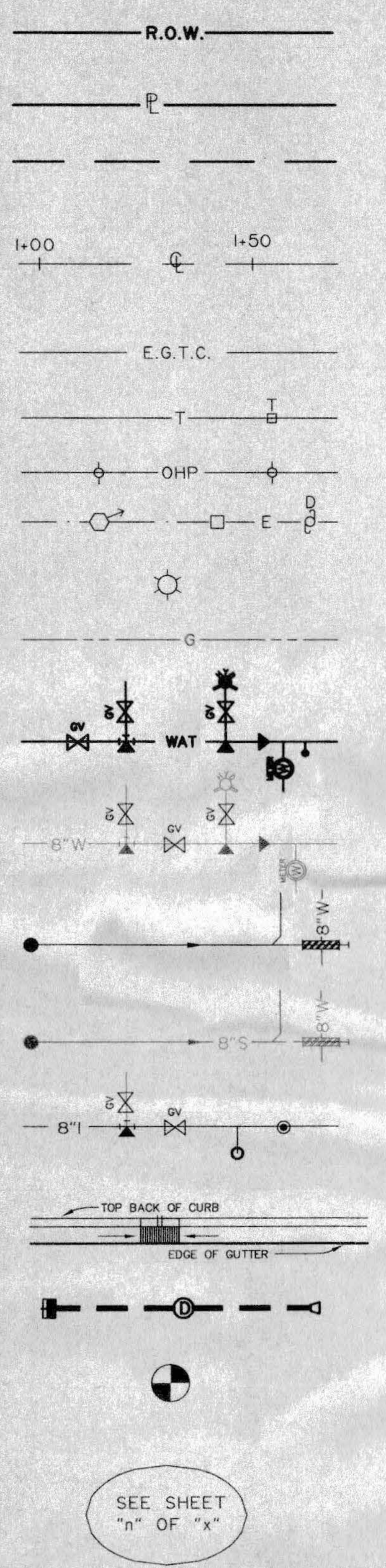
LEGEND



- STREET R.O.W. LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE & STATION MARKERS
- CENTERLINE COMMON TRENCH-ELECTRICAL, TELEPHONE, & CABLE T.V.
- UNDERGROUND TELEPHONE LINE AND PEDESTAL
- EXISTING OVERHEAD UTILITY LINES & POLES
- CONDUIT LINE, TRANSFORMER W/SERVICE TO LOT, SWITCH BOX, POLE W/DROP
- STREET LIGHT
- GAS LINE, 1¼" DIAMETER (UNLESS OTHERWISE NOTED)
- PROPOSED WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW-OFF
- EXISTING WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW-OFF
- PROPOSED SANITARY SEWER, MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG
- EXISTING SANITARY SEWER MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG
- IRRIGATION LINE, TEE & THRUST BLOCK (pressure lines only), INLINE VALVE, PROPOSED, RISER, AND EXISTING RISER
- CURB INLET W/DIRECTION OF FLOW
- STORM SEWER, INLET, MANHOLE, OUTFALL (SMALLER THAN 30")
- BENCHMARK LOCATION
- SHEET REF.

GENERAL CONSTRUCTION NOTES

1. Alignment, centerline curve data, and stationing to be verified from approved subdivision plat before construction.
2. Locations of existing utilities shown on these plans are approximate only. Contractor is to contact affected utility for specific locations before digging.
3. All satisfactory excess excavation from either utility or street construction shall be spread uniformly across the lots as directed by the Owner or his designated representative. All unsatisfactory or waste material including vegetation, roots, concrete, rocks, or other debris, shall be hauled from the project by the Contractor. No separate pay.
4. Contractor shall give 48 hour notice to all authorized inspectors, superintendents, or person in charge of public and private utilities affected by his operations prior to commencement of work. Contractor shall assure himself that all construction permits have been obtained prior to commencement of work. All permits obtainable by the Contractor shall be obtained at the Contractor's expense.
5. Contractor shall confine his construction operations to the rights-of-way, easements, and lots, as shown on Plans and Plat. Any damage to private facilities outside these limits shall be repaired by the Contractor at no expense to the Owner.
6. All road construction, and related work, all materials, performance and quality of work, shall conform to the requirements of the City of Grand Junction Standards and Specifications.
7. All utility installations are to be performed in accordance with the technical specifications of the City of Grand Junction. All water and sewer lines must be tested and approved prior to street construction. All water lines to be constructed in accordance with the technical specifications of Clifton Water District. All sewer lines to be constructed in accordance with the technical specifications of the Central Grand Valley Sanitation District.
8. Contractor shall familiarize himself with the geotechnical testing requirements of the City of Grand Junction and the affected utility districts. Though the owner is paying for the testing, it shall be the responsibility of the Contractor to contact the testing firm 24 hours in advance of the need for testing, and to verify that the appropriate numbers of tests have been taken. The results of the required types of tests and numbers of passing tests shall be furnished to the Engineer for verification before final acceptance by the Owner will be granted. All failing tests shall be brought to the immediate attention of the Engineer and retests shall be performed until passing results are obtained. All utility lines, including service lines falling within Public rights-of-way or Public easements shall be tested.
9. Only materials on which a proctor test can be performed and accurate nuclear density tests can be run are approved for utility trench backfill unless otherwise approved by the Engineer.

STORM SEWER CONSTRUCTION NOTES

1. All storm sewer line construction shall be in accordance with the City of Grand Junction Standards and Specifications.
2. All Reinforced Concrete storm sewer pipe shall conform to ASTM Standard Specifications, C-76, Class III unless otherwise noted.
3. All polyvinyl chloride (PVC) pipe and fittings shall conform to ASTM Standard Specifications, D3034 and F679, SDR-35 unless otherwise noted.
4. All High Density Polyethylene (HDPE) pipe and fittings to conform to the following:
   12 inch to 36 inch shall meet ASSHTO M294,
   42 inch to 48 inch shall meet ASSHTO MP6.

SANITARY SEWER CONSTRUCTION NOTES

1. All sewer line construction shall conform to the Central Grand Valley Sanitation District Standards and Specifications.
2. All materials and workmanship shall conform to the Standards and Specifications of the Central Grand Valley Sanitation District. The Central Grand Valley Sanitation District reserves the right to accept or reject any materials and or workmanship that does not conform to its Standards and Specifications.
3. The Contractor shall have one signed copy of the Plans and a copy of the Central Grand Valley Sanitation District Standards and Specifications at the job site at all times.
4. All sanitary sewer pipe shall be PVC SDR-35 unless otherwise specified. All pipe joints shall be 13 foot joints unless otherwise approved by the Project Engineer.
5. All sewer mains to be laid to grade utilizing a "pipe laser".
6. All sanitary sewer services to be 4 inch PVC SDR-35 unless otherwise specified.
7. Cleanouts are required at 100 foot intervals on all lines greater than 100 feet in length.
8. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.
9. A minimum of 10 feet of horizontal separation shall be maintained at all times between the waterline and sewer line except at specified crossings.
10. Where sanitary sewers cross under waterline with less than 18 inches of vertical separation, and in all cases where the sanitary sewer crosses over the waterline at any depth, provide total Concrete Encasement of pipe for a length of 10 feet either side of waterline. See the Central Grand Valley Sanitation District Details. Include cost of waterline crossing (Total concrete pipe encasement, pipe, and approved backfill), in unit price bid per lineal foot of sanitary sewer in appropriate sizes.
11. Sewer service stub-outs shall extend 14 feet beyond the property line or through front lot easements, whichever is greater, and shall be glue capped and marked with a steel fence post painted green and buried so that 3 feet remains above grade. As-built surveying for vertical grade of stub-out required PRIOR to backfill.
12. No service line shall be connected directly into a manhole.
13. The Contractor is responsible for all required sewer line testing to be completed in accordance with the Central Grand Valley Sanitation District Standards and Specifications. Final testing to be accomplished only after all other infrastructure has been installed. This includes waterlines, gas lines, electric lines, etc. Testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed to insure that the line is clean. These tests will be the basis for issuing initial Acceptance of the sewer line extension.
14. Manholes shall be constructed as shown on the Central Grand Valley Sanitation District Standard Sanitary Sewer Detail sheet.
15. Water stop gaskets and clamp assemblies are to be furnished and installed at all connections to manholes.
16. Metal grade rings are NOT to be used on top of manhole rings to adjust to finish pavement elevation. All adjustments to finish grade on new manholes shall be made using concrete grade rings and grout beneath the cast iron ring as shown on the Standard Sanitary Sewer Detail sheet.
17. All trenches shall be compacted to 95% within 2% of optimum moisture content, as determined by AASHTO T-99. Contractor shall be required to perform all necessary compaction tests through a certified soils lab. A copy of the compaction test results shall be provided to the District during the course of the project.
18. Only materials on which a proctor test can be performed and accurate nuclear density tests can be run are approved for sewer line trench back fill unless otherwise approved by the Engineer.
19. To inhibit the movement of groundwater through sewer bedding and haunching material, clay cutoff walls of native material are to be constructed approximately 10 feet upstream from each manhole as shown on sanitary sewer plan and profiles. The cut-off wall shall extend from 6 inches below to 6 inches above granular back fill material and shall be 2 feet wide. If native material is not suitable, the Contractor shall import material approved by the Engineer.
20. When installing manholes over existing sewer lines:
    Contractor is to expose existing sanitary sewer main to allow the Engineer to field verify existing pipe inverts PRIOR to construction of manholes and adjust invert elevations if required. The Contractor shall place type "A" bedding material and pour the base of the manhole and complete the manhole as per the Standard Sanitary Sewer Details, Central Grand Valley Sanitation District. The Contractor at that time can notch out or cut the existing pipe out to the spring line of the pipe. The Contractor shall control all live sewage flow and shall not allow debris from the cutting or other work to enter the existing pipe line while the work is being done.
21. The Contractor should notify the District at least 48 hrs. prior to commencement of construction.
22. All sanitary sewer notes apply to all sheets pertaining to the sanitary sewer line.
23. Red Line As-built Drawings shall be submitted to the City Utility Engineer at least 72 hours PRIOR to paving for review.
24. The Contractor shall obtain a City of Grand Junction Street Cut Permit for all work within existing City Right-of-way.
25. When connecting to existing manholes, it is necessary to provide a "PSX" positive seal gasket to accommodate the new invert-in. The manhole base and wall is to be grouted to provide a water tight seal and the invert grouted as necessary to provide for a smooth invert channel. All grout used on the invert channel should be suitable for

PAVING CONSTRUCTION NOTES

1. All road widths, and radii are to face of curb or flowline unless noted otherwise. Any "spot" design elevations are to flowline of curb and gutter unless otherwise noted.
2. TOC = top of curb elevation
   BOW = back of sidewalk
   EOP = edge of pavement elevation
   RIM = rim of manhole
   INV = invert elev. of manhole or inlet
   CL = centerline
   PL = property line
   FL = flowline
   El = elevation
3. The top of existing ground or the top of areas cut to final grade are to be scarified, moistened and recompacted to 95% of AASHTO T99 in accordance with Geotechnical recommendation before starting up with embankments or before base is placed.
4. Contractor to protect existing utilities and appurtenances. Manholes, drainage inlets, utility lines, etc., damaged, covered or filled with dirt or debris by the Contractor shall be cleaned and repaired at no expense to the Owner.
5. Aggregate base course must be compacted 95% within 2% of optimum moisture content, as determined by AASHTO T-180.
6. Hot-mix asphaltic concrete to be CDOT Grading C. A mix design for the proposed pit must be approved by Engineer prior to placement of pavement.
7. Where proposed pavement is to match existing pavement, existing pavement is to be square cut, full base thickness is to be brought to match line and existing surface is to be tack-coated before proposed surface is placed.
8. Handicap ramps are to be constructed where indicated on the plans and in accordance with current City of Grand Junction Standard Details.
9. Curb, gutter and drainage pans are to have expansion joints at each change in horizontal alignment of curb and gutter, but in no case at a greater distance apart than 100 feet. Locate dummy grooved joints between expansion joints at intervals not exceeding 10 feet.
10. Include backing of curb and Gutter and or sidewalk with native fill material per the typical roadway section in the unit price bid for embankment.

WATERLINE CONSTRUCTION

1. All water line construction shall be in accordance with the Clifton Water Districts standards and specifications
2. Contractor shall notify the Clifton Water District 48 hours prior to the beginning of construction.
3. All trenches shall be compacted to 95% within 2% of optimum moisture content, as determined by AASHTO T-99. Contractor shall be required to perform all necessary compaction tests through a certified soils lab.
4. Maximum cover required over top of new waterlines is 4'-6'.
5. All water mains, sizes 4" through 12", to be DR-18 PVC conforming to AWWA C-900
6. All service connections to be 3/4" Type "K" copper.
7. Cast Iron fittings to conform to AWWA C-110.
8. Fire Hydrants shall conform to AWWA C-502-85.
9. All materials, labor and equipment required for testing and disinfection of waterlines shall be furnished by Contractor. Disinfection of waterlines shall conform to AWWA C-651-99 or latest revision thereof. No separate pay.
10. All pipe bends/angle points, both horizontal and vertical, as called for on the plans are to be thrust blocked per Clifton Water District details and Technical Specifications.
11. Only materials on which a proctor test can be performed and accurate nuclear density tests can be run are approved for waterline trench backfill unless otherwise approved by the Engineer.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.

City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED

City of Grand Junction Engineering Division Representative — Date

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE
CENTRAL GRAND VALLEY SANITATION DISTRICT

Date

INITIAL ACCEPTANCE
CENTRAL GRAND VALLEY SANITATION DISTRICT

Date

APPROVED FOR CONSTRUCTION
CLIFTON WATER DISTRICT

Date

ACCEPTED AS CONSTRUCTED
CLIFTON WATER DISTRICT

REVISION	DATE	DESCRIPTION	BY	CH'D

G & R WEST, LLC — CITY OF GRAND JUNCTION

GENERAL LEGEND AND CONSTRUCTION NOTES

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED PROFESSIONAL ENGINEER 37343 06/12/03

DATE: June 13, 2003
SCALE: Horiz: N.T.S.
Project No: 0543-001
SHEET NO: 2 OF 12

03-079

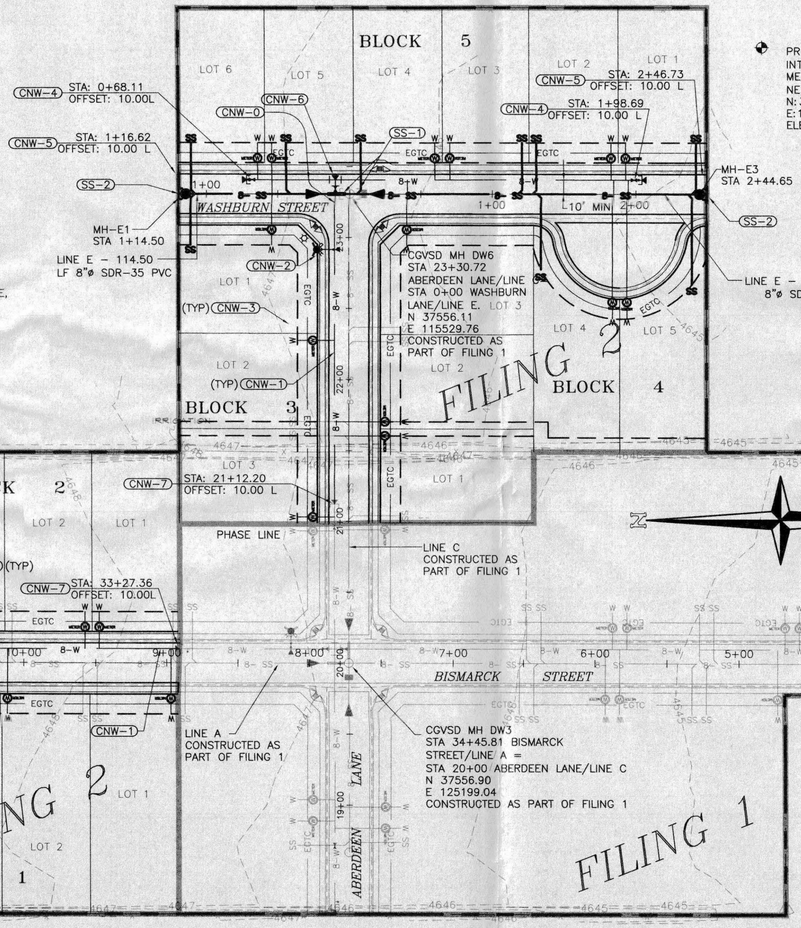
LEGEND

- R.O.W. — STREET R.O.W. LINE
- ℄ — LOT LINE
- EASEMENT LINE
- 1+00 ℄ 1+50 — CENTERLINE & STATION MARKERS
- E.G.T.C. — CENTERLINE COMMON TRENCH–ELECTRICAL, TELEPHONE, & CABLE T.V.
- T — UNDERGROUND TELEPHONE LINE AND PEDESTAL
- OHP — EXISTING OVERHEAD UTILITY LINES & POLES
- D E — CONDUIT LINE, TRANSFORMER W/SERVICE TO LOT, SWITCH BOX, POLE W/DROP
- STREET LIGHT
- G — GAS LINE, 1¼" DIAMETER (UNLESS OTHERWISE NOTED)
- GV WAT — PROPOSED WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW–OFF
- 8"W GV — EXISTING WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW–OFF
- 8" W 8– SS — PROPOSED SANITARY SEWER, MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG
- 8" W 8– SS — EXISTING SANITARY SEWER MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG
- 8"I GV — VALVE, PROPOSED, RISER, AND EXISTING RISER IRRIGATION LINE, TEE & THRUST BLOCK (pressure lines only), INLINE
- TOP BACK OF CURB / EDGE OF GUTTER — CURB INLET W/DIRECTION OF FLOW
- STORM SEWER, INLET, MANHOLE, OUTFALL (SMALLER THAN 30")
- BENCHMARK LOCATION

UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

GAS AND ELECTRIC:	XCEL ENERGY
WATER:	CLIFTON WATER DISTRICT
CABLE TELEVISION:	AT&T
SANITARY SEWER:	CENTRAL GRAND VALLEY SANITATION DISTRICT
TELEPHONE:	QWEST
IRRIGATION	GRAND VALLEY IRRIGATION DISTRICT
DRAINAGE	GRAND JUNCTION DRAINAGE DISTRICT

PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73



(IN FEET)
1 inch = 50 ft.

CONTOUR INTERVAL: 1'

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE CENTRAL GRAND VALLEY SANITATION DISTRICT Date	ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE. Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications. City of Grand Junction Engineering Division Representative Date	APPROVED FOR CONSTRUCTION CLIFTON WATER DISTRICT Date
INITIAL ACCEPTANCE CENTRAL GRAND VALLEY SANITATION DISTRICT Date	ACCEPTED AS CONSTRUCTED City of Grand Junction Engineering Division Representative Date	ACCEPTED AS CONSTRUCTED CLIFTON WATER DISTRICT Date

COORDINATES

LOCATION ID			WM PIT**		SEWER SVCS	
PHASE	BLOCK	LOT #	ROADWAY STATIONING	ROADWAY OFFSET	STATIONING	OFFSET
2	1	1*	8+97.01	24.50 L	9+49.01	36.00 L
		2*	10+11.01	24.50 L	9+59.01	36.00 L
		3*	10+21.01	24.50 L	10+73.01	36.00 L
		4*	11+35.14	24.50 L	10+83.01	36.00 L
2	2	1*	9+47.59	24.50 R	08+95.65	36.00 R
		2*	9+57.59	24.50 R	10+08.06	36.00 R
		3*	10+68.73	24.50 R	10+18.06	36.00 R
		4*	1+32.15	24.50 R	11+29.54	36.00 R
2	3	1	0+54.00	24.50 L	1+10.77	36.00 L
		2*	22+27.47	24.50 L	21+70.43	36.00 L
		3*	21+03.05	24.50 L	21+60.43	36.00 L
2	4	1*	21+60.36	24.50 R	21+04.07	36.00 R
		2*	21+70.36	24.50 R	22+26.80	36.00 R
		3*	0+40.29	24.50 R	22+36.80	36.00 R
		4	1+84.69	76.17 R	1+34.68	53.10 R
		5	1+94.69	76.17 R	2+39.61	63.77 R
2	5	1	1+92.87	24.50 L	2+42.09	36.00 L
		2	1+82.87	24.50 L	1+31.14	36.00 L
		3	0+69.43	24.50 L	1+21.14	36.00 L
		4	0+59.37	24.50 L	0+07.64	36.00 L
		5	0+54.11	24.50 R	0+44.11	36.00 R
		6	0+64.11	24.50 R	1+10.77	36.00 R
2	6	1	1+33.15	24.50 L	0+88.05	36.00 L
		2	0+23.12	27.95 L	0+78.05	36.00 L
		3	0+31.82	24.50 R	0+41.85	36.00 R
		4	1+06.82	56.20 R	0+51.85	36.00 R
		5	1+16.82	56.20 R	1+26.77	65.75 R

* DENOTES THE SEWER SERVICE WAS CONSTRUCTED AS PART OF PHASE 1
** ALL WATER SERVICES PERPENDICULAR TO MAIN

CONSTRUCTION NOTES

CNW–0 ALL WATERLINE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE CLIFTON WATER DISTRICT'S STANDARDS AND SPECIFICATIONS.

CNW–1 CONSTRUCT 8" DR–18 PVC WATER LINE. MIN 42" BURY

CNW–2 INSTALL 8"x6" TEE, 6" GV&B, HYDRANT ASSEMBLY, AND THRUST BLOCK.

CNW–3 CONSTRUCT WATER METER AND PIT. WATER SERVICE STATIONING AND OFFSET ARE TO CENTER OF METER PIT AND RELATIVE TO STREET CENTERLINE STATIONING. CONTRACTOR IS TO EXTEND WATER SERVICES AN ADDITIONAL 11.5 FEET TO THE MULTI–PURPOSE EASEMENT LINE.

CNW–4 INSTALL 8" GV&B.

CNW–5 INSTALL BLOWOFF PLUG & THRUSTBLOCK

CNW–6 INSTALL 8"x2"x2" TEE, (1)–8" GV&B & THRUST BLOCK.

CNW–7 REMOVE PLUG & BLOWOFF AND CONNECT TO EXISTING WATER LINE.

CNW–8 INSTALL 90° BEND AND THRUST BLOCK.

SS–1 EXISITNG STUBOUT TO BE REMOVED AND THE NEW SEWERLINE INSTALLED INTO THE EXISTING MANHOLE. GROUT EXISTING INVERT AS NECESSARY TO PROVIDE A SMOOTH INVERT CHANNEL AND WATERTIGHT MANHOLE

SS–2 STUB–OUT FOR FUTURE SEWER LINE CONNECTION 5' MAXIMUM LENGTH. SANITARY SEWER STUB–OUTS TO BE GLUE CAPPED AND MARKED WITH A 2x4 POST PAINTED GREEN.

BY	DESCRIPTION	DATE	REVISION	CHD

G & R WEST, LLC
CITY OF GRAND JUNCTION

UTILITY/COMPOSITE PLAN FOR DAKOTA WEST SUBDIVISION

THOMPSON–LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD. SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243–6067
FAX (970) 241–2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED JEFFREY W. LANGFORD 37343 04/25/03 PROFESSIONAL ENGINEER

DATE: June 25, 2003
SCALE: Horiz: 1" = 50'
Project No: 0543-001
SHEET NO: 3 OF 12

02-079

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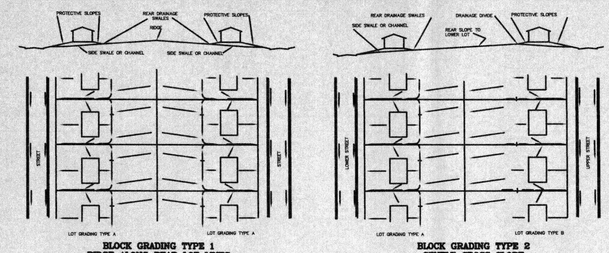
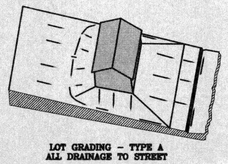
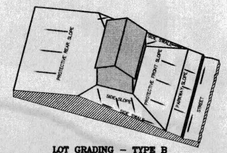


BLOCK GRADING TYPE 1
RIDGE ALONG REAR LOT LINES

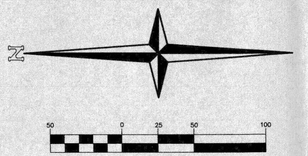
BLOCK GRADING TYPE 2
GENTLE CROSS SLOPE



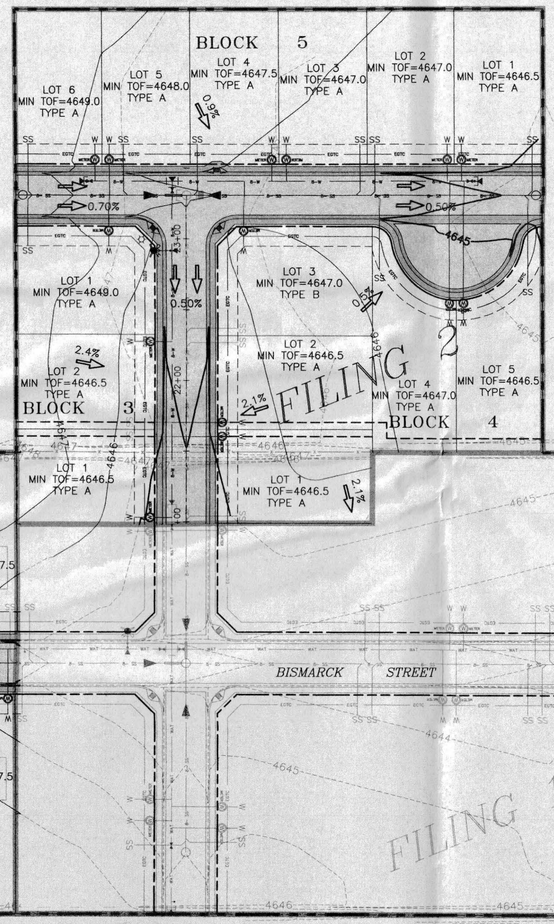
LOT GRADING – TYPE A
ALL DRAINAGE TO STREET



LOT GRADING – TYPE B
DRAINAGE BOTH TO STREET AND TO REAR LOT LINE



CONTOUR INTERVAL: 1'



LEGEND

- DRAINAGE FLOW DIRECTION
- 4645 — PROPOSED CONTOUR (5' INTERVAL)
- 4647 — PROPOSED CONTOUR (1' INTERVAL)
- 4650 — EXISTING CONTOUR (5' INTERVAL)
- 4647 — EXISTING CONTOUR (1' INTERVAL)

PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73

NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED FLOODPLAIN

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.

City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED

City of Grand Junction Engineering Division Representative — Date

REVISION	DATE	BY	DESCRIPTION

CITY OF GRAND JUNCTION

G & R WEST, LLC

GRADING & DRAINAGE PLAN FOR DAKOTA WEST SUBDIVISION

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED JEFFREY W. MOORE 37343 01/28/03 PROFESSIONAL ENGINEER

DATE: June 25, 2003
SCALE: Horiz: 1" = 50'
Project No: 0543-001
SHEET NO: 4 OF 12

03-079

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STORMWATER MANAGEMENT PLAN
DAKOTA WEST SUBDIVISION - FILING 3
GRAND JUNCTION, COLORADO

EROSION CONTROL MEASURES
Performance Standards

The general requirements for erosion control work shall be as follows:
1. Any grading shall be conducted in such a manner so as to effectively reduce accelerated soil erosion and resulting sedimentation.

2. All grading shall be designed, constructed and completed in such a manner so that exposed area of any disturbed land shall be limited to the shortest time period .

3. Sediment caused by accelerated soil erosion shall be removed from runoff water before leaving the site.

4. Any temporary or permanent facility designed and constructed for the conveyance of water around, through, or from the graded area shall be designed to limit the water flow to a non-erosive velocity.

5. Temporary soil erosion control facilities shall be removed and areas graded and stabilized with permanent soil erosion control measures pursuant to approved plans and specifications.

General Notes

1. At all times during construction, erosion and sediment control shall be maintained by the contractor.

2. Erosion control system shall be installed as grading progresses.

3. Details shown are schematic only. Adjust as necessary to fit field conditions.

4. Negative impacts to downstream areas (or receiving waters) caused by the overlot grading and/or construction to be monitored and corrected by the contractor.

Maintenance

1. The developer or his designated representative shall make routine checks on all erosion control measures to determine if repairs or sediment removal is necessary.

2. After each rainfall or moderate snow melt, erosion control measures are to be checked. If repairs are needed, they shall be completed immediately.

3. Silt and sediment shall be removed after each substantial rainfall. Deposits must be removed when they reach a height of one-half of the barrier (silt fence).

4. When temporary measures are to be removed, any silt and sediment deposits shall be removed and spread evenly in open areas and seeded as necessary.

During Construction (Temporary Measures)

1. Silt Fence: Silt fence shall be at storm sewer outlets into channels and at all inlet locations. Installation shall be in accordance with Detail B as shown on this sheet.

2. Place silt fence (SF) at the tops and toes of slopes and behind the curb and gutter where called for on this plan as soon as the backing for the curb and gutter is in place and the overlot grading is complete.

3. Compact topsoil 80-85% standard density and finish grade to elevations shown on the grading plan. Eliminate low spots and round out abrupt changes in slope.

4. Contractor shall have a water truck made available to assist in controlling dust and wind erosion.

5. Construction traffic entrances (mud traps) shall be installed prior to commencement of construction activities and shall be cleaned on a continual basis during construction.

After Construction (Permanent Measures)

1. Rip-Rap: The use of rip-rap is proposed for all storm sewer outlets. The rip rap shall function to take the impact of the release water, thereby reducing velocities to a non-erosive rate (see grading & drainage plan).

2. Gravel filters @ inlets: Following paving, gravel filters in accordance with Detail D, shall be constructed and maintained by the contractor until his contract is complete. At that time, responsibility for maintenance shall be transferred to the owner.

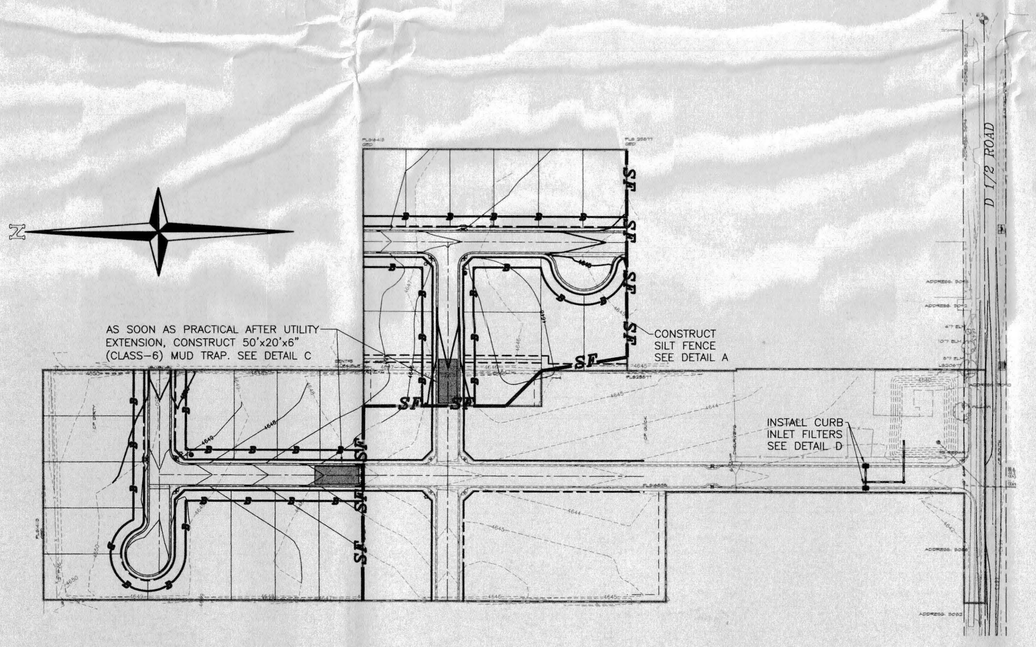
3. Landscape Areas: In improved open spaces, grass and trees with an irrigation system will be required for controlling erosion after land development & home construction are complete.

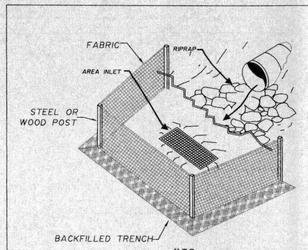
4. Native Grass Areas: After completion of grading activities, broadcast seed with special seed mix listed below and hydromulch with an organic mulch. In areas which have a slope at or exceeding 3:1, add an approved tackifier to hydromulch.

Seeding shall be done with a brillion drill into a slightly moist seedbed. The seeding shall be done in two separate applications crossing the area at right angles (if possible) to one another to guarantee proper coverage. Each application shall be at 1/2 the total rate noted in the table below.

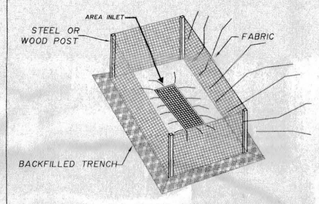
NONIRRIGATED REVEGETATIVE SEED MIX:

COMMON NAME	SCIENTIFIC NAME	Lbs/Acre PLS	%
Blue Flax	Linum perenne "Lewissi"	14 oz.	10.0%
Hard Fescue	Festuca ovina Spartan	3.50 lbs.	15.0%
Alkali Sacaton	Sporobolus giroides	2.33 lbs.	10.0%
Intermediate Wheatgrass	Agropyron intermedium"Oahe"	1.19 lbs.	10.0%
Galleta	Hilaria jamesii	11.20 oz.	5.0%
Crested Wheatgrass	Agropyron cristatum"Highcrest"	1.13 lbs.	10.0%
Western Wheatgrass	Agropyron smithii "Arriba"	2.26 lbs.	20.0%
Fult's Alkali Grass	Puccinellia distons "Fults"	7.96 lbs.	20.0%

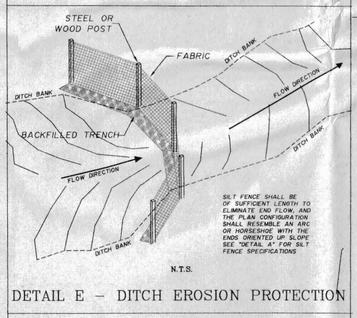




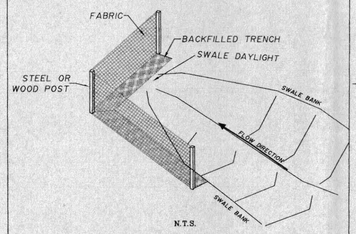
DETAIL B - CULVERT OUTLET TRAP OR INLET PROTECTION



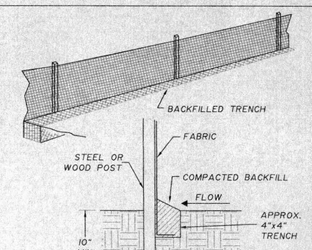
DETAIL B - INLET PROTECTION



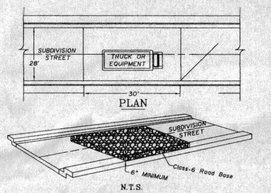
DETAIL E - DITCH EROSION PROTECTION



DETAIL F - SILT FENCE DIKE OR SWALE PROTECTION



DETAIL A - SILT FENCE (SF)



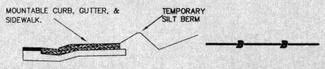
DETAIL C - MUD TRAP

DETAIL D - CURB INLET FILTER

LEGEND

PROPOSED STORM SEWER WITH MANHOLE AND CURB INLETS

PROPERTY AND CONSTRUCTION SITE BOUNDARY



NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED 100 YEAR FLOODPLAIN

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.

City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED

City of Grand Junction Engineering Division Representative — Date

REVISION	DATE	BY	DESCRIPTION

CITY OF GRAND JUNCTION

G & R WEST, LLC

STORM WATER MANAGEMENT PLAN

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED PROFESSIONAL ENGINEER
JEFFREY W. PATTEN
37343
03/25/03

DATE: June 25, 2003
SCALE: Horiz: 1" = 50' Vert: NA
Project No: 0543-001
SHEET NO. 5 OF 12

03-079

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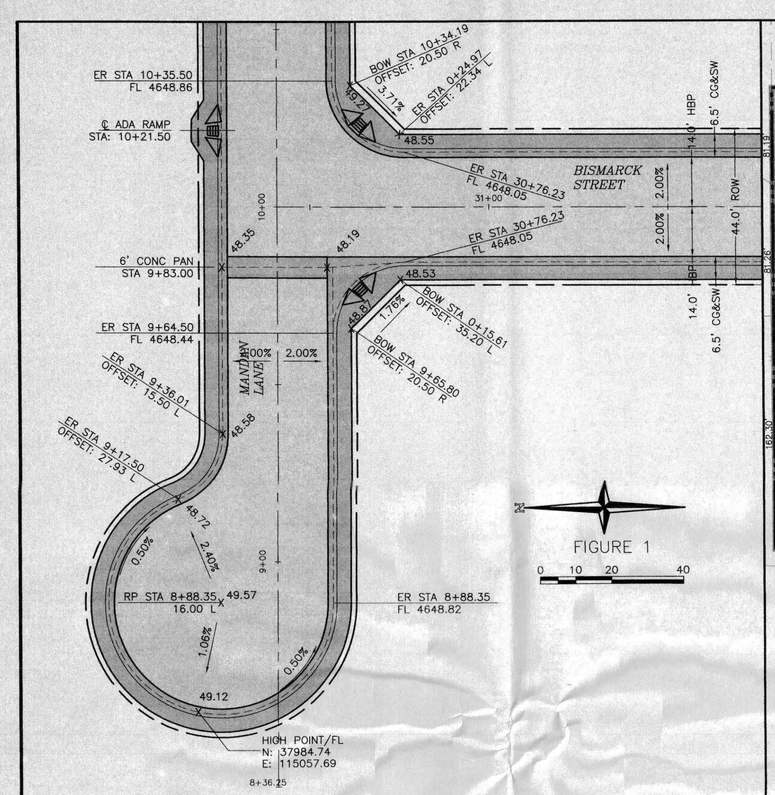
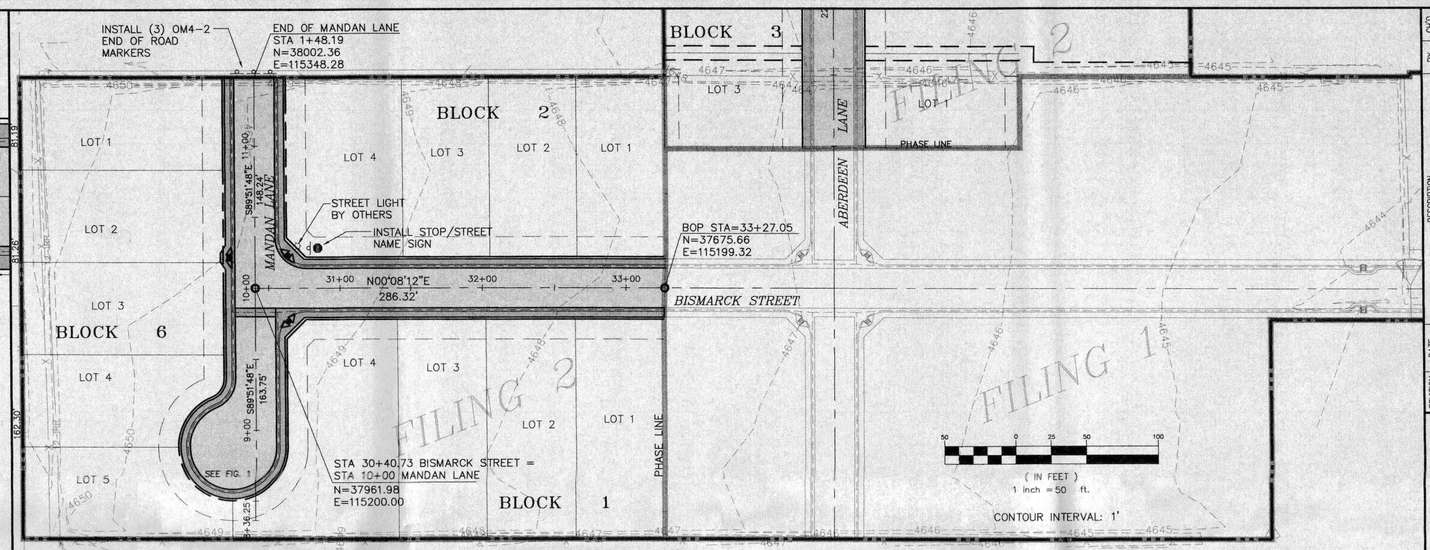


FIGURE 1

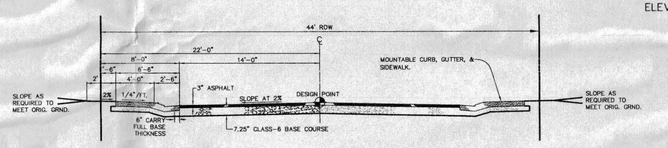
0 10 20 40



NOTE: CONTACT CITY TRAFFIC OPERATIONS SUPERVISOR, 970/244-1573, PRIOR TO ANY SIGN MATERIAL ORDER OR INSTALLATION

SIGN TYPE	MATERIAL FACING	QUANTITY
(R1-1) STOP SIGN	HIGH INTENSITY	1
(D3) STREET NAME	HIGH INTENSITY	1
(OM4-2) END OF ROAD MARKERS	HIGH INTENSITY	3

VICINITY MAP



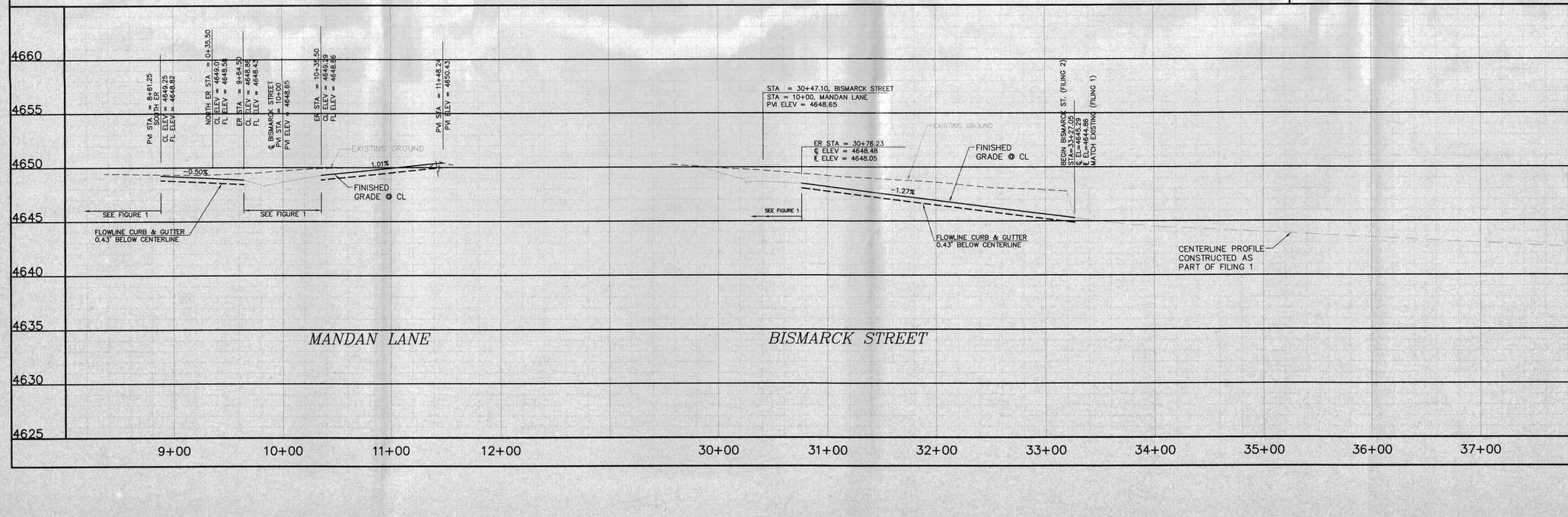
MANDAN/BISMARCK RESIDENTIAL STREET
TYPICAL SECTION

PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.
City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED
City of Grand Junction Engineering Division Representative — Date



THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MRH
CHECKED BY: JWM

COLORADO REGISTERED PROFESSIONAL ENGINEER
JEFFREY W. MARTIN
37213
04/25/03

DATE: June 25, 2003
SCALE: Horiz: 1" = 50' Vert: 1" = 5'
Project No: 0543-001
SHEET NO: 6 OF 12

CITY OF GRAND JUNCTION
G & R WEST, LLC

BY	DESCRIPTION	DATE	REVISION
CHD			

DAKOTA WEST SUBDIVISION
BISMARCK STREET/MANDAN LANE
PLAN & PROFILE

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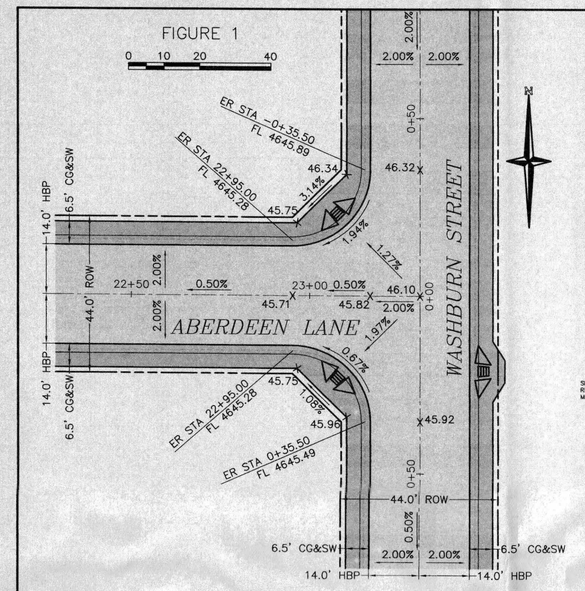
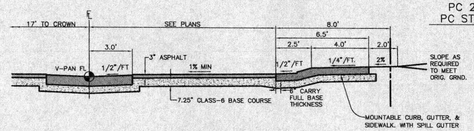
03-076

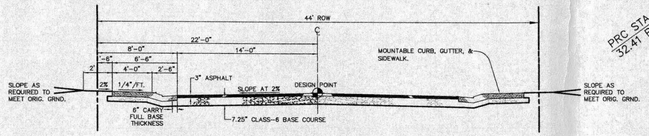
FIGURE 1

0 10 20 40





SECTION A-A



ABERDEEN LANE AND WASHBURN STREET
TYPICAL SECTION

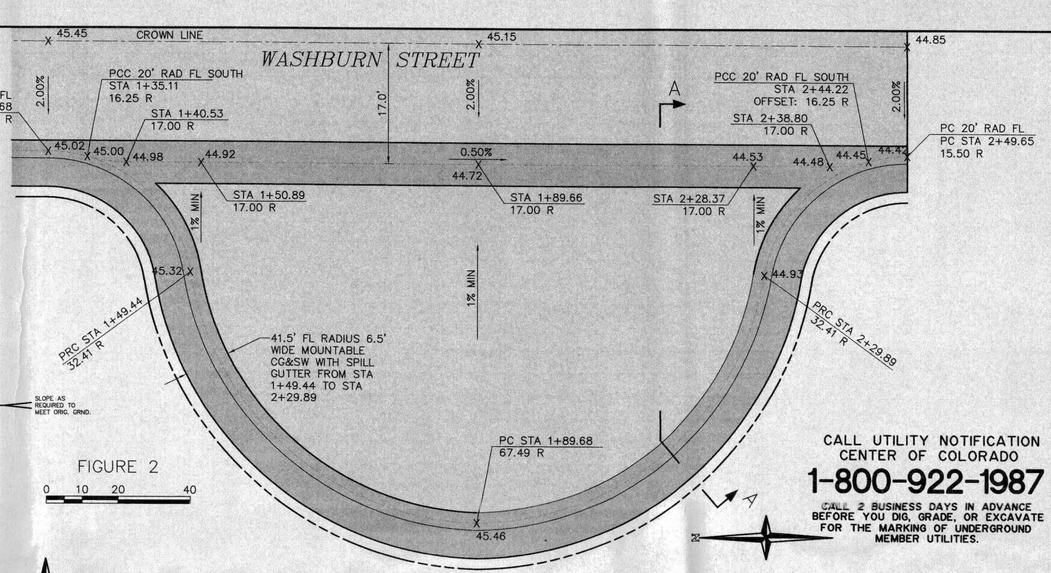


FIGURE 2

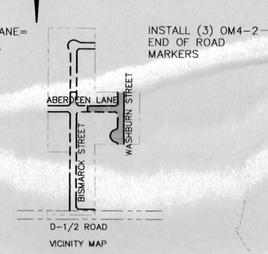
0 10 20 40

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

CONTOUR INTERVAL: 1'

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.



PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73

NOTE: CONTACT CITY TRAFFIC OPERATIONS SUPERVISOR, 970/244-1573, PRIOR TO ANY SIGN MATERIAL ORDER OR INSTALLATION

STA 2+49.65
END WASHBURN ST
N=37306.47
E=115529.16

INSTALL (3) OM4-2 END OF ROAD MARKERS

SIGN TYPE	MATERIAL FACING	QUANTITY
(OM4-2) END OF ROAD MARKERS	HIGH INTENSITY	6
(R1-1) STOP	HIGH INTENSITY	1
(D3) STREET NAME	HIGH INTENSITY	2

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.

City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED

City of Grand Junction Engineering Division Representative — Date

NO.	REVISION	DATE	BY	CHD

DESCRIPTION

CITY OF GRAND JUNCTION

G & R WEST, LLC

DAKOTA WEST SUBDIVISION
ABERDEEN LANE/WASHBURN STREET
PLAN & PROFILE

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MRH
CHECKED BY: JWM

COLORADO REGISTERED PROFESSIONAL ENGINEER
JEFFREY W. MAGEE
37343
10/29/03

DATE: June 25, 2003
SCALE: Horiz: 1" = 50' Vert: 1" = 5'
Project No: 0543-001
SHEET NO: 7 OF 12

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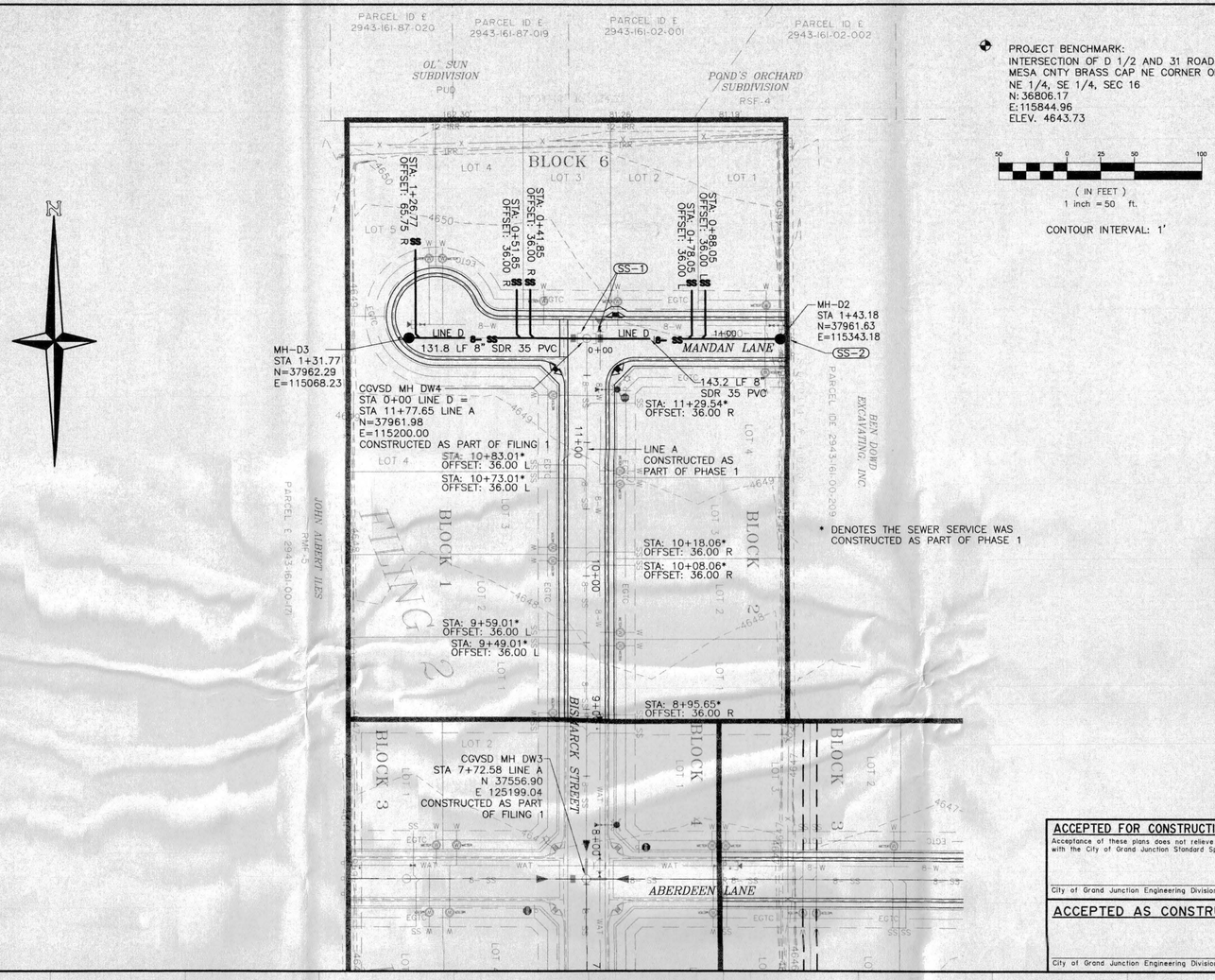


* DENOTES THE SEWER SERVICE WAS CONSTRUCTED AS PART OF PHASE 1

PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E:115844.96
ELEV. 4643.73

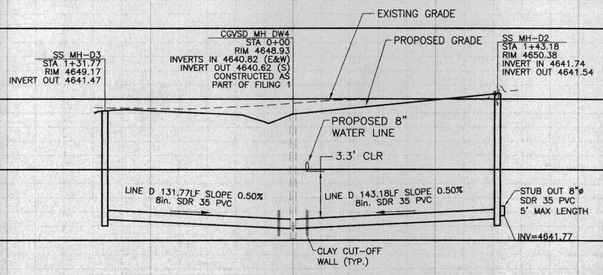
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

CONTOUR INTERVAL: 1'

CONSTRUCTION NOTES

SS-1 EXISITNG STUBOUT TO BE REMOVED AND THE NEW SEWERLINE INSTALLED INTO THE EXISTING MANHOLE. GROUT EXISTING INVERT AS NECESSARY TO PROVIDE A SMOOTH INVERT CHANNEL AND WATERTIGHT MANHOLE

SS-2 STUB-OUT FOR FUTURE SEWER LINE CONNECTION 5' MAXIMUM LENGTH. SANITARY SEWER STUB-OUTS TO BE GLUE CAPPED AND MARKED WITH A 2x4 POST PAINTED GREEN.



CALL UTILITY NOTIFICATION CENTER OF COLORADO

1-800-922-1987

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
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City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED

City of Grand Junction Engineering Division Representative — Date

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE
CENTRAL GRAND VALLEY SANITATION DISTRICT

Date

INITIAL ACCEPTANCE
CENTRAL GRAND VALLEY SANITATION DISTRICT

Date

BY	DESCRIPTION	DATE	REVISION
CHD			

CITY OF GRAND JUNCTION

G & R WEST, LLC

DAKOTA WEST SUBDIVISION
MANDAN LANE SANITARY SEWER LINE "D"

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED JEFFREY W. HOUSE 37343 6/25/03 PROFESSIONAL ENGINEER

DATE: June 25, 2003

SCALE: Horiz: 1" = 50' Vert: 1" = 5'

Project No: 0543-001

SHEET NO: 8 OF 12

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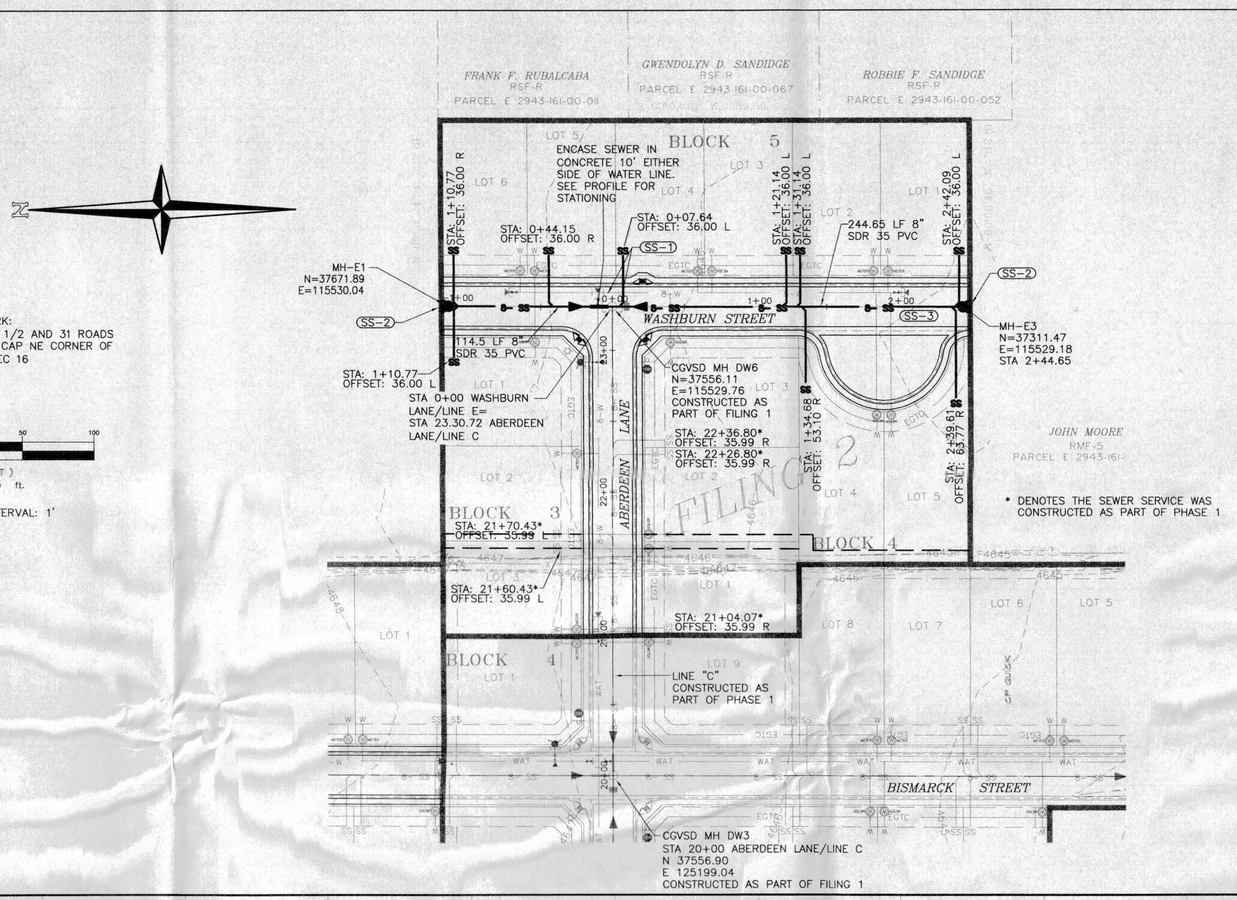

PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73

50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

CONTOUR INTERVAL: 1'

CONSTRUCTION NOTES

SS-1 EXISITNG STUBOUT TO BE REMOVED AND THE NEW SEWERLINE INSTALLED INTO THE EXISTING MANHOLE. GROUT EXISTING INVERT AS NECESSARY TO PROVIDE A SMOOTH INVERT CHANNEL AND WATERTIGHT MANHOLE

SS-2 STUB-OUT FOR FUTURE SEWER LINE CONNECTION 5' MAXIMUM LENGTH. SANITARY SEWER STUB-OUTS TO BE GLUE CAPPED AND MARKED WITH A 2x4 POST PAINTED GREEN.

SS-3 PROVIDE FLOWABLE FILL BACKFILL ON BOTH THE SEWER MAIN AND SEWER SERVICE LINES BEYOND STA 1+76.84

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE
CENTRAL GRAND VALLEY SANITATION DISTRICT
Date

INITIAL ACCEPTANCE
CENTRAL GRAND VALLEY SANITATION DISTRICT
Date

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
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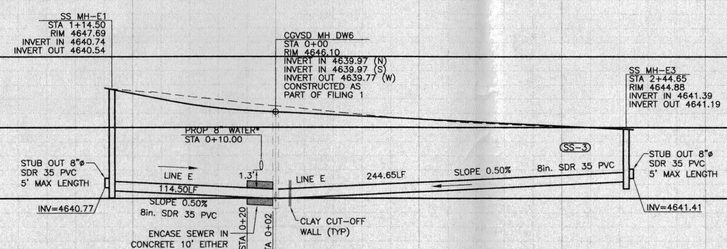
City of Grand Junction Engineering Division Representative Date

ACCEPTED AS CONSTRUCTED
City of Grand Junction Engineering Division Representative Date



NO.	REVISION	DATE	BY	CHD

CITY OF GRAND JUNCTION

G & R WEST, LLC

DAKOTA WEST SUBDIVISION
WASHBURN STREET SANITARY SEWER LINE "E"

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

COLORADO REGISTERED JEFFREY W. WACE 37343 06/25/03 PROFESSIONAL ENGINEER

DATE: June 25, 2003

SCALE: Horiz: 1" = 50' Vert: 1" = 5'

Project No: 0543-001

SHEET NO. 9 OF 12

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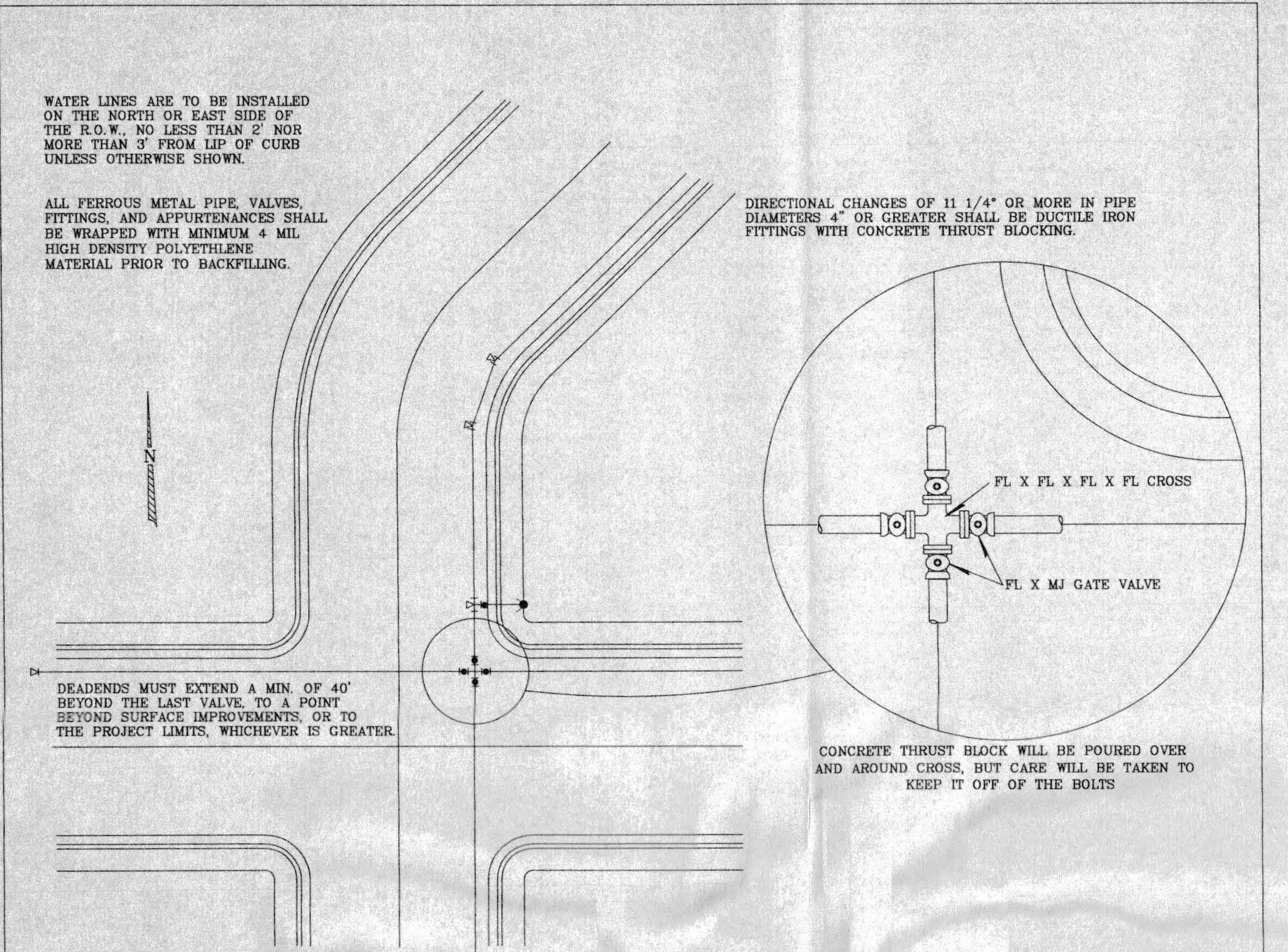
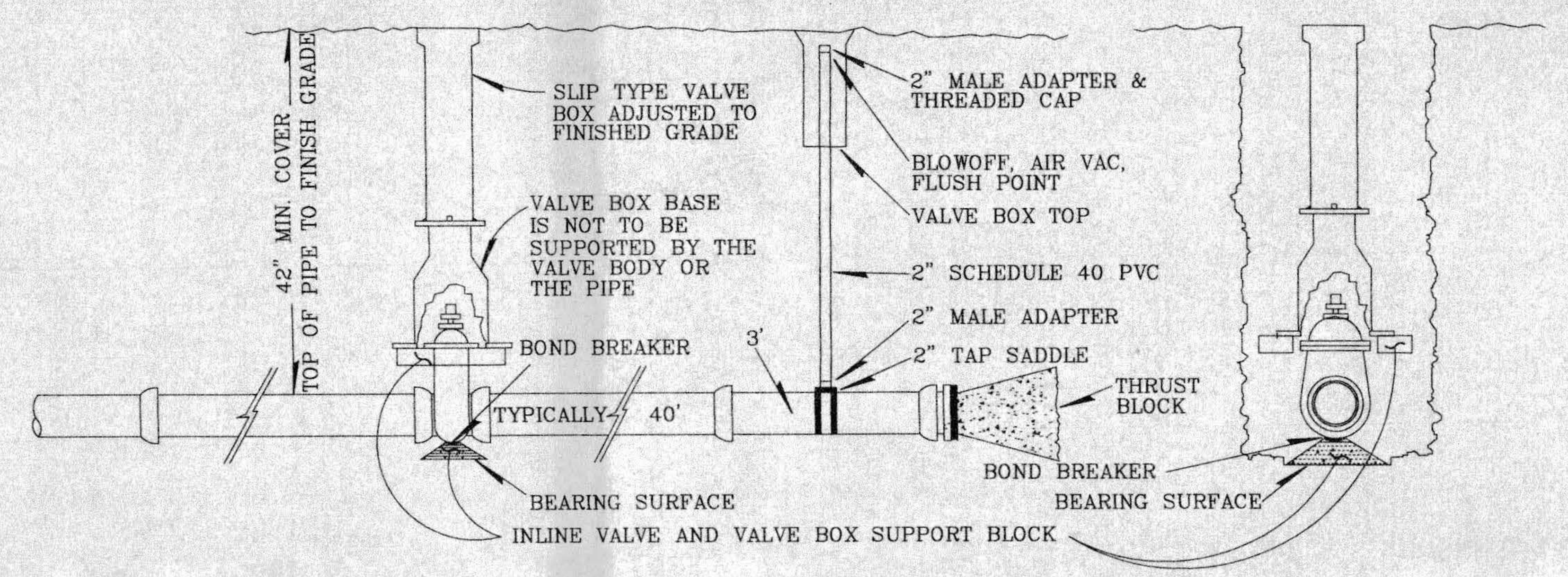
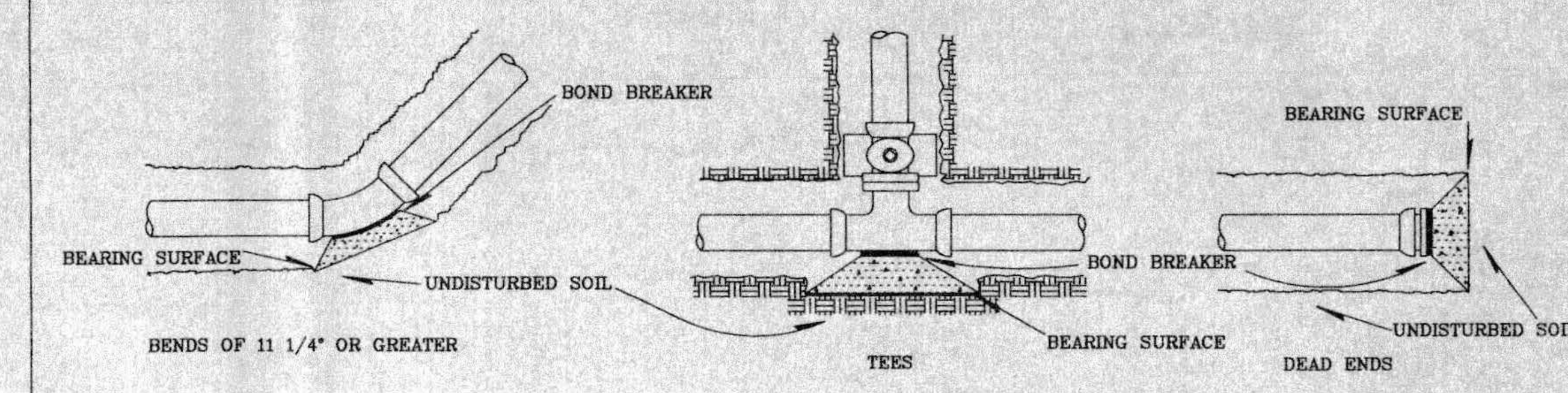


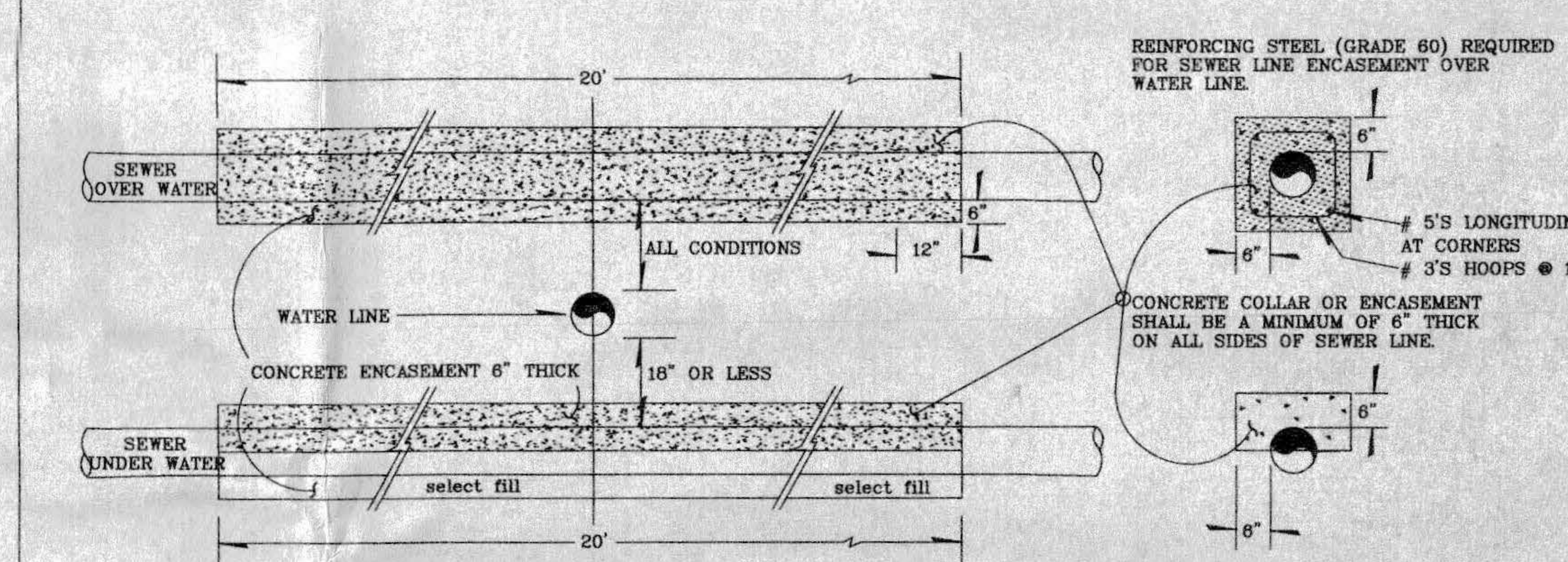
TYPICAL WATER LINE PLAN FOR INTERSECTIONS



VALVE INSTALLATION & LINE TERMINATION



THRUST BLOCK DETAILS
(MIN. 1/2 CU. YD. CONCRETE)



WATER AND SEWER LINE CROSSINGS

TABLE FOR CONCRETE THRUST BLOCKING

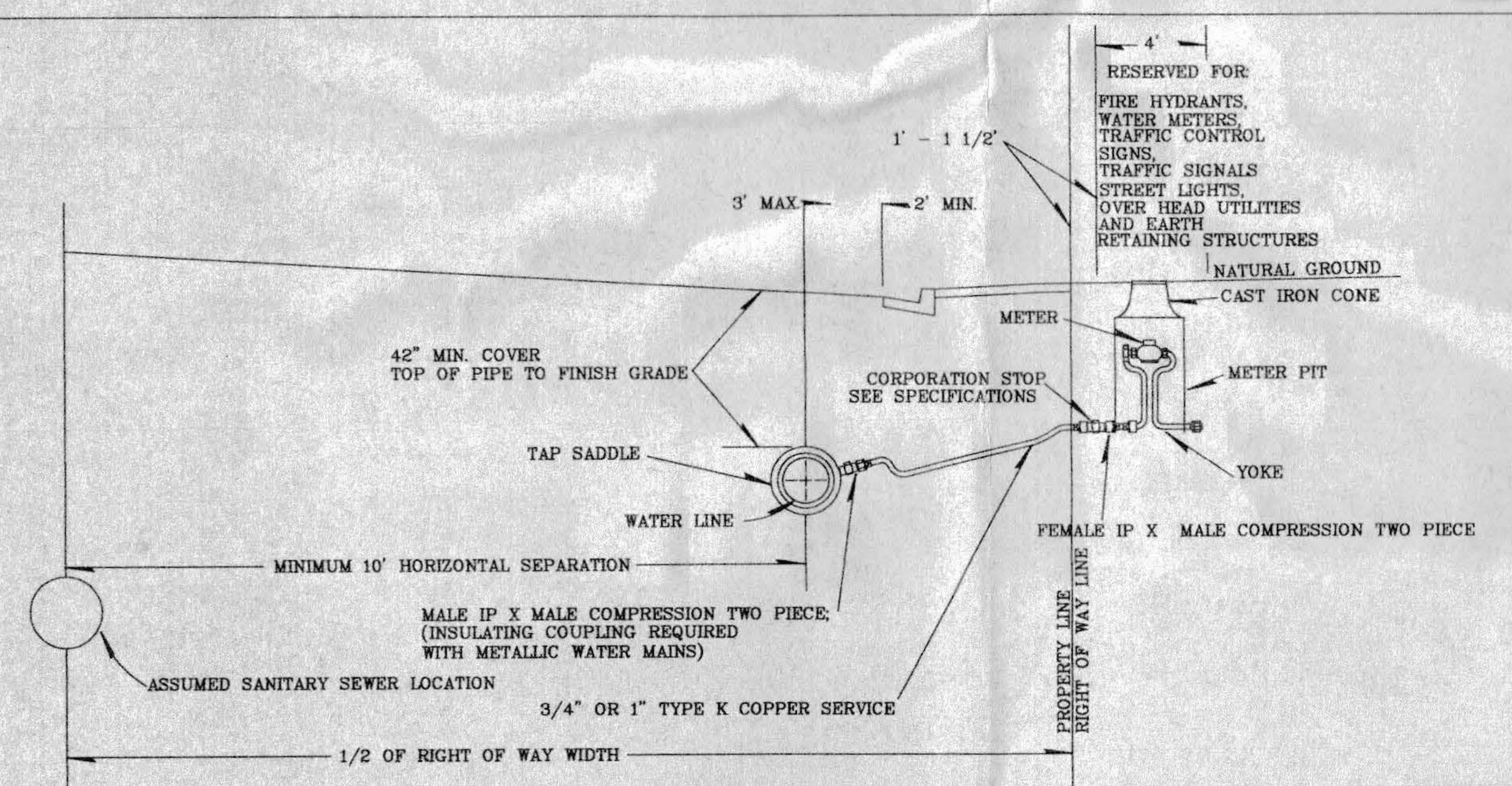
BEARING AREAS (IN SQ. FT.)					
SIZE	BENDS				TEE BRANCH SIZE AND DEAD ENDS
	90°	45°	22 1/2°	11 1/4°	
6	4.0	2.2	1.1	0	2.8
8	7.1	3.8	2.0	1.0	5.0
10	11.1	6.0	3.0	1.5	7.8
12	16.0	8.6	4.4	2.2	11.3
14	21.7	11.8	6.0	3.0	15.4
16	28.4	15.3	8.0	4.0	20.0
F.H. THRUST BLOCKS SHALL BE A MIN. OF 1/4 CU. YD. IN MASS AND HAVE A MIN. BEARING AREA OF 5 SQ. FT.					

AREAS GIVEN ARE BASED ON INTERNAL STATIC PRESSURE OF 100 P.S.I. AND SOIL BEARING CAPACITY OF 1,000 lbs. PER SQ. FT.

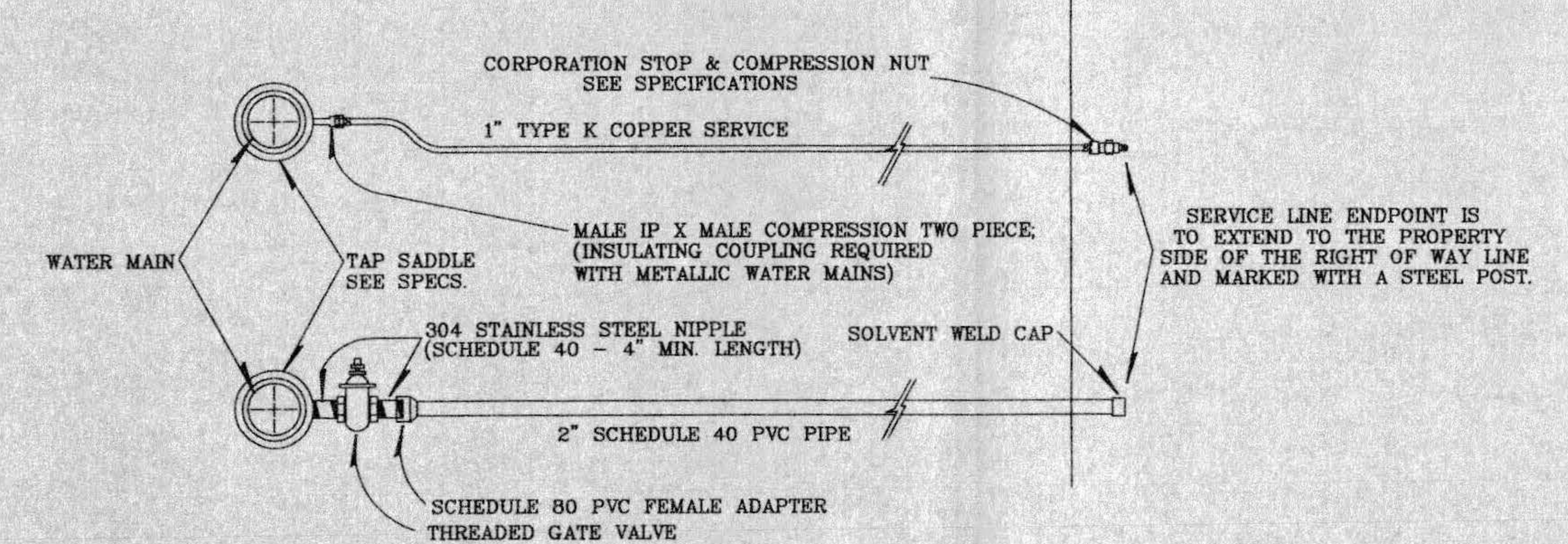
AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING TABULATED VALUES BY A CORRECTION FACTOR "F"

$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDREDS OF lbs.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF lbs.}}$$

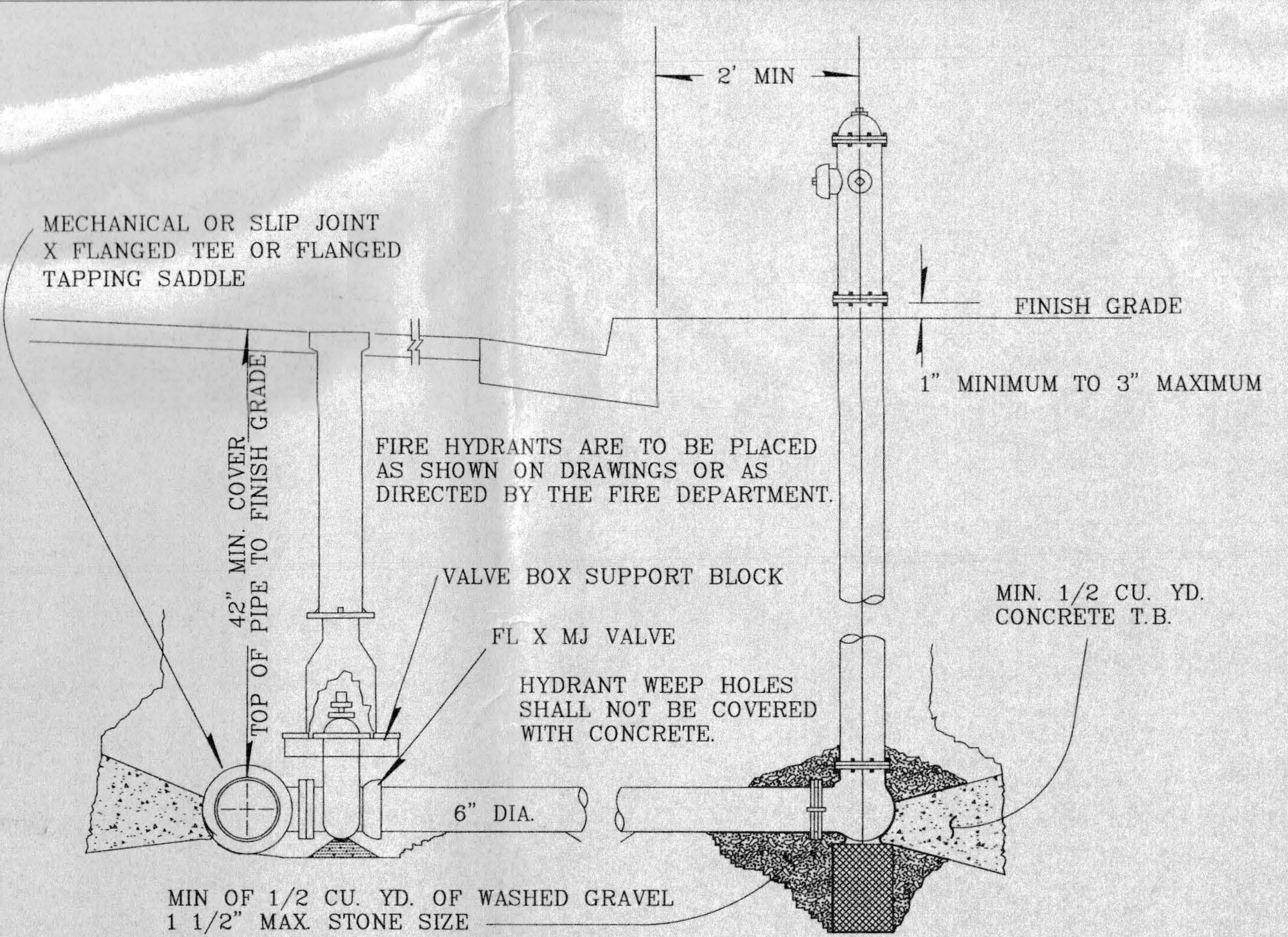
Note: Not all drawings on this typical will apply to every project



DOMESTIC SERVICE DETAIL



COMMERCIAL SERVICE DETAIL



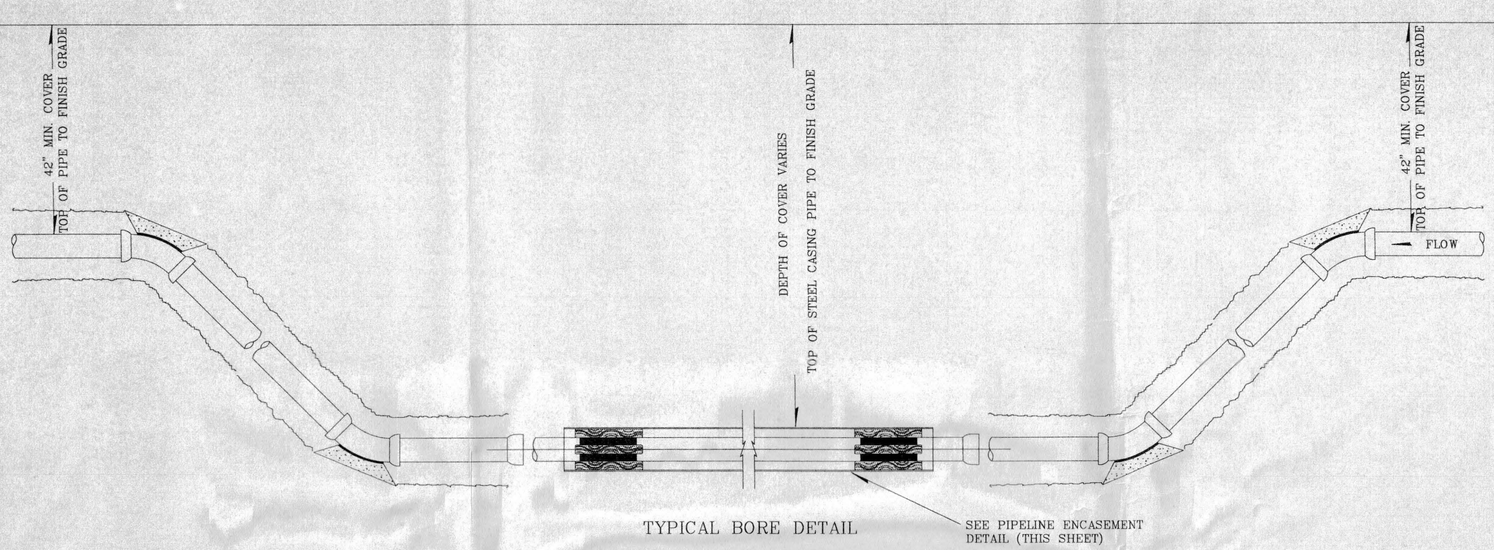
FIRE HYDRANT DETAIL

Revised Mar 99	All references to Flare type fittings changed to Compression type fittings

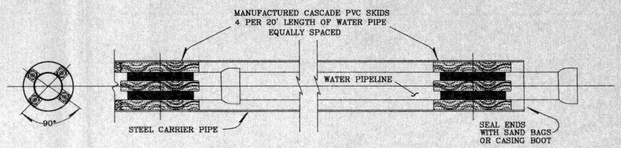
Clifton Water District

Typical Water Line Installation Dtls., Sht. 1

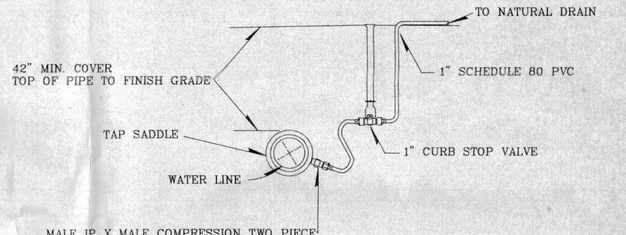
Drw By	Chk By	App By	Date	Scale	Sheet
E.D.P.	D.E.T.		Sep 97	None	10 OF 12



TYPICAL BORE DETAIL



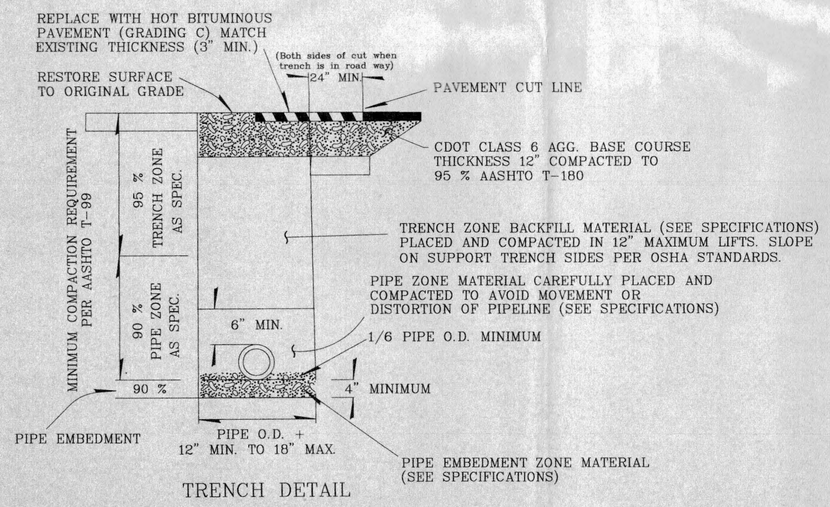
PIPELINE ENCASEMENT DETAIL



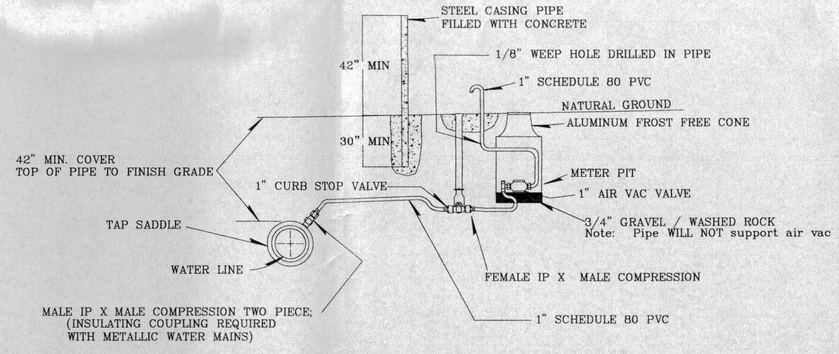
BLOW OFF DETAIL

NOTE: UPGRADE ALL PVC/SADDLE/FITTINGS/VALVES TO 2" ON WATERLINES OF 6" AND GREATER

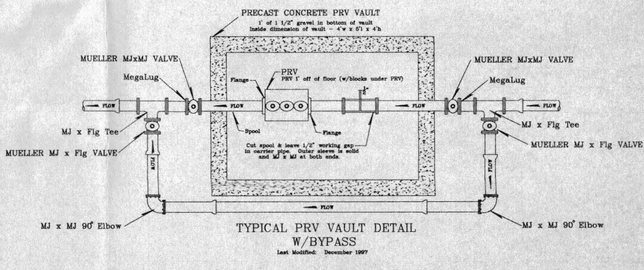
Note: Not all drawings on this typical will apply to every project



TRENCH DETAIL



AIR VAC DETAIL



TYPICAL PRV VAULT DETAIL
W/BYPASS

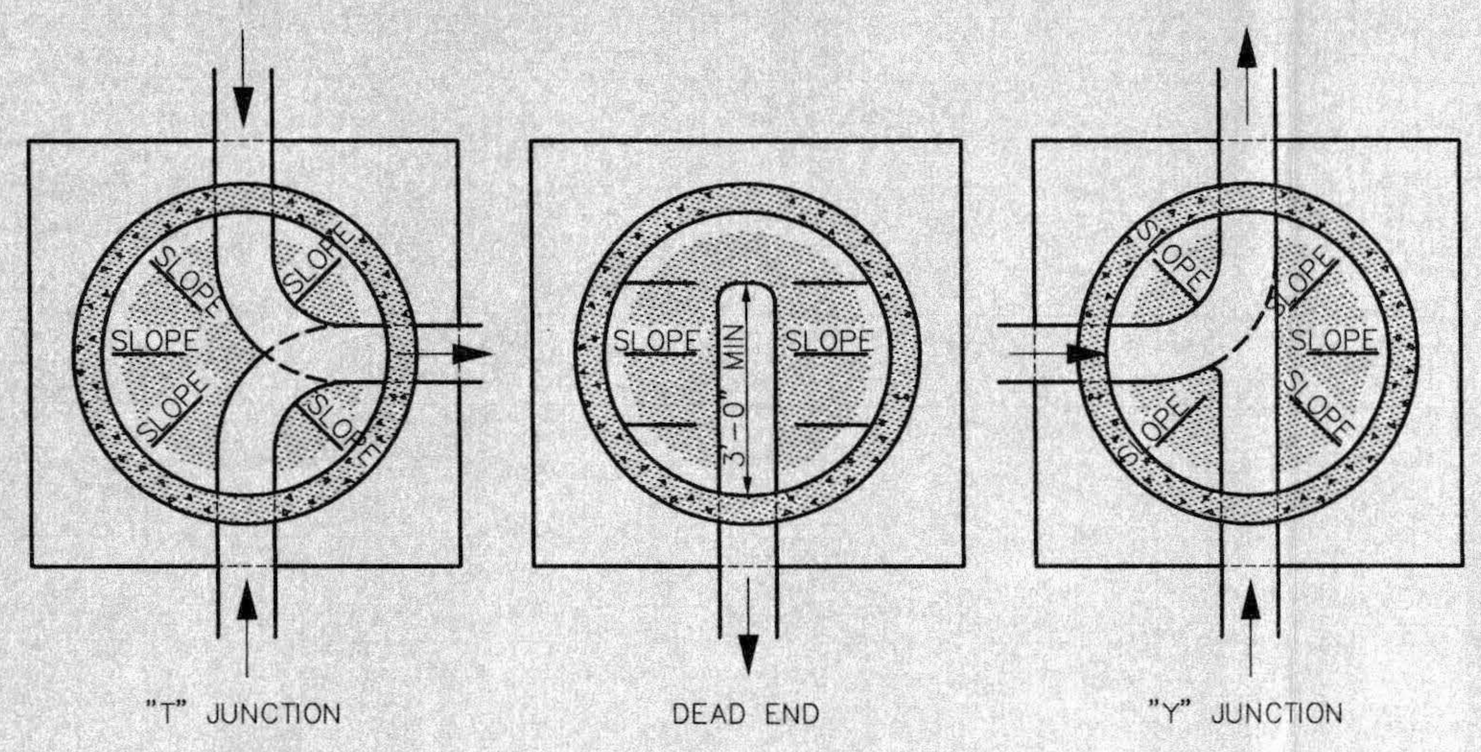
Last Modified: December 1997

Revised Mar 99	All refernces to Flare type fittings changed to Compression type fittings ... Air Vac detail modified slightly

Clifton Water District

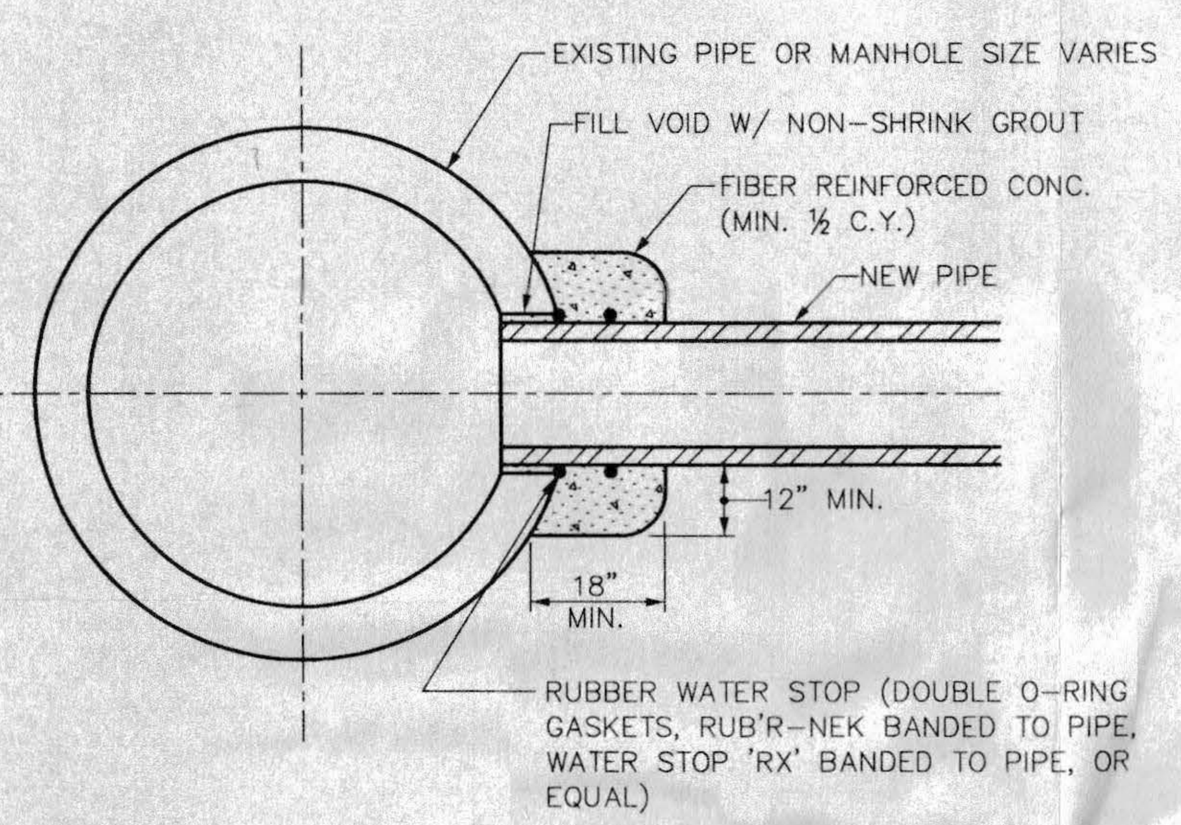
Typical Water Line Installation Dtls., Sht. 2

Drw By	Chk By	App By	Date	Scale	Sheet
E.D.P.	D.E.T.		Sep 97	None	11 0F 12



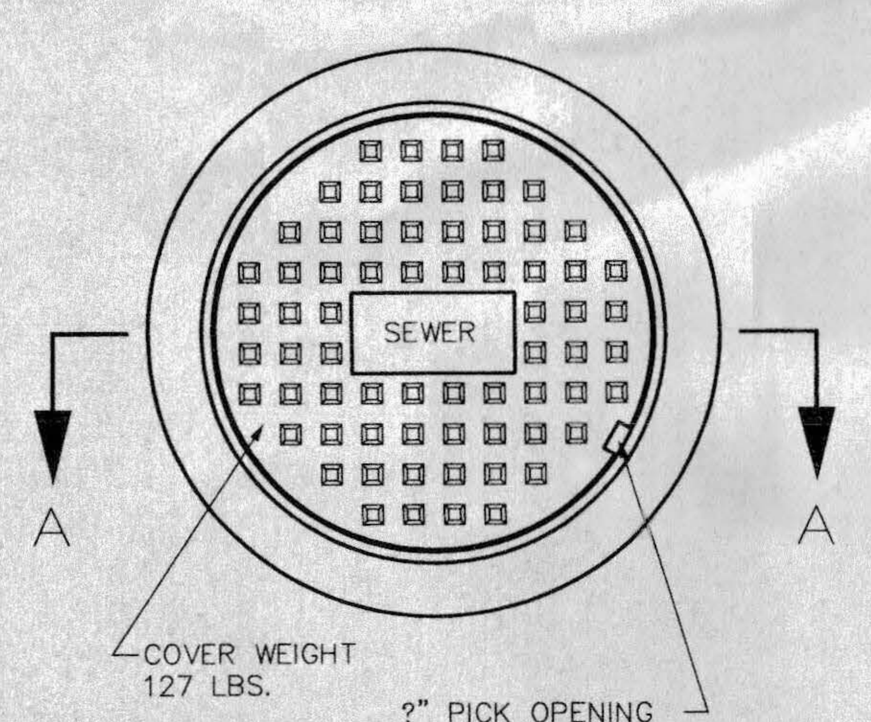
INVERTS SHALL BE FORMED TO PROVIDE A 24" MINIMUM APPROACH IN LINE WITH EACH PIPE FOR MAINTENANCE EQUIPMENT.

SECTION B–B

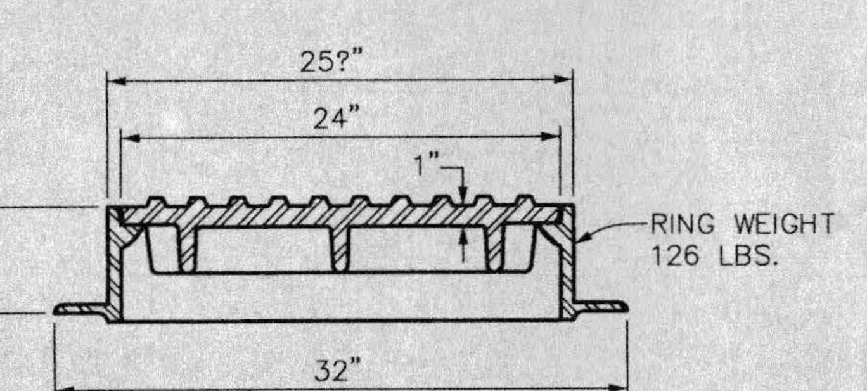


NOTE:
IF THE HOLE IN THE EXISTING PIPE OR MANHOLE IS CORED, THE CONNECTION CAN BE MADE BY INSTALLING A FLEXIBLE PIPE TO MANHOLE CONNECTOR ("BOOT") AND THE CONCRETE ENCASEMENT ELIMINATED.

CONNECTION TO EXISTING MANHOLE OR INLET BOX

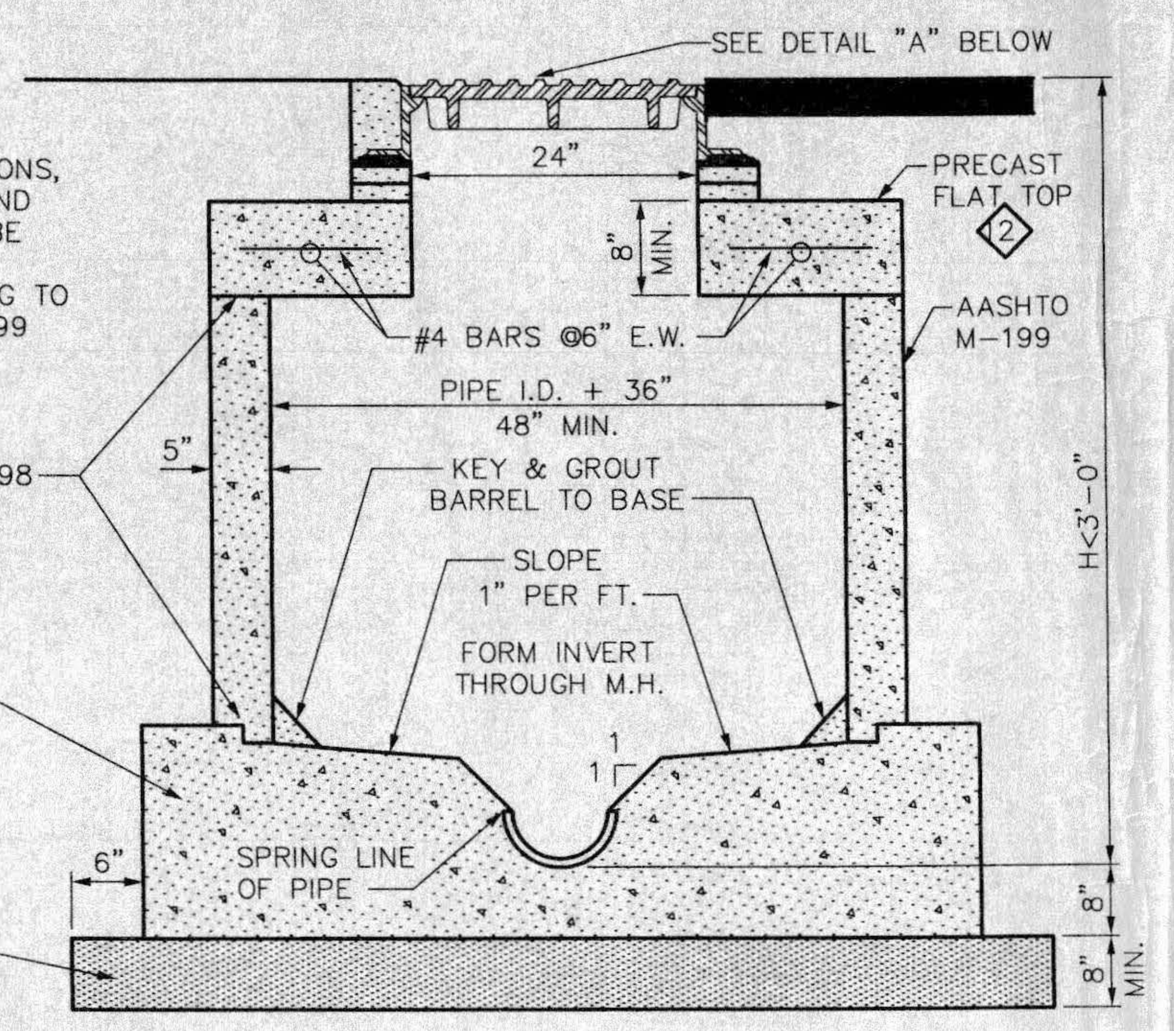


STANDARD CAST IRON MANHOLE RING & COVER



SECTION A–A

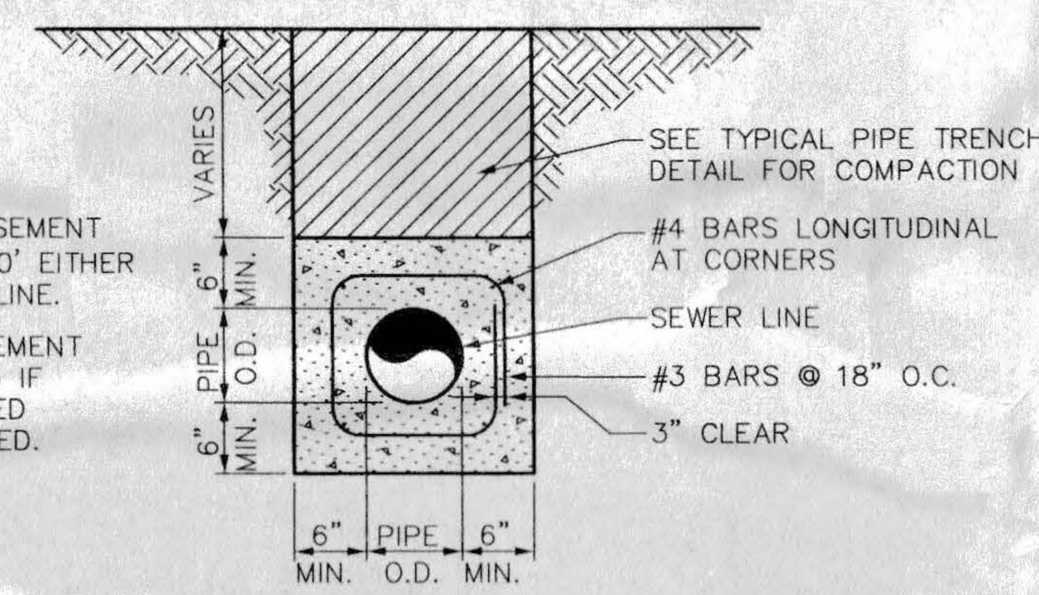
MANHOLE RISER SECTIONS, CONES, FLAT TOPS, AND GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE CONFORMING TO ASTM C-478 OR M-199



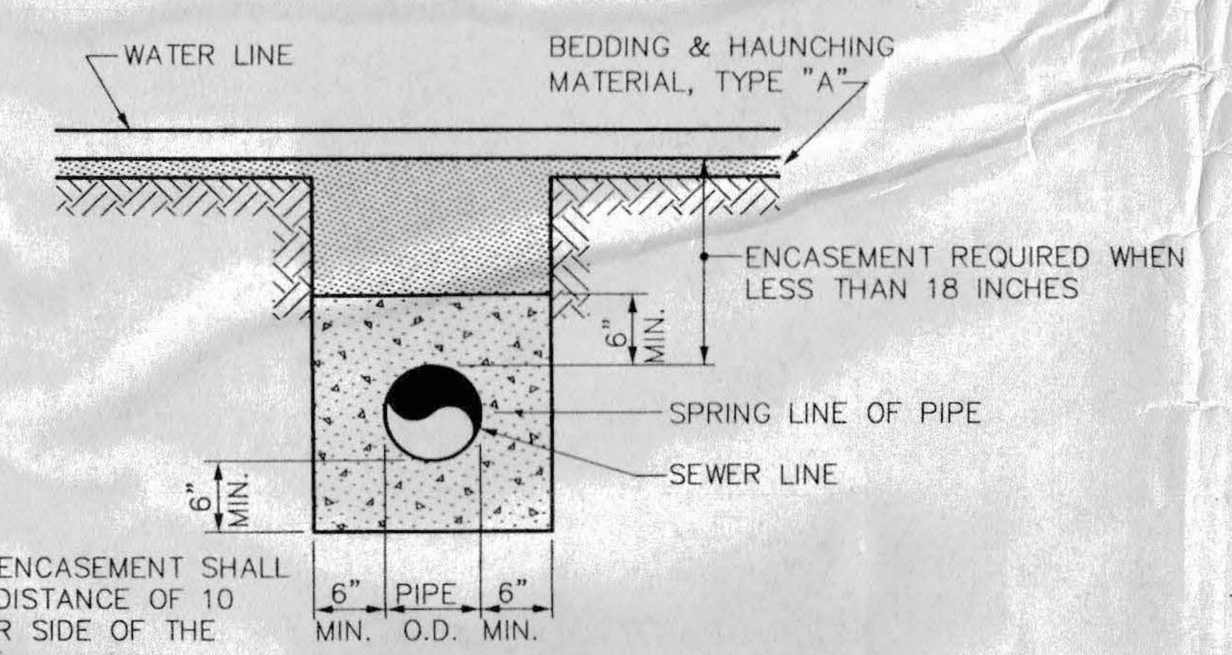
STANDARD SHALLOW MANHOLE CAST-IN-PLACE BASE

NOTES

1) CONCRETE ENCASEMENT SHALL EXTEND 10' EITHER SIDE OF WATER LINE.
2) STEEL REINFORCEMENT MAY BE DELETED IF FIBER-REINFORCED CONCRETE IS USED.



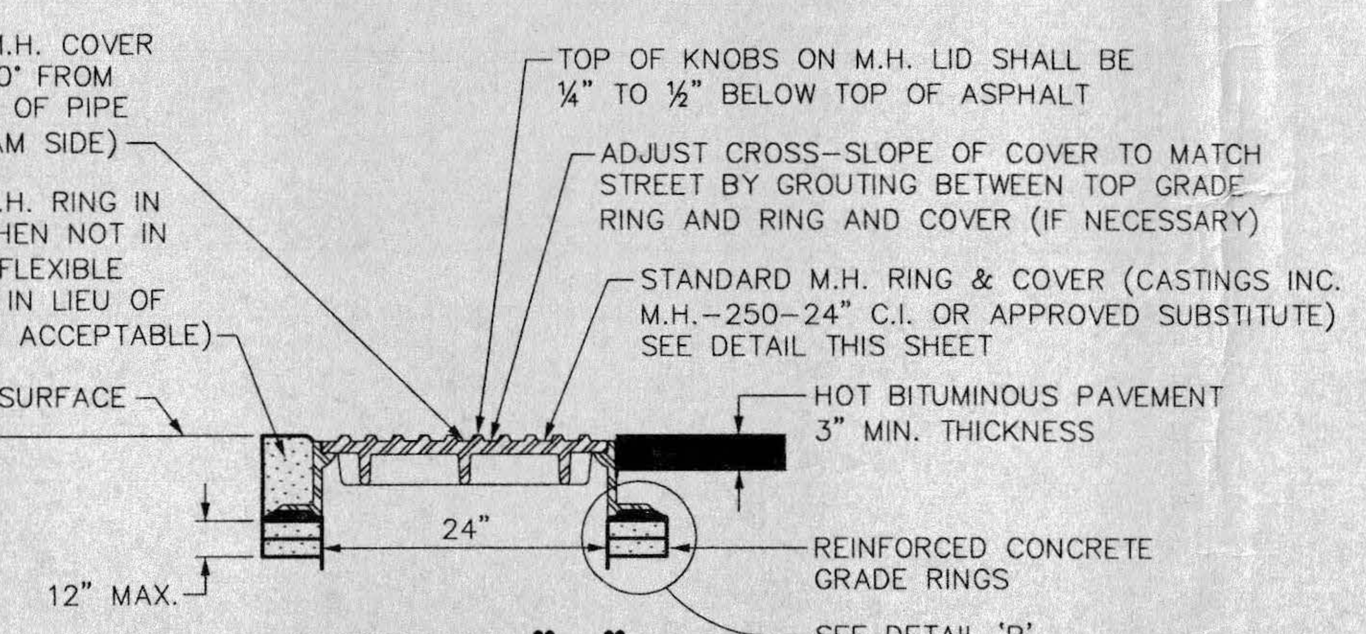
WATER LINE BELOW SEWER LINE



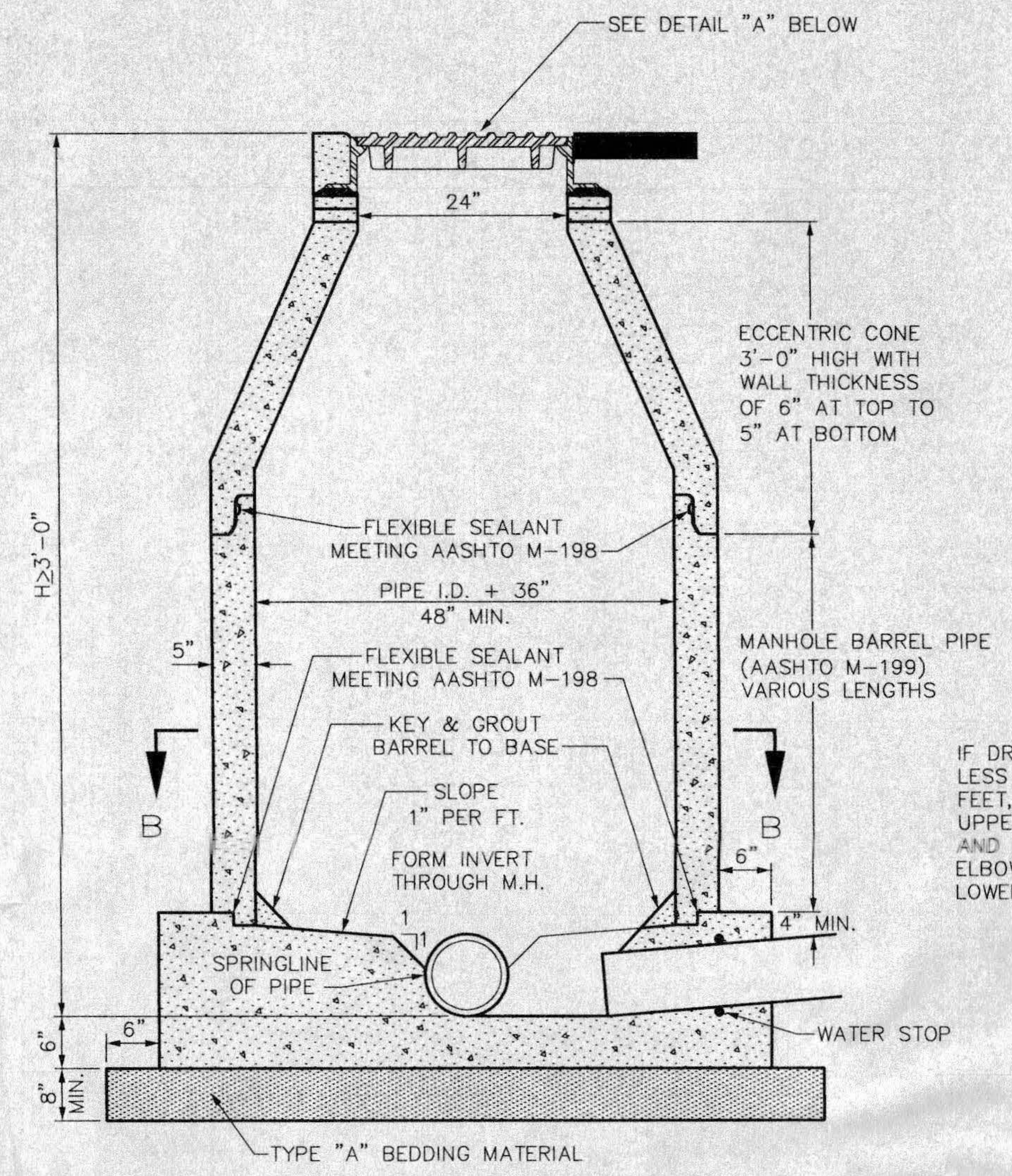
CONCRETE ENCASEMENT SHALL EXTEND A DISTANCE OF 10 FEET EITHER SIDE OF THE WATER LINE.

WATER LINE ABOVE SEWER LINE

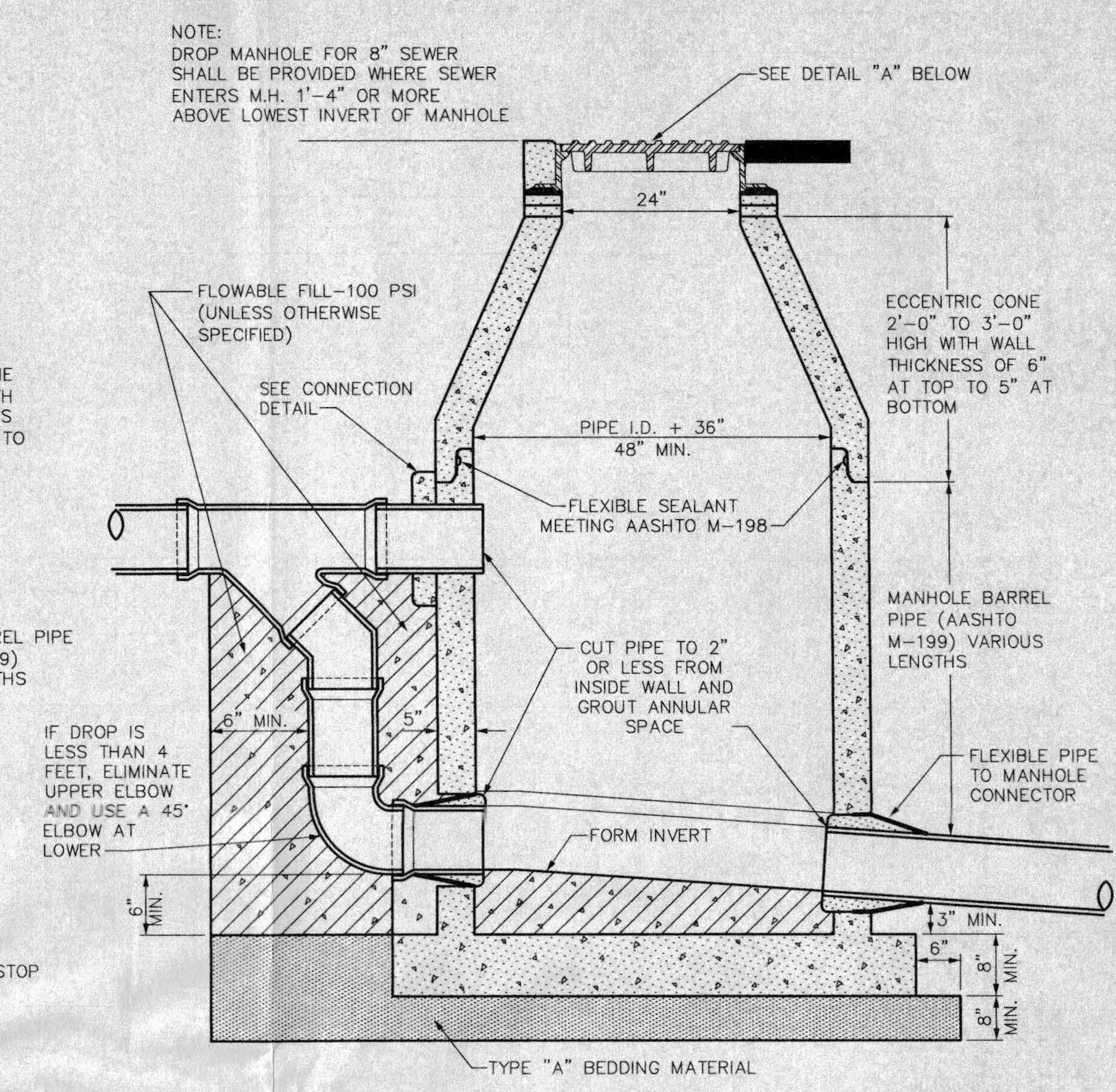
CONCRETE ENCASEMENT DETAIL



DETAIL "A"

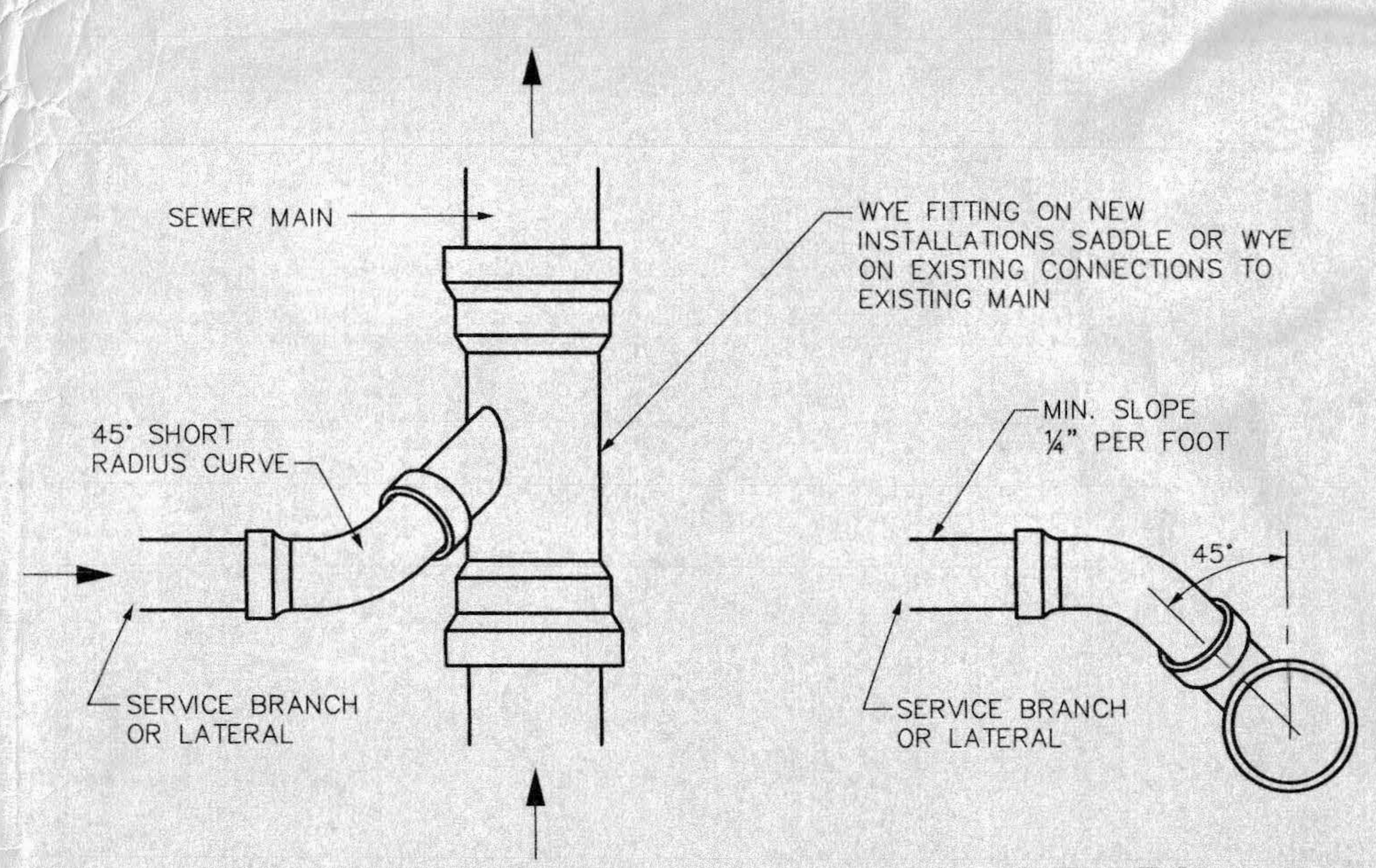


STANDARD MANHOLE CAST-IN-PLACE BASE

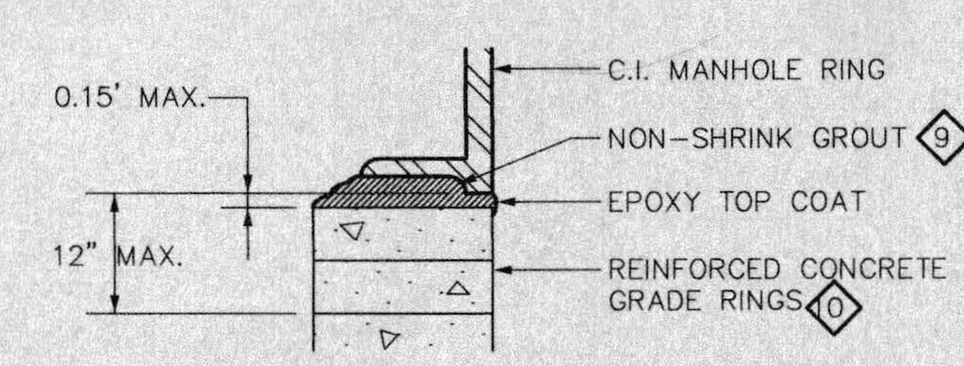


DROP MANHOLE PRECAST BASE

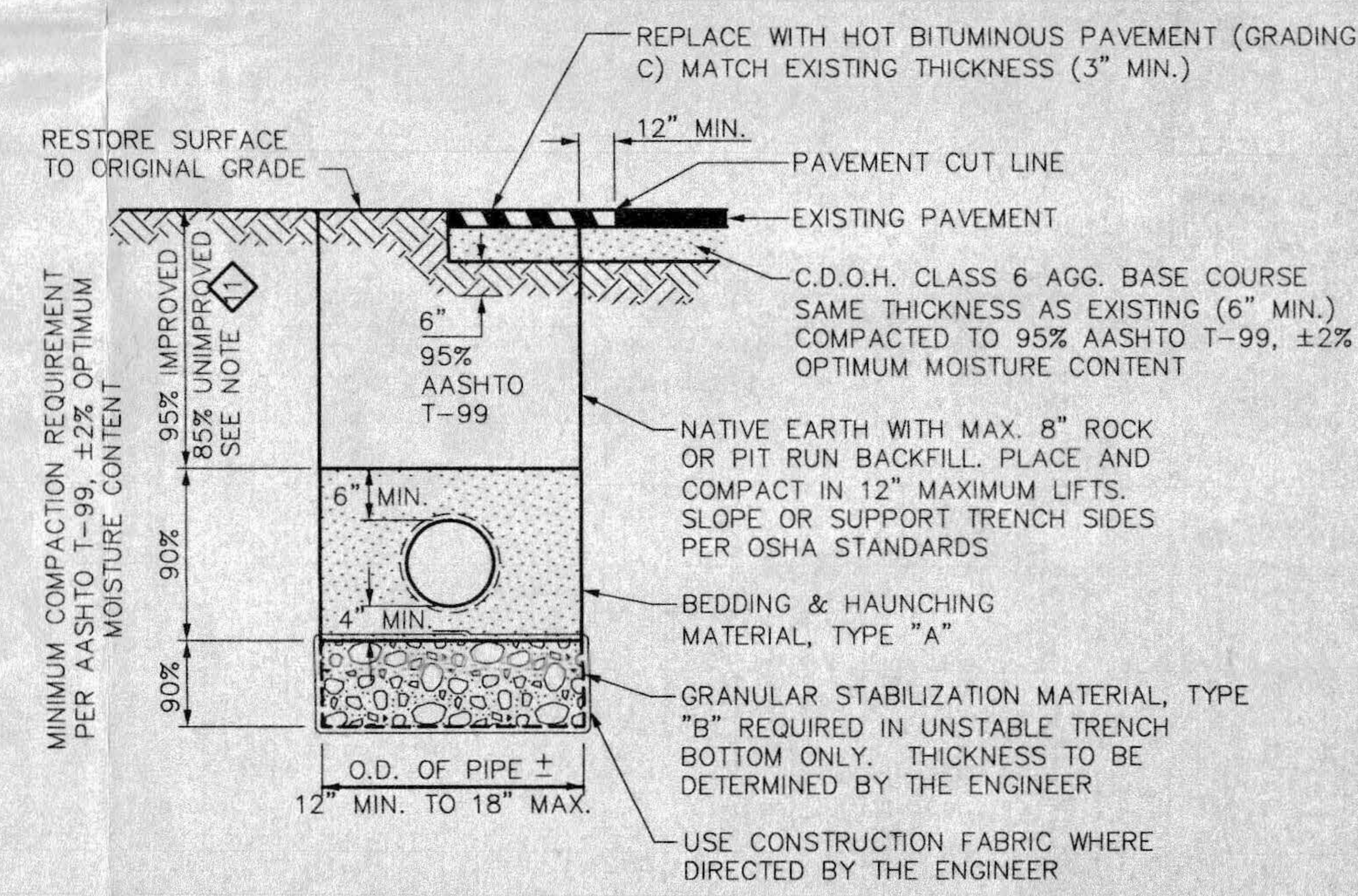
NOTE:
PRECAST BASE AND FLEXIBLE PIPE CONNECTORS CAN BE USED IN LIEU OF CAST-IN-PLACE BASE FOR ALL MANHOLE TYPES



TYPICAL SERVICE "Y" CONNECTION



DETAIL "B"



TYPICAL TRENCH DETAIL

SIEVE SIZE	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES		
	PIPE BEDDING & HAUNCHING MATERIAL (TYPE A)	GRANULAR STABILIZATION MATERIAL (SCREENED OR CRUSHED ROCK TYPE B)	PIT RUN AGGREGATE (TO BE USED WHERE SPECIFIED OR DIRECTED BY THE ENGINEER)
8 INCH	---	---	
2 INCH	---	100	
? INCH	100	---	
NO 200	20 MAX	15 MAX	20 MAX

ALL BACKFILL MATERIAL SHALL BE PLACED FULL WIDTH IN 12" MAX. LIFTS AND COMPACTED TO THE MIN. RELATIVE DENSITIES SHOWN.

03-07

GENERAL NOTES

1. Concrete shall be Colorado Division of Highways Class 'B' (Section 601.02).
2. All cement used in mortar, concrete bases, grade rings, riser sections, cones, and flat tops, for sanitary sewer manholes, shall be Type V or modified Type II Portland Cement with less than 5% tricalcium aluminate.
3. Manhole riser sections, cones, flat tops, and grade rings shall be precast reinforced concrete conforming to ASTM C-478 or AASHTO M-199.
4. Backfill around manholes and other structures shall be placed in 8" max. lifts and compacted to 95% AASHTO T-99.
5. All work shall be in accordance with approved plans and District specifications.
6. Manhole cone and flat top sections shall be positioned such that the manhole ring and cover are offset 20 degrees to 30 degrees from the upstream main sewer line into the manhole.
7. Manhole steps shall be installed in vertical alignment with the ring and cover.
8. Refer to Plans or Specifications for any manhole waterproofing and/or corrosion protection that may be required for the project.

9. Manhole ring and cover can be set to finished grade, using non-shrink grout to adjust rim elevation. Grout shall not exceed 0.15 ft. thickness and shall have a finish coat of epoxy applied to all grout surfaces exposed to the interior of the manhole. Epoxy top coat requirement may be deleted provided non- shrink grout is installed in accordance with manufacturers recommendations and instructions and is acceptable to the Engineer.

10. Precast concrete grade rings are to be used for grade adjustment on all new manholes. Paving rings are not allowed for grade adjustment unless otherwise approved by the District Engineer.

11. Minimum trench compaction requirements:
   - 95% in all areas of public or street right-of-ways including trenches beneath pavement, graveled areas, borrow ditches, and open space.
   - 85% or to match existing (whichever is greater) in unimproved or landscaped areas, fields, or private easements that are not within road or street right-of-ways.

12. Flat lid slabs are allowed only when the shortest precast eccentric cone is too tall or as required by the Plans.

SCALE:	HORIZONTAL	N.T.S.
	VERTICAL	N.T.S.
REVISIONS		DATE
REVIEW		01-2002

WestWater Engineering
2516 Foresight Circle, #1
Grand Junction, CO 81505
(970) 241-7076

CENTRAL GRAND VALLEY SANITATION DISTRICT

SANITARY SEWER DETAILS

Design by:	Drafted by:	Date:	Project No.	Sheet 12
	WWE	6/26/02	545-001	of 12