

PHOENIX VILLAGE OFFICE PARK AT WINGHAVEN

AREA "B" - PHASE TWO

A tract of land being all of Lot 8 of Phoenix Village, a Boundary Adjustment of Lot 6 and Lot 7, a subdivision according to the plat thereof recorded in Plat Book 40 Pages 217 and 218, and all of Lot 4 of Phoenix Village, a subdivision as recorded in Plat Book 40 Pages 23 and 24, all of the Recorder of Deeds Office in St. Charles County, Missouri, and being located in Survey 1669, Township 46 North, Range 2 East of the Fifth Principal Meridian, City of O'Fallon, St. Charles County, Missouri

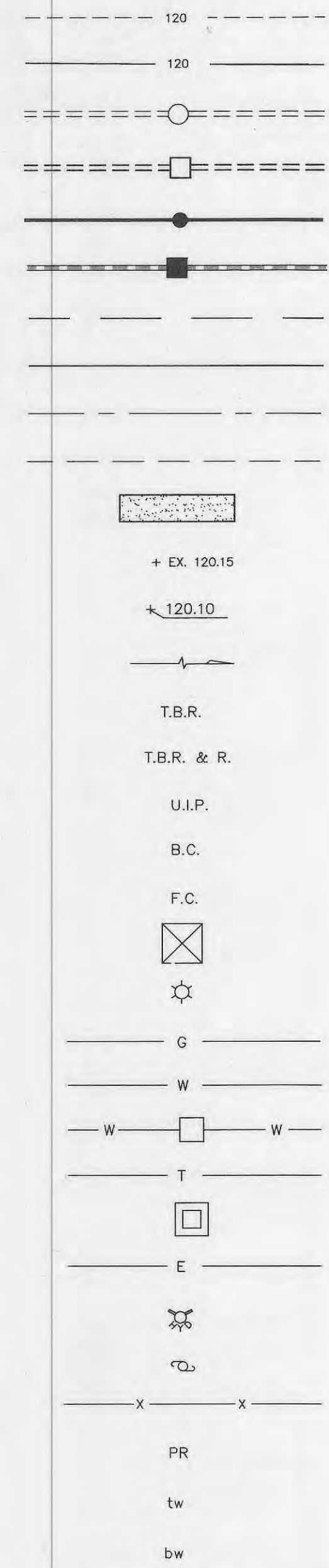
IMPROVEMENT PLANS

INDEX

| | |
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LEGEND

| | |
|----------------------------------|--------------|
| EXISTING CONTOURS | --- |
| PROPOSED CONTOURS | --- |
| EXISTING SANITARY SEWERS | ---○--- |
| EXISTING STORM SEWERS | ---□--- |
| PROPOSED SANITARY SEWERS | ---●--- |
| PROPOSED STORM SEWERS | ---■--- |
| EXISTING RIGHT-OF-WAY | --- |
| PROPOSED RIGHT-OF-WAY | --- |
| CENTERLINE | --- |
| EASEMENT | --- |
| NON-REINFORCED CONCRETE PAVEMENT | ▨ |
| EXISTING SPOT ELEVATION | + EX. 120.15 |
| PROPOSED SPOT ELEVATION | + 120.10 |
| SWALE | --- |
| TO BE REMOVED | T.B.R. |
| TO BE REMOVED & RELOCATED | T.B.R. & R. |
| TO BE USED IN PLACE | U.I.P. |
| BACK OF CURB | B.C. |
| FACE OF CURB | F.C. |
| TRASH ENCLOSURE | ⊗ |
| LIGHT STANDARD | ☆ |
| GAS MAIN | G |
| WATER MAIN | W |
| WATER METER | W |
| UNDERGROUND TELEPHONE | T |
| ELECTRIC TRANSFORMER | ⊠ |
| UNDERGROUND ELECTRIC | E |
| FIRE HYDRANT | ⊕ |
| POWER POLE | ⊖ |
| SILTATION CONTROL | X |
| PROPOSED | PR |
| GRADE AT TOP OF WALL | tw |
| GRADE AT BOTTOM OF WALL | bw |



LOCATION MAP
NOT TO SCALE

PERTINENT DATA:

| | | |
|------------------|---|---|
| OWNER | = | TRISTAR Wing, L.L.C. |
| SITE ACREAGE | = | 4.205 Acres ± |
| EXISTING ZONING | = | HTCD PUD |
| FIRE DISTRICT | = | WENTZVILLE FIRE PROTECTION DISTRICT |
| SEWER DISTRICT | = | DUCKETT CREEK |
| WATER SERVICE | = | PUBLIC WATER SUPPLY DISTRICT #2 |
| GAS SERVICE | = | ST. CHARLES GAS CO. |
| ELECTRIC SERVICE | = | AMEREN U.E. |
| PHONE SERVICE | = | CENTURY-TEL |
| SITE ADDRESS | = | NEW LOT 4 - 9325, 9327, 9329 & 9331 PHOENIX VILLAGE PARKWAY NEW LOT 8 - 9433, 9435, 9437 & 9439 PHOENIX VILLAGE PARKWAY NEW LOT 9 - 9426, 9428, 9430 & 9432 PHOENIX VILLAGE PARKWAY NEW LOT 10 - 9318, 9320, 9322 & 9324 PHOENIX VILLAGE PARKWAY NEW LOT 11 - 9210, 9212, 9214 & 9216 PHOENIX VILLAGE PARKWAY |
| ZIP CODE | = | 63366 |
| MDNR PERMIT | = | MOR105127 |

AS-BUILT

SANITARY AND STORM SEWER MEASUREMENTS

The existing sewer lengths, sizes, flowlines, depths of structures and sewers and locations with respect to existing or proposed easements have been measured. The results of those measurements are shown on this set of Final Measurement plans. Since the wye locations have been plotted from information provided by the sewer contractor or other sources, I disclaim any responsibility for that specific information.

All public sewers are located within designated existing or proposed easements.

Donald W. Taylor, Missouri P.E. No. 2041

STOCK AND ASSOCIATES CONSULTING ENGINEERS, INC. AND THE UNDERSIGNED ENGINEER HAVE NO RESPONSIBILITY FOR SERVICES PROVIDED BY OTHERS TO IMPLEMENT THE IMPROVEMENTS SHOWN ON THIS PLAN AND ALL OTHER DRAWINGS WHERE THE UNDERSIGNED ENGINEER'S SEAL APPEARS. THE CONSTRUCTION MEANS AND METHODS ARE THE SOLE RESPONSIBILITY OF THE OWNER AND CONTRACTOR. STOCK AND ASSOCIATES CONSULTING ENGINEERS, INC. HAS NO RESPONSIBILITY TO VERIFY FINAL IMPROVEMENTS AS SHOWN ON THIS PLAN UNLESS SPECIFICALLY ENGAGED AND AUTHORIZED TO DO SO BY THE OWNER OR CONTRACTOR.

BENCHMARK

SC-13 ELEV=499.34 (U.S.G.S. DATUM)
LOCATED 2.70 MILES N/NW OF THE INTERSECTION OF HIGHWAY 94 AND HIGHWAY D ON THE NORTH SIDE OF WESTBOUND LANES OF HIGHWAY 40 NEAR A FIELD ENTRANCE GOING NORTH FOR THE WESTBOUND LANES OF HIGHWAY 40. IT IS 29.55 FEET NE OF A P.K. NAIL IN THE CENTER LINE OF WESTBOUND HWY 40, 39.2 FEET SW OF THE CENTER OF THE TOP OF THE NORTHWEST END OF A CORRUGATED METAL PIPE.

FLOOD NOTE:

Subject property lies within Flood Zone "X" (areas outside the 500-year floodplain) per the National Flood Insurance Program Flood Insurance Rate Map for St. Charles County, Missouri, and Incorporated Areas. The map is identified as Map No. 29183C0240 E with an effective date of August 2, 1996.

DETENTION NOTE:

STORMWATER DETENTION IS REQUIRED AND SHALL BE ACCOMMODATED VIA THE WINGHAVEN DETENTION SYSTEM. STORMDRAINAGE IS IN ACCORDANCE WITH THE MASTER DRAINAGE REPORT FOR WINGHAVEN. STORM WATER IS TRIBUTARY TO EXISTING CREEK TO THE WEST.

PROPERTY DESCRIPTION

A tract of land being all of Lot 8 of Phoenix Village, a Boundary Adjustment of Lot 6 and Lot 7, a subdivision according to the plat thereof recorded in Plat Book 40 Pages 217 and 218, and all of Lot 4 of Phoenix Village, a subdivision as recorded in Plat Book 40 Pages 23 and 24, all of the Recorder of Deeds Office in St. Charles County, Missouri, and being located in Survey 1669, Township 46 North, Range 2 East of the Fifth Principal Meridian, City of O'Fallon, St. Charles County, Missouri, and being more particularly described as follows:

Beginning at the Southeastern most corner of above said Lot 8, said point also being the Southwestern corner of above said Lot 4; thence North 83 degrees 35 minutes 09 seconds West along the Southerly line of above said Lot 8 a distance of 175.77 feet; thence continuing along the Southerly line of above said Lot 8 North 70 degrees 59 minutes 07 seconds West 260.18 feet to a point on the Southeastern line of Lot 7 of above said Phoenix Village, a Boundary Adjustment Plat of Lot 6 and Lot 7; thence along the common line between above said Lot 6 and above said Lot 8 South 06 degrees 24 minutes 51 seconds West 186.50 feet to a point on the Northerly line of Lot 3 of above said Phoenix Village; thence North 83 degrees 35 minutes 09 seconds West along the Northerly line of above said Lot 3 a distance of 42.79 feet to a point on the Easterly line of above said Lot 4; thence South 06 degrees 24 minutes 51 seconds West along last said Easterly line 195.00 feet to the Southeastern corner of above said Lot 4; thence North 83 degrees 35 minutes 09 seconds West along the Southerly line of said Lot 4 a distance of 133.00 feet to the POINT OF BEGINNING and containing 163,188 square feet or 4.205 acres more or less according to calculations performed by Stock and Associates Consulting Engineers, Inc. on February 24, 2004.

- △ AS-BUILTS 3/9/05
- △ REVISED PER CITY COMMENTS 02/10/2005
- △ REVISED PER CITY COMMENTS 12/28/2004
- △ ADDED PARKING LOT AND SEWER 11/17/2004
- △ REVISED PER CLIENT (LOT 10 AND 11) 09/31/2004
- △ REVISED PER CLIENT (CONSTRUCTION SET) 06/14/2004
- △ REVISED PER CITY OF O'FALLON COMMENTS 05/26/2004
- △ REVISED PER CITY, FIRE, WATER & SEWER COMMENTS 04/23/2004

PHOENIX VILLAGE OFFICE PARK AT WINGHAVEN

TITLE SHEET - AREA "B" PHASE II

FILE NO. 9831.43.03

STOCK & ASSOCIATES
Consulting Engineers, Inc.

257 Chesterfield Business Parkway
St. Louis, MO 63005
PH. (636) 530-9100
FAX (636) 530-9130
e-mail: general@stockassoc.com
Web: www.stockassoc.com

DRAWN BY: T.P.S. DATE: 11/17/04 CHECKED BY: G.M.S. DATE: 11/17/04 JOB NUMBER: 202-2855.01 SHEET: C1.0 of 8

GEORGE M. STOCK E-25116

Phoenix Village Office Park Area B Phase 2

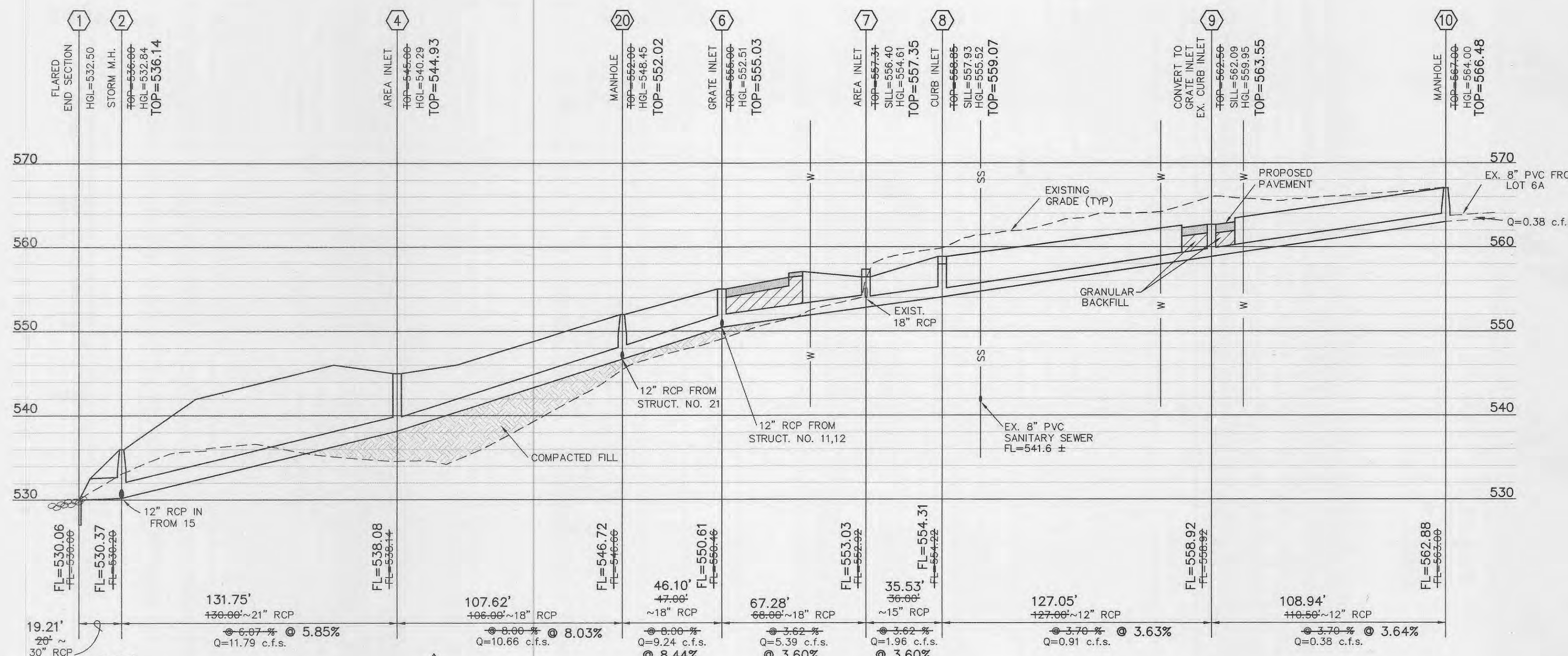
PREPARED FOR:

TRISTAR
BUSINESS COMMUNITIES

13397 LAKEFRONT DRIVE
ST. LOUIS, MO. 63045
PHONE: (314) 291-9999
FAX: (314) 291-9191

CALL 2 WORKING DAYS BEFORE YOU DIG!
CALL: 1-800-DIG-RITE
1-800-344-7483

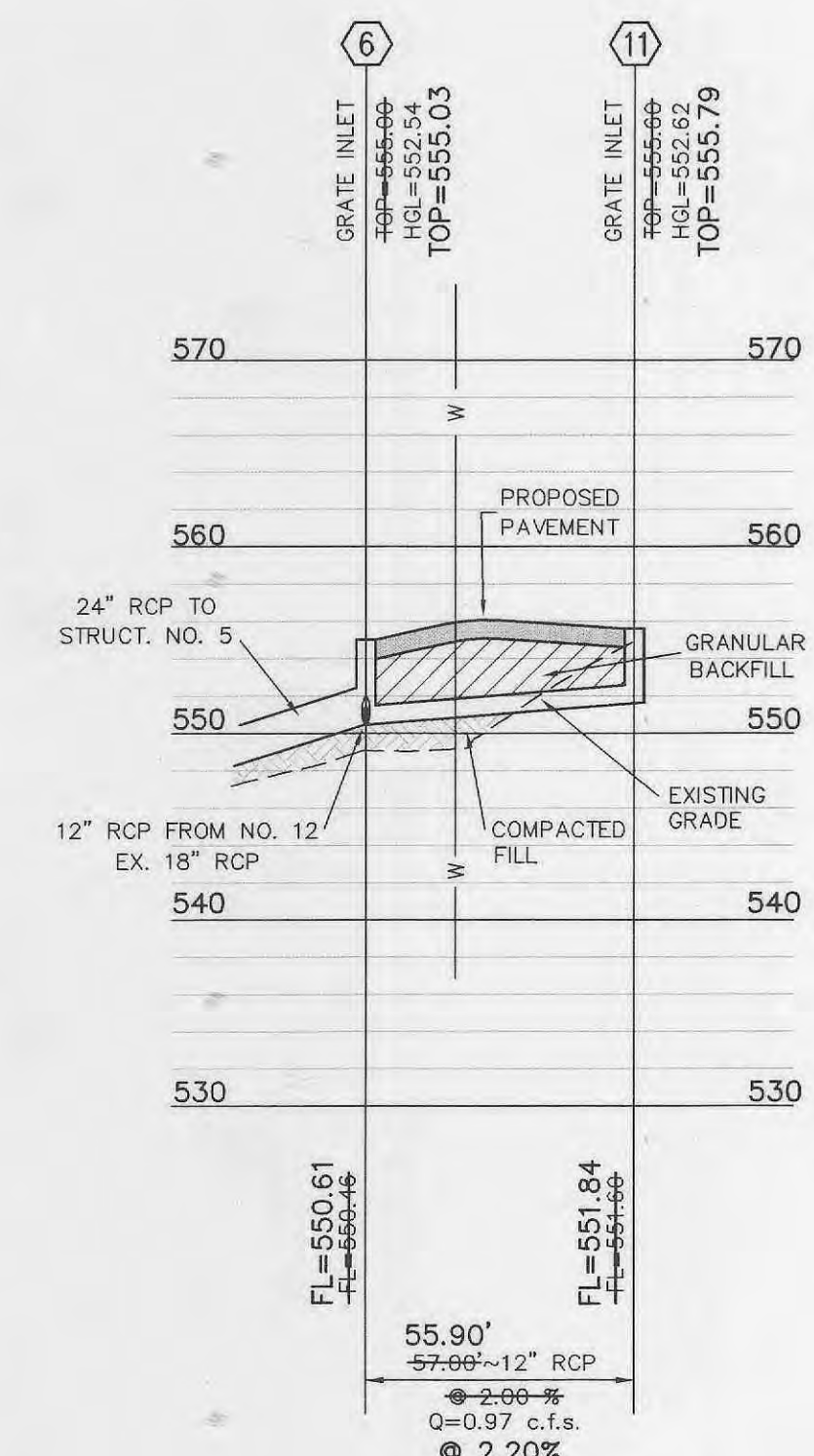




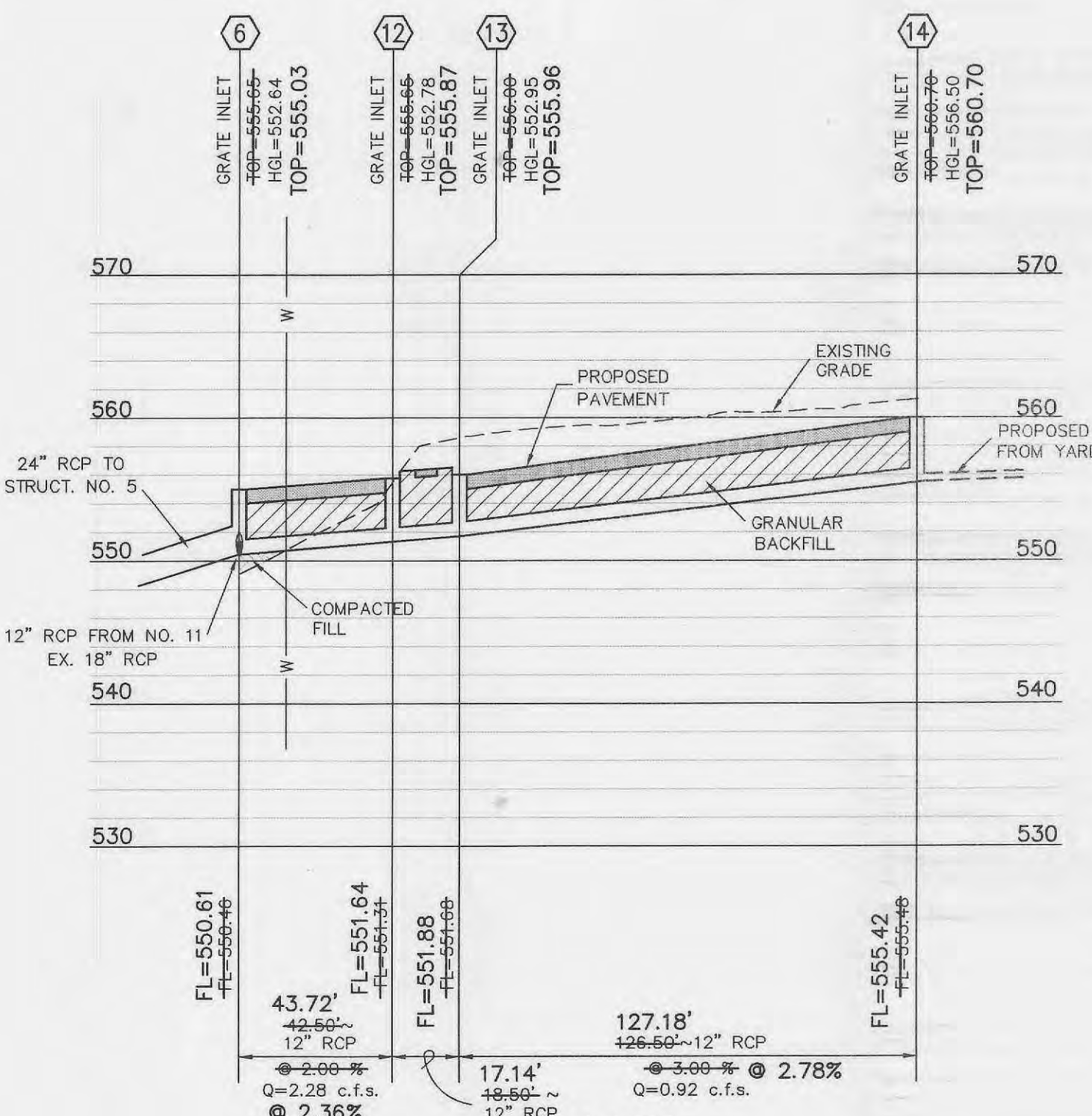
NOTE: ENERGY DISSIPATORS AND STONE REVEIMENT WILL BE FIELD EVALUATED FOR EFFECTIVENESS BOTH ON AND OFF SITE IN REDUCING EROSION.

"PRIVATE" - PROPOSED STORM SEWER PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

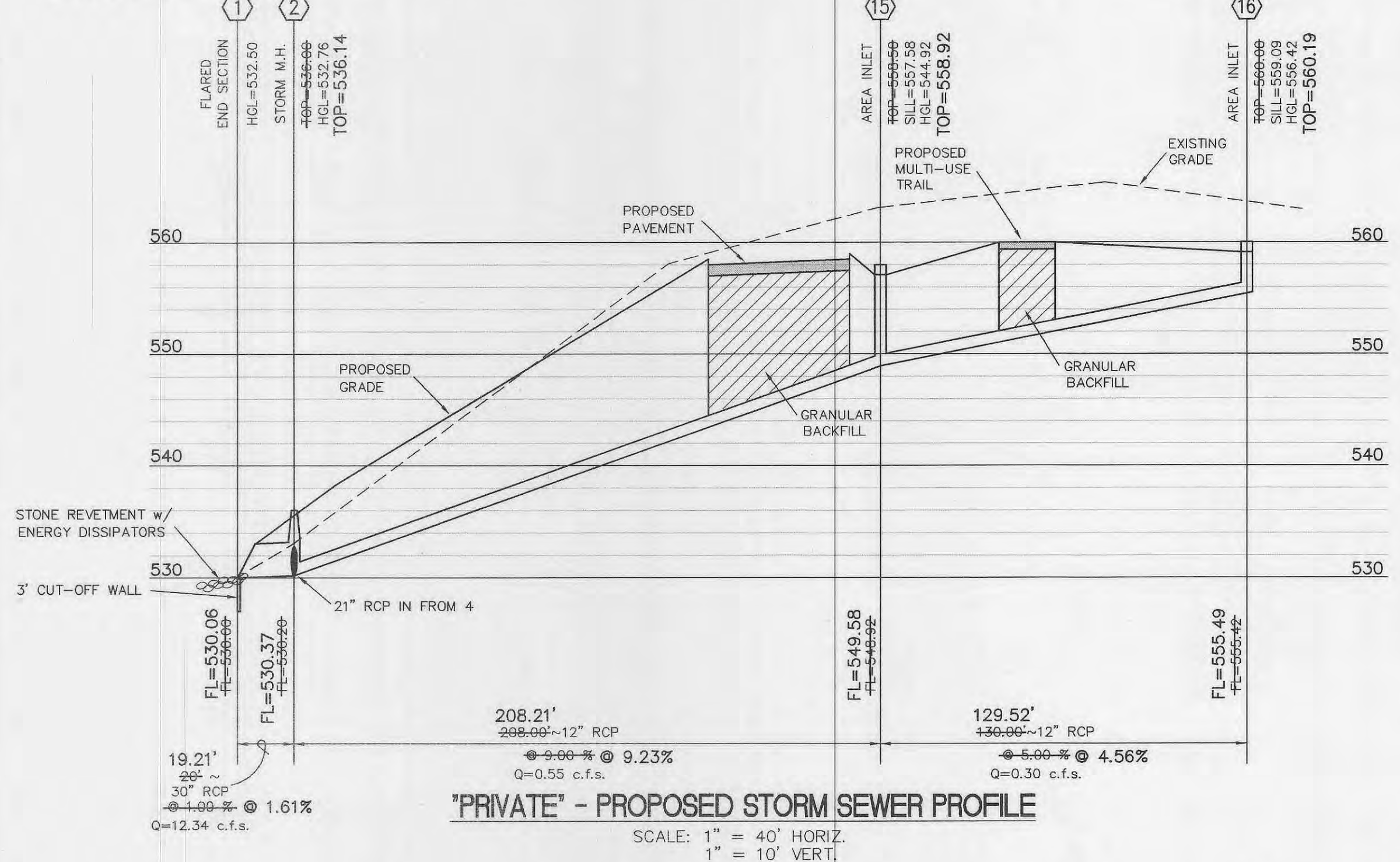
NOTE: CONTRACTOR TO ENSURE AND VERIFY 0.20' DROP THROUGH ALL STRUCTURES AND MANHOLES



"PRIVATE" - PROPOSED STORM SEWER PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.



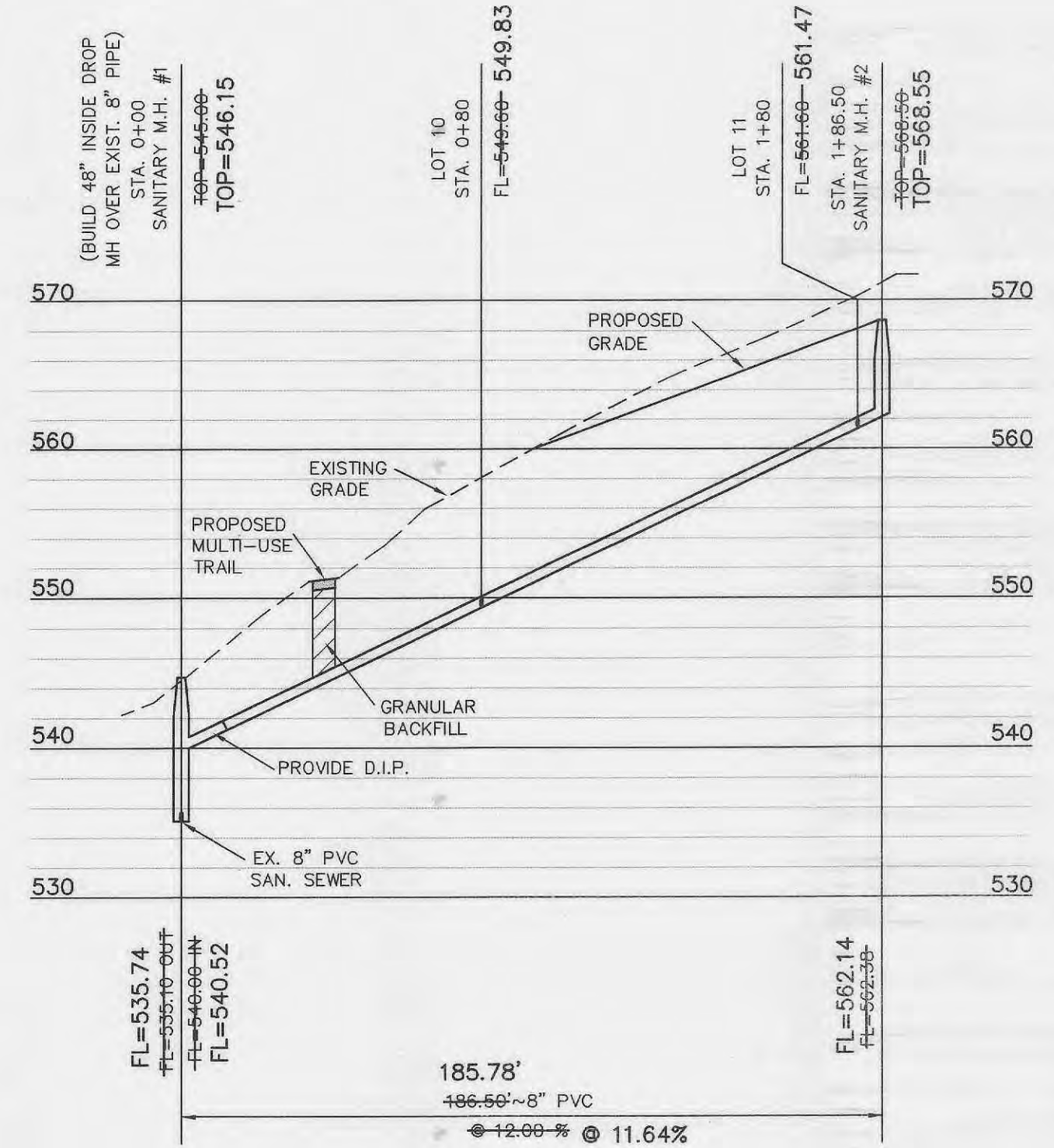
"PRIVATE" - PROPOSED STORM SEWER PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.



"PRIVATE" - PROPOSED STORM SEWER PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

| STRUCTURE NUMBER | | LINE | | FLOWLINE ELEVATIONS | | LENGTH | | FLOWLINE | | SLOPE | | P-RATIO | | HYDRAULIC DATA | | HYDRAULIC ELEVATIONS | | REMARKS | | | | | | |
|------------------|-------|-------|--------|---------------------|-------|--------|-----|----------|---------|-------|-------|---------|-------|----------------|-------|----------------------|--------|---------|--------|--------|--------|------|------|------------|
| UPPER | LOWER | UPPER | LOWER | UPPER | LOWER | FT. | IN. | PERCENT | PERCENT | UPPER | LOWER | UPPER | LOWER | UPPER | LOWER | UPPER | LOWER | UPPER | LOWER | | | | | |
| 10 | 10 | 9 | 563 | 558.92 | 110.5 | .037 | 12 | | | 0.38 | 0.48 | 0.00 | 0.01 | 0.00 | 0.00 | 564.00 | 559.96 | 559.95 | 564.00 | 3.00 | .013 | | | |
| 9 | 9 | 8 | 558.92 | 554.22 | 127 | .037 | 12 | | | 0.91 | 1.16 | 0.02 | 0.02 | 0.08 | 0.03 | 0.03 | 559.92 | 555.60 | 555.52 | 559.95 | 562.50 | 2.55 | .013 | |
| 8 | 8 | 7 | 554.22 | 552.92 | 36 | .036 | 15 | | | 1.96 | 1.60 | 0.04 | 0.08 | 0.03 | 0.04 | 0.01 | 555.47 | 554.64 | 554.61 | 555.52 | 558.85 | 3.33 | .013 | |
| 7 | 7 | 6 | 552.92 | 550.46 | 68 | .036 | 18 | | | 5.39 | 3.05 | 0.14 | 0.78 | 0.18 | 0.17 | 0.02 | 554.42 | 552.69 | 552.51 | 554.61 | 557.31 | 2.70 | .013 | |
| 6 | 6 | 20 | 550.46 | 546.66 | 47 | .08 | 18 | | | 9.24 | 5.23 | 0.42 | 3.92 | 0.36 | 0.43 | 0.12 | 551.96 | 548.81 | 548.45 | 552.51 | 555.00 | 2.49 | .013 | |
| 20 | 20 | 4 | 546.66 | 538.14 | 106 | .08 | 18 | | | 10.66 | 6.03 | 0.57 | 6.02 | 1.09 | 0.25 | 0.04 | 548.16 | 541.38 | 540.29 | 548.45 | 552.00 | 3.55 | .013 | |
| 4 | 4 | 2 | 538.14 | 530.20 | 130 | .0607 | 21 | | | 11.79 | 4.90 | 0.37 | 4.40 | 0.72 | 0.40 | 0.40 | 539.89 | 533.56 | 532.84 | 540.29 | 545.00 | 4.71 | .013 | |
| 2 | 2 | 1 | 530.20 | 530 | 20 | .01 | 30 | | | 12.34 | 2.51 | 0.10 | 1.21 | 0.02 | 0.14 | 0.14 | 532.70 | 532.52 | 532.50 | 532.84 | 536.00 | 3.16 | .013 | |
| 1 | 1 | | 530 | | | | | | | | | | | | | | 532.50 | | | | | | | |
| 11 | 11 | 6 | 551.6 | 550.46 | 57 | .02 | 12 | | | 0.97 | 1.24 | 0.02 | 0.02 | 0.04 | 0.02 | 0.02 | 552.6 | 552.58 | 552.54 | 552.62 | 555.6 | 2.98 | .013 | |
| 6 | 6 | | 550.46 | | | | | | | | | | | | | | 552.54 | | | | | | | HGL STR. 6 |
| 14 | 14 | 13 | 555.48 | 551.68 | 126.3 | .03 | 12 | | | 0.92 | 1.17 | 0.02 | 0.02 | 0.08 | 0.02 | 0.02 | 556.48 | 553.03 | 552.95 | 556.50 | 560.7 | 4.20 | .013 | |
| 13 | 13 | 12 | 551.68 | 551.31 | 18.5 | .02 | 12 | | | 1.91 | 2.43 | 0.09 | 0.09 | 0.05 | 0.11 | 0.01 | 552.68 | 552.83 | 552.78 | 552.95 | 556 | 3.05 | .013 | |
| 12 | 12 | 6 | 551.31 | 550.46 | 42.5 | .02 | 12 | | | 2.28 | 2.90 | 0.13 | 0.13 | 0.17 | 0.07 | 0.07 | 552.31 | 552.71 | 552.54 | 552.78 | 555.65 | 2.87 | .013 | |
| 6 | 6 | | 550.46 | | | | | | | | | | | | | | 552.54 | | | | | | | HGL STR. 6 |
| 16 | 16 | 15 | 555.42 | 548.92 | 130 | .05 | 12 | | | 0.30 | 0.38 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 556.42 | 549.93 | 549.92 | 556.42 | 560 | 3.58 | .013 | |
| 15 | 15 | 2 | 548.92 | 530.20 | 208 | .09 | 12 | | | 0.55 | 0.70 | 0.01 | 0.00 | 0.05 | 0.05 | 0.05 | 548.92 | 532.81 | 532.76 | 549.92 | 558.5 | 8.58 | .013 | |
| 2 | 2 | | 530.20 | | | | | | | | | | | | | | 532.76 | | | | | | | HGL STR. 2 |
| 21 | 21 | 20 | 551.00 | 546.66 | 62.2 | .07 | 12 | | | 1.42 | 1.81 | 0.05 | 0.07 | 0.10 | 0.05 | 0.05 | 552.00 | 548.55 | 548.45 | 552.05 | 555.50 | 3.45 | .013 | |
| 20 | 20 | | 546.66 | | | | | | | | | | | | | | 548.45 | | | | | | | |

SEE DRAINAGE AREA MAP C8



PROPOSED SANITARY PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

- AS-BUILTS 3/8/05
- REVISED PER CITY COMMENTS 02/10/2005
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PHOENIX VILLAGE OFFICE PARK AT WINGHAVEN

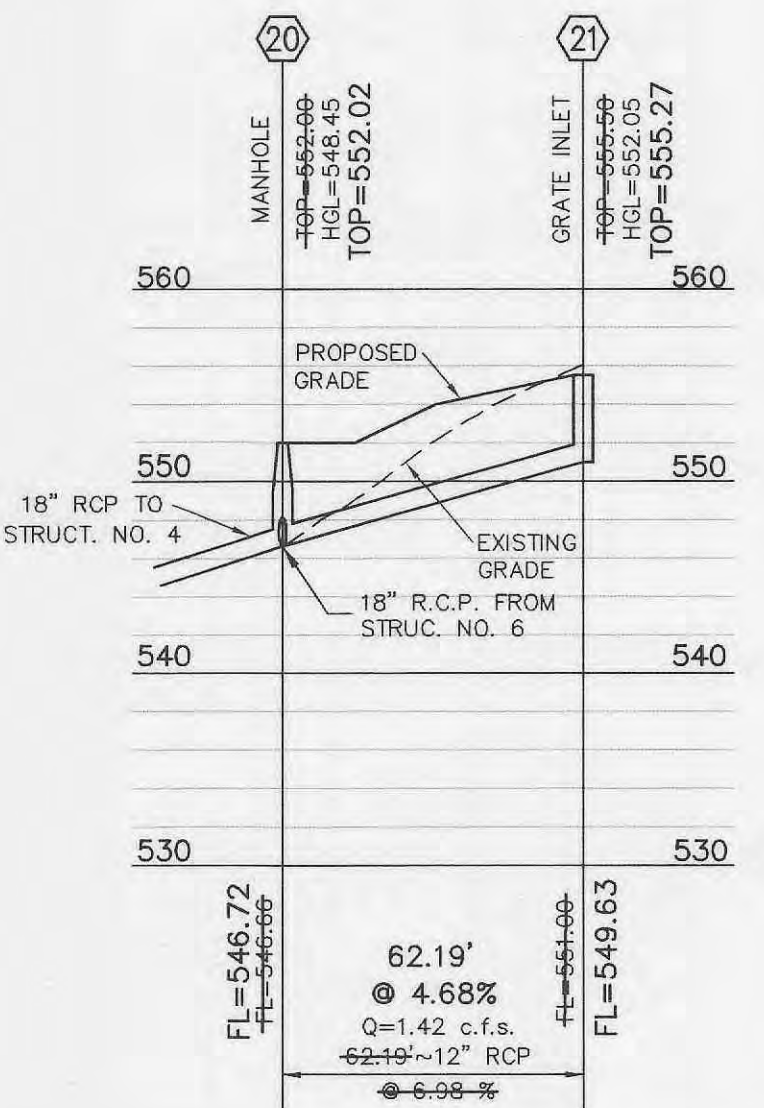
SEWER PROFILES, DETAILS & HYDRAULIC DATA - AREA "B" PHASE II

AS-BUILT

SANITARY AND STORM SEWER MEASUREMENTS

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All public sewers are located within designated existing or proposed easements.



"PRIVATE" - PROPOSED STORM SEWER PROFILE
SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

LINETYPE LEGEND

- EXISTING GRADE.....
- PROPOSED GRADE.....
- HYDRAULIC GRADE.....
- PROPOSED PAVEMENT.....
- GRANULAR BACKFILL.....
- COMPACTED FILL.....

FILE NO. 9831.43.03

GEORGE M. STOCK E-25116

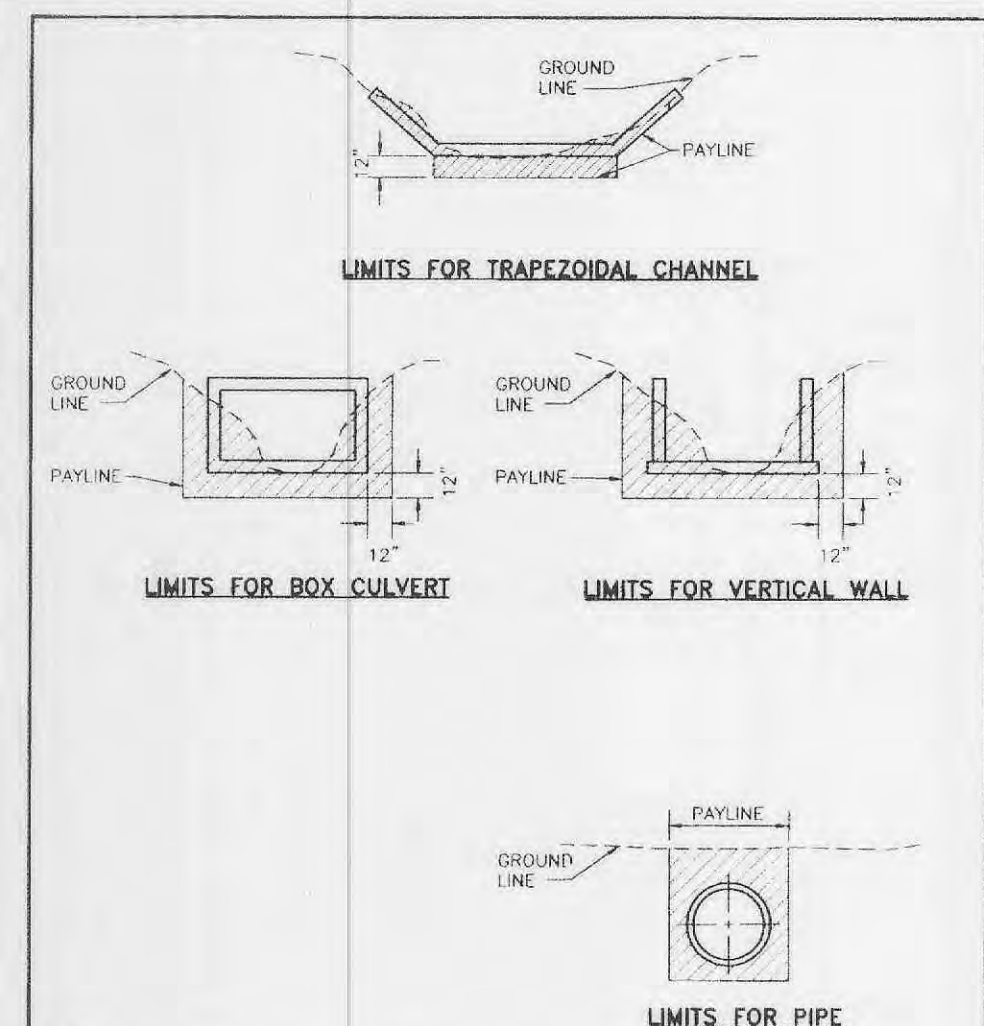
STOCK & ASSOCIATES
Consulting Engineers, Inc.

257 Chesterfield Business Parkway
St. Louis, MO 63005
PH. (636) 530-9100
FAX (636) 530-9130
e-mail: general@stockassoc.com
Web: www.stockassoc.com

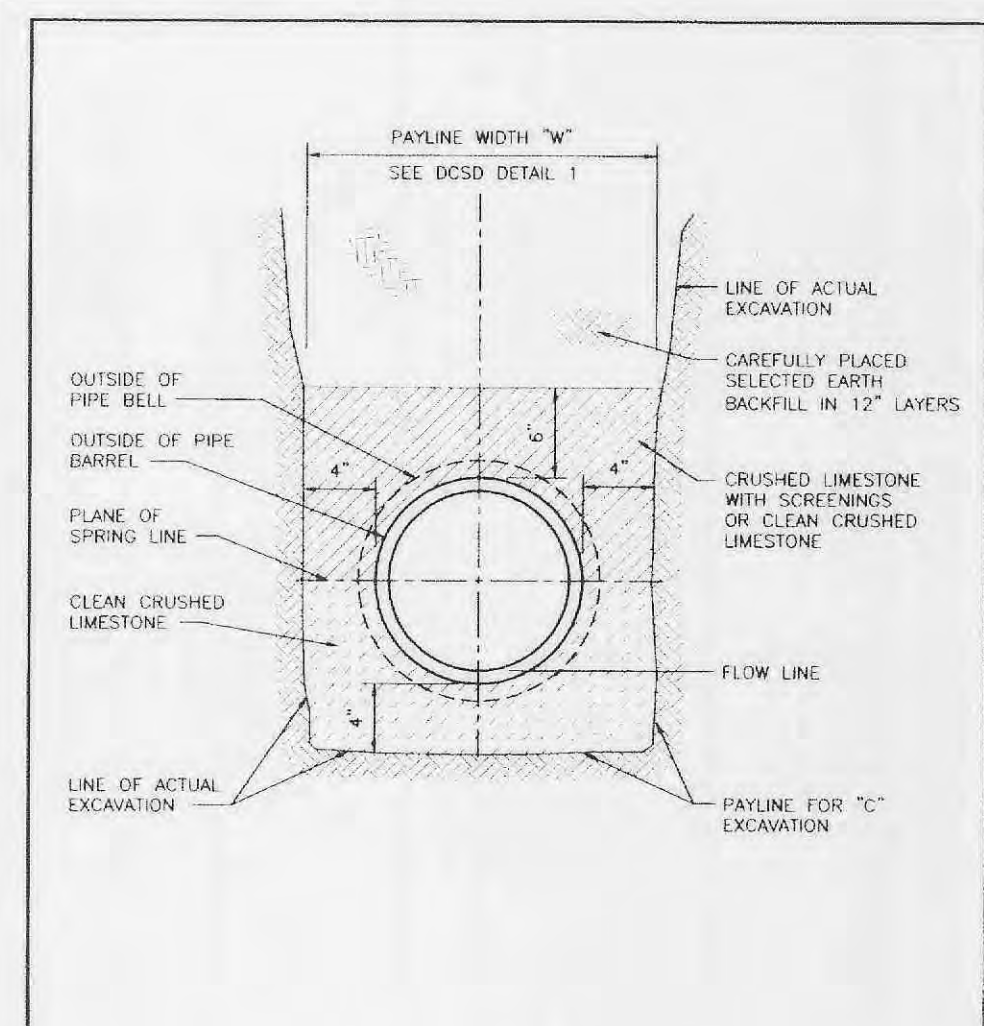
DRAWN BY: T.P.S. DATE: 11/17/04 CHECKED BY: G.M.S. DATE: 11/17/04 DATE JOB NUMBER: 202-2855.01 SHEET: C7.0 of 8

| ROUND PIPE | | | | HORIZONTAL ELLIPTICAL PIPE | | | |
|----------------------------------|----------------------------------|--------------------------------|----------------------------|----------------------------------|----------------------------------|--------------------------------|----------------------------|
| INSIDE DIAMETER OF PIPE (INCHES) | PAYLINE WIDTH OF TRENCH (INCHES) | PAYLINE WIDTH OF TRENCH (FEET) | PAY-VOLUMES (CU FT PER FT) | INSIDE DIAMETER OF PIPE (INCHES) | PAYLINE WIDTH OF TRENCH (INCHES) | PAYLINE WIDTH OF TRENCH (FEET) | PAY-VOLUMES (CU FT PER FT) |
| 4 | 30 | 2.50 | 3.28 | | | | |
| 6 | 30 | 2.50 | 3.59 | | | | |
| 8 | 30 | 2.50 | 3.87 | | | | |
| 10 | 30 | 2.50 | 4.09 | | | | |
| 12 | 30 | 2.50 | 4.25 | | | | |
| 15 | 36 | 3.00 | 5.55 | | | | |
| 18 | 36 | 3.00 | 5.77 | 14 x 23 | 41 | 3.42 | 5.94 |
| 21 | 39 | 3.25 | 6.61 | | | | |
| 24 | 42 | 3.50 | 7.39 | 19 x 30 | 49 | 4.08 | 7.68 |
| 27 | 45 | 3.75 | 8.18 | 22 x 34 | 53 | 4.42 | 8.81 |
| 30 | 49 | 4.08 | 9.30 | 24 x 38 | 58 | 4.83 | 9.70 |
| 33 | 53 | 4.42 | 10.53 | 27 x 42 | 62 | 5.17 | 10.71 |
| 36 | 56 | 4.67 | 11.43 | 29 x 45 | 66 | 5.50 | 11.72 |
| 39 | | DISCONTINUED | | 32 x 49 | 71 | 5.92 | 13.14 |
| 42 | 63 | 5.25 | 13.38 | 34 x 53 | 75 | 6.25 | 14.05 |
| 48 | 70 | 5.83 | 15.67 | 38 x 60 | 83 | 6.92 | 16.18 |
| 54 | 77 | 6.42 | 18.15 | 43 x 68 | 92 | 7.67 | 18.81 |
| 60 | 84 | 7.00 | 20.73 | 48 x 76 | 101 | 8.43 | 21.59 |
| 66 | 91 | 7.58 | 23.45 | 53 x 83 | 109 | 9.08 | 24.35 |
| 72 | 98 | 8.17 | 26.37 | 58 x 91 | 118 | 9.83 | 27.45 |
| 78 | 105 | 8.75 | 29.39 | 63 x 98 | 126 | 10.50 | 30.50 |
| 84 | 112 | 9.33 | 32.57 | 68 x 106 | 135 | 11.25 | 33.91 |
| 90 | 119 | 9.92 | 35.90 | 72 x 113 | 143 | 11.92 | 36.99 |
| 96 | 126 | 10.50 | 39.37 | 77 x 121 | 152 | 12.67 | 40.69 |
| 102 | 133 | 11.08 | 42.99 | 82 x 128 | 160 | 13.53 | 44.45 |
| 108 | 140 | 11.67 | 46.75 | 87 x 136 | 168 | 14.00 | 47.79 |
| 114 | 147 | 12.25 | 50.66 | 92 x 143 | 176 | 14.67 | 51.70 |
| 120 | 154 | 12.83 | 54.72 | 97 x 151 | 185 | 15.42 | 56.01 |
| 126 | 161 | 13.42 | 58.92 | | | | |
| 132 | 168 | 14.00 | 63.27 | 106 x 166 | 202 | 16.83 | 64.48 |
| 144 | 182 | 15.17 | 72.40 | 116 x 180 | 218 | 18.17 | 73.59 |

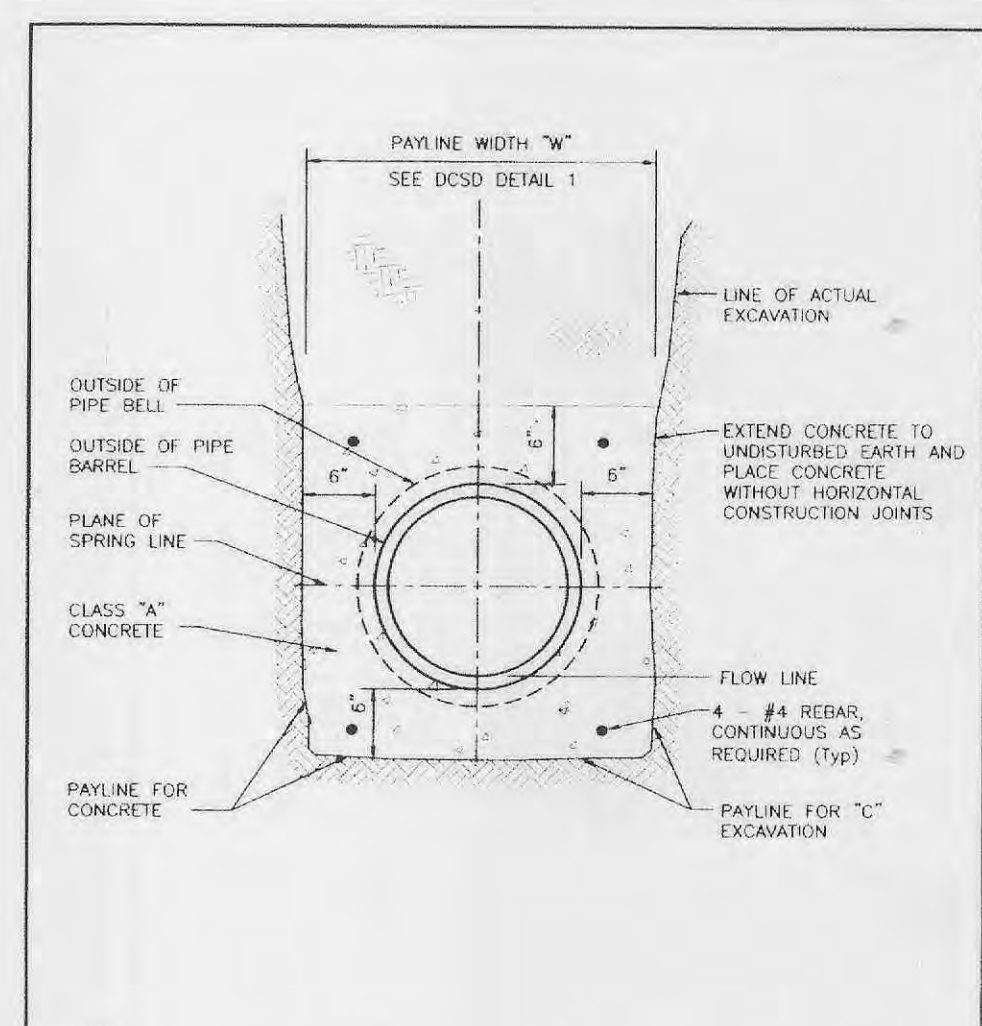
Duckett Creek Sanitary District
PAYLINE WIDTHS OF TRENCH AND PAY-QUANTITIES OF CONCRETE
Date: 12-21-99
BSM: MDOB
App: KLA
Detail: 1



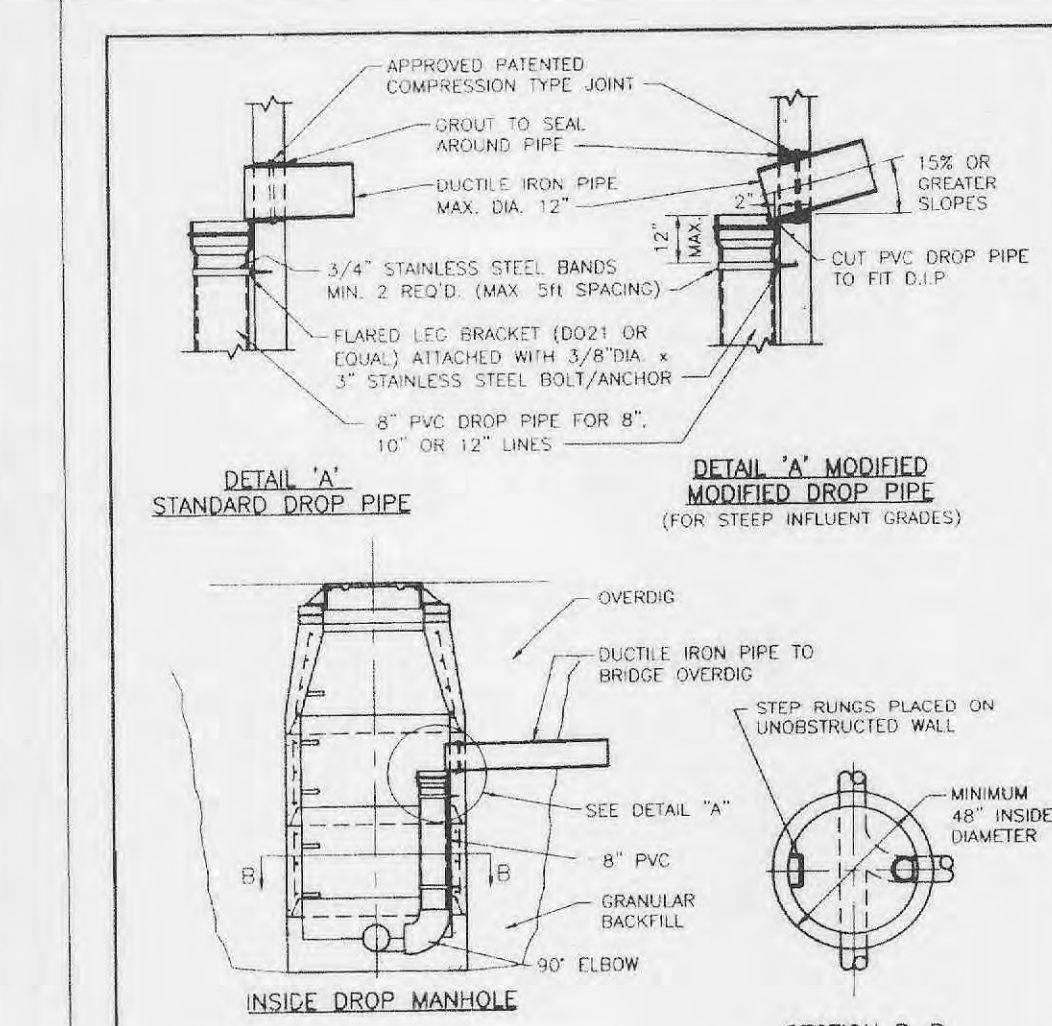
Duckett Creek Sanitary District
PAYLINE LIMITS FOR EXCAVATION
Date: 12-21-99
BSM: MDOB
App: KLA
Detail: 2



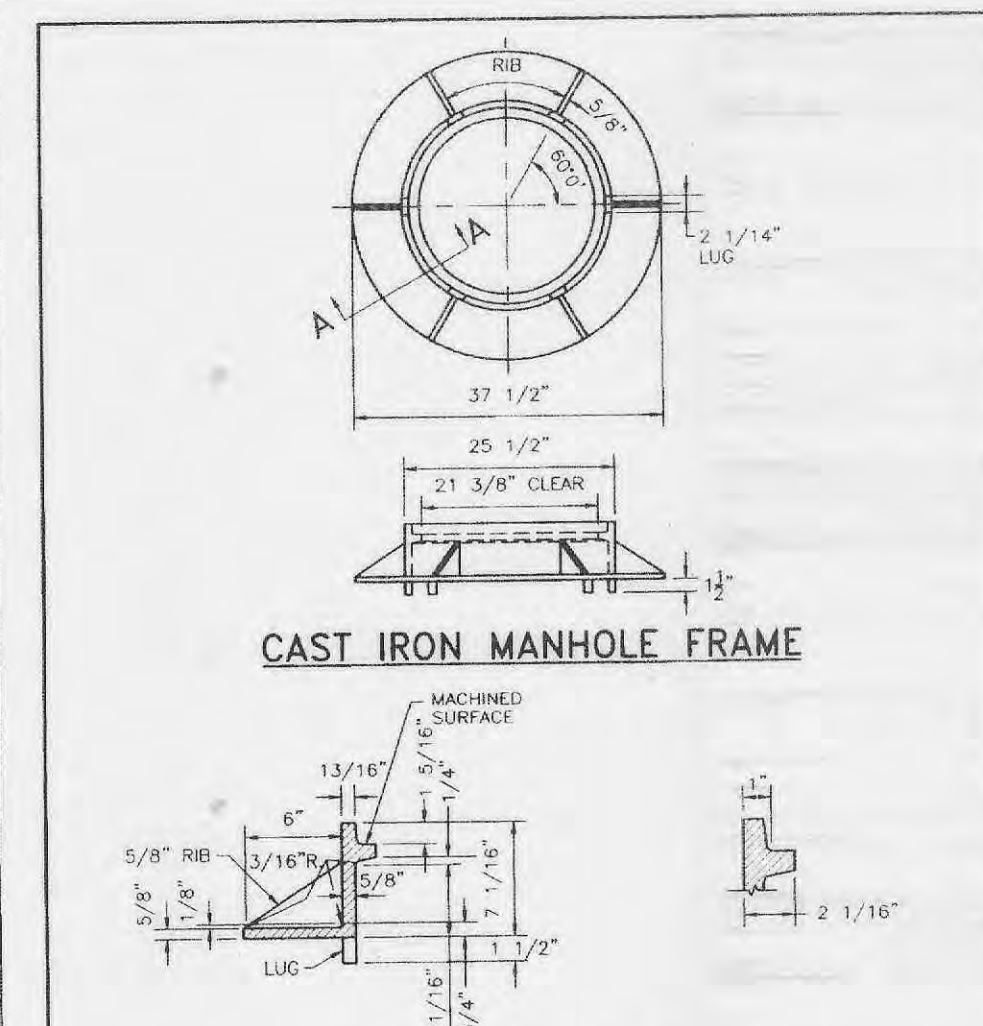
Duckett Creek Sanitary District
Date: 12-21-99
BSM: MDOB
App: KLA
Detail: 3



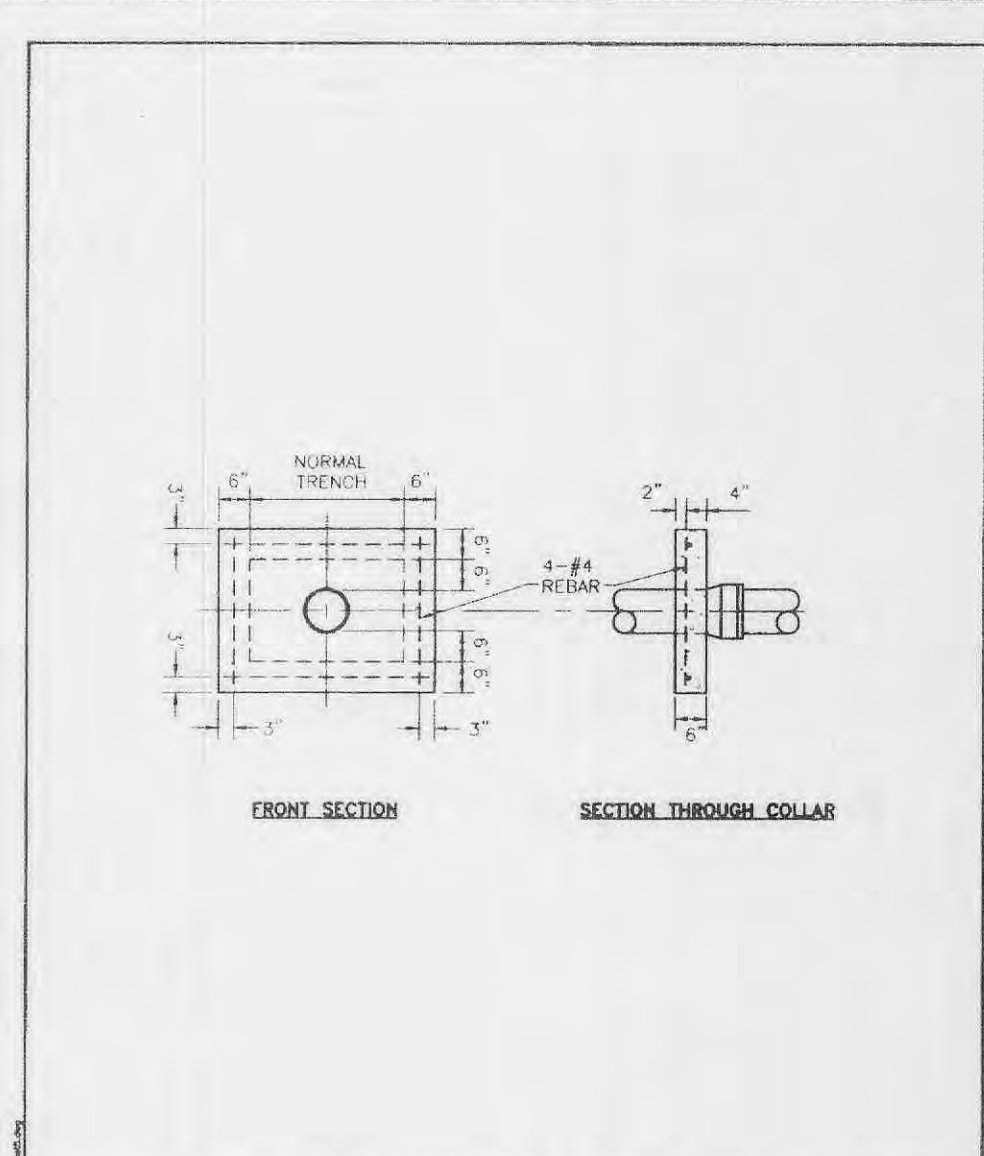
Duckett Creek Sanitary District
Date: 12-21-99
BSM: MDOB
App: KLA
Detail: 4



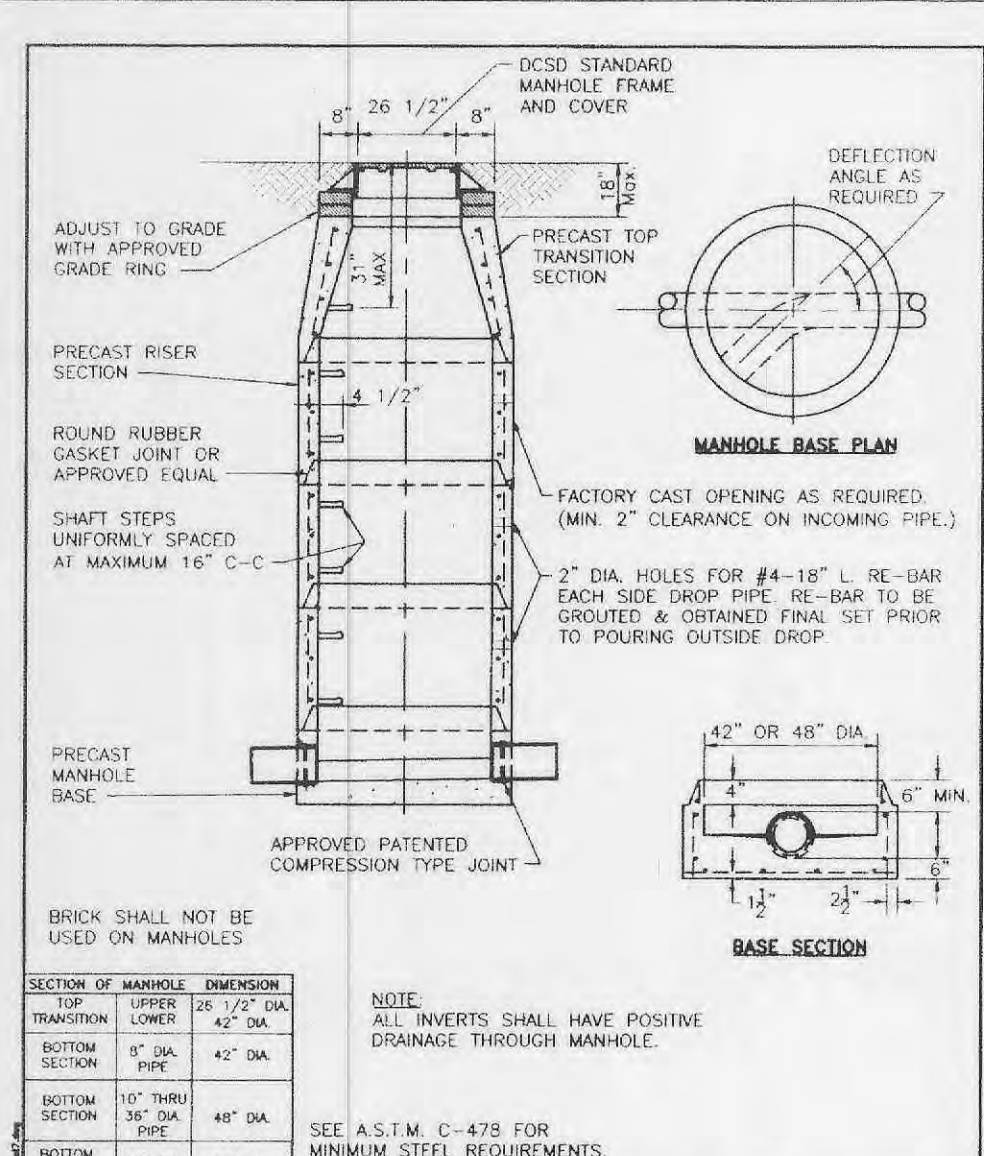
Duckett Creek Sanitary District
INSIDE DROP MANHOLE
Date: 01-10-00
BSM: MDOB
App: KLA
Detail: 10



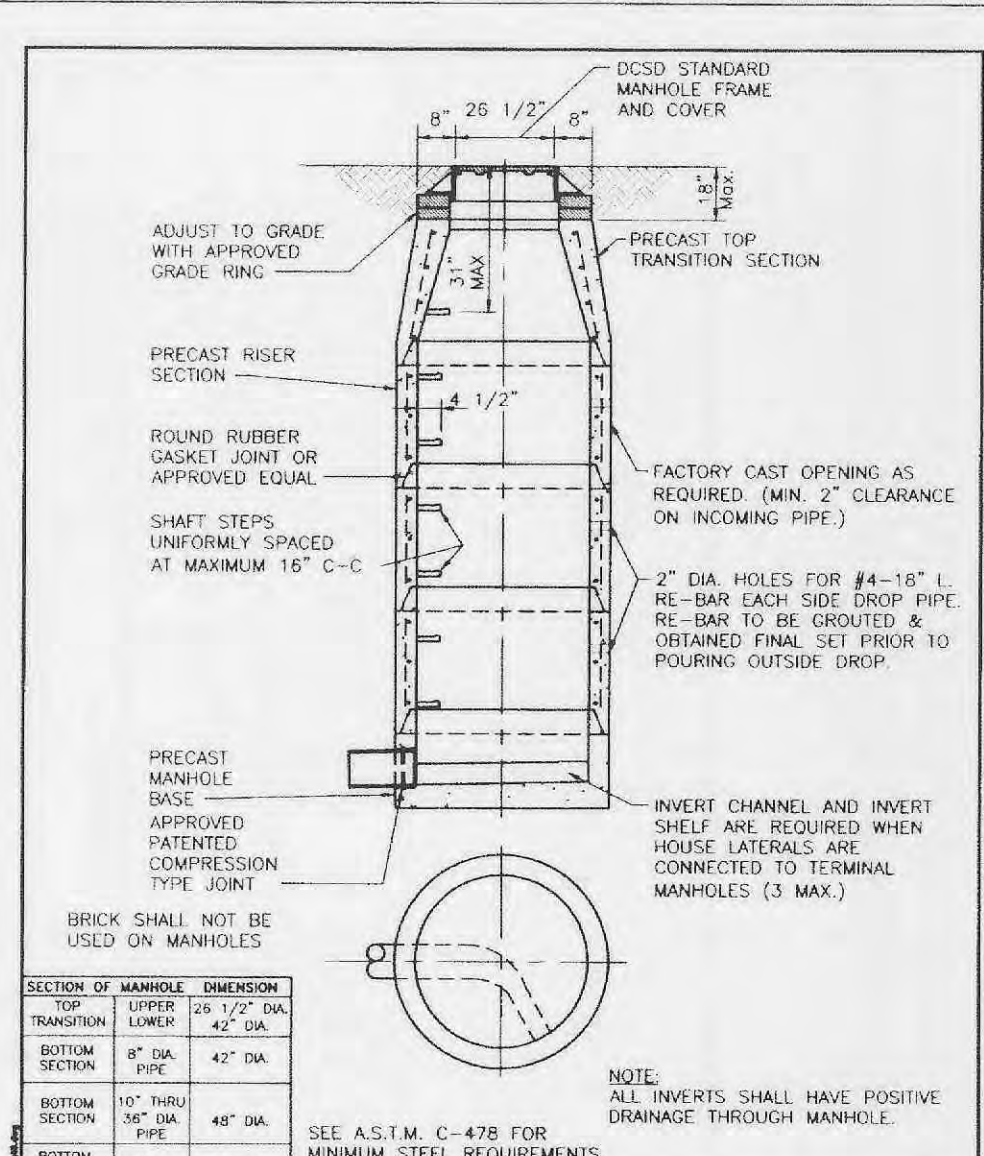
Duckett Creek Sanitary District
CAST IRON MANHOLE FRAME
Date: 01-14-00
BSM: MDOB
App: KLA
Detail: 11



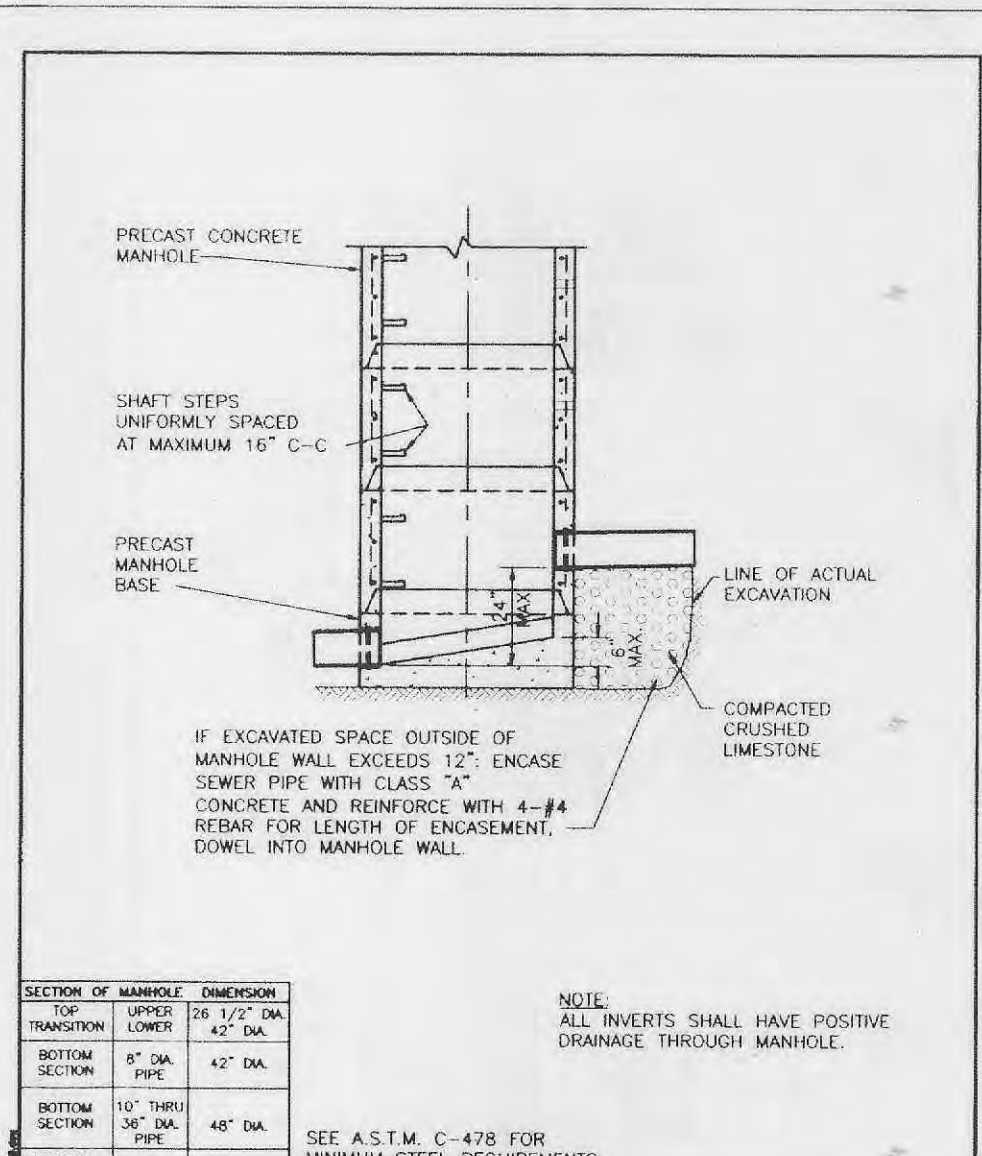
Duckett Creek Sanitary District
CONCRETE ANTI-SLIP COLLAR FOR PVC PIPE ON PIPE SLOPES FROM 15% TO 50%
Date: 12-21-99
BSM: MDOB
App: KLA
Detail: 5



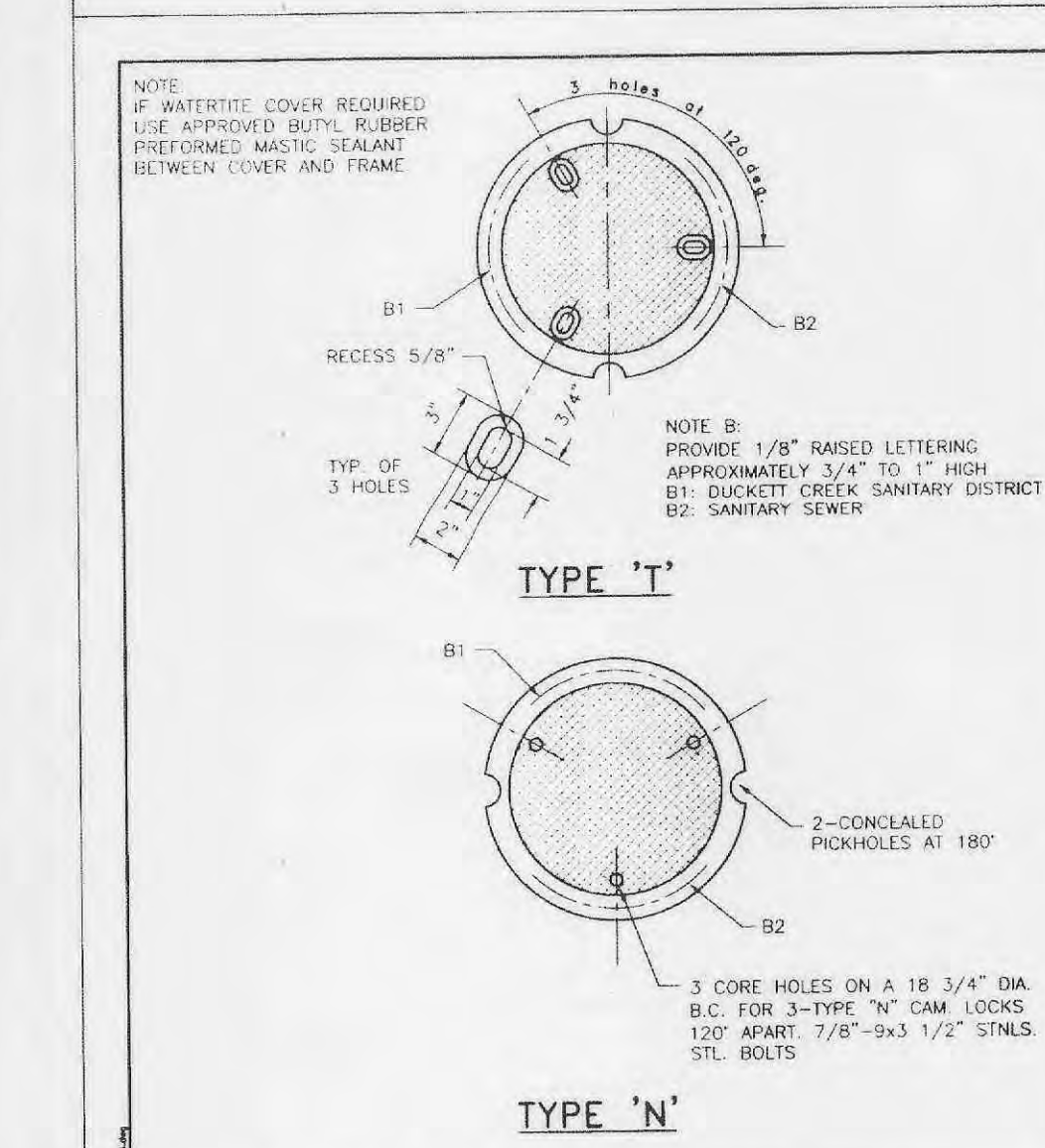
Duckett Creek Sanitary District
PRE-CAST CONCRETE MANHOLE FOR SEWERS 8" THROUGH 18"
Date: 12-30-99
BSM: MDOB
App: KLA
Detail: 7



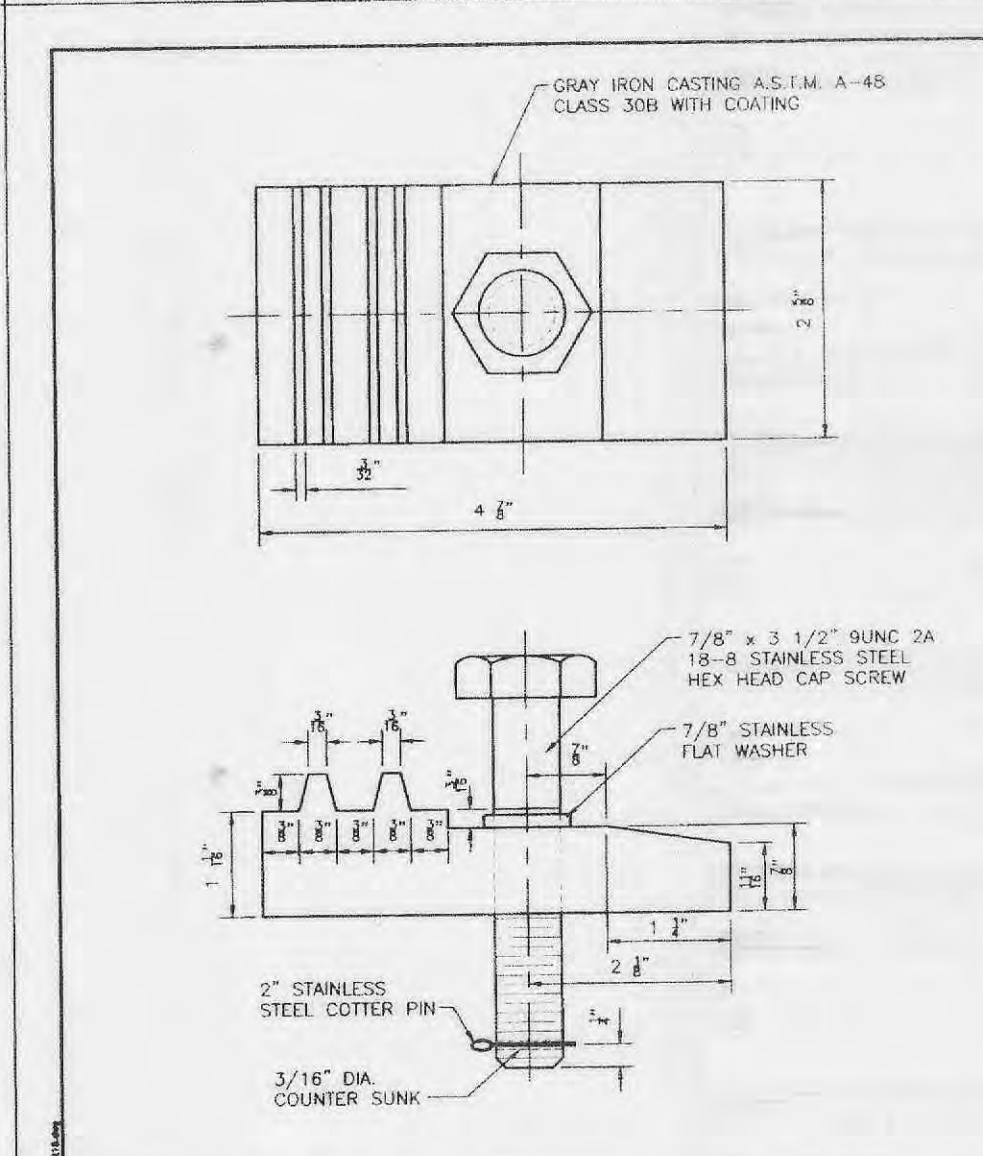
Duckett Creek Sanitary District
TERMINAL MANHOLE FOR SEWERS 8" THROUGH 18"
Date: 01-03-00
BSM: MDOB
App: KLA
Detail: 8



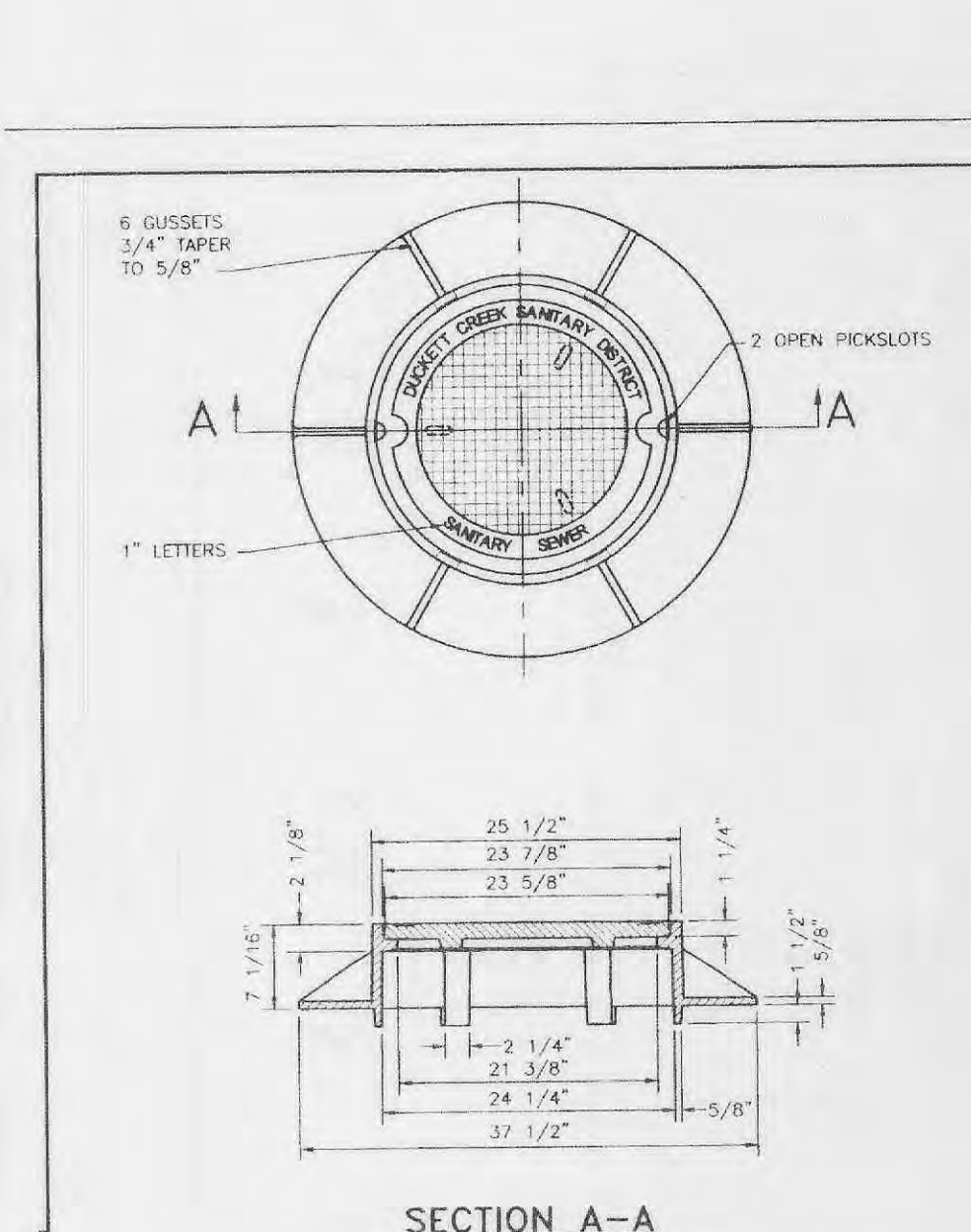
Duckett Creek Sanitary District
Date: 01-04-00
BSM: MDOB
App: KLA
Detail: 9



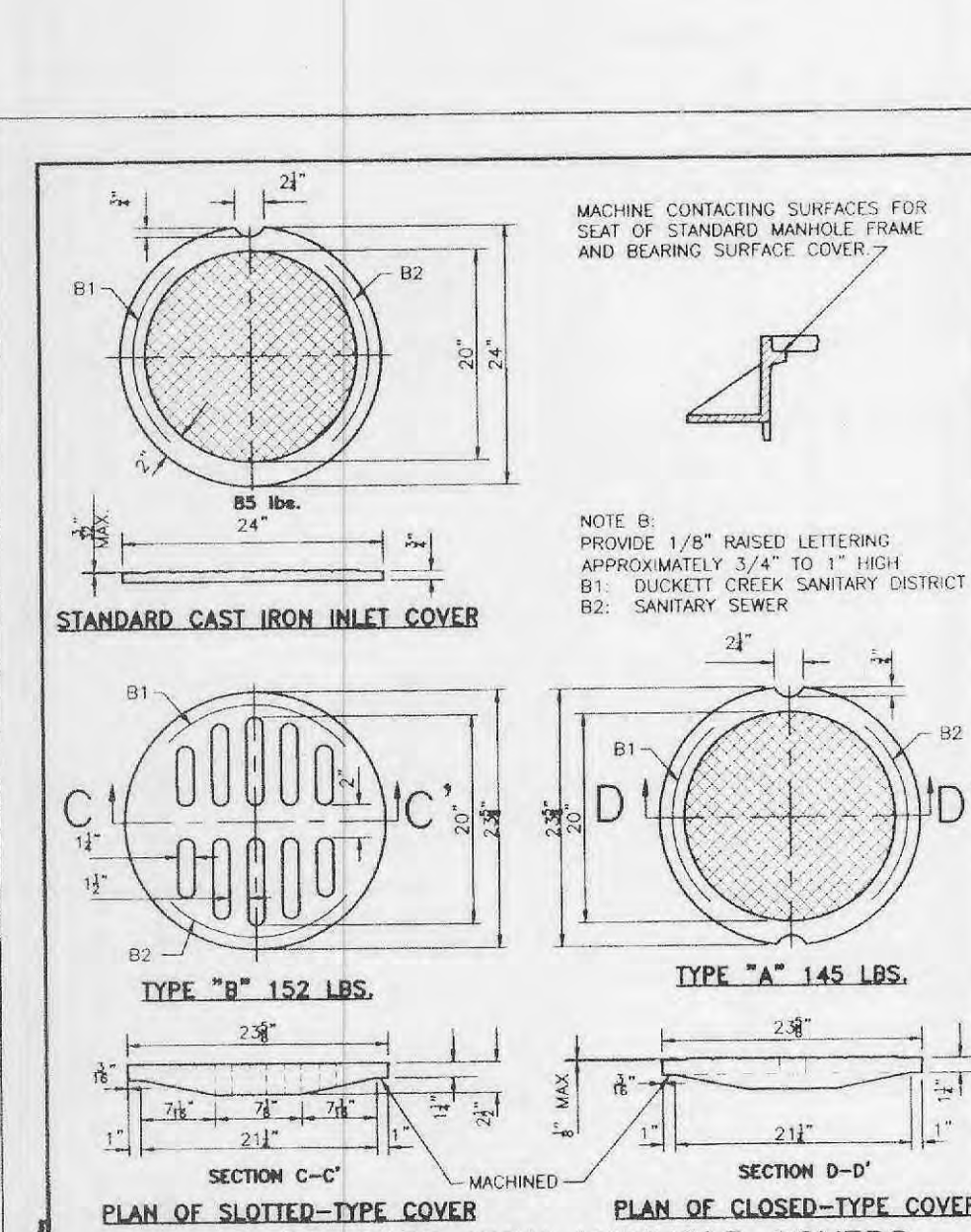
Duckett Creek Sanitary District
CAST IRON MANHOLE COVERS
Date: 12-27-00
BSM: MDOB
App: KLA
Detail: 14



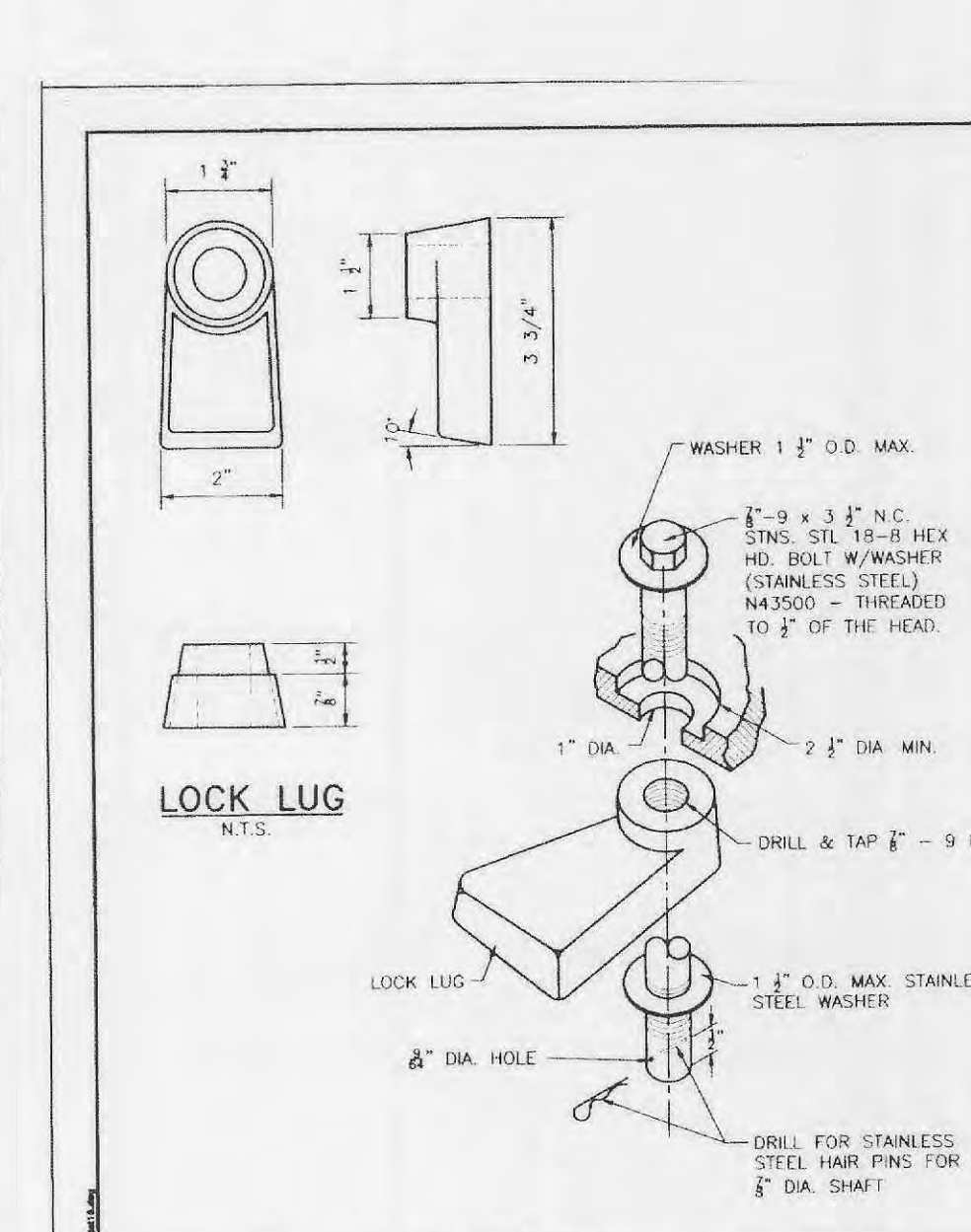
Duckett Creek Sanitary District
LOCKING DEVICE FOR TYPE "T" LOCK TYPE MANHOLE COVER
Date: 12-27-00
BSM: MDOB
App: KLA
Detail: 15



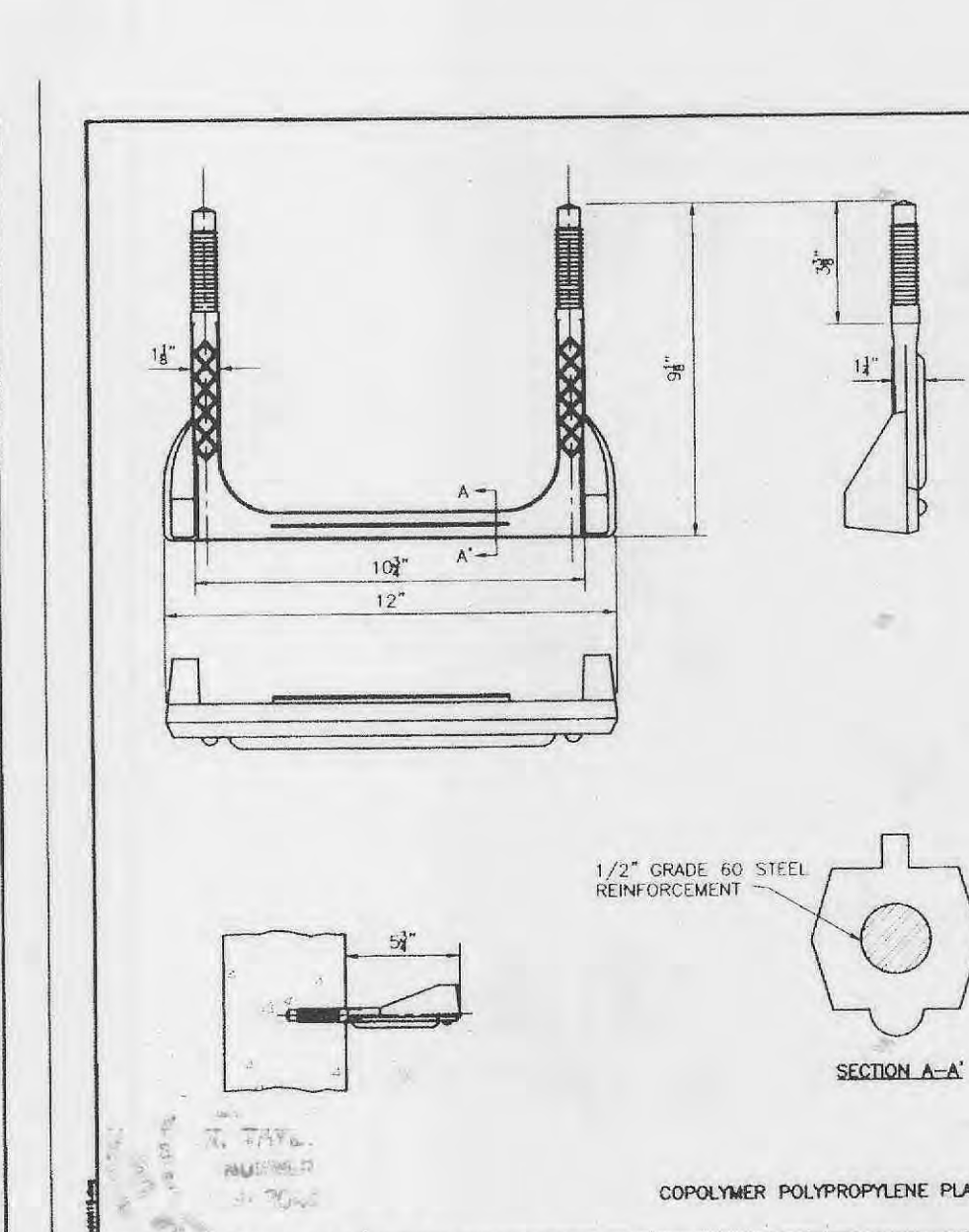
Duckett Creek Sanitary District
Date: 01-14-00
BSM: MDOB
App: KLA
Detail: 12



Duckett Creek Sanitary District
CAST IRON COVERS MANHOLES AND INLETS
Date: 12-22-00
BSM: MDOB
App: KLA
Detail: 13



Duckett Creek Sanitary District
LOCKING DEVICE FOR TYPE "N" LOCK TYPE MANHOLE COVER
Date: 12-28-00
BSM: MDOB
App: KLA
Detail: 16



Duckett Creek Sanitary District
Date: 1-3-01
BSM: MDOB
App: KLA
Detail: 18

AS-BUILT

SANITARY AND STORM SEWER MEASUREMENTS

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PHOENIX VILLAGE OFFICE PARK AT WINGHAVEN
SEWER DETAILS - AREA "B" PHASE II
FILE NO. 9831.43.03

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Phoenix Village Office Park Area B Phase 2

SDR-35 x C900 BELL & SPIGOT ADAPTERS

| SIZE | CATALOG NO. | A | B | C | D | E | F | G | H | CT | PT |
|------|-------------|------|------|------|------|------|------|------|-----|-----|-----|
| 4" | 334-040 | 4.56 | 8.23 | 4.25 | 4.10 | 3.94 | 4.80 | 2.72 | 2.7 | .32 | .25 |
| 6" | 334-060 | 6.68 | 9.93 | 6.31 | 4.57 | 5.88 | 6.90 | 3.72 | 3.5 | .45 | .36 |

Duckett Creek Sanitary District
SDR-35 x C900 BELL AND SPIGOT ADAPTERS
19A

SDR-35 x C900 BELL & SPIGOT ADAPTERS

| SIZE | CATALOG NO. | A | L | STYLE |
|------|-------------|-----|------|------------|
| 4" | 335-040 | 3.2 | 10.6 | FABRICATED |
| 6" | 335-060 | 2.9 | 3.5 | HARC0 |
| 8" | 335-080 | 4.0 | 12.5 | FABRICATED |

Duckett Creek Sanitary District
SDR-35 x C900 BELL AND SPIGOT SPECIAL 4", 6" & 8" ADAPTERS
19B

SDR-35 x C900 BELL & SPIGOT ADAPTERS

| SIZE | CATALOG NO. | OD | ID | OD | ID | CTN | CTN |
|------|-------------|--------|--------|--------|--------|-------|-----|
| | | (C900) | (C900) | (C900) | (C900) | QTY | WT |
| 4x4 | 337-040 | 4.80 | 4.215 | 4.86 | 4.25 | 10.0 | 1 |
| 6x6 | 337-060 | 6.90 | 6.275 | 6.96 | 6.32 | 11.15 | 1 |
| 8x8 | 337-080 | 9.05 | 8.400 | 9.13 | 8.45 | 12.50 | 1 |

Duckett Creek Sanitary District
SDR-35 x C900 BELL AND SPIGOT SPECIAL 4", 6" & 8" ADAPTERS
19C

PLASTIC SADDLE TEE OR WYE FITTING (SOLVENT WELD)

WHEN CONNECTION TO A PLASTIC PIPE IS ALLOWED AND A CONNECTION IS LARGER THAN 6" IN DIAMETER, A SOLVENT WELD WYE OR TEE FITTING OF A SIMILAR MATERIAL MUST BE USED. (EXAMPLE: 10" x 8") THIS IS ACCOMPLISHED BY CAREFULLY CUTTING A HOLE WITH A SAW IN THE MAIN AT THE REQUIRED LOCATION AFTER CUTTING AND SHAPING THE HOLE TO THE SIZE OF THE FITTING. THE FOLLOWING STEPS SHOULD BE TAKEN:

- CLEAN AND DRY BOTH INSIDE THE SADDLE WYE SURFACE AND PIPE SURFACE TO BE SOLVENT CEMENTED.
- IMPORTANT: APPLY A LIBERAL HEAVY COAT OF ONE-STEP SOLVENT CEMENT TO THE INSIDE SURFACE OF THE SADDLE WYE AND TO THE EXTERIOR WELDING SURFACE TO THE PIPE.
- WITHOUT DELAY, MATE THE SURFACES AND STRAP DOWN TIGHTLY. A BEAD OF SOLVENT SHOULD APPEAR AFTER THE SADDLE HAS BEEN STRAPPED DOWN TIGHTLY.
- USING A RAG OR PAPER TOWEL, WIPE BEAD AND ANY EXCESS SOLVENT CEMENT OFF PIPE AND SADDLE.
- ALLOW 30-60 MINUTES FOR SET-UP TIME BEFORE BACKFILLING. CURE TIME DEPENDS ON SIZE OF MATERIALS BEING INSTALLED AND VARIOUS COLD DAMP CONDITIONS.
- DISCARD OLD SOLVENT IF IT BECOMES GELLED OR LUMPY.

7. A CLEAN, DRY, BONDING MATERIAL IS REQUIRED AROUND THE COMPLETED CONNECTION BEFORE BACKFILLING. THE BEDDING MATERIAL SHOULD BE ONE OF THE FOLLOWING:

- 1 TO 3 CEMENT TO SAND MIX
- TYPE-X/MX CONCRETE
- ASCC APPROVED BEDDING FOR SANITARY SEWERS

Duckett Creek Sanitary District
8" & LARGER CONNECTION TO PLASTIC MAIN
20A

METAL FRAME AND COVER TYPE CLEANOUT

ADJUSTABLE HEAD TYPE CLEANOUT

Duckett Creek Sanitary District
TYPICAL SEWER LATERAL CLEANOUT DETAILS
25

INSERTA TEE

THE USE OF AN INSERTA TEE REQUIRES DISTRICT APPROVAL.

INSTALLATION PROCEDURE:

- CORE THE PROPER SIZE HOLE. THE SIZE: 4" 6" 8" 10" 12" 14" 16". THE SIZE: 4" 6" 8" 10" 12" 14" 16".
- INSERT THE RUBBER SLEEVE (1) IN THE CORED HOLE WITH THE GOLD VERTICAL LINE ON THE RUBBER SLEEVE (1) FACING TO THE SIDE OF THE MAIN LINE. THE UPPER SEGMENT SHOULD BE ON TOP OF THE WALL OR STRAP AND THE LOWER SEGMENT (PVC PROFILE WALL AND POLYETHYLENE PIPE ONLY) SHOULD BE ON THE INSIDE OF THE PIPE.
- APPLY THE INSERTA TEE SOLUTION SUPPLIED TO THE INSIDE OF THE RUBBER SLEEVE AND TO THE OUTSIDE OF THE PVC HUB ADAPTER. SOLUTIONS DO NOT USE IN OIL-BASED SUBSTRATES.
- PLACE THE PVC HUB ADAPTER (2) INTO THE RUBBER SLEEVE. MAKE SURE THAT THE RED VERTICAL LINE (3) ON THE PVC HUB ADAPTER IS IN LINE WITH THE GOLD VERTICAL LINE (1) ON THE RUBBER SLEEVE.
- PLACE THE 2x4 BOARD ON TOP OF THE PVC HUB ADAPTER.
- THE RED HORIZONTAL LINE (4) AT THE TOP OF THE HUB ADAPTER IS A DEPTH MARK. THIS TELLS THE INSTALLER HOW FAR TO BORE THE ADAPTER INTO THE RUBBER SLEEVE. GRAB THE PVC HUB ADAPTER (2) MEETS THE TOP OF THE RUBBER SLEEVE (1).
- PLACE THE STAINLESS STEEL BAND (5) AROUND THE TOP OF THE RUBBER SLEEVE AND TIGHTEN DOWN.
- INSTALL PIPE IN NORMAL MANNER.

Duckett Creek Sanitary District
INSERTA TEE DETAILS AND SPECIFICATIONS
20B

ROLL-IN (FOR EXISTING CLAY OR CONCRETE PIPE)

NOTES:

- WHEN A CONNECTION IS ALLOWED LARGER THAN 6" DIAMETER A SADDLE MAY BE USED IF THE I.D. OF THE CONNECTION PIPE IS NOT GREATER THAN ONE HALF (1/2) OF THE I.D. OF THE MAIN SEWER. (EXAMPLE: 24" x 10")
- IF THE I.D. OF THE CONNECTION PIPE IS GREATER THAN ONE HALF (1/2) OF THE I.D. OF THE MAIN SEWER THE WYE OR TEE MUST BE "ROLLED IN". (EXAMPLE: 12" x 8")
- THIS IS ACCOMPLISHED BY BREAKING AWAY AND REMOVING ONE SECTION OF PIPE. THE TOP HALF OF THE BELL ON THE PIPE LYING ADJACENT TO THE GAP IS CAREFULLY BROKEN OFF. THE TOP HALF OF THE BELL ON THE MAIN REPLACEMENT SECTION WITH A "TEE" WYE FITTING IS ALSO BROKEN OFF. THE REPLACEMENT PIPE IS THEN PLACED IN THE LINE GAP WITH THE STUB POINTED IN THE WADING DIRECTION. THE BROKEN BELLS ON THE REPLACEMENT AND ADJACENT PIPE MAKE IT POSSIBLE FOR THE REPLACEMENT SECTION TO FIT INTO THE SEWER LINE WITHOUT DISTURBING THE ADJACENT PIPE SECTIONS. THE REPLACEMENT SECTION IS THEN NOTICED TO THE DESIGN POSITION AND THE BROKEN BELLS ARE ENCASED WITH A 6" CLASS "A" CONCRETE ENCASEMENT.
- I.D. OF MAIN SEWER SHALL NOT BE DECREASED BY A ROLL-IN CONNECTION.

Duckett Creek Sanitary District
1800' MAXIMUM SPACING
21

ROADWAY BORING DETAIL

NOTES:

- INSIDE DIAMETER OF CASING PIPE TO BE MINIMUM OF 4" GREATER THAN COUPLING DIAMETER OF CARRIER PIPE.
- ENCASMENTS TO BE INSTALLED UNDER THE ROAD BY MEANS OF JACKING IT THROUGH OR BY BORING A HOLE THAT WILL RECEIVE THE CASING WITH A SNUG FIT.
- THE OUTSIDE DIAMETER OF THE CASING SHALL NOT BE LESS THAN, NOR MORE THAN ONE INCH GREATER THAN THE BORED HOLE.
- THE ANNULAR SPACE BETWEEN THE CASING PIPE AND THE BORED HOLE SHALL BE FILLED WITH GROUT.

SUPPORT OF CARRIER PIPE OR FORCE MAIN IN CASING

SECTION A-A'

Duckett Creek Sanitary District
ROADWAY BORING DETAIL
22

MANHOLE CONNECTION AT MANHOLE

NOTE: INVERT-BOTTOM SHALL BE WORKED TO PROVIDE POSITIVE DRAINAGE THROUGH MANHOLE.

| MAIN SIZE | A x B | A x B | A x B | A x B |
|-----------|-----------|-----------|-----------|-----------|
| 24" | 5' x 1' | 4'5" x 1' | 4'0" x 1' | 3'5" x 1' |
| 20" | 4'5" x 1' | 4'0" x 1' | 3'5" x 1' | 3'0" x 1' |
| 18" | 4'0" x 1' | 3'5" x 1' | 3'0" x 1' | 2'5" x 1' |
| 16" | 3'5" x 1' | 3'0" x 1' | 2'5" x 1' | 2'0" x 1' |
| 14" | 3'0" x 1' | 2'5" x 1' | 2'0" x 1' | 1'5" x 1' |
| 12" | 2'5" x 1' | 2'0" x 1' | 1'5" x 1' | 1'0" x 1' |

Duckett Creek Sanitary District
LOW PRESSURE SEWER MAIN CONNECTION AT MANHOLE
28

THRUST BLOCK DETAIL AND SIZE SCHEDULE

| MAIN SIZE | A x B | A x B | A x B | A x B |
|-----------|-----------|-----------|-----------|-----------|
| 24" | 5' x 1' | 4'5" x 1' | 4'0" x 1' | 3'5" x 1' |
| 20" | 4'5" x 1' | 4'0" x 1' | 3'5" x 1' | 3'0" x 1' |
| 18" | 4'0" x 1' | 3'5" x 1' | 3'0" x 1' | 2'5" x 1' |
| 16" | 3'5" x 1' | 3'0" x 1' | 2'5" x 1' | 2'0" x 1' |
| 14" | 3'0" x 1' | 2'5" x 1' | 2'0" x 1' | 1'5" x 1' |
| 12" | 2'5" x 1' | 2'0" x 1' | 1'5" x 1' | 1'0" x 1' |

Duckett Creek Sanitary District
THRUST BLOCK DETAIL AND SIZE SCHEDULE
29

SANITARY SEWER LATERAL PROFILE

NOTE: DIFFERENCE IN DEPTH INCREASES WITH PIPE SIZE.

Duckett Creek Sanitary District
TYPICAL SANITARY SEWER LATERAL PROFILE
26

SANITARY SEWER LATERAL RISER DETAIL

Duckett Creek Sanitary District
SANITARY SEWER LATERAL RISER DETAIL
27

AS-BUILT

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Donald W. Taylor
STATE OF MICHIGAN
LAND SURVEYOR
No. 2041

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SEWER DETAILS - AREA "B" PHASE II

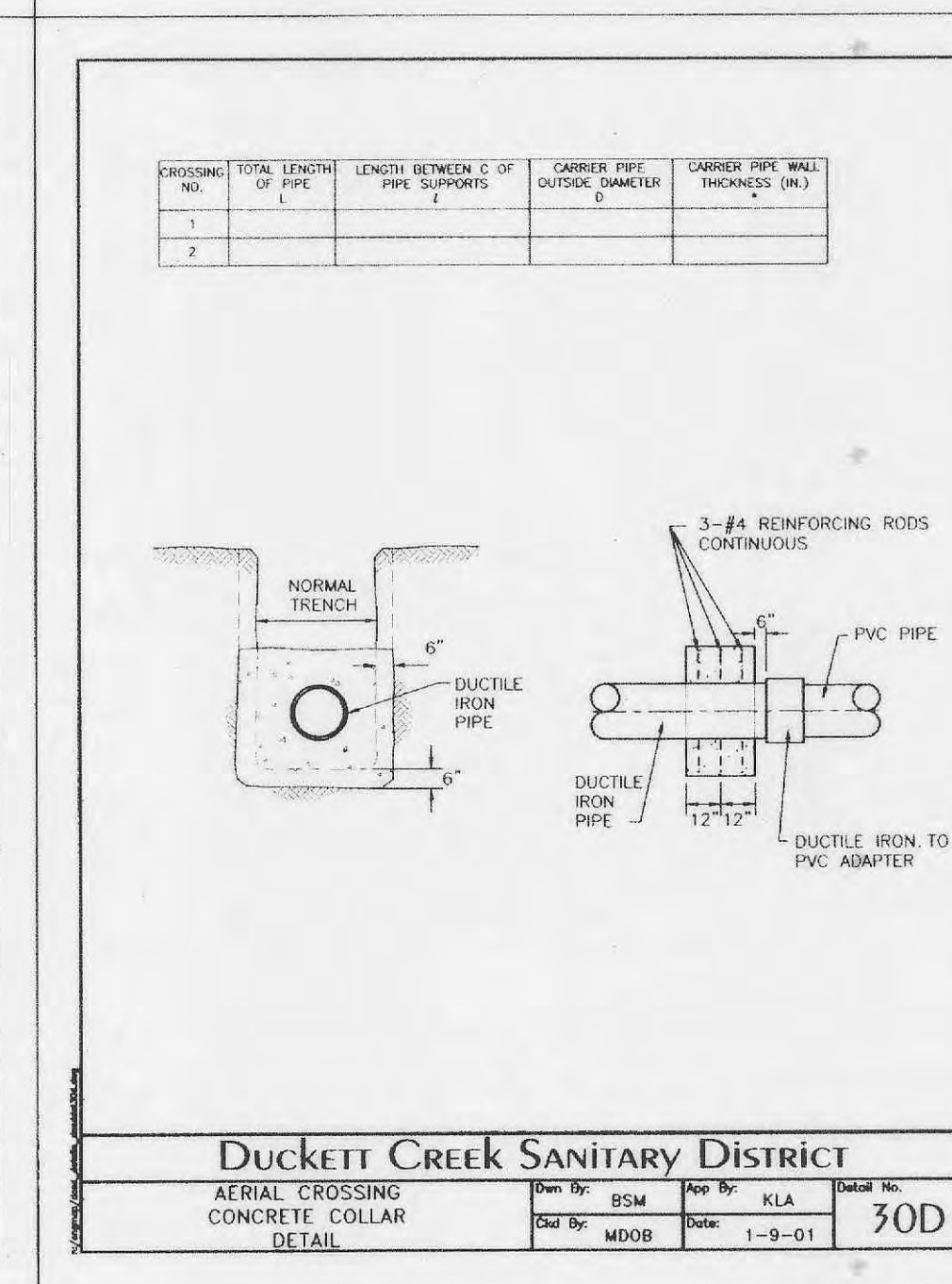
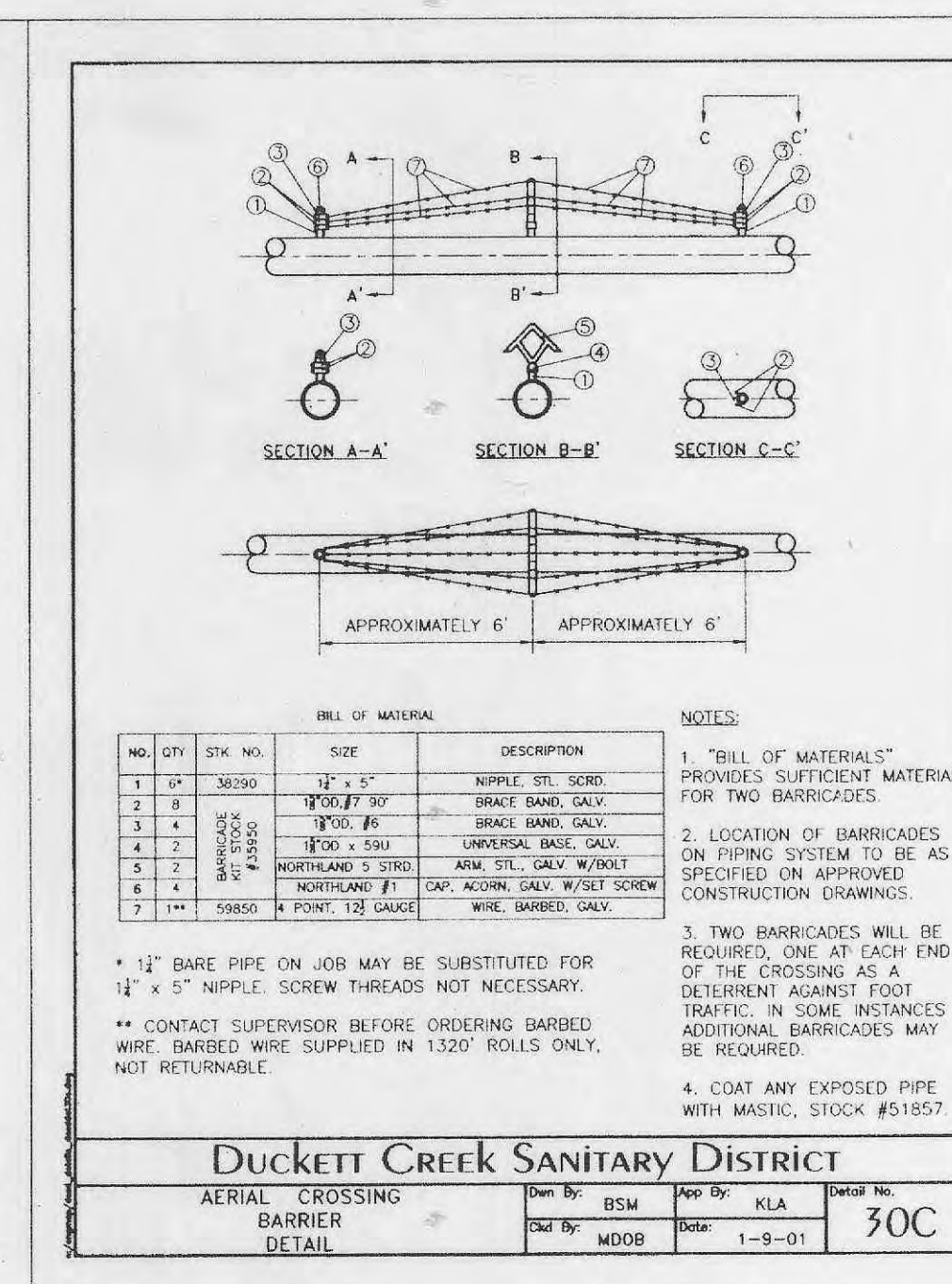
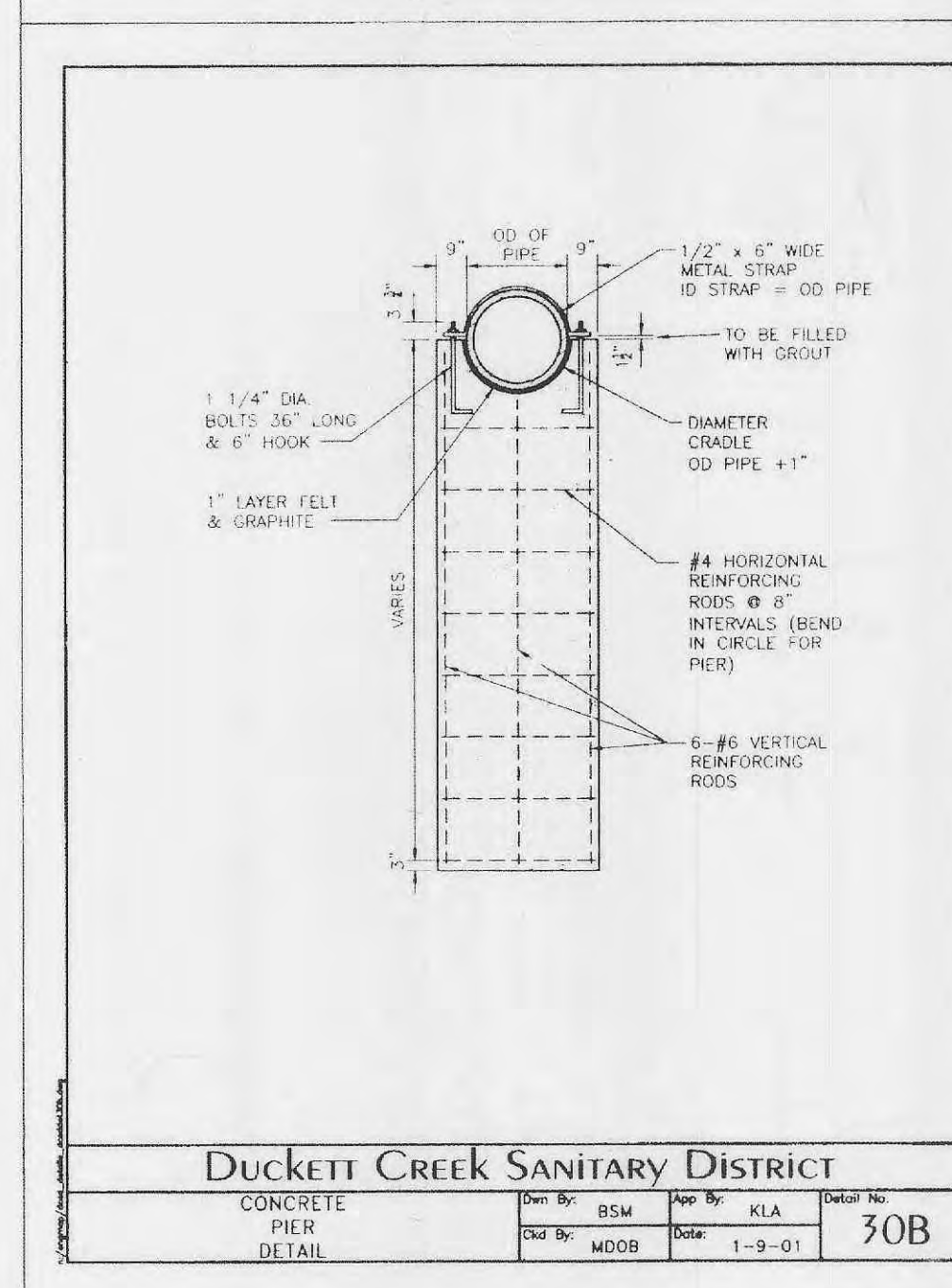
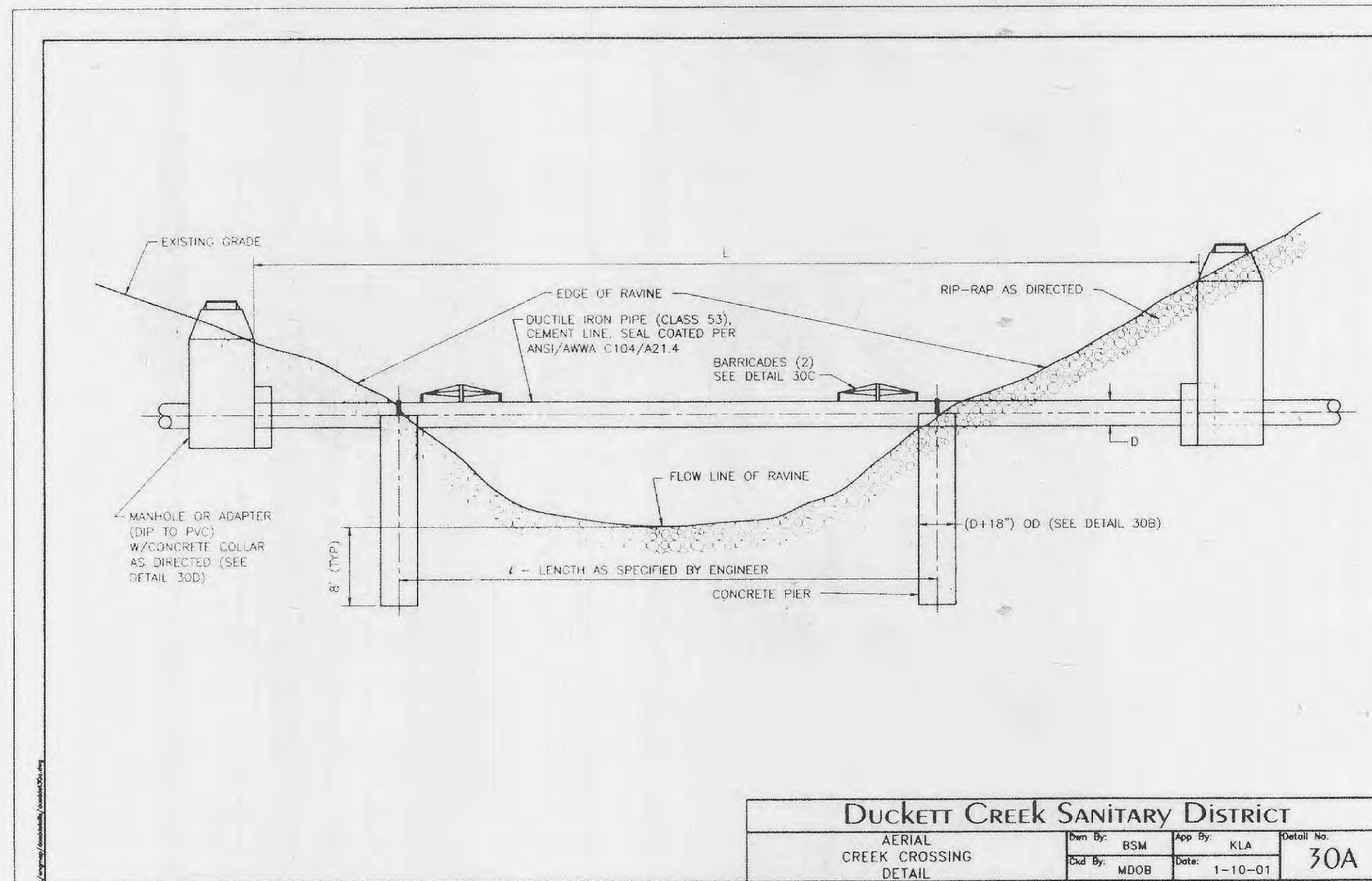
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STOCK & ASSOCIATES
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DRAWN BY: GEORGE M. STOCK E-25116 DATE CHECKED BY: T.P.S. 11/17/04 DATE: G.M.S. 11/17/04 DATE JOB NUMBER: 202-2855.01 SHEET: C7.3 of 8

Phoenix Village Office Park Area B Phase 2



AS-BUILT

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|---------------------------|---------|----------------|--------------------|----------------|----------------|-------------------------|------------------|

Phoenix Village Office Park Area B Phase 2