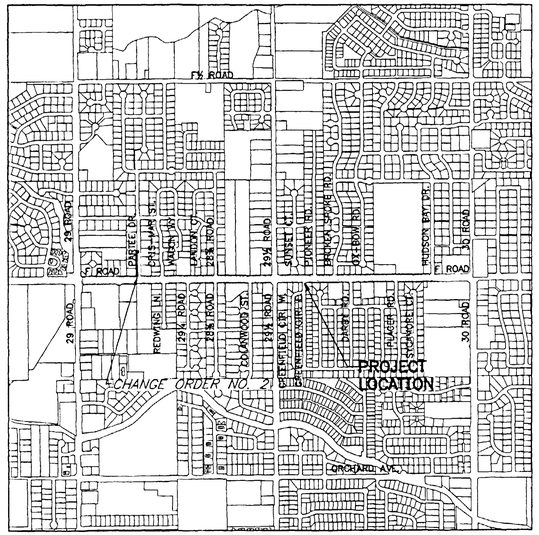
CENTRAL GRAND VALLEY SANITATION DISTRICT

F ROAD SEWERLINE REPLACEMENT
29 ROAD TO HUDSON BAY DRIVE

MESA COUNTY, COLORADO

JULY 2004



SCALE: 1"=1000'

SHEET NO.	TITLE
1	INDEX, LEGEND, MANHOLE DETAILS, AND GENERAL NOTES
2	PLAN AND PROFILE STA. 0+00 W TO STA. 5+50 W & STA 0+00 N TO STA 0+30.8 N
3	PLAN AND PROFILE STA. 5+50 W TO STA. 11+50 W
4	PLAN AND PROFILE STA. 11+50 W TO STA. 15+75 W
5	PLAN AND PROFILE STA. 0+00 E TO STA. 6+20 E
6	PLAN AND PROFILE STA. 0+00 TO STA. 0+60 N & STA. 0+00 TO STA. 5+50 E
7	PLAN AND PROFILE STA. 5+50 E TO STA. 7+85 E
8	PLAN AND PROFILE STA. 0+00 TO STA. 2+45 W & STA 0+00 N TO STA 0+24.9 N
9	PLAN AND PROFILE STA. 0+00 TO STA. 4+97.6 E & STA. 0+00 N TO STA. 0+79.4 N
10	SERVICE LINE PLAN AND PROFILES
11	STANDARD SANITARY SEWER DETAILS
1 OF 1	*PLAN AND PROFILE PARTEE DRIVE CHANGE ORDER NO. 2*

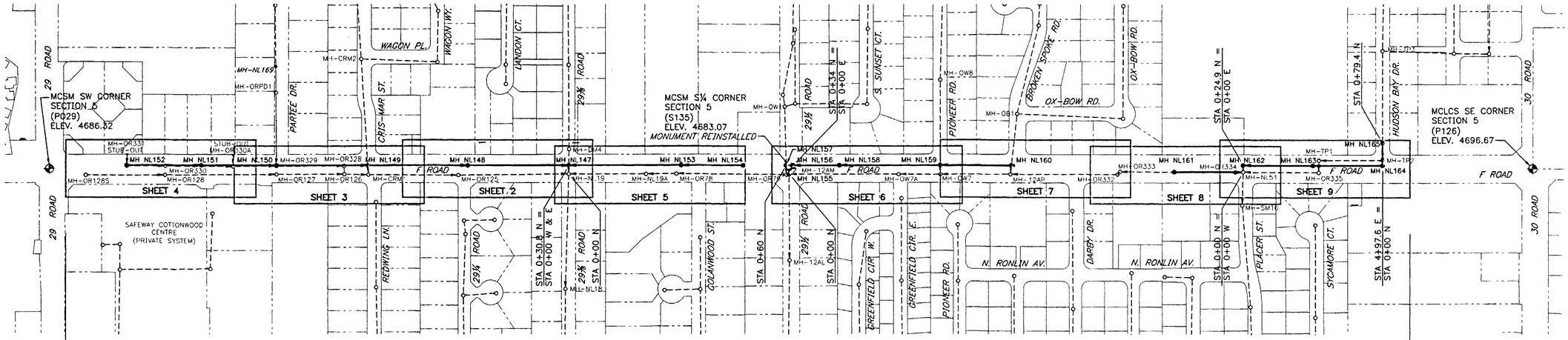
INDEX TO PLANS

AS-BUILT CKK 12-05

COLORADO REGISTERED PROFESSIONAL ENGINEER
CHAD KELLIE KNOLES
24778

PREPARED FOR:
CENTRAL GRAND VALLEY SANITAION DISTRICT
MESA COUNTY, COLORADO

PREPARED BY:
WESTWATER ENGINEERING
Consulting Engineers
Grand Junction, CO



SHEET INDEX

SEE INDIVIDUAL PLAN AND PROFILE SHEETS
FOR NEW SEWER LINES AND SERVICE LINES (SOUTH)

PROJECT CONTROL

Control is based on the following coordinates and elevations:
All elevations based on NAD 83.

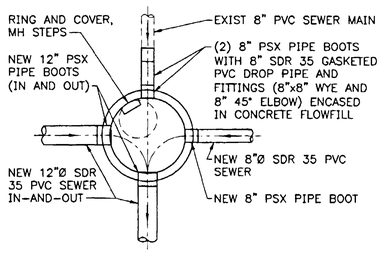
Point	Northerly	Easterly	Elevation		Comment
P029	44715.404	105265.145	4686.32	BM	MCLCS SIMS Data
~~S135~~	~~44716.438~~	~~107908.468~~	~~4683.07~~		~~MCLCS SIMS Data~~
P126	44717.191	110550.745	4696.67		MCLCS SIMS Data
S135	*44716.138*	*107908.168*	*4683.32*		*Original Monument Reinstalled 12/29/05*

GENERAL CONSTRUCTION NOTES

The following notes apply to the entire project. They are summarized on this Plan Sheet to avoid repeating them on each Sheet on which they may specifically apply. Refer to individual Plan and Profile Sheets for notes specific to each area of construction.

1. The Contractor shall comply with the following governmental agencies that have jurisdiction over portion(s) of the project and/or site:
   - Colorado Department of Public Health and Environment (CDPHE)
   - Mesa County Road and Bridge (County)
   - City of Grand Junction (City)

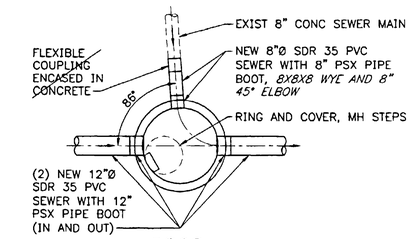
   In case of conflicts between Plans & Specifications and regulations, the reference having the more stringent requirements shall apply. Plans & Specifications that exceed Code requirements shall govern.
2. The continuous and uninterrupted flow of sewage is a requirement of this project. Contractor shall be responsible for any sewage back-up or spill resulting from execution of the Work.
3. The location and elevation of existing buried utilities and appurtenances shown on the Plans are approximate only, based on information furnished by utility companies and property owners. Contractor shall be responsible for verifying actual utility location through standard utility locate system at the Utility Notification Center of Colorado (1-800-922-1987), for resolving conflicts and protecting each utility during construction. Restore and replace any utility damaged as a result of construction activities and obtain written acceptance of such repairs by utility owner at no additional cost.
4. The traveling public must be protected during all phases of construction, and at all times of the day, with proper traffic control devices (warning signs, barricades, channelizing devices, etc.) and through appropriate maintenance of backfilled areas (dust, loose gravel, surface smoothness, etc.).
5. Contractor shall limit construction activities to City right-of-ways, with strict adherence to lane closure and surface restoration requirements. Any additional area needed for staging or conducting the work shall be the Contractor's responsibility to secure.
6. Where the new sewer line is located in the south west-bound lane of F Road, the Contractor will be allowed to work 7 days a week except on Holidays, with traffic control and lane closure set-ups beginning no sooner than 9:00 a.m. Full lanes of traffic are to be re-established in the evening prior to dusk, approximately 7:30 p.m. The maximum length for daytime closure of a lane of traffic is 1,000 contiguous lineal feet, or the distance between three consecutive manholes (two consecutive runs of sewer line), whichever is greater.
7. Construction activities shall not obstruct normal and emergency traffic use of F Road. At least one full lane of traffic must remain open to traffic in each direction of travel at all times. Detours at intersecting streets will be allowed where practical (i.e., Karen Lee, Cris-Mar, Del-Mar Subdivisions), and encouraged elsewhere (29½ Road, Ox-Bow, Trading Post Subdivisions).
8. The excavated trench may be covered with a steel plate to achieve two lanes of traffic during non-working hours.
9. Construction equipment and materials may be parked or stored within the center turn lane during nighttime and non-working hours, and the turn lane closed to traffic provided that the turn lane at intersecting streets remains unobstructed and open to traffic at least 150-feet each side of the intersection. The closure is to be barricaded with all necessary reflectors and lights to channelize traffic during non-working hours. The maximum length of said nighttime center turn lane closure shall not exceed 100 feet, nor shall more than one intersecting street be affected. The center turn lane closure will be adjusted daily as work progresses.
10. Work located beyond the limits of the south west-bound lane will be restricted to the hours of 7:00 p.m. to 6:00 a.m. (nighttime construction).
11. All backfill placed within two (2) feet measured horizontally from any structure or manhole shall be compacted with hand operated mechanical equipment per City Specifications.
12. Traffic Control Plans (TCP) will be submitted no later than 1-week prior to the preconstruction meeting and will be distributed to the City of Grand Junction for review and approval. Minimum requirements of the TCP include:
    - TCP for normal daily construction activities.
    - TCP for non-working hours center turn lane closure.
    - TCP for cross traffic at affected intersections and subdivisions, including variable message board(s) recommending alternative routes.
    - TCP for on-coming traffic, including variable message board(s) recommending alternative routes.
    - TCP emergency contingency for detouring traffic in the unforeseen event of emergency conditions (traffic accident, utility line break, etc.) at the project site.
13. The location of existing service lines is approximate only, based on 1971 as-builts of the original sewer line, on TV inspection of the existing sewer main (1995, 1996, 1997 and 2005), and to a limited extent on pothole locates completed in 2005. Actual locations may vary, and shall be field verified by excavating and exposing the existing sewer main until the tap is located.
14. The Owner has established a project benchmark and horizontal control as shown on the Sheet Index above. The Contractor shall be responsible for all construction staking based on the existing coordinate system and datum for the project, including but not limited to alignment and grade of new sewer lines, manholes and service lines.
15. The Owner has the Ute Water District's (UWD) approval to utilize existing fire hydrants in the project vicinity as a source of water for soil moisture conditioning for compaction efforts, and for dust control as necessary. The Contractor shall supply the necessary backflow protection device(s) on water trucks that shall be inspected and approved by UWD prior to use of fire hydrants, and shall record the volume of water used and report this volume to the Engineer on a monthly basis. Operation of fire hydrants or any other component of the water system shall be per UWD's written direction.
16. The Owner will provide compaction testing for trench and structural backfill. The Contractor shall be responsible for recompaction of failed tests, and for the cost of failed tests. The Contractor shall be responsible for all other testing, including but not limited to tests required as a part of materials and product submittals and pipeline testing.
17. The Contractor is responsible for all required gravity flow sewerline testing to be completed in the presence of the Owner or their representative. Quality assurance tests are described in Section 3 of the Specifications and will include:
    - Sewer alignment (lamp) and flowline test (flush and water flow)
    - Water tightness (air pressure test)
    - Pipe deflection test (go-no go Mandrel)
18. All sewerline construction shall conform to Central Grand Valley Sanitation District's standards and specifications.
19. All materials and workmanship shall be subject to inspection by the District. The District reserves the right to accept or reject any materials and workmanship that does not conform to its standards and specifications.
20. The Contractor shall have one copy of the Plans & Specifications at the job site at all times.
21. All sanitary sewer pipe installed by conventional trench excavation and pipe laying shall be PVC SDR-35 unless otherwise specified. All pipe joints shall be 13 foot joints unless otherwise approved by the District Engineer.
22. All sewer mains shall be laid to grade utilizing a pipe laser, and checked with surveyors level and rod at 50-foot maximum increments (every four pipe joints).
23. A minimum 10-foot separation shall be maintained at all times between waterlines and sewer lines except at specified crossings.
24. All sanitary sewer services to be 4" to match existing diameter. The material of existing sewer service lines at connections between the existing line and new service stub is unknown unless specified on the Plans. Connections between dissimilar pipe materials shall be made with a flexible Caulder type coupling encased in concrete or Mission Couplings to prevent displacement of the pipe alignment and flowline. Connections between new and existing PVC service lines shall be completed with PVC closure couplings. Provide temporary connection to the new sewer line to restore service. Cut and cap (glued) service line for testing purposes, and reconnect service line after the new sewer line has been tested and approved.
25. Manholes shall be constructed as shown on the Central Grand Valley Sanitation District Standard Sanitary Sewer Detail sheet.
26. No service lines shall be connected directly into manholes.
27. Remove asphalt pavement by milling to neat, straight lines initially to accommodate the trench box (approximately 6-feet width). Provide temporary patch with compacted millings following backfill, for a contiguous length not exceeding 1,000 lineal feet. Once this maximum length of temporary millings is reached, remove millings and place full depth hot mix asphalt patch. Final paving is to be completed by first milling to a depth of 2-inches the full lane width or the transverse width of 11.5-feet and placing 2-inches hot mix asphalt as shown on the Plan views.
28. Asphalt surface restoration is to match the existing roadway section, including but not limited to thickness and gradation of granular base course, asphalt, and where encountered, geotextile stabilization fabric. All roadway striping shall also be restored to original conditions.



NEW DROP MH-NL147

N 44728.20
E 107115.08

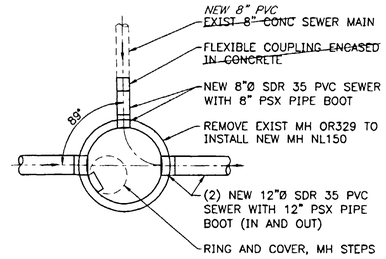
STA ~~0+30.8 N~~ = 0+31.0 N
STA 0+00 W=
STA 0+00 E
SEE PLAN AND PROFILE SHEET 2



NEW DROP MH-NL149

N 44727.52
E 106398.31

STA ~~7+16 W~~ 7+16.8 W
SEE PLAN AND PROFILE SHEET 3



NEW MH-NL150

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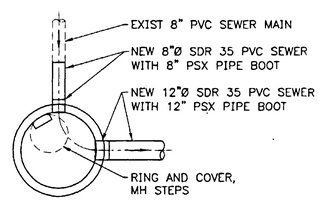
E 106072.97

STA ~~10+48 W~~ 10+42.1 W
SEE PLAN AND PROFILE SHEET 3



NEW MH-NL152

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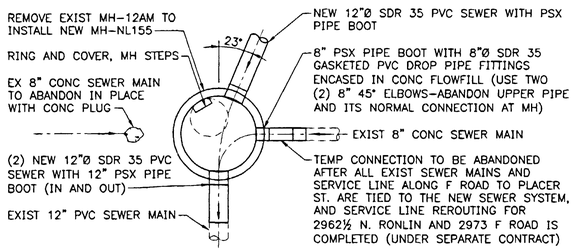
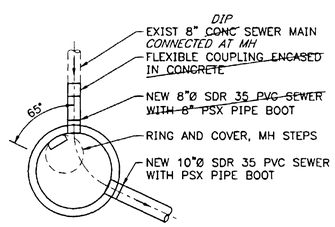
STA ~~15+75 W~~ 15+73.4W
SEE PLAN AND PROFILE SHEET 4



NEW MH-NL155

N 44695.71
E 107900.61

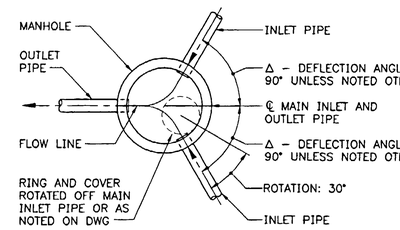
STA 0+00 N
SEE PLAN AND PROFILE SHEET 6



NEW MH-NL157

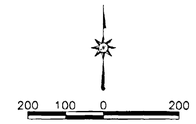
N 44740.37
E 107890.41

STA ~~0+60 N~~ 0+61 N
SEE PLAN AND PROFILE SHEET 6



MANHOLE SCHEMATIC

NO SCALE



LEGEND

- NEW SEWER LINE, CLAY CUTOFF WALL, FLOW DIRECTION ARROW, AND NEW MANHOLE
- EXISTING SEWER LINE AND MANHOLE
- SEWER SERVICE LINE AND COUPLING
- GAS LINE
- OVERHEAD POWER LINE
- UNDERGROUND ELECTRIC
- TELEPHONE CABLE
- IRRIGATION DITCH OR PIPE
- WATER LINE
- EXISTING STORM DRAIN MH
- TEL PED — TELEPHONE PED
- PP LP — POWER POLE, LIGHT POLE
- GUY WIRE
- WATER METER, SERVICE LINE
- FENCE
- BH-4 — BORE HOLE
- STREET SIGN
- SURVEY MARKER
- SECTION LINE
- PROPERTY LINE/ROW
- ASPHALT REPLACEMENT
- EXISTING ASPHALT STREET
- CONCRETE REPLACEMENT
- CONCRETE FLOWFILL

NOTE: NOT ALL SYMBOLS MAY APPLY TO PROJECT

AS-BUILT CKK 12-05

SCALE:	HORIZONTAL 1"=200'
	VERTICAL N/A

REVISIONS	DATE
AS-BUILT CKK	*12-05*

COLORADO REGISTERED KELLIE R. KNOPP 24778 PROFESSIONAL ENGINEER

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

CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT
INDEX, LEGEND, MH DETAILS, AND GENERAL NOTES

Design by:	Drafted by:	Date:	Project No.	Sheet
CKK	PRD	07-05	0437	1 of 11

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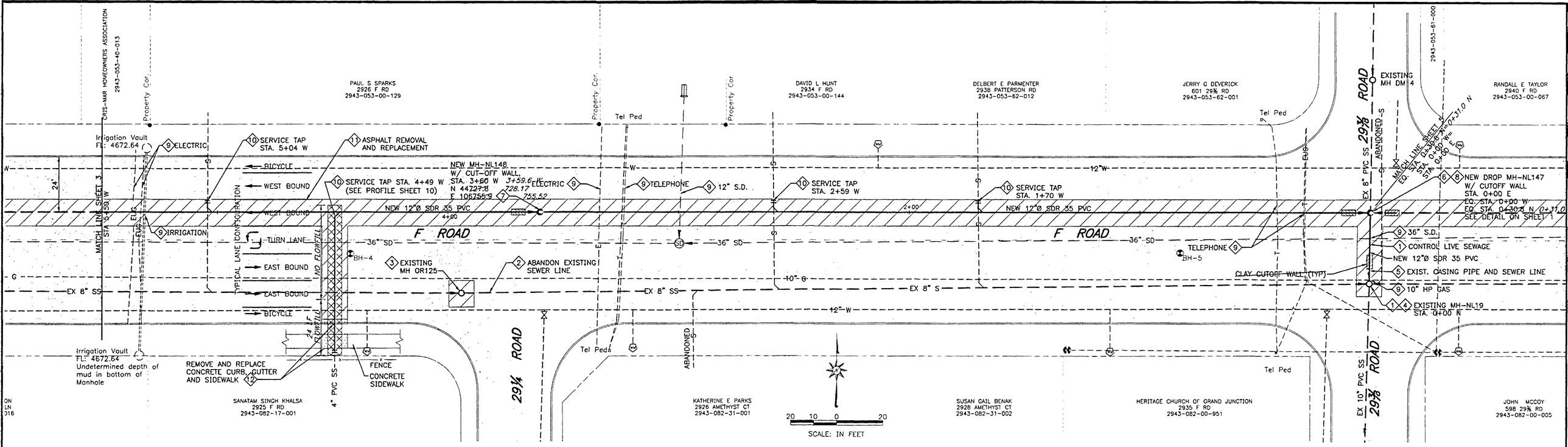

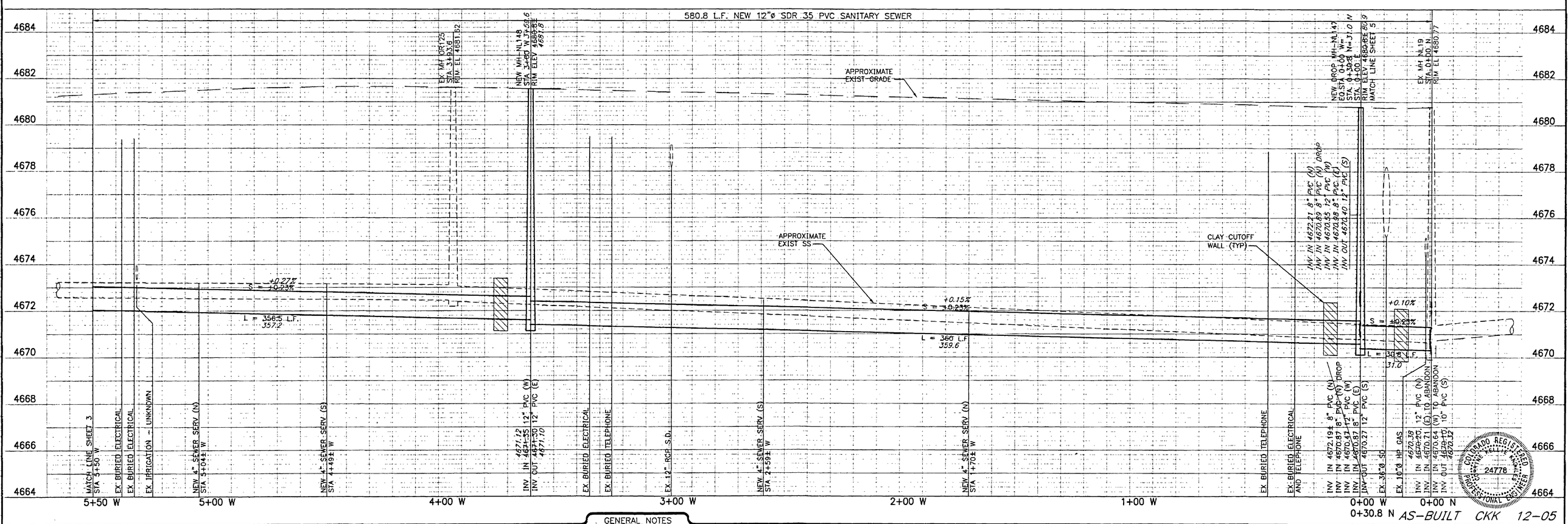

AS-BUILT CKK 12-05

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

GENERAL NOTES

1. Bypass pump live sewage around the work area from an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater.
4. Connect to existing manhole by core drilling the existing manhole wall and base and install 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 a smooth invert channel. All grout used on the invert channel should be suitable for feathering applications and installed per the manufacturer's recommendations. After the new sewer line is in service, modify invert of manhole where sewer lines have been abandoned by plugging the existing pipe(s) with concrete and forming a new flowline channel to eliminate the abandoned connection(s).
5. Remove existing 30-inch casing pipe and 8-inch sewer line as new sewer line is installed and dispose of at an off-site area designated for such waste.
6. Install new 4-foot diameter drop manhole per details on the Standard Sanitary Sewer Details Sheet. Drop manhole to be coated or otherwise protected against corrosion by hydrogen sulfide gas.
7. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
8. Connect existing sewer line to new drop manhole with a new gasketed SDR 35 PVC pipe, drop pipe, and fittings (8x8 wye and 8" 45° elbow) encased in concrete to match the diameter, slope, and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a PVC closure coupling if the connection cannot be made at drop fittings.
9. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
10. Install full body wye fitting for each active service tap, rotated upward at 45 degree from horizontal, with a short stub of SDR 35 PVC service line and temporary glue capped and adequately braced for testing. Connect active service taps to the sewer main after sewer main has bee pressure tested. Only active taps are to be reconnected to the new sewer line. Engineer will assist Contractor in determining which taps are active through use of dyes or other suitable methods to ensure all active taps are reconnected to the system. New service line shall extend from the tap connection to the existing service line at minimum 1/4 inch per foot slope.
11. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
12. Saw cut and remove existing curb, gutter and sidewalk, or remove to nearest construction joint. Dispose of waste concrete off-site in an area designated foe such waste. Replace concrete curb, gutter, and sidewalk to match existing.

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COLORADO REGISTERED PROFESSIONAL ENGINEER 24778

CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT
PLAN AND PROFILE STA 0+00 TO STA 5+50 WEST AND STA 0+00 TO STA. 0+30.8 NORTH

Design by:	Drafted by:	Date:	Project No.	Sheet 2 of 11
CKK	PRD	07-05	0437	

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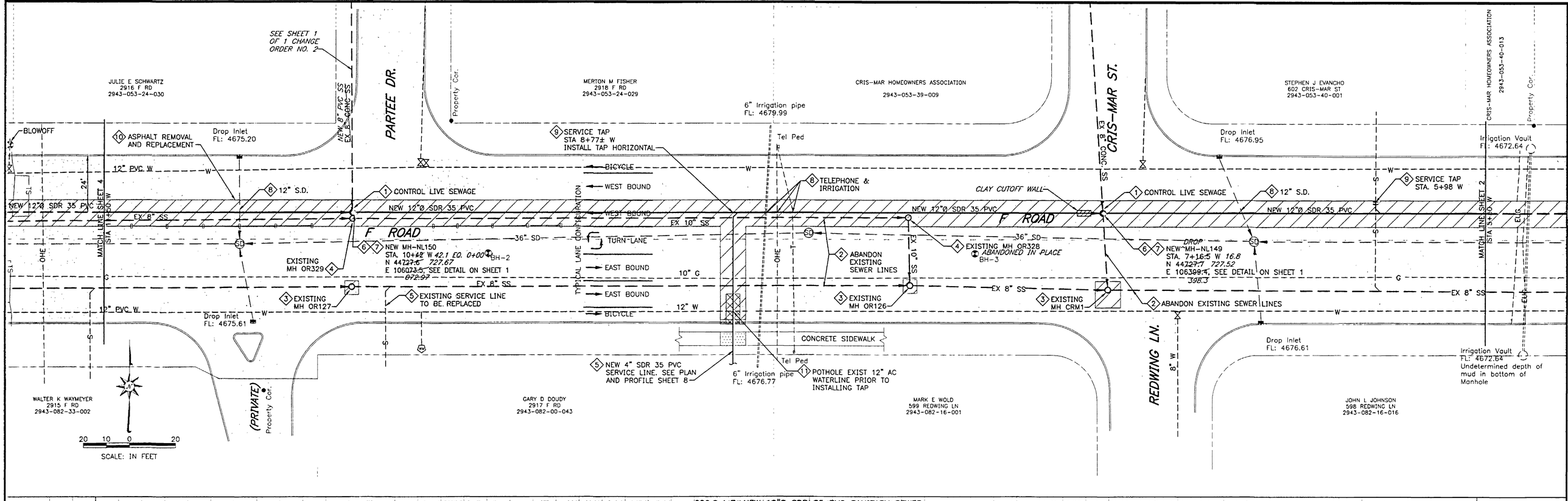

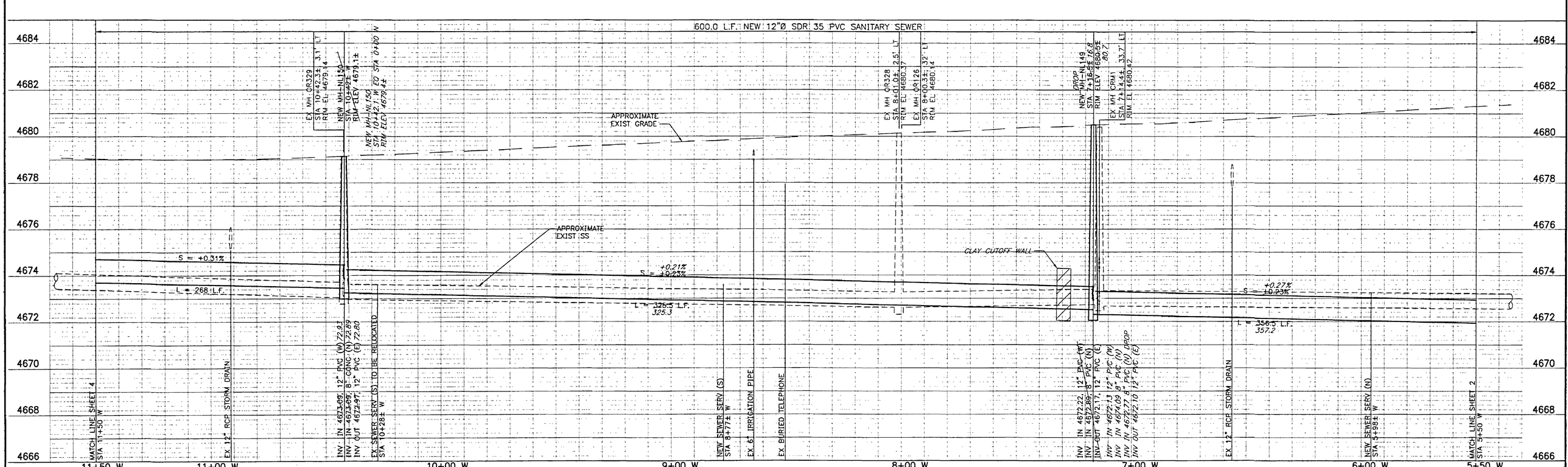

AS-BUILT CKK 12-05

GENERAL NOTES

1. Bypass pump live sewage around the work area from an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater.
4. If conflict exists between new sewer line and existing manhole, remove existing manhole and dispose of off-site at an area designated for such waste. Install temporary pipe connections between inlet and outlet pipe at the removed manhole to maintain the flow of sewage during the interim of testing and placing the new sewer line in service.
5. Existing sewer service line to be rerouted with new 4-inch SDR 35 PVC. See Sheet 8 for Profile.
6. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
7. Connect existing sewer lines to new manholes with a 5-foot length of new PVC pipe stub-out to match the diameter, slope and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a flexible coupling encased in concrete
8. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
9. Install full body wye fitting for each active service tap, rotated upward at 45 degree from horizontal, with a short stub of SDR 35 PVC service line and temporary glue capped and adequately braced for testing. Connect active service taps to the sewer main after sewer main has bee pressure tested. Only active taps are to be reconnected to the new sewer line. Engineer will assist Contractor in determining which taps are active through use of dyes or other suitable methods to ensure all active taps are reconnected to the system. New service line shall extend from the top connection to the existing service line at minimum 1/4 inch per foot slope
10. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
11. Pothole existing 12" AC waterline to verify elevation at service line crossing prior to installing service tap for 2917 F Road. Notify Engineer and Ute Water 48 hours in advance of the work.

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

COLORADO REGISTERED KELLIE KNOWLES 24778 PROFESSIONAL ENGINEER

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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT
PLAN AND PROFILE
STA 5+50 WEST TO STA 11+50 WEST

Design by:	Drafted by:	Date:	Project No.	Sheet
CKK	PRD	07-05	0437	3 of 11

02110704.tif

LIPSON III PROPERTIES
2902 F RD
2943-053-53-002

LIPSON III PROPERTIES
2902 F RD
2943-053-53-001

DONNIE A YANCEY
2904 F RD
2943-053-53-004

PLAZA FUNDING LTD PARTNERSHIP
2906 F RD
2943-053-53-003

LISA A ONDO
2910 PATTERSON RD
2943-053-00-011

DONALD E KLITZKE
2910½ F RD
2943-053-00-001

CATHERINE R LEHMAN
2912 F RD
2943-053-00-117

VIRGINIA L SCANLAN
2914 F RD
2943-053-00-116

JULIE E SCHWARTZ
2916 F RD
2943-053-24-030

WALTER K WAYMEYER
2901 F RD
2943-082-33-007

WALTER K WAYMEYER
2915 F RD
2943-082-33-002

Property Cor.

Property Cor. (PRIVATE)

Tel Ped

EX 8" SS

EX 8" PVC SS

ABANDONED

TYPICAL LANE CONFIGURATION
BICYCLE
WEST BOUND
WEST BOUND
TURN LANE
EAST BOUND
EAST BOUND
BICYCLE

F ROAD

36" RCP SD

36" SD

12" AC W

12" W

12" PVC W

4" PV

10" G

EUG

OHE

S1

TS

BLOWOFF

MATCH LINE SHEET 3
STA 11+50 W

(1) ABANDON EXISTING SEWER LINES

(2) EXISTING MANHOLE

(2) EXISTING MH OR128

(2) EXISTING MH OR330A

(3)(4) NEW MH-NL152
STA. 15+~~75~~ W *73.4*
N 44~~27.5~~ *728.25*
E 105~~41.2~~ *547.66*
NEW 12"Ø SDR 35 PVC

(3) NEW MH-NL151
STA. 13+~~10~~ W *10.1*
N 44~~27.6~~ *728.17*
E 105~~05.9~~ *804.99*

(5) EXISTING MH OR331

(5) EXISTING MH OR330
ABANDONED IN PLACE

(6) ELECTRIC

(6) TELEPHONE AND ELECTRIC

(6) 12" S.D.

(7) SERVICE TAP STA. 14+49 W

(7) SERVICE TAP STA. 14+14 W

(7) SERVICE TAP STA. 12+95 W

(7) SERVICE TAP STA. 12+77 W

(8) ASPHALT REMOVAL AND REPLACEMENT

Drop Inlet
FL: 4677.41

BH-1

24'

14+00

SCALE: IN FEET
20 10 0 20

425.0 L.F. NEW 12"Ø SDR 35 PVC SANITARY SEWER
423.4

NEW MH-NL152
STA. 15+~~75~~ W *73.4*
RIM ELEV 4682.4±

EX MH OR330
STA 14+38.2, 4.4' LT
RIM EL 4681.32

NEW MH-NL151
STA. 13+~~10~~ W *10.1*
RIM ELEV 4680.4± *80.4*

EX MH OR330A
STA 11+96.5, 4.4' LT
RIM EL 4679.93

APPROXIMATE EXIST GRADE

APPROXIMATE EXIST SS

S = +0.24% ~~+0.31%~~

L = 265.0 L.F. *263.3*

S = +0.31%

L = 268 L.F.

EX BURIED ELECTRIC
EX BURIED ELECTRIC

INV. IN 4675.07± 8" PVC (N) *75.19*
INV. OUT 4674.79± 12" PVC (E) *74.54*

NEW SEWER SERV (N)
STA 14+14± W

EX BURIED ELECTRIC

EX 12" RCP S.D.

NEW SEWER SERV (N)
STA 14+49± W

NEW SEWER SERV (N)
STA 12+95± W

INV. IN 4673.97± 12" PVC (W) *73.91*
INV. OUT 4673.92± 12" PVC (E) *73.76*

NEW SEWER SERV (N)
STA 12+77± W

MATCH LINE SHEET 3
STA 11+50 W

15+00 W
14+00 W
13+00 W
12+00 W
11+50 W

4684
4682
4680
4678
4676
4674
4672
4670
4668
4666

GENERAL NOTES

1. Existing sewer line to be abandoned in place.
2. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater
3. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
4. Connect existing sewer lines to new manholes with a 5-foot length of new PVC pipe stub-out to match the diameter, slope and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a PVC closure coupling if the existing sewer line is PVC, or with a flexible coupling encased in concrete if the existing sewer line is other material.
5. If conflict exists between new sewer line and existing manhole, remove existing manhole and dispose of off-site at an area designated for such waste. Install temporary pipe connections between inlet and outlet pipe at the removed manhole to maintain the flow of sewage during the interim.
6. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
7. Install full body wye fitting for each active service tap, rotated upward at 45 degree from horizontal, with a short stub of SDR 35 PVC service line and temporary glue capped end adequately braced for testing. Connect active service taps to the sewer main after sewer main has bee pressure tested. Only active taps are to be reconnected to the new sewer line. Engineer will assist Contractor in determining which taps are active through use of dyes or other suitable methods to ensure all active taps are reconnected to the system. New service line shall extend from the tap connection to the existing service line at minimum 1/4 inch per foot slope.
8. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	*12-05*

COLORADO REGISTERED PROFESSIONAL ENGINEER
CHRISTINE KELLIE KNIGHT
24778

WestWater Engineering
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Grand Junction, CO 81505
(970) 241-7076

AS-BUILT CKK 12-05

CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

PLAN AND PROFILE
STA 11+50 TO STA 15+75± WEST

Design by:	Drafted by:	Date:	Project No.	Sheet
CKK	PRD	07-05	0437	4 of 11

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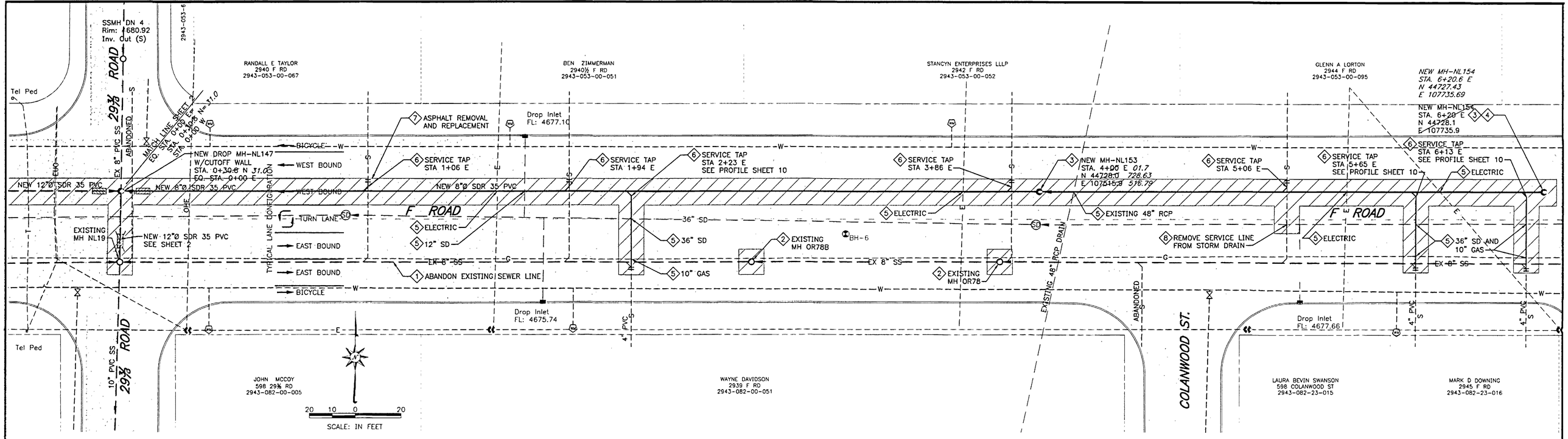

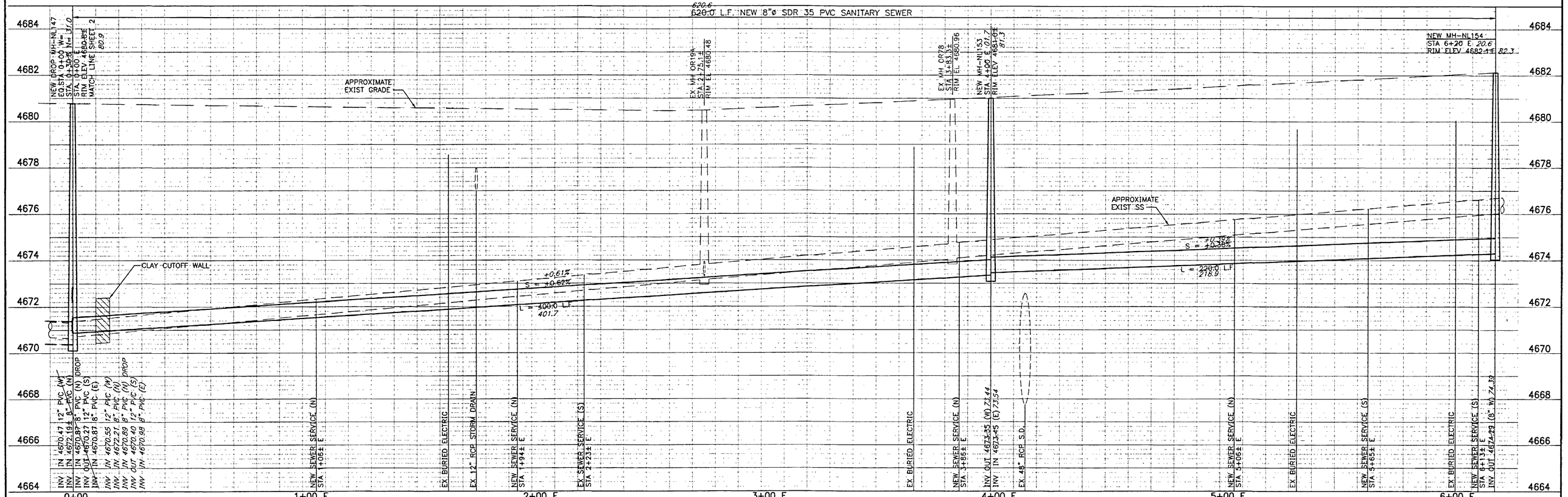

AS-BUILT CKK 12-05

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

GENERAL NOTES

1. Existing sewer line to be abandoned in place.
2. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater.
3. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
4. Extend invert channel for dead-end manhole a minimum 3/4 of the length through the manhole base to facilitate testing and access for the Distrct's maintenance equipment.
5. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
6. Install full body wye fitting for each active service tap, rotated upward at 45 degree from horizontal, with a short stub of SDR 35 PVC service line and temporary glue capped end adequately braced for testing. Connect active service taps to the sewer main after sewer main has bee pressure tested. Only active taps are to be reconnected to the new sewer line. Engineer will assist Contractor in determining which taps are active through use of dyes or other suitable methods to ensure all active taps are reconnected to the system. New service line shall extend from the tap connection to the existing service line at minimum 1/4 inch per foot slope.
7. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
8. After the new sewer line is in service, remove existing sewer service line and casing pipe from the existing 36-inch concrete storm drain pipe by exposing the storm drain, chopping out the connections each side of pipe, and removing the service line. Patch the wall of storm drain pipe with concrete, or replace one joint of 36-inch concrete storm drain pipe.

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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT
PLAN AND PROFILE LINE STA 0+00 TO STA 6+20 EAST

Design by:	Drafted by:	Date:	Project No.	Sheet
CKK	PRD	07-05	0437	5 of 11

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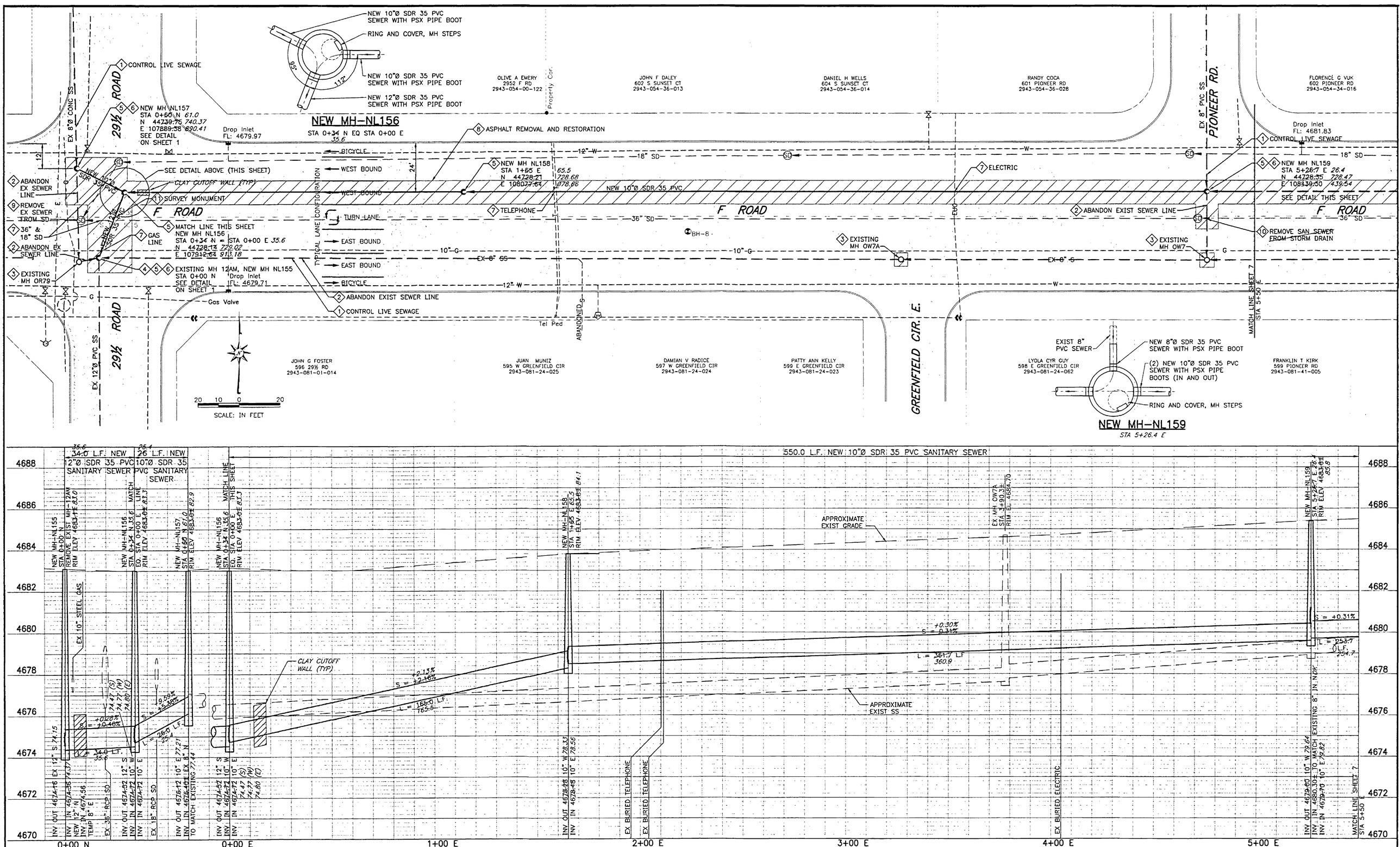

AS-BUILT CKK 12-05

GENERAL NOTES

1. Bypass pump live sewage around the work area form an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater.
4. Remove and dispose of existing manhole at an off-site area designated for such waste. Pour concrete cap in abandoned connecting sewer line to west. Abandon temporary connection east after all sewage connections to the east are rerouted
5. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
6. Connect existing sewer lines to new manholes with a 5-foot length of new PVC pipe stub-out to match the diameter, slope and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a PVC closure coupling if the existing sewer line is PVC, or with a flexible coupling encased in concrete if the existing sewer line is other material.
7. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
8. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt
9. After the new sewer line is in service, remove existing sewer main and casing pipe from inside the existing storm drain manhole. Casing pipe is either ductile iron or steel. Storm drain manhole may require sediment removal to facilitate the work. Cut abandoned sewer as close to and perpendicular with wall of manhole as possible and fill the ends of pipe with a concrete plug
10. After the new sewer line is in service, remove existing sewer main and casing pipe from the existing 36-inch concrete storm drain pipe by exposing the storm drain, chipping out the connections each side of pipe and removing the sewer main and casing pipe. Patch the wall of storm drain with concrete, or replace one joint of 36-inch concrete storm drain.
11. Carefully remove and salvage existing MCLCS survey monument and reinstall monument to precisely match existing coordinates and elevation. Final installation to be approved by the Mesa County Surveyor

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

COLORADO REGISTERED KENNETH E. KELLIE 24778 PROFESSIONAL ENGINEER

WestWater Engineering
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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

PLAN AND PROFILE STA 0+00 TO STA 0+60 NORTH & STA 0+00 TO STA 5+50 EAST

Design by:	Drafted by:	Date:	Project No.	Sheet
CKK	PRD	07-05	0437	6 of 11

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FLORENCE C VUK
602 PIONEER RD
2943-054-34-016

ROBERT C KRATZER
601 BROKEN SPOKE RD
2943-054-10-001

ALMA LOUISE SEKULICH
2965 OX BOW RD
2943-054-08-001

JAMES D HAZELHURST
2967 OX BOW RD
2943-054-08-002

DEAN M WARREN
2969 OX BOW RD
2943-054-08-003

LARRY A WHITE
2971 OX BOW RD
2943-054-08-004

JAMES M E
2973 OX BO
2943-054-0

BROKEN SPOKE RD.

8" 12"

12" EX 8" PVC SS

Drop Inlet
FL: 4681.83

Drop Inlet
FL: 4682.71

7 ASPHALT REMOVAL AND RESTORATION

18" SD

W

BICYCLE

WEST BOUND

WEST BOUND

NEW 10"Ø SDR 35 PVC

TYPICAL LANE CONFIGURATION

TURN LANE

EAST BOUND

EAST BOUND

BICYCLE

1 CONTROL LIVE SEWAGE

4 5 NEW DROP MH NL160
STA 7+80±1 E 81.1
N 44728.15 727.89
E 108692.69 694.28
SEE DETAIL THIS SHEET

5 L.F. 10"Ø CAPPED STUB OUT AT 0.31%

2 ABANDON EXIST SEWER LINE

8 REMOVE SAN SEWER FROM STORM DRAIN

3 EXISTING MH 12AP

6 EXISTING SERVICE LINE TO BE REROUTED

F ROAD

36" SD

BH-9

10"-G

EX 8"-SS

G

W

S

MATCH LINE SHEET 6
STA 5+50 E

2 ABANDON EXISTING SEWER LINE

ABANDONED

Drop Inlet
FL: 4682.73

DARBY DR.

ELG

3 EXISTING MH OR333

BH-10

F ROAD

EX 6"-SS

3 EXISTING MH OR332

6 EXISTING SERVICE LINE TO BE REROUTED

FRANKLIN T KIRK
599 PIONEER RD
2943-081-41-005

DAVID EVARTS
598 PIONEER RD
2943-081-41-004

JEDIDIAH D BRINKLEY
29625 N RONLIN AVE
2943-081-41-019

DAVID P LANCASTER
599 DARBY DR
2943-081-31-001

FLOYD E CONNER
598 DARBY DR
2943-081-30-001

SCOTT L MAXWELL
2973 F RD
2943-081-28-001

20 10 0 20
SCALE: IN FEET

12" EXIST 8" PVC SEWER

NEW 10"Ø SDR 35 PVC SEWER WITH PSX PIPE BOOT

RING AND COVER, MH STEPS

12" (2) 8" PSX PIPE BOOTS WITH NEW 8" 12" CL 160 PVC SDR-35 DROP PIPE AND GASKETED PVC FITTINGS (8x8x8 WYE AND 8"-45° 12x12x12 TEE AND 12" 90° ELBOW) ENCASED IN CONCRETE FLOWFILL

84"±

5 L.F. NEW 10"Ø SDR 35 PVC SEWER WITH PSX PIPE BOOT AND GLUED CAP

NEW DROP MH-NL160

STA 7+80±1 E 81.1

236.1
235.1 L.F. NEW 10"Ø SDR 35 PVC SANITARY SEWER

4692
4690
4688
4686
4684
4682
4680
4678
4676
4674

NEW DROP MH-NL160
STA 7+80±1 E 81.1
RIM ELEV 4686.85±

EX MH 12AP
STA 7+76.5, 32.25 Rt
RIM EL 4686.50

APPROXIMATE EXIST GRADE

S = +0.31%

= 253.7 L.F.
254.7

APPROXIMATE EXIST SS

FUTURE 10"Ø SDR 35 PVC SANITARY SEWER

MATCH LINE SHEET 6
STA 5+50 E

REPLACE 11" CMC SD ABOVE NEW SS

EXISTING SD ABOVE SS

EX SEWER SERVICE (S)
STA 7+45±

INV OUT 4680.80 10" PVC (N)
INV IN 4682.38 12" PVC (N)
INV IN 4680.92 12" PVC (N) DROP
INV IN 4680.80 10" PVC (E)
INV OUT 4680.19 10" W
INV IN 4680.19
TO MATCH EXISTING 8" N
INV (DROP) 4680.79 N
INV IN 4680.59 10" STUB E

STA 7+85.1 E 10" CAP
INV 4680.6

STA 7+86.1 E 10" CAP
INV 4680.82

EX STORM DRAIN

EX SEWER SERVICE (S)
STA 9+41±

EX WATER LINE

EX BURIED ELECTRIC

EX BURIED ELECTRIC

5+50 E
6+00 E
7+00 E
8+00 E
9+00
10+00
11+00
11+50

AS-BUILT CKK 12-05

GENERAL NOTES

1. Bypass pump live sewage around the work area form an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater.
4. Install new 4-foot diameter drop manhole per details on the Standard Sanitary Sewer Details Sheet. Drop manhole to be coated or otherwise protected against corrosion by hydrogen sulfide gas.
5. Connect existing sewer lines to new manholes with new PVC drop pipe and fittings to match the diameter, slope and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a PVC closure coupling if the connection cannot be made at drop fittings.
6. Existing sewer service line to be rerouted under a separate contract prior to abandonment of the existing sewer main under this contract.
7. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
8. After the new sewer line is in service, remove existing sewer main and casing pipe from the existing 36-inch storm drain pipe by exposing the storm drain, chipping out the connections each side of the pipe and removing the sewer main and casing pipe. Patch the wall of storm drain with concrete, or replace one joint of 36-inch concrete storm drain

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

COLORADO REGISTERED PROFESSIONAL ENGINEER
CORRINE KELLIE KNOWLTON
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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

PLAN AND PROFILE
STA 5+50 EAST TO STA 7+85± EAST

Design by:	Drafted by:	Date:	Project No.	Sheet 7 of 11
CKK	PRD	07-05	0437	

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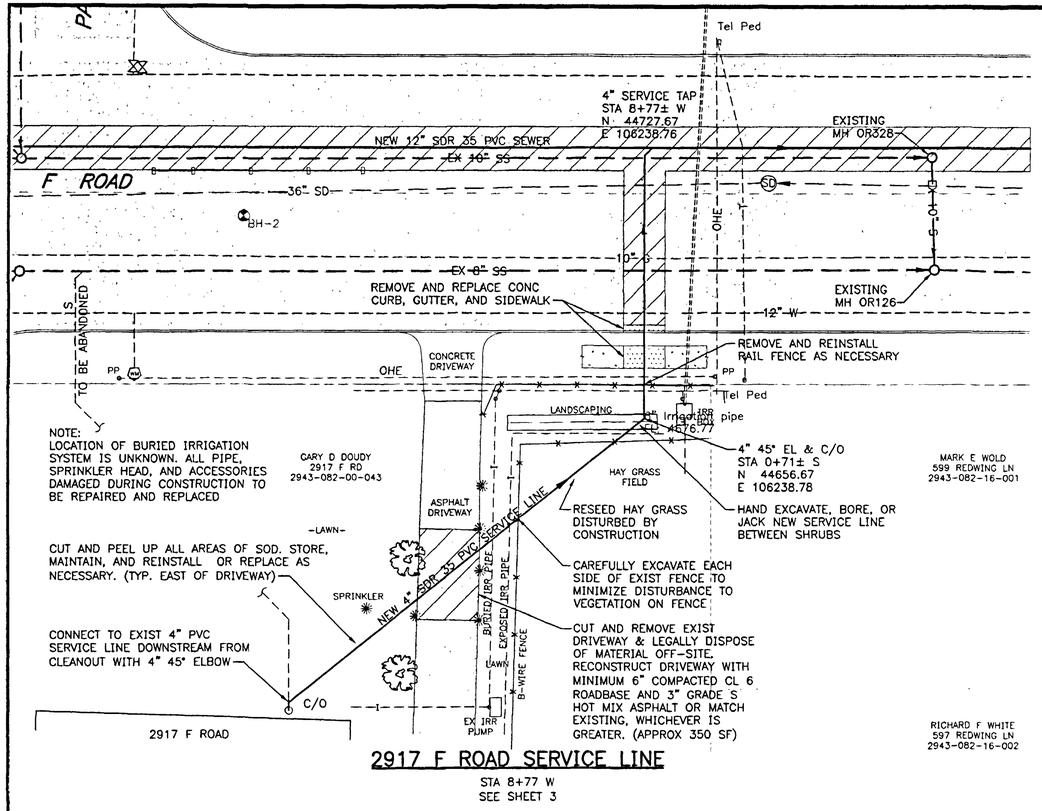
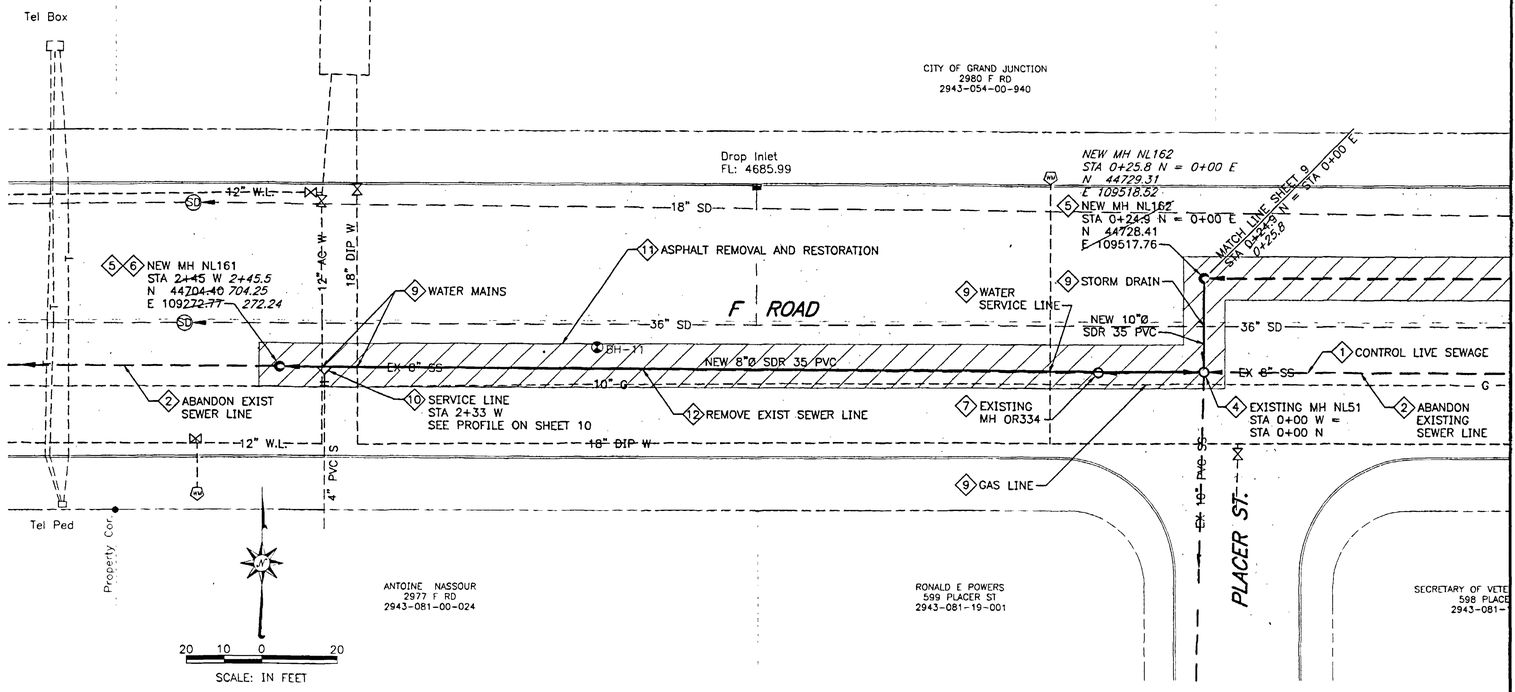
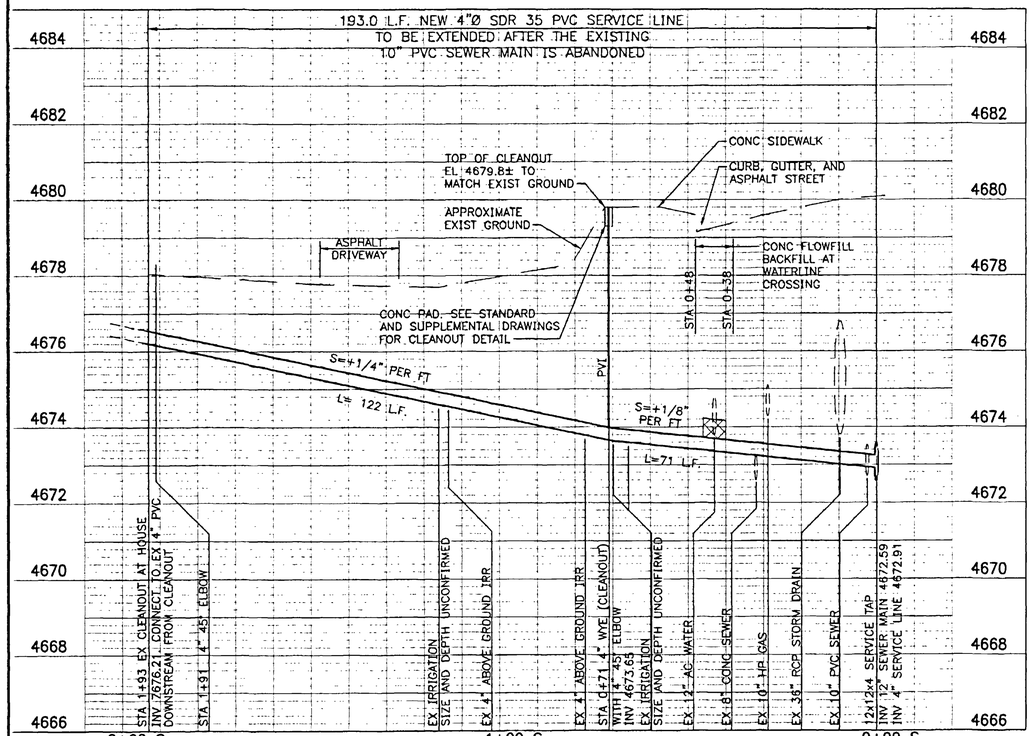


2917 F ROAD SERVICE LINE

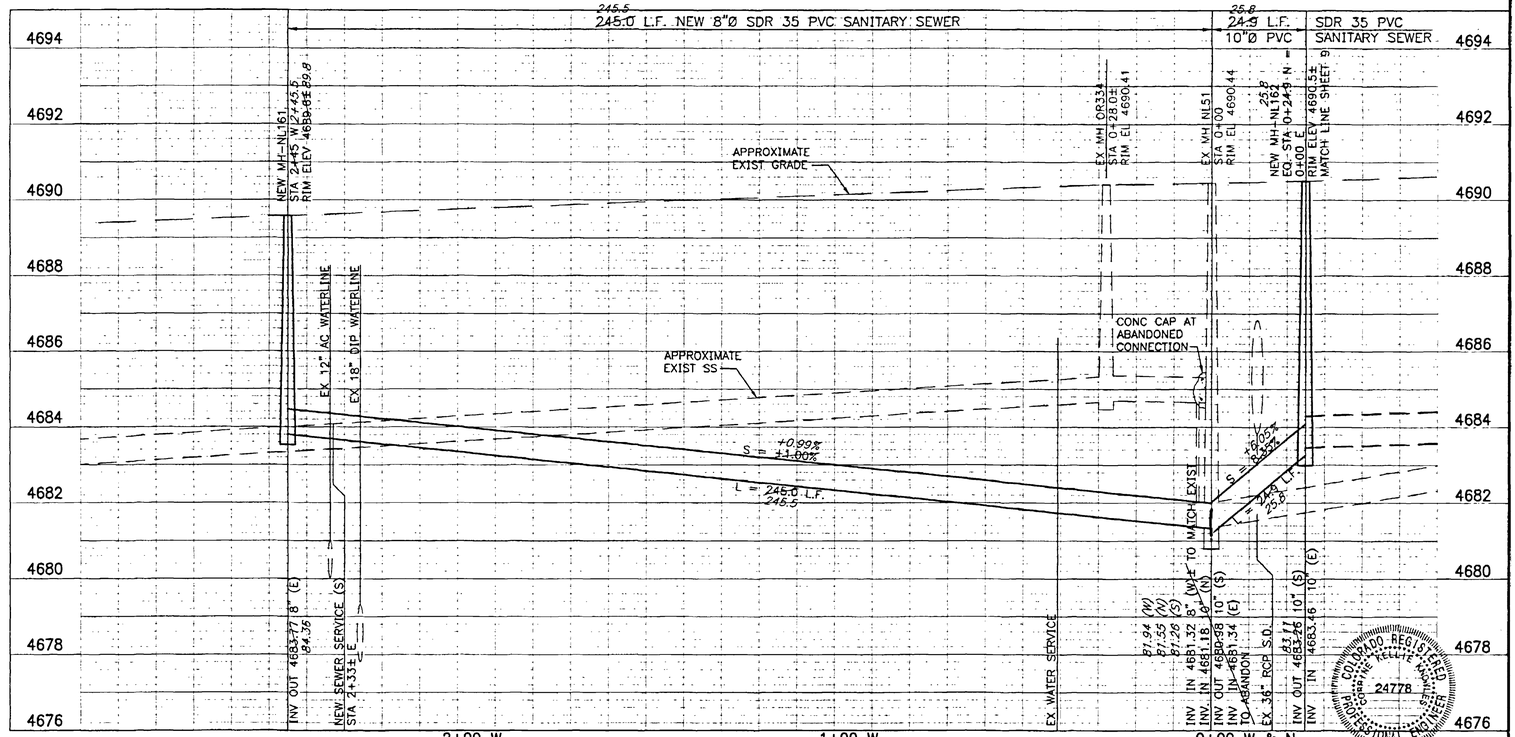
STA 8+77 W
SEE SHEET 3





2917 F ROAD SERVICE LINE

STA 8+77 W



F ROAD SEWER MAIN

AS-BUILT CKK 12-05

COLORADO REGISTERED
CHRISTINE WEST
24778
PROFESSIONAL ENGINEER

GENERAL NOTES

1. Bypass pump live sewage around the work area from an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. NOT USED
4. Connect to existing manhole by core drilling the existing manhole wall and base and install 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 a smooth invert channel. All grout used on the invert channel should be suitable for feathering applications and installed per the manufacturer's recommendations. After the new sewer lines are in service, modify invert of manhole where sewer lines have been abandoned by plugging the existing pipe with concrete and forming a new flowline channel to eliminate the abandoned connection.
5. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
6. Extend invert channel for dead-end manhole a minimum 3/4 of the length through the manhole base to facilitate testing and access for the District's maintenance equipment
7. Remove and dispose of existing manhole at an off-site area designated for such waste.
8. NOT USED
9. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
10. Install full body wye fitting for each active service tap, rotated upward at 45 degree from horizontal, with a short stub of SDR 35 PVC service line and temporary glue capped end adequately braced for testing. Connect active service taps to the sewer main after sewer main has bee pressure tested. Only active taps are to be reconnected to the new sewer line. Engineer will assist Contractor in determining which taps are active through use of dyes or other suitable methods to ensure all active taps are reconnected to the system. New service line shall extend from the top connection to the existing service line at minimum 1/4 inch per foot slope.
11. Remove existing asphalt by mixing a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
12. Remove existing sewer line as new sewer line is installed and dispose of at an off-site area designated for such waste. Cap the end of existing sewer line that remains abandoned in place with concrete.

SCALE:	HORIZONTAL 1"=20'	VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

WestWater Engineering
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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

PLAN AND PROFILE STA 0+00 TO STA 2+45 WEST & STA 0+00 TO STA 0+24.9 NORTH

Design by:	Drafted by:	Date:	Project No.	Sheet 8 of 11
CKK	PRD	07-05	0437	

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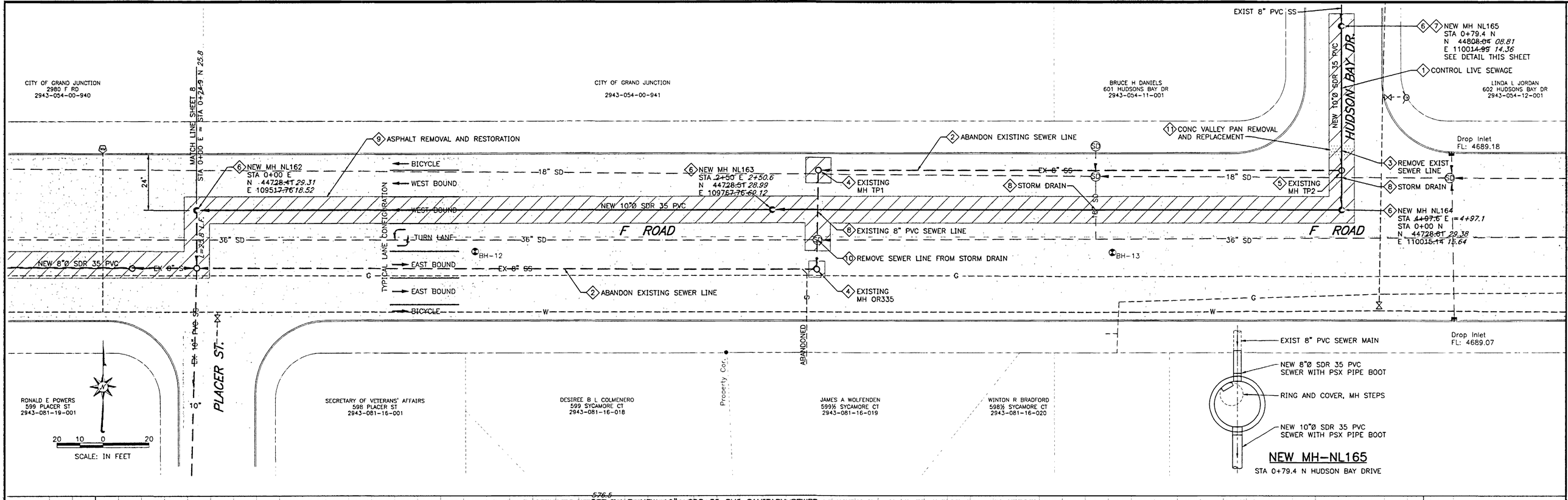

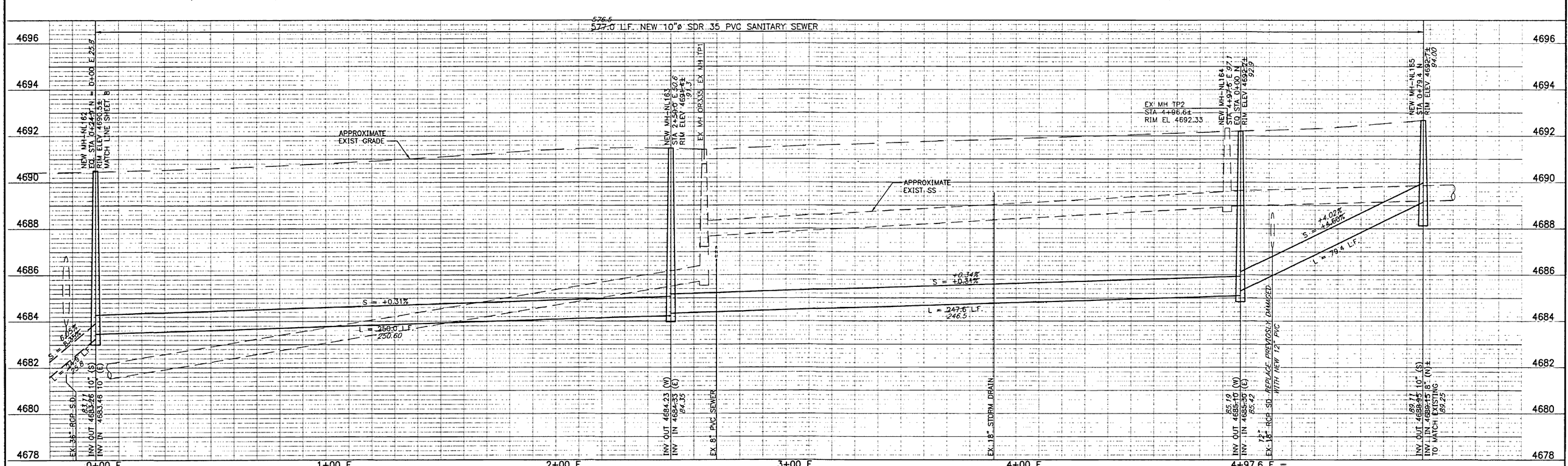

AS-BUILT CKK 12-05

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

GENERAL NOTES

1. Bypass pump live sewage around the work area from an upstream manhole to a downstream manhole along the sewer main as necessary to complete the work. Sewage may be allowed to backup into the sewer lines to a limited extent, provided that this does not cause backup into residences or businesses. It may be necessary to periodically relieve sewer lines during the day by removing the pipe laser and providing temporary connections to the new sewer line.
2. Existing sewer line to be abandoned in place.
3. Remove existing sewer line as new sewer line is installed and dispose of at an off-site area designated for such waste. Cap the end of existing sewer line that remains abandoned in place with concrete.
4. Existing manhole to be abandoned by removing the top cone section, grade rings and ring and cover, and filling the manhole with concrete flow fill. Dispose of waste material at an off-site area designated for such waste. Backfill excavation with compacted material to within 24-inches of finished grade and place 19-inches compacted Class 6 road base and 5-inches Grade S hot mix asphalt, or match existing, whichever is greater
5. Remove and dispose of existing manhole at an off-site area designated for such waste. Pour concrete cap in abandoned connecting sewer line.
6. Install new 4-foot diameter manhole per details on the Standard Sanitary Sewer Details Sheet.
7. Connect existing sewer line to new manholes with a 5-foot length of new PVC pipe stub-out to match the diameter, slope and flowline elevation of existing sewer line, and connect the stub-out to the existing sewer line with a PVC closure coupling
8. Protect existing utilities at crossings from damage or displacement during construction by hand digging to expose the utility line, providing temporary shoring and supports as necessary, and replacing bedding material as necessary.
9. Remove existing asphalt by milling a width suitable for the trench box. Backfill the trench with compacted material to 24-inches below the existing surface and place 19-inches compacted Class 6 road base and 5-inches temporary compacted millings for an interim driving surface until a 5-inch Grading S (3/4 inch minus) hot mix asphalt patch is placed. Final paving to include 2-inch milled asphalt the full width of the lane of traffic and placement of 2-inches hot mix asphalt.
10. After the new sewer line is in service, remove existing sewer main and casing pipe from inside the existing storm drain manhole. Casing pipe is either ductile iron or steel. Storm drain manhole may require sediment removal to facilitate the work. Cut abandoned sewer as close to end perpendicular with wall of manhole as possible and fill the ends of pipe with a concrete plug.
11. Remove existing concrete valley pan to nearest construction joints to accommodate trench. Reconstruct concrete valley pan to match flowline and configuration of existing, minimum 6-inch thick.

COLORADO REGISTERED CORTNE KELLIE NICHOLS 24778 PROFESSIONAL ENGINEER

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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

PLAN AND PROFILE STA 0+00 EAST TO STA 4+97.6 EAST & STA 0+00 NORTH TO STA 0+79.4 NORTH

Design by:	Drafted by:	Date:	Project No.	Sheet
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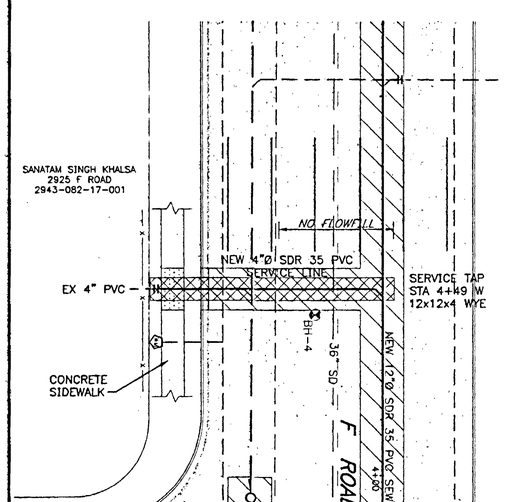
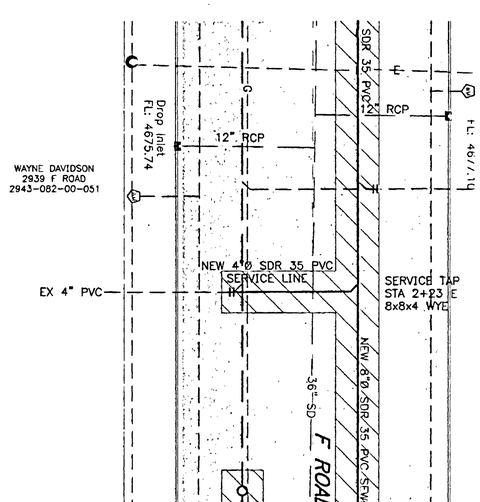
02110710.tif



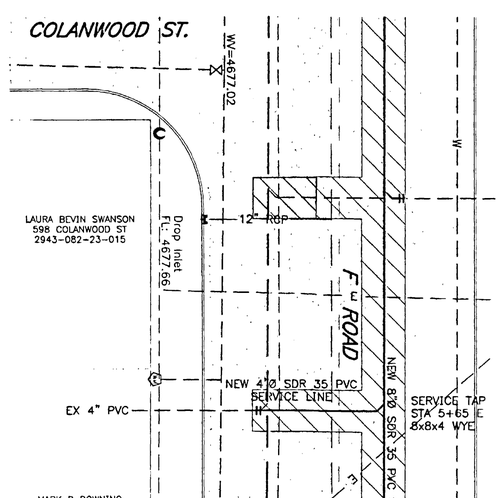
2925 F ROAD SERVICE LINE

STA 4+49 W
SEE SHEET 2



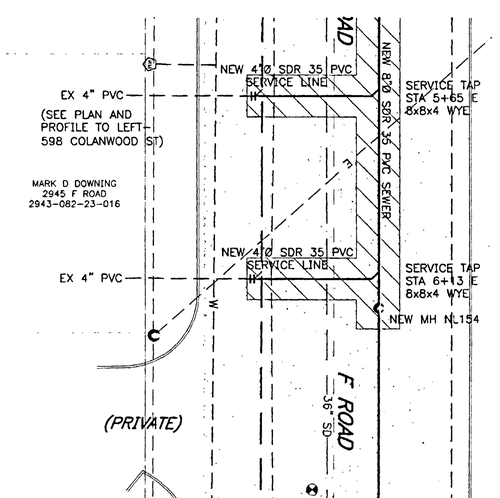
2939 F ROAD SERVICE LINE

STA 2+23 E
SEE SHEET 5



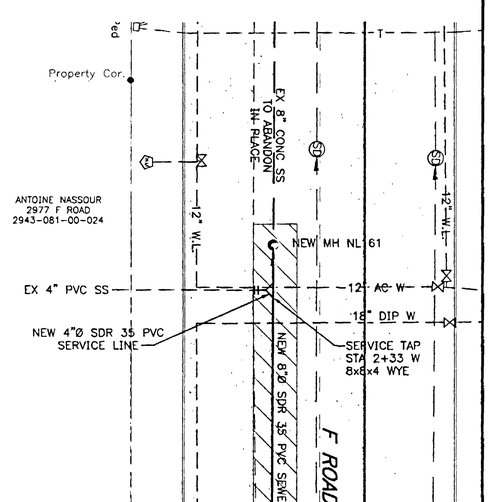
598 COLANWOOD SERVICE LINE

STA 5+65 E
SEE SHEET 5



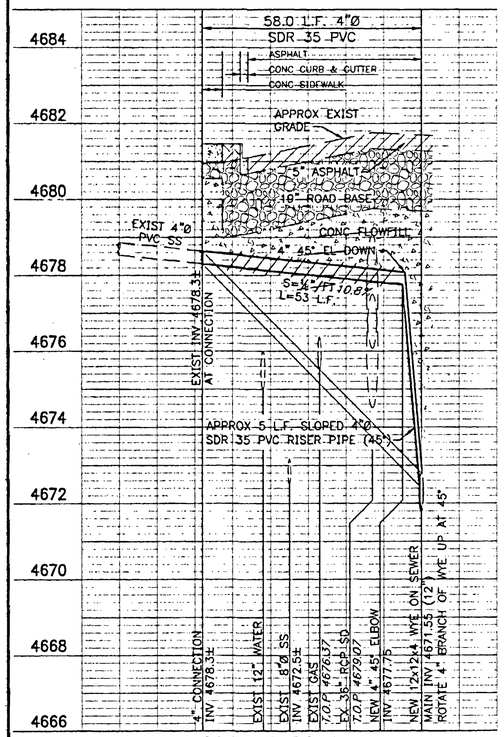
2945 F ROAD SERVICE LINE

STA 6+13 E
SEE SHEET 5



2977 F ROAD SERVICE LINE

STA 2+33 W
SEE SHEET 8



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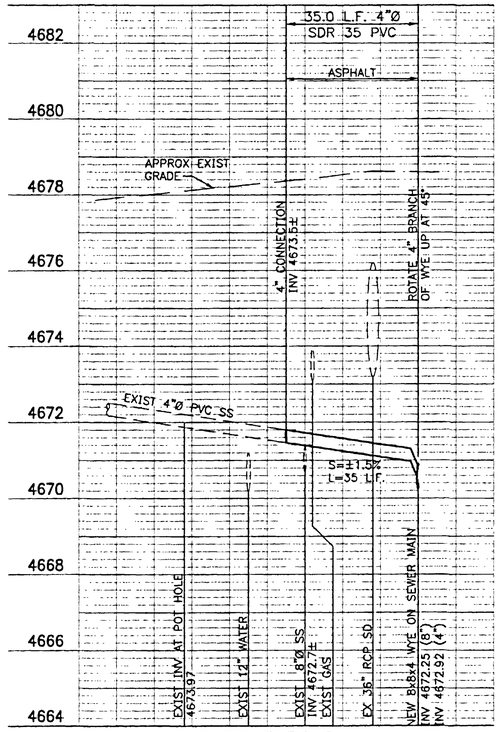
STA 4+49 W



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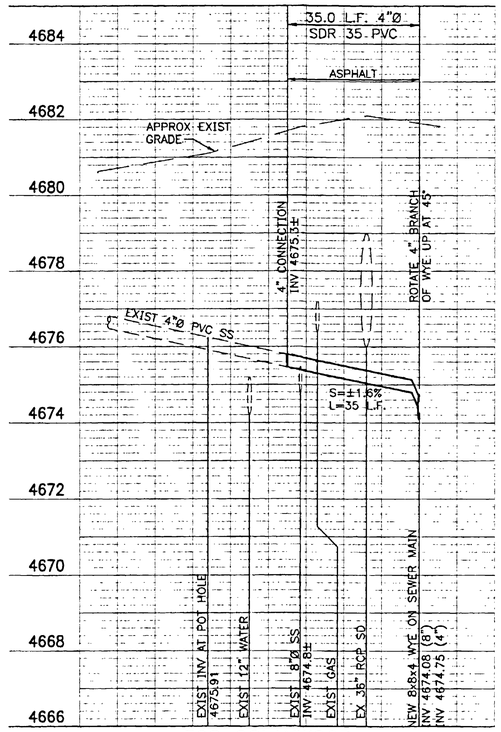
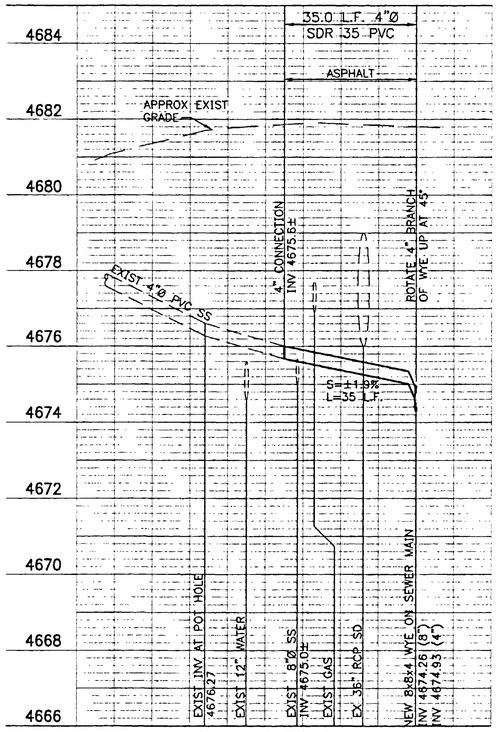


598 COLANWOOD

STA 5+65 E



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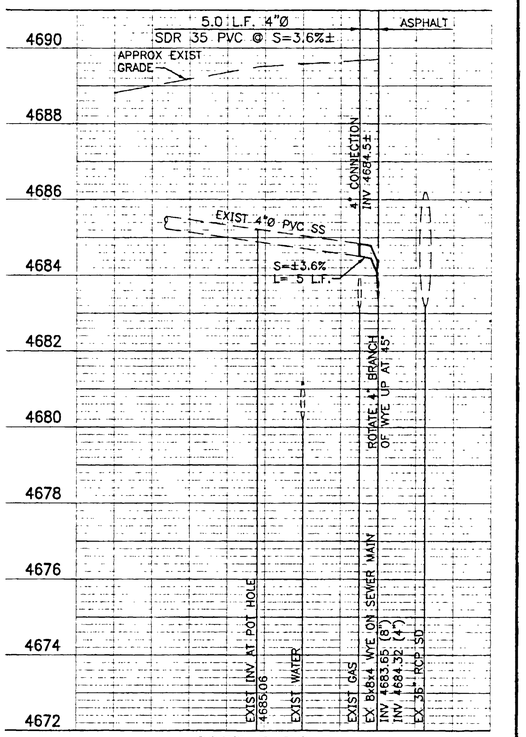

2977 F ROAD

STA 2+33 W

AS-BUILT CKK 12-05

SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

REVISIONS	DATE
AS-BUILT CKK	12-05

COLORADO REGISTERED 24778 PROFESSIONAL ENGINEER KELLIE K. NINE

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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

SERVICE LINE PLAN AND PROFILES

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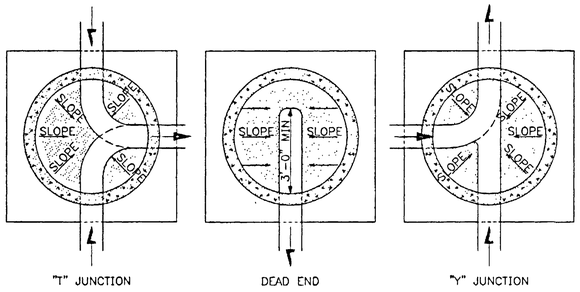
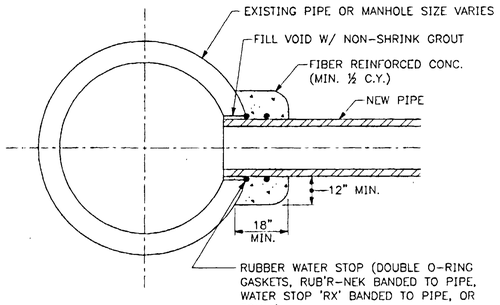


"T" JUNCTION DEAD END "Y" JUNCTION

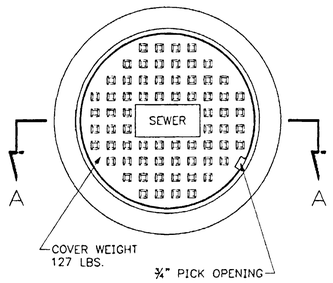
INVERTS SHALL BE FORMED TO PROVIDE A 24" MINIMUM APPROACH IN LINE WITH EACH PIPE FOR MAINTENANCE EQUIPMENT.

SECTION B–B

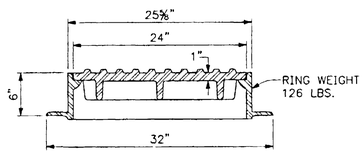


NOTE:
IF THE HOLE IN THE EXISTING PIPE OR MANHOLE IS CORED, THE CONNECTION CAN BE MADE BY INSTALLING A FLEXIBLE PIPE TO MANHOLE CONNECTOR ("BOOT") AND THE CONCRETE ENCASEMENT ELIMINATED.

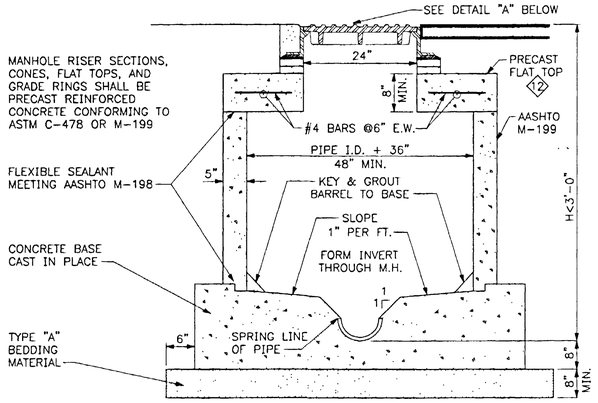
CONNECTION TO EXISTING MANHOLE OR INLET BOX



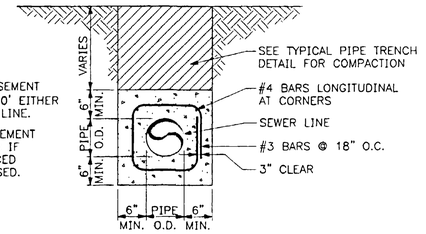
STANDARD CAST IRON MANHOLE RING & COVER



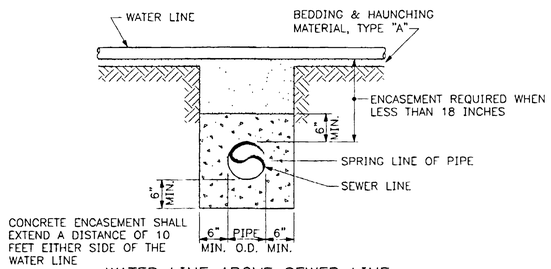
SECTION A–A



STANDARD SHALLOW MANHOLE CAST–IN–PLACE BASE

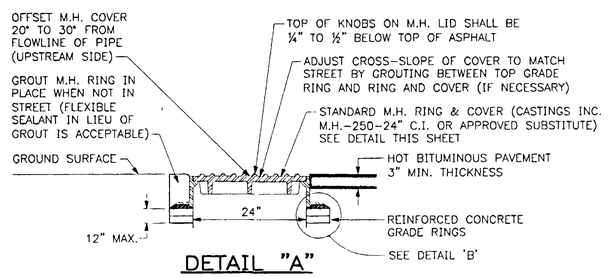


WATER LINE BELOW SEWER LINE

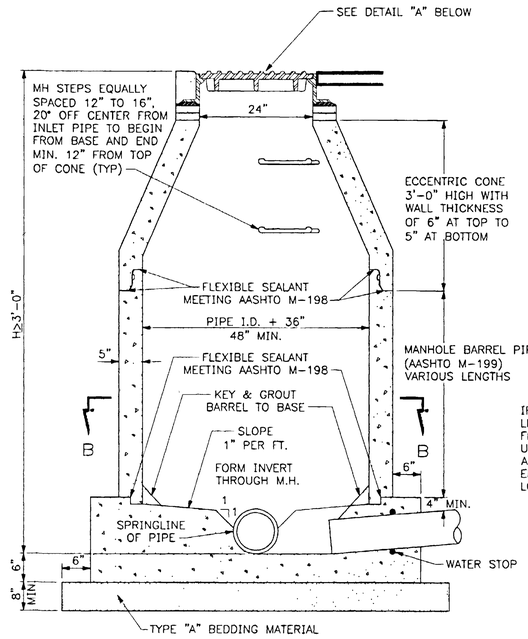


WATER LINE ABOVE SEWER LINE

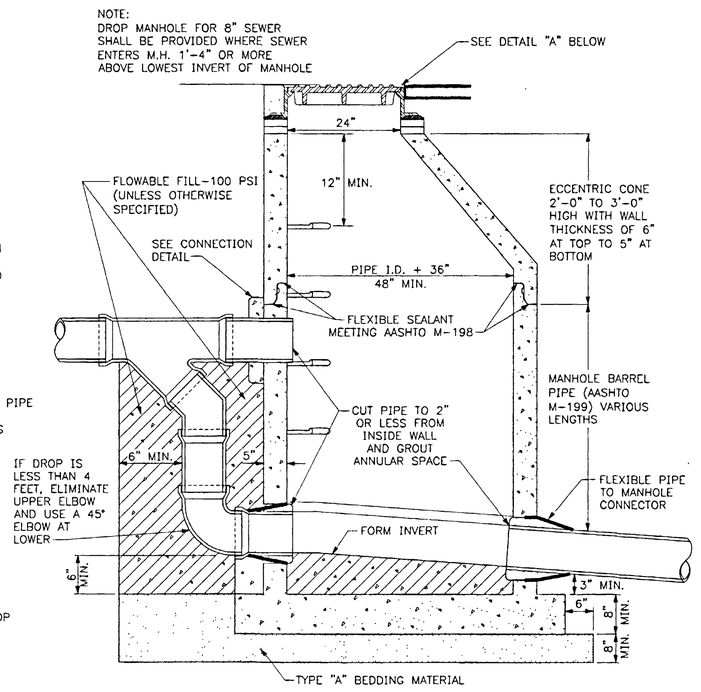
CONCRETE ENCASEMENT DETAIL



DETAIL "A"

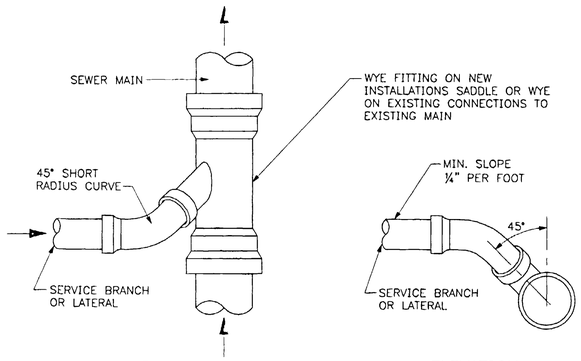


STANDARD MANHOLE CAST–IN–PLACE BASE

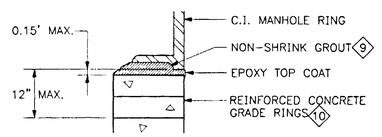


DROP MANHOLE PRECAST BASE

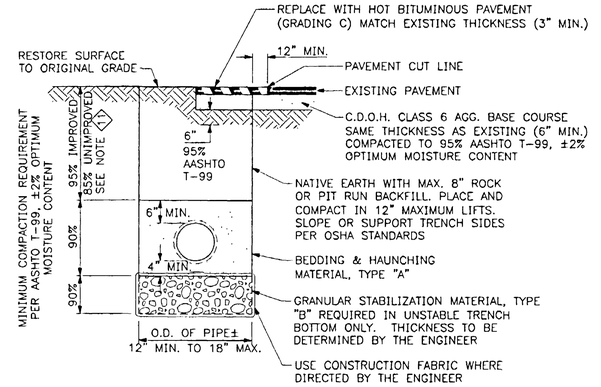
NOTE:
PRECAST BASE AND FLEXIBLE PIPE CONNECTORS CAN BE USED IN LIEU OF CAST–IN–PLACE BASE FOR ALL MANHOLE TYPES



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	
¾ 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

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 II 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 unless shown otherwise on plans
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/UPDATED	01–2005

WestWater Engineering
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CENTRAL GRAND VALLEY SANITATION DISTRICT
F ROAD SEWERLINE REPLACEMENT

STANDARD SANITARY SEWER DETAILS

Design by:	Drafted by:	Date:	Project No.	Sheet 11
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