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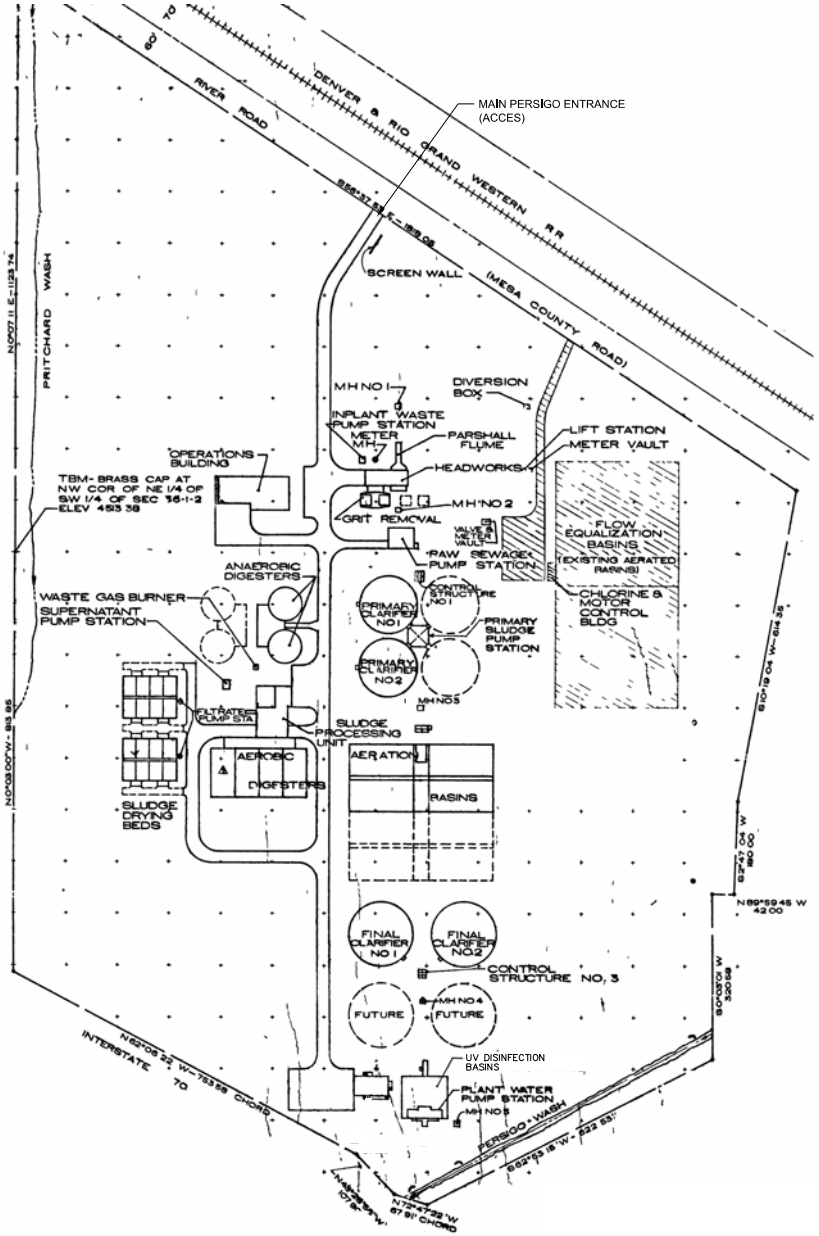
CITY OF GRAND JUNCTION / MESA COUNTY
PERSIGO WASH WASTEWATER TREATMENT PLANT

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS
FINAL CONSTRUCTION DRAWINGS

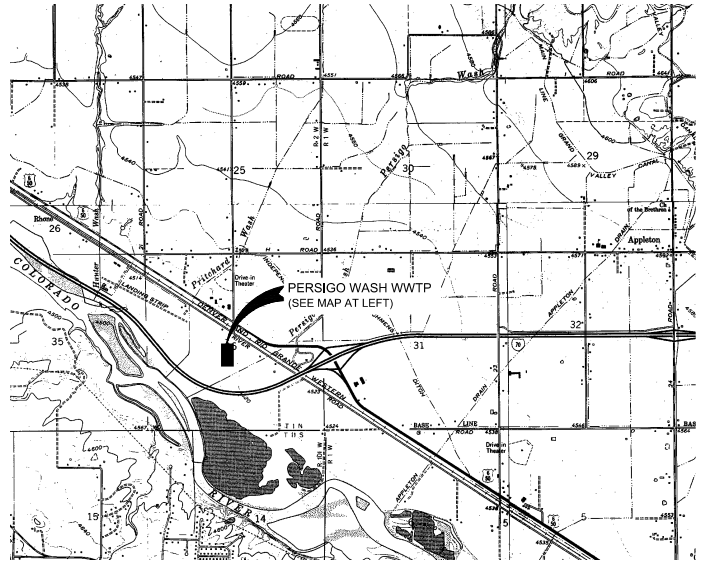
JULY 2017

Project Number: 205305055



PERSIGO WASH WASTEWATER TREATMENT PLANT SITE PLAN

N.T.S.



PROJECT LOCATION MAP

N.T.S.

DRAWING INDEX

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	4	G100	PROJECT EASEMENT PLAN
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	12	C300	PIPELINE SECTIONS
	13	C500	DIFFUSER DETAILS
	14	C501	DETAILS
	15	C502	PIPE AND MANHOLE DETAILS
	16	C503	EROSION CONTROL DETAILS
			STRUCTURAL
	17	S100	EXISTING EFFLUENT BOX STRUCTURAL PLAN, SECTIONS AND DETAILS

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GENERAL NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE CITY OF GRAND JUNCTION AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UTILITIES THAT WILL BE AFFECTED PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
3. ELEVATIONS, DIMENSIONS FOR THE EXISTING PIPING SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL OBTAIN, AT HIS EXPENSE, ALL PERMITS WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK.
5. EXISTING WASTEWATER TREATMENT SYSTEM SHALL REMAIN ACTIVE FOR THE DURATION OF THE PROJECT. COORDINATE WITH THE OWNER IF INTERFERENCE OR INTERRUPTION WITH THE EXISTING WASTEWATER TREATMENT SYSTEM IS NEEDED FOR CONSTRUCTION.
6. SITE ACCESS ON THE PLANT SIDE SHALL BE FROM THE MAIN ENTRANCE VIA THE MAIN ACCESS ROAD. ACCESS SOUTH OF I-70 SHALL BE AS SHOWN ON DWG. G100.
7. EFFORTS TO SHOW EXISTING PIPING IN THEIR APPROPRIATE LOCATION HAVE BEEN MADE AND ARE SHOWN HEREIN. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES.

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Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
B - TWA CONSTRUCTION DRAWINGS	SJH	CFH	17.05.03
A - Client Review APPLICATION	SJH	CFH	16.08.31

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
PROJECT LOCATION MAP, GENERAL NOTES, AND LIST OF DRAWINGS

Permit-Seal

Project Number: 205305055
File Name: 05055-G002.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. G002

Revision B

Sheet 2 of 17

ABBREVIATIONS

Abbreviation	Meaning
A	
A	AMPERE
A.F.F.	ABOVE FINISHED FLOOR
ABAND.	ABANDON
AB	AIR BLOWER
AC	AIR COMPRESSOR
A.C.	ALTERNATING CURRENT
A/C	AIR CONDITIONING
ACSTB	ACOUSTIC
AD	ACCESS DOOR
A.D.	AREA DRAIN
AER	TANK AERATOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
A.I.	AREA INLET
AIC	AMPS INTERRUPTING
AIR	PROCESS AIR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALK	ALKALINITY CHEMICAL
ALM	ALUM
ALT	ALTERNATE
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ACCESS PANEL
APPD	APPROVED
APPROX.	APPROXIMATE
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASB	ASBESTOS
ASPH	ASPHALT
ATAD	AUTOTHERMAL THERMOPHILIC AEROBIC DIGESTION
ATC	ACOUSTICAL TILE CEILING
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AVE	AVERAGE
AV	AIR VALVE
AWC	ACOUSTICAL WALL COVERING
AWG	AMERICAN WIRE GAUGE
∠	ANGLE
B	
B.C.	BRASS CAP
BI	BATT INSULATION
BDY	BOUNDARY
BD	BOARD
BEJ	BRICK EXPANSION JOINT
BFV	BUTTERFLY VALVE
BIT	BITUMINOUS
BL	BUILDING LINE
BLDG	BUILDING
BLC	BOILER CIRCULATION PUMP
BLK	BLOCK
BLR	BOILER
BM	BEAM
B.M.	BENCH MARK
B.O.	BOTTOM OF
BOT	BOTTOM
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
BRK	BRICK
BRK	BRACKET
BS	BAR SCREEN
BT	BENT
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BWR	BACKWASH RETURN
BWS	BACKWASH SUPPLY
BWW	BACKWASH WASTE
C	
C	CONDUIT
CA	COMPRESSED AIR
CB	CIRCUIT BREAKER
CND	CONDUIT
CAP	CAPACITY
CC	CENTER TO CENTER
CB	CATCH BASIN
CEM	CEMENT
CFM	CUBIC FEET PER MINUTE
CHIM	CHIMNEY
C.I.	CURB INLET
CI	CAST IRON
CIR	CIRCULAR
CJ	CONTROL JOINT
CKD	CHECKED
CKT	CIRCUIT
CLS	CHLORINE
CL	CENTER LINE
CLG	CEILING
CLKG	CAULKING
CLOS	CLOSED
CLR	CLEARANCE
CLWG	CLEAR WIRE GLASS
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
CN	CENTRATE
CNT	CENTRIFUGE
CNV	CONVEYOR
CNTR	COUNTER
C.O.	CLEANOUT
COMP	COMPRESSIBLE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
C.J	CONSTRUCTION JOINT
CONT	CONTINUOUS
COR	CORNER
CPP	CORRUGATED POLYETHYLENE PIPE
C.P.	CONTROL POINT
CP	CHEMICAL FEED PUMP
CPR	COPPER
C.P.S.	CYCLES PER SECOND (HERTZ)
C/S	COUNTER SINK
CS	CARBON STEEL
C.T.	CERAMIC TILE
CT	CHEMICAL TANK
CTR	CENTER
C.Y.	CUBIC YARDS
C.V.	CEILING VENT
CV	CHECK VALVE
CW	COLD WATER
D	
D	DRAIN
DC	DIRECT CURRENT
DEG	DEGREE
DEPR	DEPRESSION
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DUCT HEATER
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DN	DOWN
DR	DOOR
D	DRAIN
DS	DOWN SPOUT
DSL	DIGESTER SLUDGE
DV	DIAPHRAGM VALVE
DWG	DRAWING
DWLS	DOWELS
E	
E	EAST
EA.	EACH
E.A.	EXHAUST AIR
EF	EACH FACE
EFF	EFFLUENT
EFP	EFFLUENT FILTER PUMP
EJ	EXPANSION JOINT
EL.	ELEVATION
ELEC.	ELECTRIC OR ELECTRICAL
ENCL	ENCLOSURE
ENT	ENTRANCE
EQ.	EQUAL OR EQUALIZATION
EQUIP	EQUIPMENT
EST	ESTIMATE
EW	EACH WAY
EXC	EXCAVATE
EXH	EXHAUST
EX.	EXISTING
EXP	EXPANSION PUMP
EXPD	EXPOSED
EXPN	EXPANSION
EXT	EXTERIOR
F	
F	FAHRENHEIT
FCA	FLANGE COUPLING ADAPTER
FCG	FACING
FCJ	FLOOR CONSTRUCTION JOINT
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FNDN	FOUNDATION
F.E.S.	FLARED END SECTION
F.F.	FINISH FLOOR
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FIX.	FIXTURE
FLE	FILTER ELEMENT
FLR	FLOOR
FLSH	FLASHING
FLEX	FLEXIBLE
FLG	FLOORING
FL	FLANGE
FLOC	FLOCCULATOR
F.L.	FLOW LINE
FPM	FEET PER MINUTE
FR	FRAME
FRP	FIBERGLASS REINFORCED PIPE
FT	FEET
FTG	FOOTING
FTW	FILTER TO WASTE
FVNR	FULL VOLTAGE NON-REVERSING
FW	FINISHED WATER
G	
G	GAS
GA	GAGE OR GAUGE
GALV	GALVANIZED
G.B.	GRADE BREAK
GBV	GLOBE VALVE
G.C.O.	GROUND CLEANOUT
GEN	GENERAL
GFI	GROUND FAULT INTERRUPTOR
GI	GALVANIZED IRON
GL	GLASS
GLO	GENERAL LAND OFFICE
GND	GROUND
GPM	GALLONS PER MINUTE
GRD	GRADE
GR	GRIT
GP	GRIT PUMP
GRS	GALVANIZED RIGID STEEL CONDUIT
GRT	GRATING
GS	GRIT SEPARATOR
GV	GATE VALVE
GW	GRIT WASHER
GWB	GYPSUM WALLBOARD
GWT	GLAZED WALL TILE
GYP	GYPSUM
H	
HB	HOSE BIBB
HCP	HEAT CIRCULATION PUMP
HD	HEAD
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HDRL	HANDRAIL
HDW	HARDWARE
HEX	HEAT EXCHANGER
HGL	HYDRAULIC GRADE LINE
H.P.	HORSE POWER
HPR	HIGH PRESSURE
HRR	HOT WATER RETURN
HRS	HOT WATER SUPPLY
HORZ.	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
HTG	HEATING
HTR	HEATER
H.W.	HEADWALL
HW	HOT WATER
HWH	HOT WATER HEATER
HWR	HOT WATER RETURN
HWS	HOT WATER SERVICE
HWC	HOT WATER CIRCULATION
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ
I	
I	IRON
IC	INTERCOM
I.D.	INSIDE DIAMETER
I.E.	INVERT ELEVATION
IN.	INCH
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
J	
JB	JUNCTION BOX
JCT	JUNCTION
JST	JOIST
JT	JOINT
K	
K	KEY
KCM	KILO CIRCULAR MIL
KGV	KNIFE GATE VALVE
KL	KEY LOCK
KP	KICK PLATE
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWAT
L	
LAB	LABORATORY
LAV	LAVATORY
LBR	LUMBER
LBS	POUNDS
LD	LOAD
LDG	LOADING
LEN	LENGTH
LIN	LINEAR
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LM	LIQUID FLOW METER
LNG	LONG
LONG.	LONGITUDINAL
LP	LOW POINT
L.R.	LONG RADIUS
LSG	LIQUID SLUDGE GAS
LT	LIGHT
LTG	LIGHTING
LWL	LOW WATER LEVEL
M	
MACH.	MACHINE
MAS	MASONRY
MCSM	MESA COUNTY SURVEY MARKER
MTL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCJ	MASONRY CONTROL JOINT
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MET	METAL
MFG	MANUFACTURING
MG	MOTOR GENERATOR
MH	MANHOLE
M.J.	MECHANICAL JOINT
MIN	MINIMUM
MLQ	MIXED LIQUOR
MM	MAGNETIC FLOW METER
MO	MASONRY OPENING
M	MOTOR
MSTC	MASTIC
MT	METAL THRESHOLD
MTD	MOUNTED
MV	MUD VALVE
N	
N	NORTH
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MFG. ASSOCIATION
NO	NUMBER
N.O.	NORMALLY OPEN
NPW	NON-POTABLE WATER
N.R.	NOT REQUIRED
NV	NEEDLE VALVE
O	
O.C.	ON CENTERS
O/	OVER
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OF	OVERFLOW
OFF	OFFICE
OG	OFF GAS
OH	OVERHEAD
OL	OVERLOAD
OPNG	OPENING
OPP	OPPOSITE
OPS	OPERATIONS
P	
P	POLE
P.C.	POINT OF CURVATURE
P.C.C.	POINT OF COMPOUND CURVE
P.C.R.	POINT OF CURB RETURN
P.R.C.	POINT OF REVERSE CURVE
PC	PIECE
PERF	PERFORATED
P.E.	PLAIN END
PE	PRIMARY EFFLUENT
PH	PHASE
P.I.	POINT OF INTERSECTION
PL	PLATE
PTFM	PLATFORM
PLBG	PLUMBING
PLG	PILING
PLS	PROFESSIONAL LAND SURVEYOR
PLY	PLYWOOD
PNL	PANEL
POLY	POLYETHYLENE
PPM	PARTS PER MILLION
PRE.	PRELIMINARY
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PRESSURE REDUCING VALVE
PRV	
PS	PRIMARY SLUDGE
PST	PUMP STATION
PSC	PRIMARY SCUM
PSF	POUNDS/SQUARE FOOT
PSI	POUNDS/SQUARE INCH
P.T.	POINT OF TANGENCY
PT	POINT
PTD	PRELIMINARY TREATMENT EFFLUENT
PTE	
PTN	POTENTIAL (VOLTAGE)
PV	PLUG VALVE
PVC	POLYVINYL-CHLORIDE
PVMT	PAVEMENT
Q	
QT	QUART
Q.T.	QUARRY TILE
QTRS	QUARTERS
1/4RD	QUARTER ROUND
QZ	QUARTZ RESTRIKE
R	
RAD	RADIUS
RAS	RETURN ACTIVATED SLUDGE
RC	REMOTE CONTROL
RCP	REINFORCED CONCRETE PIPE
RD	ROUND
R.D.	ROOF DRAIN
RECP	RECEPTACLE
RECT.	RECTIFIER
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
RGS	REGISTER
REINF	REINFORCEMENT
REM	REMOVABLE
REQD	REQUIRED
REV	REVISIONS
RE:	REFER
RFG	RIGID GALV. STEEL
RGH	ROUGH
RIO	REMOTE INPUT/OUTPUT RACK
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RS	RAW SEWAGE
RSP	RETURN SLUDGE PUMP
RSR	RISER
RUB	RUBBER
RVP	PRESSURE RELIEF VALVE
RW	RAW WATER
S	
S	SOUTH
SAN	SANITARY SEWER
SCH	SCHEDULE
SCR	SCREENINGS
SCP	SCUM PUMP
SD	SANITARY DRAIN
S.D.	SUBDRAIN
SE	SECONDARY EFFLUENT
SEC	SECTION
SEQ	SEQUENCE
SG	SLIDE GATE
SHLD	SHOULDER
SHT.	SHEET
SIM	SIMILAR
SL	RAW SLUDGE
SLG	SLUICE GATE
SMA	SURFACE MECH. MIXER
SMT	SUBSURFACE TURBINE MIXER
SMX	SUBSURFACE MIXER
SN	SUPERNATANT
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SPF	SOUNDPROOF
SPH	SPACE HEATER
SPL	SPECIAL
SQ	SQUARE
SS	STAINLESS STEEL
SSC	SECONDARY SCUM
STA	STATION
STD	STANDARD
STGR	STRINGER
STL	STEEL
STM	STORM SEWER
STN	STONE
STOR	STORAGE
STP	SLUDGE TRANSFER PUMP
STR	STRUCTURAL
STWY	STAIRWAY
SFL	SUB FLOOR
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWS	SURFACE WASH SYSTEM
SYM	SYMMETRICAL
SYS	SYSTEM
T	
TAN	TANGENT
T.B.	THRUST BLOCK
TD	TANK DRAIN
T.E.	TOP ELEVATION
TE	THICKENER EFFLUENT
TEL	TELEPHONE
T/G	TONGUE AND GROOVE
TEMP	TEMPORARY
TMP	TEMPERATURE
TERM	TERMINAL
TG	TOGGLE
TH	THRESHOLD
THK	THICK
THRD	THREADED
T.O.	TOP OF
T.O.C.	TOP OF CURB
T.O.F.	TOP OF FLOOR
TOIL	TOILET
TOPO	TOPOGRAPHY
T.O.P.	TOP OF PIPE
T.O.S.	TOP OF SLAB
T.O.W.	TOP OF WALL
TRMT	TREATMENT
TSC	THICKENER SCUM
TSL	THICKENER SLUDGE
TSTAT	THERMOSTAT
TV	TELESCOPE VALVE
TYP	TYPICAL
TVSS	TRANSIET VOLTAGE SURGE SUPRESSOR
U	
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
U.N.O.	UNLESS NOTED OTHERWISE
UPC	UNINTERRUPTIBLE POWER SYSTEM
UT	UTE MERIDIAN
UV	ULTRA-VIOLET DISINFECTIONS
V	
V	VOLT
VCP	VITRIFIED CLAY PIPE
VD	VAULT DOOR
VENT.	VENTILATION
VERT (V)	VERTICAL
VLV	VALVE
VOL	VOLUME
V.P.C.	VERTICAL POINT OF CURVATURE
V.P.I.	VERTICAL POINT OF INTERSECTION
V.P.T.	VERTICAL POINT OF TANGENCY
VS	VENT STACK
VT	VINYL-TILE
V.T.R.	VOLTAGE TRANSFORMER
VTR	VENT THROUGH ROOF
VWM	VERIFY WITH MFG.
W	
W	WEST
WR	WIRE
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WD	WOOD
W.D.	WASTE DRAIN
WDW	WINDOW
WF	WIDE FLANGE
WH	WALL HYDRANT
WHM	WATTHOUR METER
WI	WROUGHT IRON
WKSH	WORK SHOP
W/O	WITHOUT
WP	WEATHER PROOF
WPF	WATER PROOF
WPFG	WATER PROOFING
WSE	WATER SURFACE ELEVATION
WSP	WASTE ACTIVATED SLUDGE
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WOVEN WIRE MESH
X	
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
Y	
YD	YARD
Y.D.	YARD DRAIN
YR	YEAR

GENERAL SYMBOLS LEGEND

- PIPE END (SIDE VIEW)
- PIPE END (END VIEW)
- CENTERLINE
- ELEVATION BULLET
- GROUNDWATER LEVEL
- SURFACE WATER LEVEL
- KEYED NOTE
- POINT OF CONNECTION
- SG-1 EQUIPMENT TAG

MATERIALS LEGEND

- EARTH
- CONCRETE (PLAN)
- CONCRETE (SECTION)
- CRUSHED ROCK
- GRAVEL
- CMU
- ASPHALT
- RIPRAP
- SAND (SECTION)
- GROUT (SECTION)
- BRICK
- BLOCKING
- FINISH WOOD
- METAL
- GLAZED/CERAMIC TILE
- STONE
- RIGID INSULATION
- BATT INSULATION
- PLYWOOD
- GRATING (PLAN)
- GRATING (SECTION)
- CHECKERED PLATE
- DEMOLITION

SITE/UTILITY LEGEND

- AREA INLET
- CURB INLET INLET
- CLEAN-OUT
- EXISTING MANHOLE
- FLARED END SECTION
- MANHOLE
- AIR/VACUUM VALVE
- BLOW OFF VALVE
- BACK FLOW PREV. VALVE
- VALVE
- FIRE HYDRANT
- 11.25° BEND
- 22.5° BEND
- 45° BEND
- 90° BEND
- CROSS
- TEE
- PLUG
- THRUST BLOCK
- EDGE OF GRAVEL/DIRT
- EDGE OF ASPHALT
- EASEMENT
- RIGHT-OF-WAY
- FLOWLINE
- SECTION LINE
- SANITARY SEWER
- RAILROAD
- WATERLINE
- FENCE(OTHER)
- FENCE(BARB WIRE)
- BURIED ELECTRICAL
- OVERHEAD ELECTRICAL
- TELEPHONE
- FIBER OPTIC
- CABLE
- GAS
- STORM SEWER
- OUTFALL PIPE

EROSION CONTROL LEGEND

- SILT FENCE
- CONSTRUCTION FENCE
- LIMITS OF CONSTRUCTION
- VEHICLE TRACING CONTROL PAD
- SOIL LIFT FILL PLACEMENT
- WETLANDS

SECTION IDENTIFICATION

SECTION LETTER

A
C300

SHEET NUMBER OF DRAWING WHERE SECTION IS LOCATED

A SECTION

SECTION LETTER

DETAIL IDENTIFICATION

DETAIL NUMBER

1
C500

SHEET NUMBER OF DRAWING WHERE DETAIL IS LOCATED

1 DETAIL

DETAIL NUMBER

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- B FINAL CONSTRUCTION DRAWINGS | SLH | CRH | 17.05.03
- A DESIGN REVIEW APPLICATION | SLH | CRH | 16.08.31

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
DRAWING ABBREVIATIONS LEGENDS AND SYMBOLS

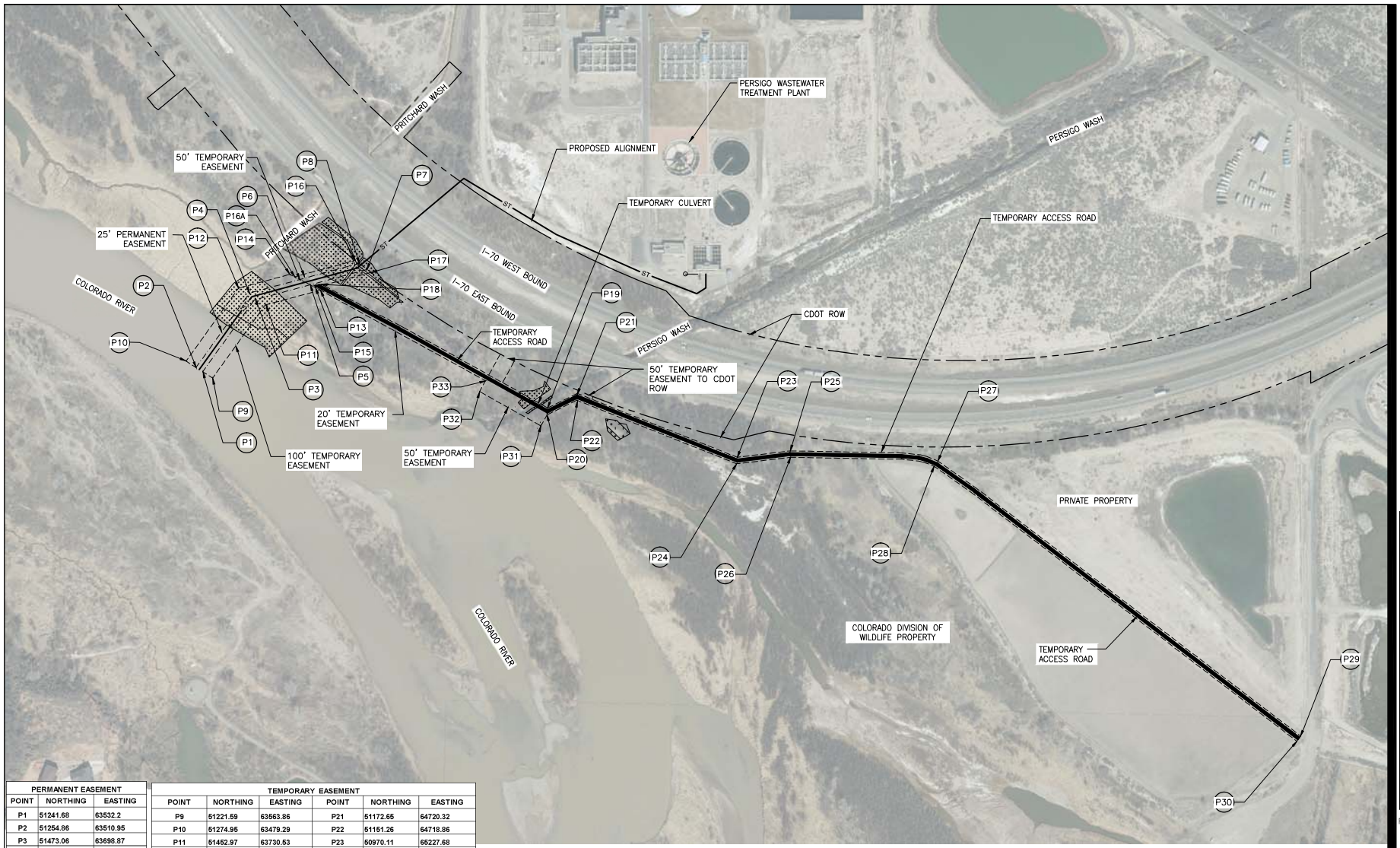
Permit-Seal

Project Number: 205305055
File Name: 05055-G003.dwg

S.L.H. | D.S. | C.R.H. | 16.04.12
Dwn. | Chkd. | Dsgn. | YY.MM.DD

Drawing No. G003

Revision B | Sheet 3 of 17



PERMANENT EASEMENT		
POINT	NORTHING	EASTING
P1	51241.68	63532.2
P2	51254.86	63510.95
P3	51473.06	63698.87
P4	51490.61	63680.77
P5	51516.89	63873.17
P6	51533.87	63840.29
P7	51565.78	64053.32
P8	51584.92	64028.38

TEMPORARY EASEMENT					
POINT	NORTHING	EASTING	POINT	NORTHING	EASTING
P9	51221.59	63563.86	P21	51172.65	64720.32
P10	51274.95	63479.29	P22	51151.26	64718.86
P11	51452.97	63730.53	P23	50970.11	65227.68
P12	51506.33	63645.96	P24	50949.69	65225.88
P13	51499.98	63905.90	P25	50990.43	65395.86
P14	51550.2	63808.67	P26	50970.08	65396.76
P15	51508.39	63889.67	P27	65863.94	50958.15
P16	51594.52	64016.06	P28	50941.77	65852.01
P16A	51542.36	63823.86	P29	50086.32	67014.74
P17	51556.26	64065.95	P30	50069.93	67002.81
P18	51519.34	63906.96	P31	51070.14	64604.91
P19	51126.72	64625.98	P32	51178.38	64410.51
P20	51105.33	64624.51	P33	51212.71	64429.34

LEGEND

- WETLANDS
- CDOT ROW
- PERMANENT EASEMENT
- ST — OUTFALL
- TEMPORARY EASEMENT
- TEMPORARY ACCESS

HORIZ. 0 150' 300'
SCALE IN FEET

N

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Revision	By	Appd.	YY.MM.DD
B TRAN. CONSTRUCTION DRAWINGS	SLH	CFH	17.05.03
A Detailed Review APPLICATION	SLH	CFH	16.08.31

Issued

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY
PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

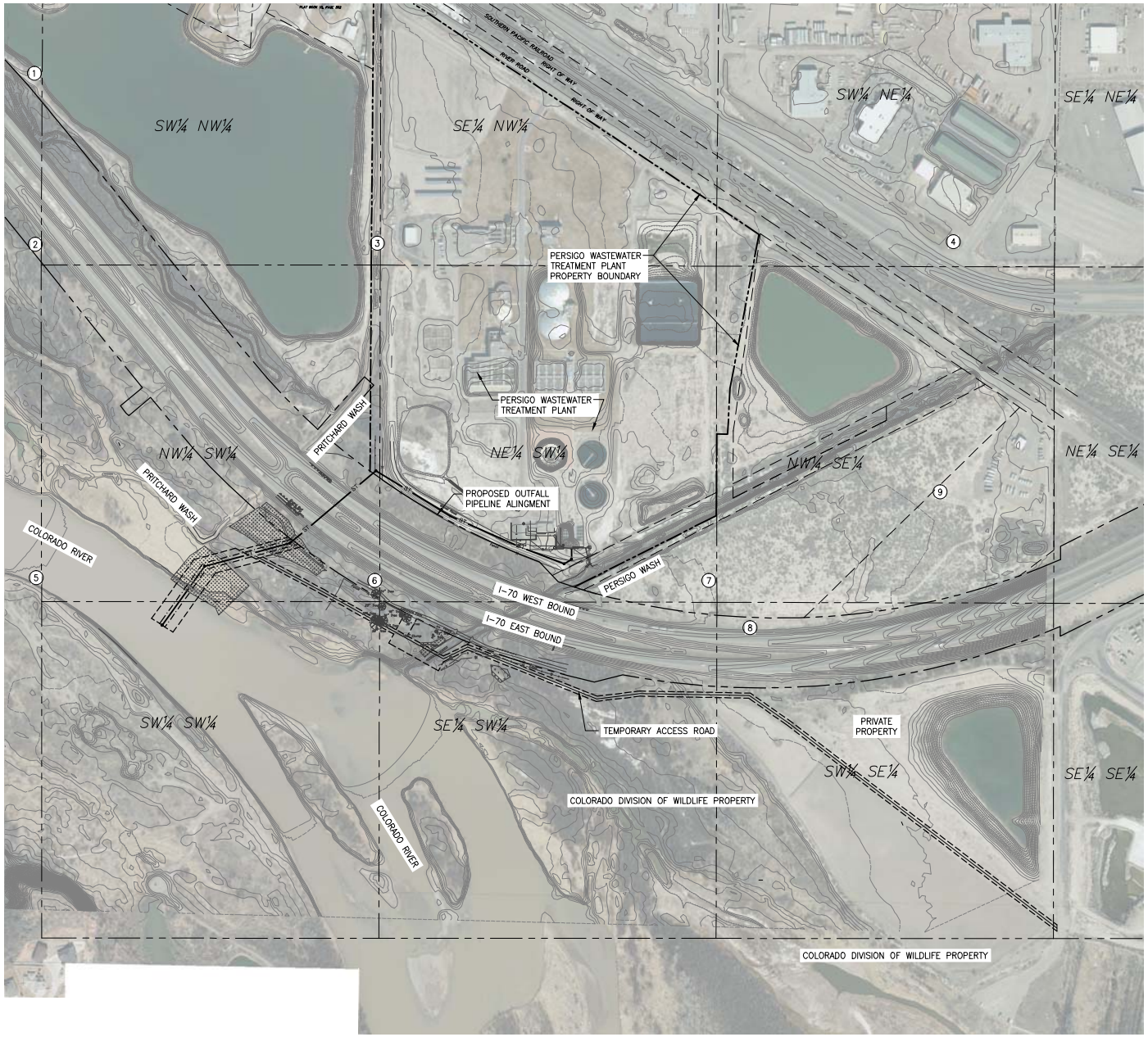
Title
PROJECT EASEMENT PLAN

Permit-Seal

Project Number: 205305055
File Name: 0505S-G100.dwg

SLH	D.S.	C.R.H.	15.08.24
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. G100
Revision B
Sheet 4 of 17



PROJECT CONTROL POINTS		
POINT NUMBER	NORTHING	EASTING
1	53334.796	63048.360
2	52662.232	63046.578
3	52661.966	64376.875
4	52654.444	67022.782
5	51341.391	63048.202
6	51341.191	64374.572
7	51338.696	65698.425
8	51320.876	65456.710
9	51547.376	67025.050

LEGEND

- SECTION LINE
- EXIST PROPERTY/EASEMENT LINE
- PERSIGO WWTP PROPERTY LINE
- I-70 RIGHT-OF-WAY
- TEMPORARY EASEMENT
- PERMANENT EASEMENT

0 200' 400'
SCALE: 1"=200'

N

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Issued	By	Appd.	YY.MM.DD
A DEBER REVIEW APPLICATION	SLH	CRH	16.08.31
B TWA CONSTRUCTION DRAWINGS	SLH	CRH	17.05.03

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
OVERALL SITE PLAN AND
PROJECT CONTROL MAP

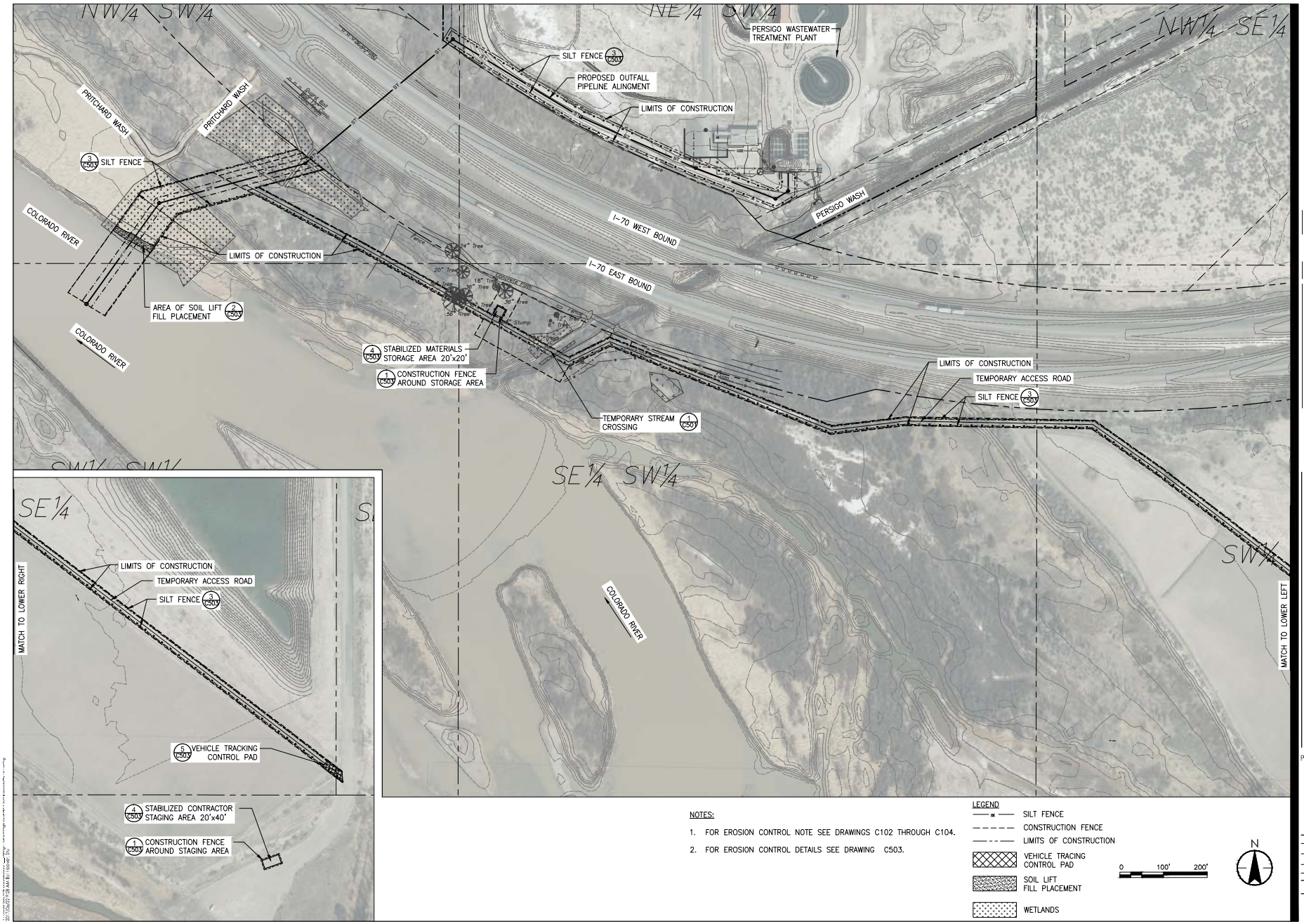
Permit-Seal

41104
12/21/17

Project Number: 205305055
File Name: 05055-C100.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C100
Revision B
Sheet 5 of 17



NOTES:

1. FOR EROSION CONTROL NOTE SEE DRAWINGS C102 THROUGH C104.
2. FOR EROSION CONTROL DETAILS SEE DRAWING C503.

LEGEND

- SILT FENCE
- CONSTRUCTION FENCE
- LIMITS OF CONSTRUCTION
- VEHICLE TRACING CONTROL PAD
- SOIL LIFT FILL PLACEMENT
- WETLANDS

0 100' 200'

N

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Issued	By	Appd.	YY.MM.DD
A Detail review application	SJH	CRH	11.05.03
B 75% CONSTRUCTION DRAWINGS	SJH	CRH	16.08.31

Revision

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
EROSION CONTROL PLAN

Permit-Seal

Project Number: 205305055
File Name: 05055-C101.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C101
Revision B
Sheet 6 of 17

SWMP – PERSIGO WWTP DIFFUSER OUTFALL

1. SITE DESCRIPTION

The Contractor shall comply with all CDOT contractual requirements and all requirements associated with the CDPS-SCP on this project. The SWMP Administrator shall update to reflect current project site conditions.

A. PROJECT SITE LOCATION: Project site is located in the City of Grand Junction at the Persigo Wastewater Treatment Plant. Specifically it is at 39°6'36.49" N and 108°39'43.33" W

B. PROJECT SITE DESCRIPTION: The project is a linear utility installation from the treatment to the Colorado River. The pipeline is a 48-inch (ID) in diameter and approximately 1,952 feet or 0.37 mile in length from the Persigo WWTP to the diffuser in the Colorado River

C. PROPOSED SEQUENCING FOR MAJOR CONSTRUCTION ACTIVITIES: The project will be constructed from the downstream end starting with the diffuser in the Colorado River. From the diffuser structure, the pipe will be installed upstream to I-70. This portion will consist of tradition cut and cover techniques. Under I-70 will be a trenchless installation consisting of a direction bore. North of I-70B will return to traditional cut and cover construction installation.

All areas to receive traditional cut and cover will have the top 12" of material stockpiled to be replaced once construction has been placed. All wetland topsoil shall be stored separately from upland topsoil. describe the sequence of construction events involved in the project, such as clearing and grubbing, grading, drainage, excavation, structures removal and construction that may impact water quality etc.

D. ACRES OF DISTURBANCE:
1. Total area of construction site (LOC (PERMITTED AREA)): 4.1 acres
2. Total area of proposed disturbance (LDA): 4.0 acres
3. Total area of seeding: 4.1 acres
4. Total area of impervious surface: 0.0 acres
5. Total area of NEW impervious surface: 0.0 acres

E. EXISTING SOIL DATA: See Geotechnical Report completed by Huddleston-Berry dated May 9, 2016

F. EXISTING VEGETATION, INCLUDING PERCENT COVER:
During design the SWMP Administrator for Design in consultation with the Engineer will determine if the SWMP Administrator for Design or the SWMP Administrator will conduct the Vegetation Transects as outlined in Chapter 4.11.2 of the CDOT Erosion Control and Stormwater Quality Guide.

Per the wetland investigation, existing ground cover through the undeveloped portion of the project is 50-75% cover in upland areas and 75-90% cover in wetland areas.

An additional survey including general description of existing vegetation shall be conducted by the SWMP Administrator prior to any ground disturbance on the project. The SWMP Administrator shall photo-document existing vegetation where all work will be occurring. The SWMP Administrator shall also perform the vegetation survey transect(s) including photo documentation as outlined in Chapter 4.11.2 of CDOT's Erosion Control and Stormwater Quality Guide.

Pre-Construction Date of survey: ____________ %Density: ____________
Description of existing vegetation:
Map or table showing transect locations in SWMP notebook tab 17:

Post-Construction Date of survey: ____________ %Density: ____________
Description of existing vegetation: **Date of CDPS-SCP Closure:** ____________
Map or table showing transect locations in SWMP notebook tab 17:

[APRIL 2016]

G. POTENTIAL POLLUTANTS SOURCES: See First Construction Activities under Potential Pollutant Sources. The SWMP Administrator shall prepare a list of all potential pollutants and their locations in accordance with CDOT Spec Subsection 107.25.

H. RECEIVING WATER:
1. Outfall locations: Colorado River
2. Names of receiving water(s) on site: Colorado River and Persigo Wash
3. Ultimate receiving water: Colorado River
4. Horizontal distance nearest water of the state is from project: 0 ft

I. NON-STORMWATER DISCHARGES:
ALLOWABLE:
1. Groundwater and stormwater dewatering: Discharges to the ground of water from construction dewatering activities may be authorized provided that:
   a. the source is groundwater and/or groundwater combined with stormwater that does not contain pollutants
   b. the source and BMPs/Control Measures are identified in the SWMP
   c. discharges do not leave the site as surface runoff or to surface waters
   d. The contractor shall protect all work areas and facilities from water at all times. Areas and facilities subject to flooding, regardless of the source of water, shall be promptly dewatered and restored at no cost to the owner. This shall include removal of any debris caused by flooding. Any dewatering shall be done in accordance with CDOT Spec Subsection 107.25

CONTAMINATED:
2. If discharges do not meet the above criteria a separate CDPS permit shall be obtained by the Contractor from the CDPHE. See CDOT standard special provision 250 Hazardous Waste and Contaminated Water.

2. SITE MAP COMPONENTS:

Pre-construction

A. PROJECT CONSTRUCTION POTENTIAL SITE BOUNDARIES See Erosion Control Plan – Sheet 6

B. ALL AREAS OF GROUND SURFACE DISTURBANCE See Erosion Control Plan – Sheet 6

C. AREAS OF CUT AND FILL See Erosion Control Plan – Sheet 6 – No new cuts/fills anticipated

D. LOCATION OF ALL STRUCTURAL BMPs/CONTROL MEASURES IDENTIFIED IN THE SWMP See Erosion Control Plan – Sheet 6

E. LOCATION OF NON-STRUCTURAL BMPs/CONTROL MEASURES AS APPLICABLE IN THE SWMP See Erosion Control Plan – Sheet 6

F. SPRINGS, STREAMS, WETLANDS AND OTHER SURFACE WATER See Erosion Control Plan – Sheet 6

G. PROTECTION OF TREES, SHRUBS, CULTURAL RESOURCES AND MATURE VEGETATION See Erosion Control Plan – Sheet 6

H. AREAS USED FOR STORING AND STOCKPILING OF MATERIALS, STAGING AREAS (field trailer, fueling, etc.) and BATCH PLANTS See Erosion Control Plan – Sheet 6

3. SWMP ADMINISTRATOR:

A. SWMP ADMINISTRATOR FOR DESIGN: To be filled by Contractor

Name/Title	Contact Information (phone & email)

B. SWMP ADMINISTRATOR FOR CONSTRUCTION: (As defined in CDOT Subsection 208) The Contractor shall designate a SWMP Administrator for Construction upon ownership of the SWMP. The SWMP Administrator shall become the owner/operator and assume responsibility for all design changes to the SWMP implementation and maintenance in accordance to CDOT Subsection 208.03. The SWMP Administrator shall be responsible for implementing, maintaining and revising SWMP, including the title and contact information. The activities and responsibilities of the SWMP administrator shall address all aspects of the projects SWMP. (Update the information below for each new SWMP Administrator) (Copy of TECS Certification must also be included in the SWMP Notebook.)

Name/Title	Contact Information	Certification #	Start Date	Engineer Approval

C. EROSION CONTROL INSPECTOR: (As defined in CDOT Subsection 208) The Contractor may designate an Erosion Control Inspector. The Erosion Control Inspector shall complete duties in accordance with CDOT subsection 208.03 (c) (Copy of TECS Certification must also be included in the SWMP Notebook.)

Name/Title	Contact Information	Certification #	Start Date	Engineer Approval

4. STORMWATER MANAGEMENT CONTROLS FIRST CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL PERFORM THE FOLLOWING:

A. POTENTIAL POLLUTANT SOURCES
Evaluate, identify, locate and describe all potential sources of pollutants at the site in accordance with CDOT subsection 107.25, CDPS-SCP and place in the SWMP notebook. All BMPs/Control Measures related to potential pollutants shall be shown on the SWMP site map by the Contractor's SWMP Administrator.

B. OFFSITE DRAINAGE (RUN ON WATER)
1. Describe and record BMPs/Control Measures on the SWMP site map that have been implemented to address off site run-on water in accordance with CDOT subsection 208.03.

C. VEHICLE TRACKING PAD/VEHICLE TRACKING CONTROL
1. BMPs/Control Measures shall be implemented in accordance with CDOT subsection 208.04.

D. PERIMETER CONTROL
1. Perimeter control shall be established as the first item on the SWMP to prevent the potential for pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters.
2. Perimeter control may consist of vegetation buffers, berms, silt fence, erosion logs, existing landforms, or other BMPs/Control Measures as approved.
3. Perimeter control shall be in accordance with CDOT subsection 208.04.

[APRIL 2016]

5. DURING CONSTRUCTION

RESPONSIBILITIES OF THE SWMP ADMINISTRATOR DURING CONSTRUCTION

The SWMP should be considered a "living document" that is continuously reviewed and modified. During construction, the following items shall be added, updated, or amended as needed by the SWMP Administrator in accordance with CDOT subsection 208.
During construction, indicate how items that have not been addressed during design are being handled in construction. If items are covered in the template or other sections of the SWMP notebook indicate below what section the discussion takes place.

A. STOCKPILE MANAGEMENT: Shall be done in accordance with CDOT Subsections107.25 and 208.07
B. CONCRETE WASHOUT: Concrete wash out water or waste from field laboratories and paving equipment shall be contained in accordance with CDOT subsection 208.05.
C. SAW CUTTING: Shall be done in accordance with CDOT subsection 107.25, 208.04, 208.05
D. STREET SWEEPING: Shall be done in accordance with CDOT subsection 208.04

6. INSPECTIONS

A. Inspections shall be in accordance with CDOT subsection 208.03 (c).

7. BMP/CONTROL MEASURE MAINTENANCE

A. Maintenance shall be in accordance with CDOT subsection 208.04 (f).

8. RECORD KEEPING

A. Records shall be kept in accordance with CDOT subsection 208.03 (d).

9. INTERIM AND PERMANENT STABILIZATON

A. SEEDING PLAN (Seeding provided by WestWater Engineering and is adapted from the Bureau of Land Management's Grand Junction Field Office seed menu recommendations (BLM 2012)

Soil preparation, soil conditioning or topsoil, seeding (native), mulching (weed free) and mulch tackifier will be required for an estimated 4.1 acres of disturbed area within the right-of-way limits which are not surfaced. The following types and rates shall be used:

Low Elevation Semi/Salt-Desert Grass/Shrubland, Basin big Sagebrush
(8"-10" annual precip)
Grasses Only (Required)

COMMON NAME	BOTANICAL NAME	LBS. PLS PER ACRE
Indian Ricegrass	*Achnatherum [Oryzopsis] hymenoides*	3.7
Sand Dropseed*	*Sporobolus cryptandrus*	0.1
4-Wing Saltbush	*Atriplex canescens*	2.7
Shadscale	*Atriplex confertifolia*	2.0
And At Least Two of the Following		
Salina Wildrye	*Leymus salinus*	1.0
Alkali Sacaton*	*Sporobolus airoides*	1.0
Western Wheatgrass	*Pascopyrum [Agropyron] smithii*	1.5
And at Least One of the Following		
Bottlebrush squirreltail	*Elymus elymoides, Sitanion hystrix*	2.0
Galleta	*Pleuraphis jamesii*	1.0
Purple Three-Awn	*Aristida purpurea*	1.0
TOTAL		Min – 11.5 Max - 13.0

B. SEEDING APPLICATION: Drill seed 0.25 inch to 0.5 inch into the soil. In small areas not accessible to a drill, hand broadcast or hydroseed at double the rate and rake 0.25 inch to 0.5 inch into the soil per CDOT subsection 212.

C. MULCHING APPLICATION: Apply a minimum of 2 tons of certified weed free hay or 2 1/2 tons of certified weed free straw per acre and in accordance with CDOT Section 213, and mechanically crimp it into the soil in combination with an organic mulch tackifier.
1. Prior to winter shutdown or the summer seeding window closure: Uncompleted slopes shall be mulched with 2 tons of mulching (weed free) per acre, mechanically crimped into the topsoil in combination with an organic mulch tackifier per CDOT subsections 208 and 213.

D. SPECIAL REQUIREMENTS:
1. Due to high failure rates, hydroseeding will not be allowed for permanent stabilization.

E. SOIL CONDITIONING AND FERTILIZER REQUIREMENTS: Minimum requirements for all disturbances to receive seeding (native). (Elevation: (4,520) feet)

Soil conditioner paid for as Item 212- Soil Conditioning (Acre)			
Biological nutrient organic based fertilizer (lbs/acre)*	Humate (lbs/acre)	Compost (cys/acre) **All areas <2:1** (1/2 inch depth)	Spray on Amendment (lbs/acre) **>2:1 slopes only**
300	200	65	3500

*Biological nutrient shall not exceed 8-8-8 (N-P-K).

Humate based material shall be in accordance to Standard Special Provision 212 and compost shall be in accordance to CDOT Standard Special Provision 212.

F. SOIL RETENTION COVERING: On slopes and ditches requiring a blanket or turf reinforcement mat (trm), the blanket/trm shall be placed in lieu of mulch and mulch tackifier and placed after seeding (native). See SWMP site map for blanket/trm locations.

G. RESEEDING OPERATIONS/CORRECTIVE STABILIZATION
Prior to partial acceptance.
1. All seeded areas shall be reviewed during the 14 day inspections by the SWMP Administrator and or Erosion Control Inspector for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be re-graded, seeded, and have the designated mulching applied as necessary, at no additional cost to the project.

10. PRIOR TO PROJECT FINAL ACCEPTANCE

A. Partial Acceptance shall be in accordance with CDOT subsection 107.25 (d), 208.10 and 214.04 at the Partial Acceptance of the project, it shall be determined by the SWMP Administrator and the Engineer which temporary BMPs/Control Measures shall remain until 70% revegetation is established or which shall be removed.
B. At the end of the project, all ditch checks shall either consist of temporary erosion logs (or equivalent) or permanent rip-rap.

2017/06/22 9:29 AM By: Hoover, Stu

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Issued	By	Appd.	YY.MM.DD
B FINAL CONSTRUCTION DRAWINGS	SLH	CRH	17.05.03
A DESIGN REVIEW APPLICATION	SLH	CRH	16.08.31

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
EROSION CONTROL NOTES SHEET 1 OF 3

Permit-Seal

Project Number: 205305055
File Name: 05055-C102.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C102

Revision B

11. NARRATIVES:

A. ADDITIONAL BMPS/CONTROL MEASURES AND NARRATIVES:
BMP/Control Measure details and narratives not covered by the SWMP or Standard Plan M-208, M-216 shall be added to the SWMP notebook by the SWMP Administrator.

[Apr.2016]

BMP Matrix:

1. M-Standards have been included along with standard BMP narratives. If a Non-Standard BMP will be used or the standard narrative does not apply, the SWMP Administrator shall write a Non-Standard BMP narrative, place an "X" in the column and complete a Non-Standard BMP Specification and Narrative for the SWMP notebook.
2. The SWMP Administrator shall place an "X" in the column In Use on Site when the BMP/Control Measure has been installed.
3. Place an "X" in the column BMP/Control Measure to be located by SWMP Administrator if the SWMP Administrator shall locate the BMP/Control Measure during construction. These BMP/Control Measures are not currently located on SWMP Plans but are anticipated to be used during construction (i.e. Vehicle Tracking Pad, Batch Plants, etc.). The SWMP Administrator shall locate these prior to or during construction and reflect on SWMP Map.
4. Place an "X" in the column Installation BMP/Control Measure Pre-Construction if the BMP/Control Measure is to be installed prior to construction activity.

STRUCTURAL BMPs/Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:

APPLICATION, BMP/CONTROL MEASURE	NARRATIVE	M-STANDARD (NON-STANDARD)	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATOR	INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION	BMP/CONTROL MEASURE PHASING: FIRST/INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
PROTECTION OF EXISTING WETLANDS *Fence (plastic) and erosion logs*	Fence (plastic) shall be placed in combination with erosion logs to prevent encroachment of construction traffic and sediment into state waters prior to start of construction disturbances. Fence (plastic) shall be placed adjacent to the wetlands; erosion logs shall be placed between the plastic fence and disturbance area. Logs shall be placed to direct flows away from or filter water running into wetlands from disturbance areas.					X	X	
PROTECTION OF EXISTING TREES/LANDSCAPING *Fence (plastic)*	Fence (plastic) shall be used in areas indicated in the plans to prevent encroachment of construction traffic and sediment for the protection of mature trees and/or existing landscaping prior to start of construction disturbances.					X	X	
STOCKPILE PROTECTION *Temporary berm, erosion logs, aggregate bags*	Placed within specified distance, in accordance with CDOT subsection 208.06, from toe to contain sediment around stockpile. *Aggregate bags are easily moved and replaced for access during the work day. Place prior to start of stock pile, increase control as stock pile increases size.	M-208					X	
TOE OF FILL PROTECTION *Erosion logs, temporary berm, silt fence, topsoil windrow**	Place prior to slope/embankment work to capture sediment and protect and delineate undisturbed areas. *Can be used to stockpile topsoil for salvage.	M-208				X	X	
PERIMETER CONTROL *Erosion logs, silt fence, temporary berm, topsoil windrow**	Placed prior to construction commencing to address potential run-on water from off site, and to divert around disturbed area. *Can be used to stockpile topsoil for salvage.	M-208				X	X	
SEDIMENT CONTROL/ SLOPE CONTROL *Silt fence, erosion logs*	Placed on the contour of a slope to contain and slow down construction runoff. Place prior to start of construction disturbances.	M-208				X	X	
CONCRETE WASHOUT *In-ground or fabricated*	Construction control, used for waste management of concrete and concrete equipment cleaning. Place prior to start of concrete activities.	M-208				X	X	
VEHICLE TRACKING PAD	Source control, placed to prevent tracking of sediment from disturbed area to offsite surface. Place prior to start of construction disturbances.	M-208				X	X	
SWEEPING	Source control, used to remove sediment tracked onto paved surfaces and to prevent sediment from entering drainage system. Sweep daily and at the end of the construction shift as needed. Kick brooms shall not be permitted.					X	X	
DEWATERING *(Contractor is responsible for obtaining a permit from Colorado Department of Health and Environment.)*	Shall be done in such a manner to prevent potential pollutants from entering state waters.					X	X	
TEMPORARY STREAM CROSSING *(SWMP Administrator shall add locations to SWMP site maps)*	Constructed over stream or drainage to prevent discharge of pollutants from construction equipment into water.					X	X	[Apr.2016]
CLEAN WATER DIVERSION	Placed to divert clean surface or ground water around disturbance area to prevent it from mixing with construction runoff.					X	X	
OTHER								

NON-STRUCTURAL BMPs/Control Measures that may be potentially used on the project for erosion and sediment control; practices may include, but are not limited to:
Erosion control devices are used to limit the amount of soil loss on site
Sediment control devices are designed to capture sediment on the project site.
Construction controls are BMPs/Control Measures related to construction access and staging.
BMP/Control Measure locations are indicated on the SWMP site map.

APPLICATION, BMP/CONTROL MEASURE	NARRATIVE	M-STANDARD	IN USE ON SITE	BMP/CONTROL MEASURE TO BE LOCATED BY SWMP ADMINISTRATOR	INSTALLATION BMP/CONTROL MEASURE PRE-CONSTRUCTION	BMP/CONTROL MEASURE PHASING: FIRST/INITIAL CONSTRUCTION ACTIVITIES	INTERIM CONSTRUCTION ACTIVITIES	PERMANENT STABILIZATION
VEGETATIVE BUFFER STRIP *Fence (plastic)*	Filter sediment laden runoff from disturbance area. Area to be identified on SWMP prior to construction starting.					X	X	X
LANDFORM *(SWMP Administrator shall add locations to SWMP site maps)*	Existing landforms may be used as a BMP/Control Measure if they prevent sediment from entering or leaving the disturbance area. If a landform directs flow of water to a concentrated outfall point, the outfall point shall be protected to prevent erosion. Area to be identified on SWMP prior to construction starting.					X	X	
TOPSOIL MANAGEMENT *STOCKPILE/SALVAGE*	Prior to embankment work commencing, existing topsoil shall be scraped to a depth of 4 inches, and placed in stockpiles or windrows. Upon completion of slope work/final grading (less 4 inches), topsoil shall be evenly distributed over embankment to a depth of 4 inches.					X	X	
SURFACE ROUGHENING / GRADING TECHNIQUES *Backhoe, Dozing, Combination Loader*	Temporary stabilization of disturbance and to minimize wind and erosion.						X	
SEEDING (TEMPORARY)	Temporary stabilization used for over wintering of disturbance or used to control erosion for areas scheduled for future construction.						X	
BONDED FIBER MATRIX(HYDRAULIC MULCH	Not to be used in areas of concentrated flows, i.e. ditch lines. To be used in combination with surface roughening for temporary stabilization of disturbed soils, when work is temporarily halted and as approved by the Engineer. May be used as surface cover for temporary topsoil stockpiles.						X	
MULCH/MULCH TACKIFIER	Temporary or Final Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer						X	X
SPRAY-ON MULCH BLANKET (Not to be used in areas of concentrated flows, i.e. ditch lines.)	Temporary or Final Stabilization placed as a surface cover for erosion control and or seeding establishment. To be installed as temporary surface cover when work is temporarily halted and as approved by the Engineer						X	X
SEEDING PERMANENT (NATIVE)	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.							X
SOIL RETENTION BLANKET (SRB)	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas.	M-216					X	X
TURF REINFORCEMENT MAT (TRM)	Final Stabilization of disturbance and to reduce runoff and control erosion on disturbed areas. Placed in channels or on slopes for erosion control, channel liner and seeding establishment.	M-216					X	X
OTHER								

12. TABULATION OF STORMWATER QUANTITIES

A. BMP/Control Measure sediment removal and disposal shall be paid for as: 208 Removal and Disposal of Sediment (Equipment) and 208 Removal and Disposal of Sediment (Labor). All other BMP/Control Measure maintenance shall be included in the cost of the BMP/Control Measure.

B. It is estimated that 40 hours of labor may be required for miscellaneous erosion control work as directed by the Engineer. Work shall be paid for as 203 Labor.

C. Establishment of seeded areas shall be paid for as: 212 Seeding (native) This shall include mowing, weed control, reseeding/mulch/tackifier.

Spec.	Pay Item	Description	Pay Unit	Initial Const.	Interim Const.	Permanent Stabilization	*Total Quantity
SSP	203-02330	Laborer	Hour	40			
PSP	207-00205	Topsoil	CY	2500			
PSP	207-00210	Stockpile Topsoil	CY	2500			
SSP	208-00004	Silt Berm	LF				
SSP	208-00013	Erosion Log Type 1 (20 inch)	LF				
SSP	208-00020	Silt Fence	LF				
		Soil Lifts (3' High)	LF	100			
SSP	208-00033	Sediment Trap	Each				
SSP	208-00046	Pre-fabricated Concrete Washout Structure	Each	2			
SSP	208-00051	Storm Drain Inlet Protection (Type II)	LF	20			
SSP	208-00070	Vehicle Tracking Pad	Each	2			
SSP	208-00103	Removal and Disposal of Sediment (Labor)	Hour				
SSP	208-00105	Removal and Disposal of Sediment (Equipment)	Hour				

[Apr.2016]

Spec.	Pay Item	Description	Pay Unit	Initial Const.	Interim Const.	Permanent Stabilization	*Total Quantity
SSP	208-00106	Sweeping (Sediment Removal)	LS				
SSP	208-00107	Removal of Trash	LS				
SSP	208-00207	Erosion Control Management (ECM)	LS	1			
SSP	208-00300	Temporary Berm	LF				
SSP	208-00301	Temporary Diversion (Coffer Dam)	LF	500			
SSP	208-00520	Temporary Stream Crossing	LS	1			
SSP	212-00006	Seeding (Native)	Acre	4.1			
SSP	212-00009	Seeding (Temporary)	Acre				
SSP	212-00032	Soil Conditioning	Acre	4.1			
SSP	213-00002	Hydraulic Mulching	Acre	4.1			
SSP	213-00061	Mulch Tackifier	LB				
SSP	213-00150	Bonded Fiber Matrix	Acre				
SSP	213-00151	Bonded Fiber Matrix	LB				
PSP	214-00000	Landscape Maintenance	LS	1			
SSP	216-00301	Turf Reinforcement Mat (Class1)	SY				
PSP	217-00000	Herbicide Treatment	SY				
SSP	607-11525	Fence (Plastic)	LF				
PSP	700-70380	Erosion Control	FA				

*It is anticipated that additional BMPs/Control Measures and BMP/Control Measure quantities not shown on the SWMP Site Maps shall be required on the project for unforeseen conditions and replacement of items that are beyond their useful service life, see CDOT subsection 208.03 and 208.04. **Quantities for all BMPs/Control Measures shown above are estimated, and have been increased for unforeseen conditions and normal BMP/Control Measure life expectancy.** Quantities shall be adjusted according to the conditions encountered in the field as directed and approved by the Engineer. Payment shall be for the actual work completed and material used.

[Apr.2016]

13. BIOLOGIC IMPACTS

A. ENVIRONMENTAL IMPACTS:
1. Wetland Impacts: YES
2. Stream Impacts: YES
3. Threatened and Endangered Species: Federally listed, candidate and proposed species potentially occurring in within the proposed action area in Mesa County, Colorado (Table 1) were reviewed (USFWS 2015). A Biological Assessment accompanies this PCN for submittal to U.S. Fish and Wildlife Service.

Table 1. Federally-Listed, Proposed or Candidate Species Potentially Occurring Within Mesa County, CO

Species and Status	*Habitat*	*Area of Influence/Project Site*: *Suitable Habitat*	*Species Documented*
BIRDS			
Gunnison Sage-grouse* (Centrocercus minimus) Threatened	Broad, continuous big sagebrush habitat on flat or gently sloping terrain south of the Colorado River.	No	No
Mexican spotted owl* (*Strix occidentalis lucida*) Threatened	Old growth forests and extensive rocky canyon habitat with cliffs.	No	No
Yellow-billed Cuckoo (*Coccyzus americanus*) Threatened	Old growth riparian woodlands (cottonwood galleries) with dense understories.	Yes	No
FISH			
Colorado pikeminnow (*Ptychocheilus lucius*) Endangered	Colorado River, downstream from Rifle, Colorado.	Yes	Yes
Razorback sucker (*Xyrauchen texanus*) Endangered	Colorado River, downstream from Rifle, Colorado.	Yes	Yes
Bonytail (*Gila elegans*) Endangered	Lower Colorado River, primarily Grand Valley and to the west.	Yes	Yes
Humpback chub (*Gila cypha*) Endangered	Lower Colorado River, primarily Grand Valley and to the west.	Yes	Yes
Greenback cutthroat trout* (*Oncorhynchus clarki stomias*) Threatened	Cold water streams, Grand Mesa area including Cache Creek on the north side of Battlement Mesa.	No	No

Table 1. Federally-Listed, Proposed or Candidate Species Potentially Occurring Within Mesa County, CO

Species and Status	*Habitat*	*Area of Influence/Project Site*: *Suitable Habitat*	*Species Documented*
PLANTS			
DeBeque phacelia* (*Phacelia submutica*) Threatened	Sparsely vegetated, steep slopes in chocolate-brown, gray, or red clay on Atwell Gulch and Shire Members, Wasatch Formation. Soils often have large cracks because of the high shrink-swell potential of the clays; desert shrubland with four wing saltbush, shadscale, greasewood, broom snakeweed, bottlebrush squirreltail and Indian ricegrass, grading upward into scattered junipers; 4,700-6,200 ft.	No	No
Colorado hookless cactus* (*Sclerocactus glaucus*) Threatened	Rocky hills, mesa slopes, and alluvial benches in salt desert shrub communities; often with well-formed microbiotic crusts; can occur in dense cheatgrass; with shadscale, galleta grass, black sagebrush, Indian ricegrass grading upward into big sagebrush and sagebrush/pinyon-juniper; 4,500-6,000 ft.	No	No

* These species were considered but dropped from further detailed analysis because they were not detected during surveys conducted for this project and are not known to occur within the project vicinity and/or would not be affected by project development.

Table 1. Federally-Listed, Proposed or Candidate Species Potentially Occurring Within Mesa County, CO

Species and Status	*Habitat*	*Area of Influence/Project Site*: *Suitable Habitat*	*Species Documented*
BIRDS			
Gunnison Sage-grouse* (Centrocercus minimus) Threatened	Broad, continuous big sagebrush habitat on flat or gently sloping terrain south of the Colorado River.	No	No
Mexican spotted owl* (*Strix occidentalis lucida*) Threatened	Old growth forests and extensive rocky canyon habitat with cliffs.	No	No
Yellow-billed Cuckoo (*Coccyzus americanus*) Threatened	Old growth riparian woodlands (cottonwood galleries) with dense understories.	Yes	No

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Revision	By	Appd.	YY.MM.DD
3 - TWA CONSTRUCTION DRAWINGS	SJH	CRH	17.05.03
A - DEBE REVIEW APPLICATION	SJH	CRH	16.08.31

Issued By Appd. YY.MM.DD

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
EROSION CONTROL NOTE SHEET 2 OF 3

Permit-Seal

Project Number: 205305055
File Name: 05055-C102.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C103
Revision B
Sheet 8 of 17

[April 2016]

Species and Status	Habitat	Area of Influence/Project Site	
		Suitable Habitat	Species Documented
Table 1. Federally-Listed, Proposed or Candidate Species Potentially Occurring Within Mesa County, CO			
FISH			
Colorado pikeminnow (*Ptychocheilus lucius*) Endangered	Colorado River, downstream from Rifle, Colorado.	Yes	Yes
Razorback sucker (*Xyrauchen texanus*) Endangered	Colorado River, downstream from Rifle, Colorado.	Yes	Yes
Bonytail (*Gila elegans*) Endangered	Lower Colorado River, primarily Grand Valley and to the west.	Yes	Yes
Humpback chub (*Gila cypha*) Endangered	Lower Colorado River, primarily Grand Valley and to the west.	Yes	Yes
Greenback cutthroat trout* (*Oncorhynchus clarki stomias*) Threatened	Cold water streams, Grand Mesa area including Cache Creek on the north side of Battlement Mesa.	No	No
PLANTS			
DeBeque phacelia* (*Phacelia submutica*) Threatened	Sparsely vegetated, steep slopes in chocolate-brown, gray, or red clay on Atwell Gulch and Shire Members, Wasatch Formation. Soils often have large cracks because of the high shrink-swell potential of the clays; desert shrubland with four wing saltbush, shadscale, greasewood, broom snakeweed, bottlebrush squirreltail and Indian ricegrass, grading upward into scattered junipers; 4,700-6,200 ft.	No	No
Colorado hookless cactus* (*Sclerocactus glaucus*) Threatened	Rocky hills, mesa slopes, and alluvial benches in salt desert shrub communities; often with well-formed microbiotic crusts; can occur in dense cheatgrass; with shadscale, galleta grass, black sagebrush, Indian ricegrass grading upward into big sagebrush and sagebrush/pinyon-juniper; 4,500-6,000 ft.	No	No

* These species were considered but dropped from further detailed analysis because they were not detected during surveys conducted for this project and are not known to occur within the project vicinity and/or would not be affected by project development.

4. If YES to any of the above items, are any permits required or additional actions needed (404, etc.)
404 permit has been approved. SPK-2016-00171

[April 2016]

14. NOTES

A) Wetland Top Soil Handling Techniques

The top 12 inches of wetland topsoil containing plant root stock and seed will be stripped from the impacted wetlands and redistributed upon completion of the pipeline installation (CNAP 1998). Wetland topsoil will be handled with care by avoiding compaction of undisturbed or stockpiled soils to protect the rhizomes, seed, and propagule sources. If wetland topsoil will need to be temporarily stored, it will be stockpiled in linear rows no greater than 3 feet high and 3 feet wide and not allowed to dry out (NRCS 2008). Covering the stockpiles may be necessary to keep the soil moist and prevent noxious weed infestations.

It is expected that salvaged topsoil will yield a valuable seed source and root stock and should establish quickly. Seeding of wetland species should only be used as a supplemental revegetation technique to the salvaged wetland top soil plant source

B) Re-Fueling

A lined re-fueling station will be established a minimum of 100 feet from the water's edge of the Colorado River and Persigo Wash. Adequate spill response equipment will be present at the refueling station. Gas will be transported in ANSI approved containers. Funnels will be used to re-fill tanks and wind blocks created in re-fueling under windy conditions

C) Site Re-establishment

- Prior to delivery to the site, equipment will be cleaned of soils remaining from previous construction sites which may be contaminated with noxious weeds.
- Equipment and material handling will be done on established sites to reduce the area and extent of soil compaction.
- Top soil, where present, will be segregated from deeper soils and replaced as top soil on the final grade, a process known as live topsoil handling. Wetland topsoil will be stored separately from upland top soil. (See the below wetland soil handling techniques)
- If stored longer than one growing season, upland topsoil stockpiles should be seeded with non-invasive sterile hybrid grasses for stabilization.
- Soil disturbance by heavy equipment in wetland areas will be minimized by using mats and other appropriate measures.
- No temporary fills will be stored in wetland areas. Native material removed during trench excavation from wetland areas will be stored in an upland location, detailed in the erosion control plan. However, if it is deemed necessary to place temporary fill material into wetland areas during the construction process, a horizontal marker will be used to delineate the existing ground elevation in order to ensure all temporary fill material is removed and the wetland is returned to its original grade.
- Cut-off collars will be placed on all wetland and stream crossings to prevent back washing (seed vector) and to ensure that soil moisture conditions are not impacted after construction so that native plants can re-establish from the existing seed bank
- All exposed soils and fill material below the ordinary high water mark will be permanently stabilized at the earliest practicable date.
- After construction wetland soils will be spread 6 inches to 12 inches deep in areas where wetlands were disturbed during construction.
- After construction, disturbed areas (with the exception of wetland areas) will be immediately reseeded with the seed mix provided in the BA.

- Flows in the Colorado River and Persigo Wash will not be impeded and low flows will be maintained during project construction. A soil coffer dam would be installed in the Colorado River to direct flows away from the construction area. To maintain low flows through Persigo Wash while the temporary access road is in use, a 54" CMP will be installed into the wash and the road crossing constructed above.
- All efforts to minimize restriction and acceleration of water from the installation and removal of the coffer dam into the Colorado River and the 54" CMP into Persigo Wash will be made.
- The pre-construction course, condition, capacity, and location of the Colorado River or Persigo Wash will not be altered by the project.
- Side slopes of Persigo Wash will be graded to match the existing slopes upon removal of the 54" CMP.

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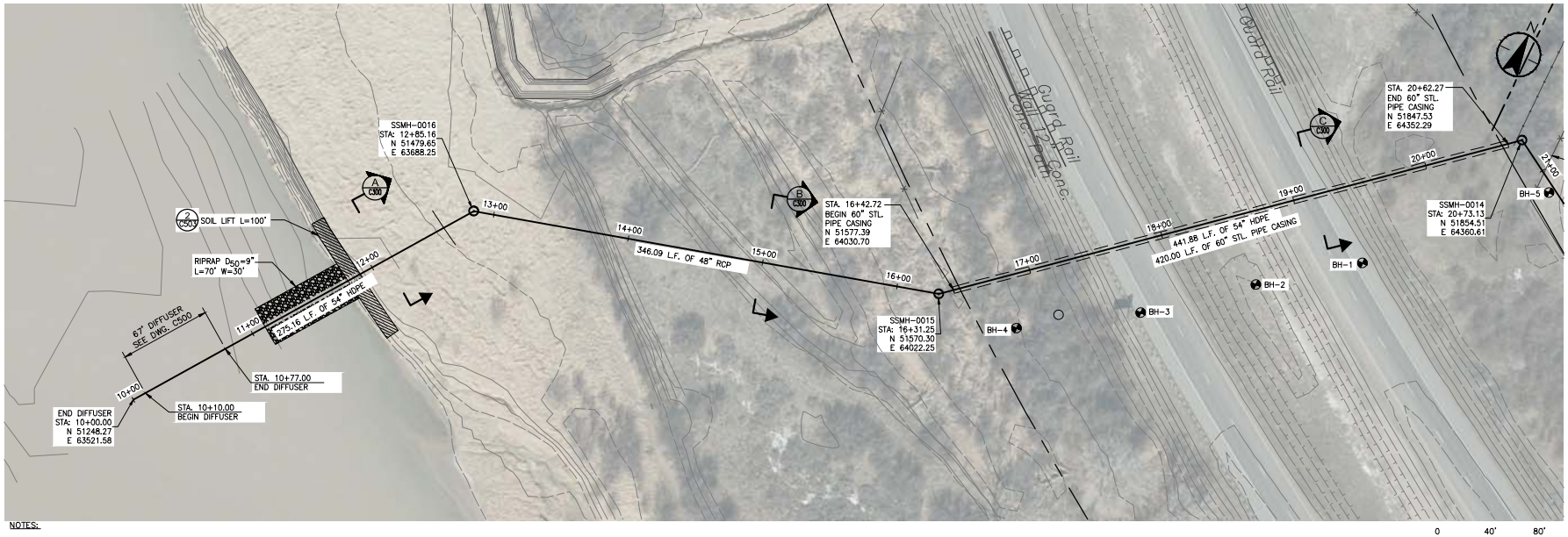
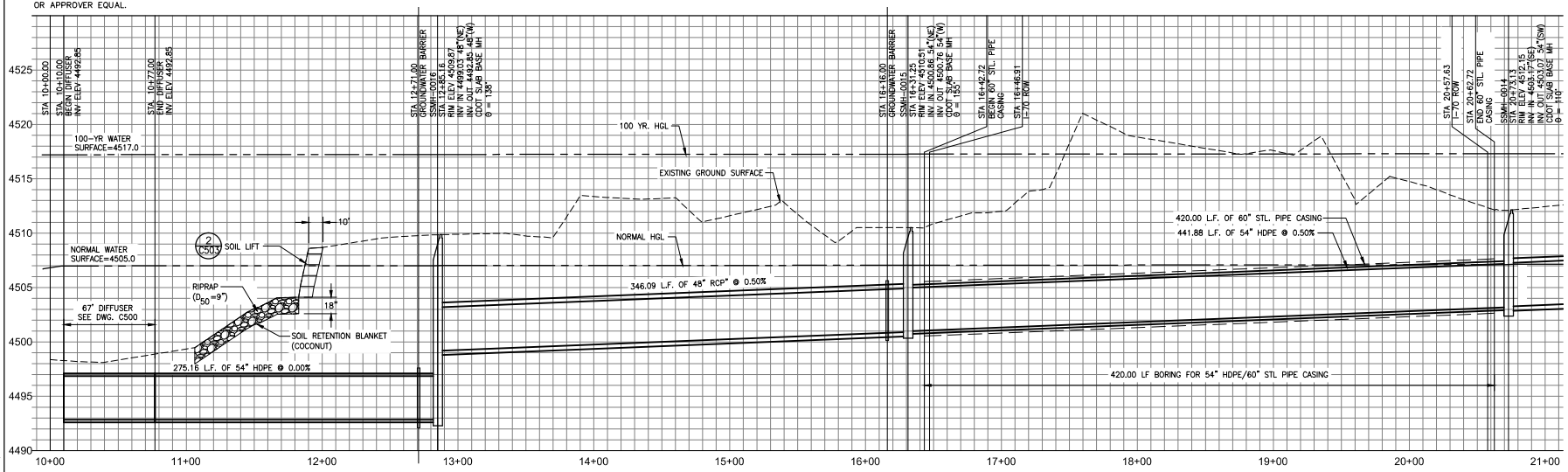


NOTES:

1. HGL BASED ON 100 YR. TAILWATER OF 4517 IN THE COLORADO RIVER. ELEVATION OF HGL DOES NOT REFLECT ELEVATION OF RIVER DURING CONSTRUCTION.
2. HGL SHOWN ONLY REFLECTS ELEVATION USED FOR DESIGN OF OUTFALL.
3. ALL WORK MUST REMAIN OUTSIDE CDOT ROW AT ALL TIMES WITH THE EXCEPTION OF TRENCHLESS CONSTRUCTION.
4. ALL MANHOLES SHALL HAVE LOCKING LIDS. LIDS SHALL BE NEENAH R-1574 OR APPROVER EQUAL.

HORIZONTAL 0 40' 80' 1"=40'

VERTICAL 0 5' 10' 1"=10'



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Issued	By	Appd.	YY.MM.DD
A Initial Review Application	SLH	CRH	16.08.31
B TRC CONSTRUCTION DRAWINGS	SLH	CRH	17.05.03

Revision	By	Appd.	YY.MM.DD

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
OUTFALL PIPELINE PLAN AND PROFILE
STA. 10+00.00 TO 20+83.66

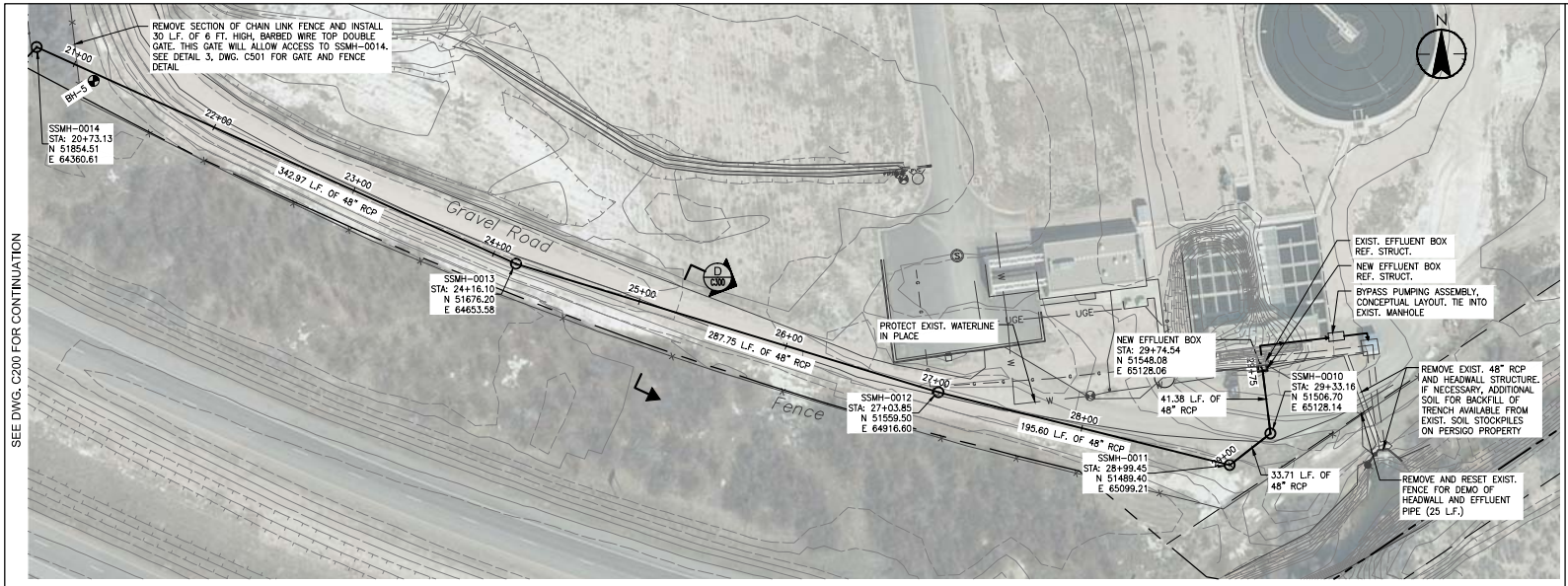
Permit-Seal

Project Number: 205305055
File Name: 05055-C200-201.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C200
Revision B
Sheet 10 of 17

SEE DWG. C200 FOR CONTINUATION

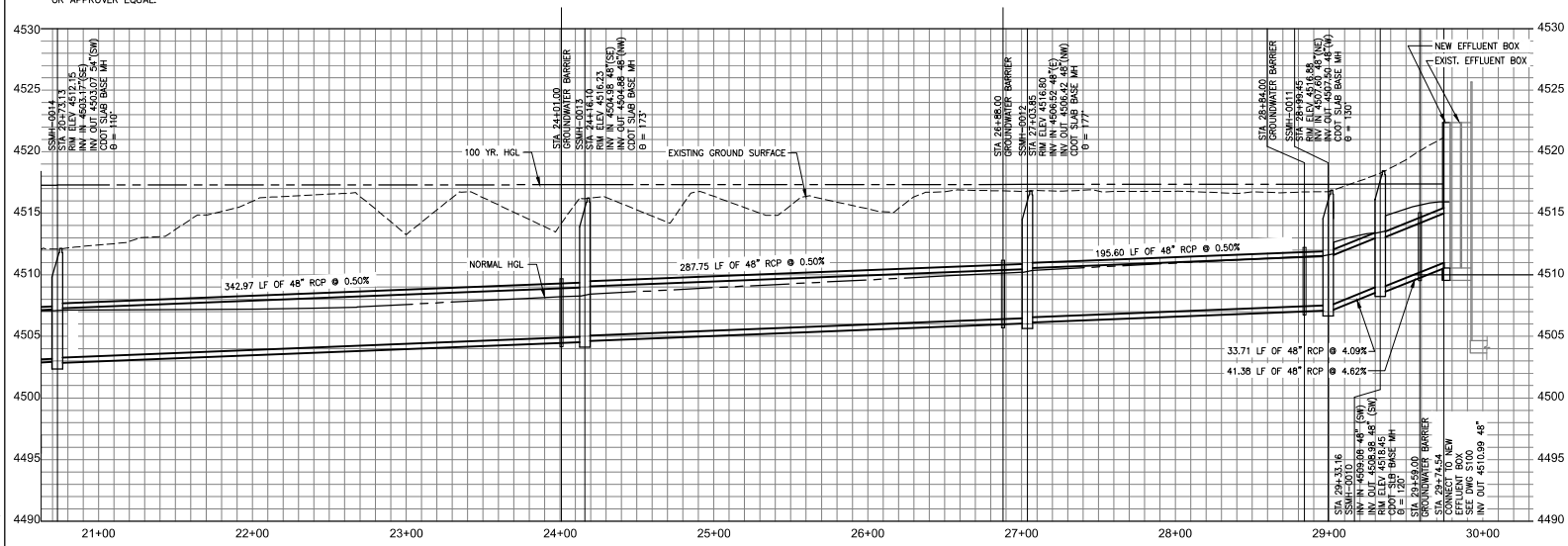


NOTES:

1. HGL BASED ON 100 YR. TAILWATER OF 4517 IN THE COLORADO RIVER. ELEVATION OF HGL DOES NOT REFLECT ELEVATION OF RIVER DURING CONSTRUCTION.
2. HGL SHOWN ONLY REFLECTS ELEVATION USED FOR DESIGN OF OUTFALL.
3. ALL WORK MUST REMAIN OUTSIDE CDOT ROW AT ALL TIMES WITH THE EXCEPTION OF TRENCHLESS CONSTRUCTION.
4. ALL MANHOLES SHALL HAVE LOCKING LIDS. LIDS SHALL BE NEENAH R-1574 OR APPROVER EQUAL.

HORIZONTAL 0 40' 80' 1"=40'

VERTICAL 0 5' 10' 1"=10'



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Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
A DESIGN REVIEW APPLICATION	SLH	CRH	17.05.03
B TRAN CONSTRUCTION DRAWINGS	SLH	CRH	16.08.31

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

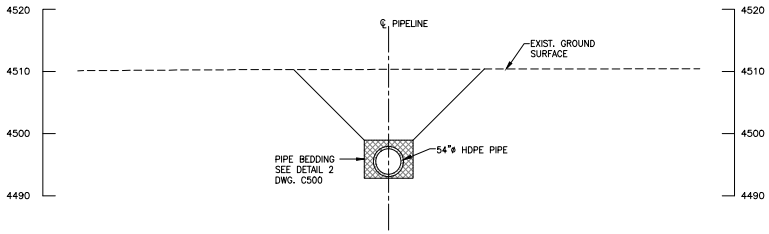
Title
OUTFALL PIPELINE PLAN AND PROFILE
STA. 20+83.66 TO 30+00.00

Permit-Seal

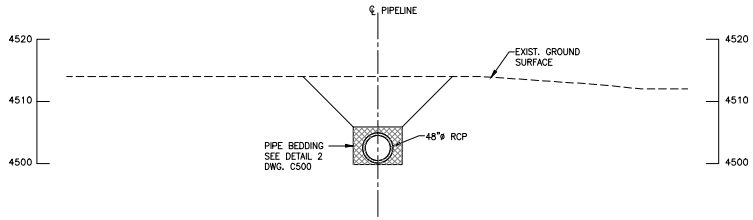
Project Number: 205305055
File Name: 05055-C200-201.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

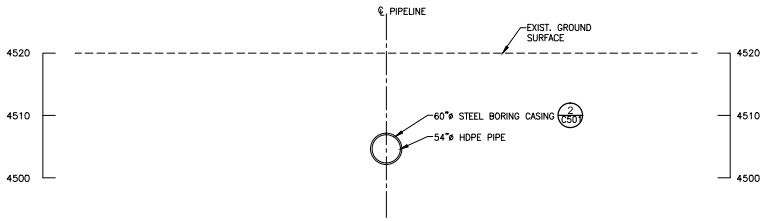
Drawing No. C201
Revision B
Sheet 11 of 17



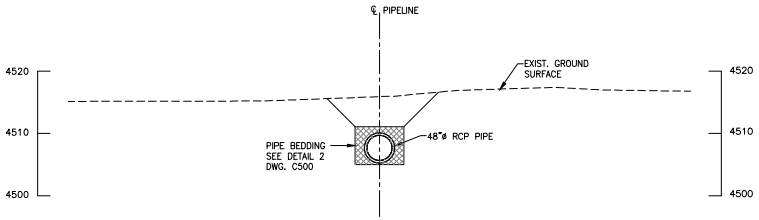
SECTION A
STATION 10+77 TO 12+85.16



SECTION B
STATION 12+85.16 TO 16+31.25



SECTION C
STATION 16+31.25 TO 20+73.13



SECTION D
STATION 20+73.13 TO 29+74.54

0 10' 20'
1"=10'

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Issued	By	Appd.	YY.MM.DD
A ISSUED FOR REVIEW APPLICATIONS	SLH	CRH	17.05.03
B FOR CONSTRUCTION DRAWINGS	SLH	CRH	16.08.31

Revision

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY

PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

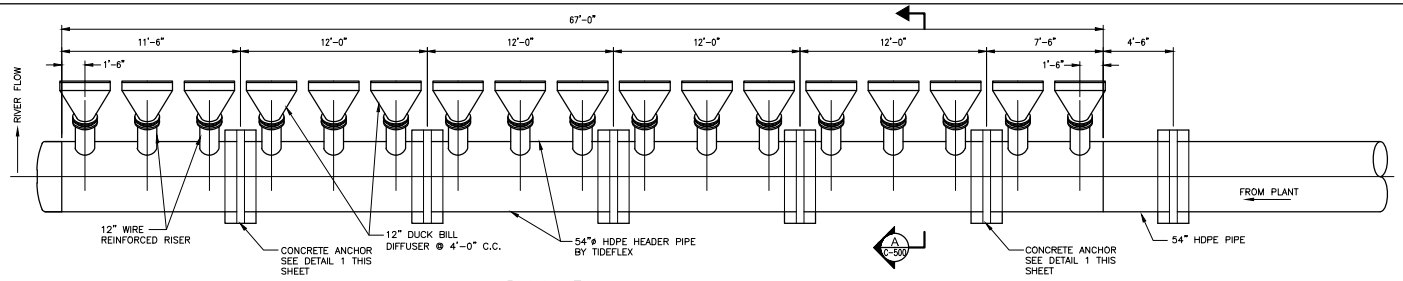
Title
PIPELINE SECTIONS

Permit-Seal

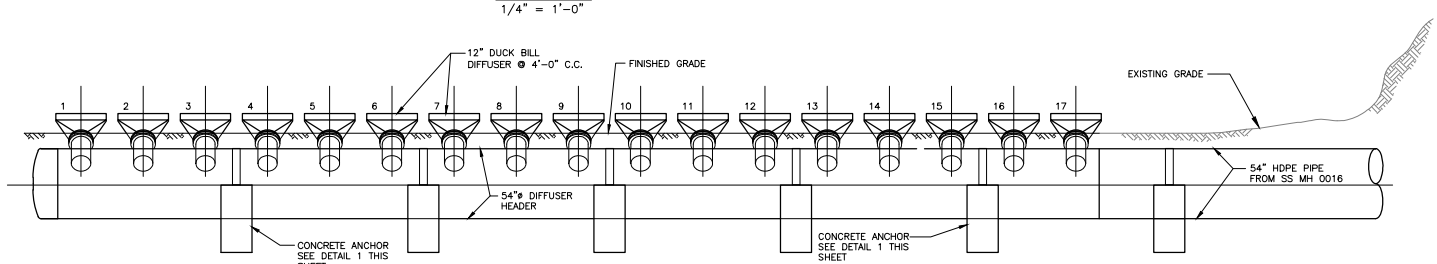
Project Number: 205305055
File Name: 05055-C300.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

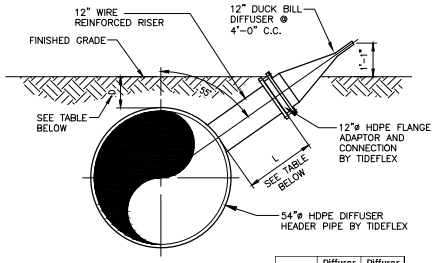
Drawing No. C300
Revision B
Sheet 12 of 17



PLAN VIEW
1/4" = 1'-0"



ELEVATION VIEW
1/4" = 1'-0"



Diffuser ID	Diffuser Depth "D" (ft)	Diffuser Extension "L" (ft)
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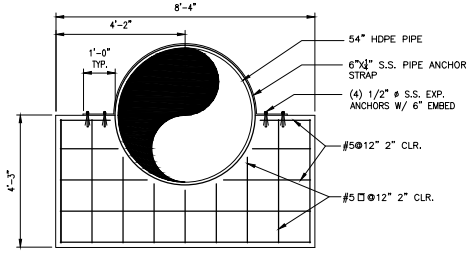
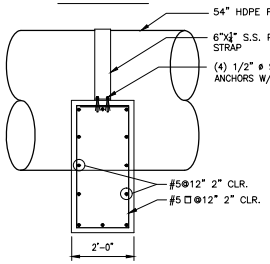
2	0.5	1.64
3	0.5	1.64
4	0.5	1.64
5	0.5	1.64
6	0.5	1.64
7	0.5	1.64
8	0.5	1.64
9	0.5	1.64
10	0.5	1.64
11	0.5	1.64
12	0.5	1.64
13	0.6	1.78
14	0.7	1.92
15	0.8	2.06
16	0.9	2.20
17	1	2.35

A SECTION
DIFFUSER LAYOUT
1/2" = 1'-0"

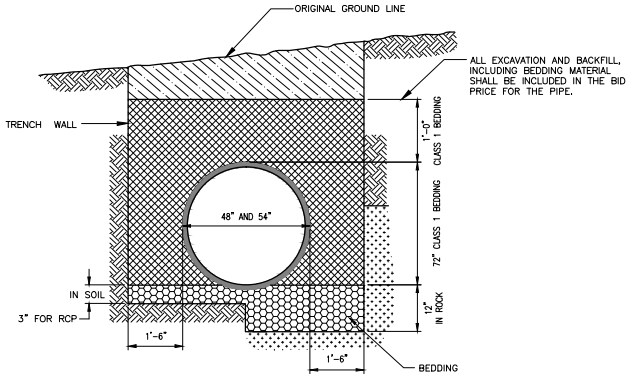


FRONT VIEW



SIDE VIEW

1 DETAIL
CONCRETE ANCHOR BLOCK
N.T.S.



- THE BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3 IN. OF LOOSE STRUCTURE BACKFILL (CLASS 1). BEDDING IS NOT REQUIRED FOR FLEXIBLE PIPE IN SOIL. BEDDING MATERIAL FOR RIGID OR FLEXIBLE PIPE IN ROCK SHALL BE 12 IN. OF LOOSE STRUCTURE BACKFILL, CLASS 1.

2 DETAIL
PIPE IN TRENCH
N.T.S.

0 1'-0" 2'-0" 4'-0"
1/2" = 1'-0"

0 2'-0" 4'-0" 8'-0"
1/4" = 1'-0"

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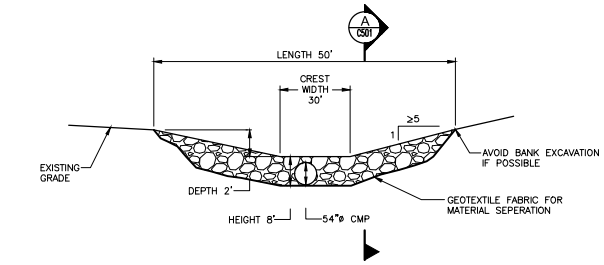
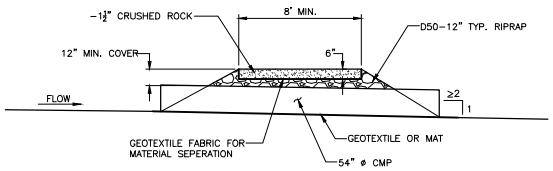
Revision	By	Appd.	

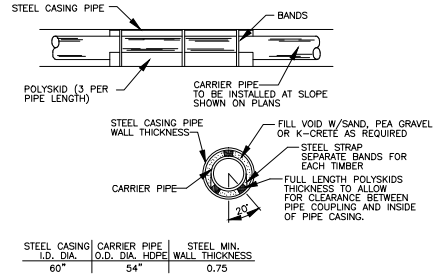


CULVERT CROSSING SECTION



SECTION A

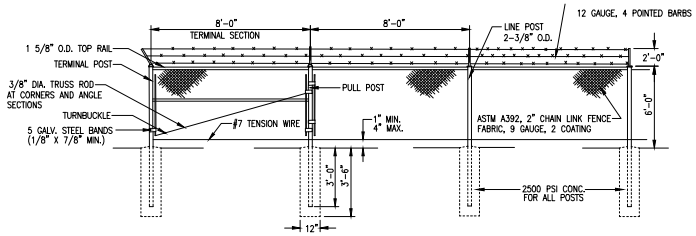
1 DETAIL
TEMPORARY STREAM CROSSING (TSC)
SEE DWG. C101
N.T.S.



STEEL CASING I.D. DIA.	CARRIER PIPE O.D. DIA. HDPE	STEEL MIN. WALL THICKNESS
60"	54"	0.75

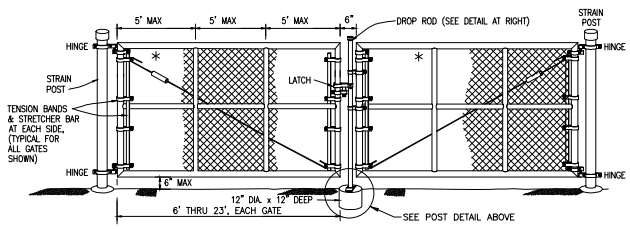
NOTES:
1. FINAL BORING DETAILS SHALL BE AS REQUIRED FROM CDOT.
2. APPROVED WORK PERMITS SHALL BE OBTAINED PRIOR TO COMMENCING WORK.
3. ALL PIPE JOINTS WITHIN THE PIPE CASING SHALL BE RESTRAINED PIPE JOINTS.

2 DETAIL
CASING PIPE INSTALLATION
N.T.S.

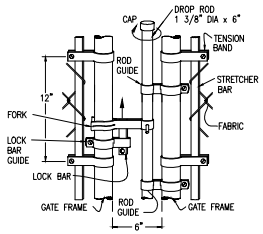


TYPICAL FENCE INSTALLATION

NOTES:
1. BOTTOM TENSION WIRESHALL BE 7 GAUGE ATTACHED WITH 12 GAUGE HOG RINGS, 12" C.C.
2. TOP RAIL COUPLINGS SHALL BE SPACED EVERY 20'.EXPANSION COUPLINGS SHALL BE AT 100' INTERVALS.
3. TOP RAIL WIRE TIES SHALL BE SPACED 24" MAX.
4. FENCE SHALL CONFORM WITH W.D.O.T STANDARDS INCLUDING LATEST REVISIONS.
5. CONTRACTOR TO PROVIDE SHOP DRAWING FOR GATES PRIOR TO BEGINNING WORK.



VEHICLE GATE



TYPICAL DROP ROD ASSEMBLY

3 DETAIL
CHAIN LINK FENCE
N.T.S.

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Issued	By	Appd.	YY.MM.DD
A ISSUED FOR REVIEW APPLICATION	SLH	CRH	17.05.03
B FINAL CONSTRUCTION DRAWINGS	SLH	CRH	16.08.31

Revision	By	Appd.	YY.MM.DD

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY
PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

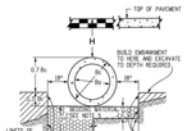
Title
DETAILS

Permit-Seal

Project Number: 205305055
File Name: 05055-C501.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. C501
Revision B
Sheet 14 of 17



NOTE: Bc IS THE OUTSIDE DIMENSION FOR DIAMETER, SPAN OR RISE.

PIPE INSTALLATION
(WITH 0.7 PROJECTION RATIO)

CIRCULAR (CIR)				VERTICAL ELLIPTICAL (VE)				HORIZONTAL ELLIPTICAL (HE)			
PIPE SIZE-Bc INSIDE DIA.	WALL THICKNESS	0.3 Bc OUTSIDE DIA.		SPAN	RISE	WALL THICKNESS	0.3 OUTSIDE RISE	SPAN	RISE	WALL THICKNESS	0.3 OUTSIDE RISE
IN.		FT.		IN.			FT.	IN.			FT.
12	2	0.40									
15	2-1/4	0.49									
18	2-1/2	0.58						23	14	2-3/4	0.49
21	2-3/4	0.66									
24	3	0.75						30	19	3-1/4	0.66
27	3-1/4	0.84						34	22	3-1/2	0.73
30	3-1/2	0.92						38	24	3-3/4	0.79
33	3-3/4	1.01									
36	4	1.10		29	45	4-1/2	1.35	45	29	4-1/2	0.95
42	4-1/2	1.28		34	53	5	1.58	53	34	5	1.10
48	5	1.45		38	60	5-1/2	1.78	60	38	5-1/2	1.23
54	5-1/2	1.62		43	68	6	2.00	68	43	6	1.38
60	6	1.80		48	76	6-1/2	2.23	76	48	6-1/2	1.53
66	6-1/2	1.97		53	83	7	2.43	83	53	7	1.68
72	7	2.15		58	91	7-1/2	2.65	91	58	7-1/2	1.83
78	7-1/2	2.33		63	98	8	2.85	98	63	8	1.98
84	8	2.50		68	106	8-1/2	3.08	106	68	8-1/2	2.13
90	8-1/2	2.68		72	113	9	3.28	113	72	9	2.25
96	9	2.85		77	121	9-1/2	3.50	121	77	9-1/2	2.40
102	9-1/2	3.02		82	128	9-3/4	3.69	128	82	9-3/4	2.54
108	10	3.20		87	136	10	3.90	136	87	10	2.68

△ ALSO EQUIVALENT ROUND DIMENSION FOR ELLIPTICAL PIPE.

DIMENSIONS FOR REINFORCED CONCRETE PIPE
(FOR INFORMATION ONLY)

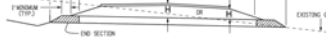
GENERAL NOTES

REINFORCED CONCRETE PIPE

1. FILL HEIGHTS GREATER THAN MAXIMUM ALLOWED IN THE HEIGHTS OF FILL TABLE ON THIS SHEET REQUIRE SPECIAL DESIGN OF STRUCTURE.
2. PIPE DESIGN IS BASED ON SAFETY FACTOR OF 1.33 ON ULTIMATE STRENGTH.
3. THE HEIGHTS OF FILL OVER TOP OF PIPE ARE BASED ON UNIT WEIGHT OF SOIL AT 120 LBS. PER CUBIC FT.
4. PIPE CLASS IS DETERMINED FROM 0.01 IN. CRACK D-LOAD.
5. BEDDING IS CLASS B (MODIFIED) FROM CONCRETE PIPE DESIGN MANUAL-AMERICAN CONCRETE PIPE ASSOCIATION WITH SETTLEMENT RATIO R = 0.5 and (YIELDING BED). BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 2 IN. LOOSE THICKNESS STRUCTURE BACKFILL CLASS 2. BEDDING MATERIAL FOR RIGID PIPE IN ROCK SHALL BE 12 IN. LOOSE THICKNESS STRUCTURE BACKFILL CLASS 1.
6. CHANGES IN DESIGN FACTORS REQUIRE COMPENSATING CHANGES IN PIPE DESIGN.
7. MINIMUM WALL THICKNESS DIMENSIONS ARE BASED ON AASHTO M 170 (WALL B) FOR CIRCULAR PIPE, AND AASHTO M 207 FOR ELLIPTICAL PIPE.
8. SPACING FOR MULTIPLE PIPE INSTALLATIONS SHALL CONFORM TO THE DETAILS SHOWN ON STANDARD PLAN M-206-1.
9. WHEN A PIPE IS TO BE EXTENDED, THE SAME PIPE MATERIAL AND SIZE AS IN THE ORIGINAL PIPE INSTALLATION SHALL BE USED.

NONREINFORCED CONCRETE PIPE

1. AT THE OPTION OF THE CONTRACTOR, NONREINFORCED CONCRETE PIPE CONFORMING TO AASHTO M 86 MAY BE USED IN LIEU OF REINFORCED CONCRETE PIPE FOR ALL SIZES 36 INCHES IN DIAMETER AND SMALLER. THE NONREINFORCED CONCRETE PIPE SHALL MEET THE SAME D-LOAD TO PRODUCE THE ULTIMATE LOAD UNDER THE THREE-EDGE BEARING METHOD AS SPECIFIED FOR REINFORCED CONCRETE PIPE IN CONFORMANCE WITH AASHTO M 170. THE CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION OF CONFORMANCE. THE WALL THICKNESS OF THE NONREINFORCED PIPE MAY BE INCREASED AS REQUIRED TO MEET D-LOAD REQUIREMENT.
2. ALL REQUIREMENTS FOR REINFORCED CONCRETE PIPE, EXCEPT THOSE REFERRING TO REINFORCEMENT, SHALL APPLY TO NONREINFORCED CONCRETE PIPE.

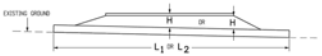


END SECTION

CONCRETE PIPE WITH END SECTIONS

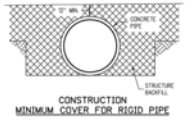
NOTE: USE THE H THAT IS GREATER FOR MAXIMUM ALLOWABLE FILL HEIGHT.

H = HEIGHT OF FILL OVER TOP OF PIPE, INCLUDING PAVEMENT THICKNESS.
L_1 = LENGTH OF PIPE TO BE MEASURED WHEN PLACED IN ACCORDANCE WITH SECTION 624.
L_2 = LENGTH OF PIPE TO BE MEASURED WHEN PLACED IN ACCORDANCE WITH SECTION 603.



CONCRETE PIPE WITHOUT END SECTIONS

NOTE: USE THE H THAT IS GREATER FOR MAXIMUM ALLOWABLE FILL HEIGHT.



CONSTRUCTION
MINIMUM COVER FOR RIGID PIPE

TYPE OF PIPE	HEIGHT OF FILL OVER TOP OF PIPE, H (FEET)			
	CLASS OF PIPE		0.01 IN. CRACK D-LOAD	
	CLASS CIR II CLASS VE II CLASS HE II 3000 D	CLASS CIR III CLASS VE III CLASS HE III 1350 D	CLASS CIR IV CLASS VE IV 2000 D	CLASS CIR V CLASS VE V CLASS HE V 3000 D 4000 D
CIRCULAR (CIR)	1 TO 18	1 TO 25	± 25 TO 37	± 37 TO 45
VERTICAL ELLIPTICAL (VE)	1 TO 18	1 TO 25	± 25 TO 37	± 37 TO 45 ± 45 TO 62
HORIZONTAL ELLIPTICAL (HE)	1 TO 18	1 TO 25	± 25 TO 37	

ALLOWABLE RANGE OF HEIGHTS FOR FILL OVER REINFORCED CONCRETE PIPE
(ALL SIZES)

Computer File Information	Sheet Revisions		
Creation Date: 07/04/12 Initials: DLM	Date:	Comments	
Last Modification Date: 01/02/14 Initials: LTA	3/25/14	Note Bc, Color to Gray, Pipe Material Labels, Dimensions	
Full Path: www.coloradodot.info/business/designsupport	4/11/14	Changed "Bc" to 1.5x Height Table.	
Drawing File Name: 603020003.dgn			
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English			

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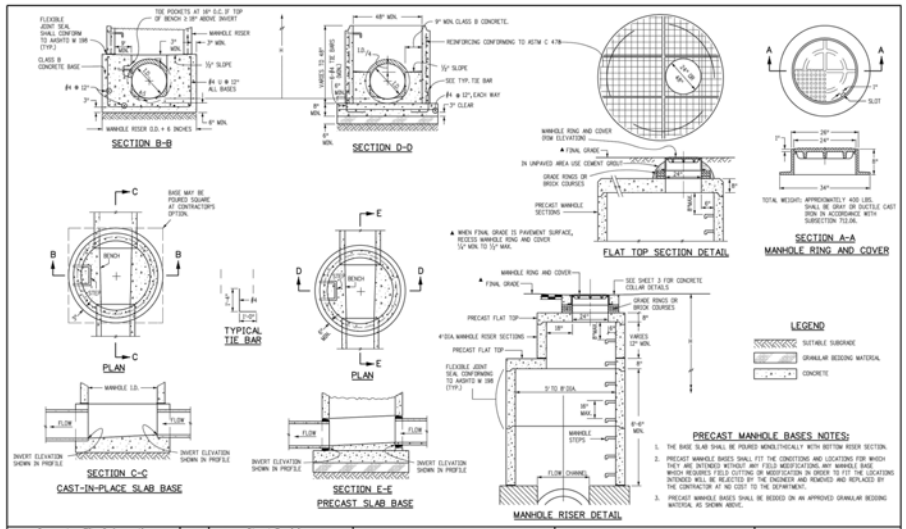
Division of Project Support DLM/LTA

REINFORCED CONCRETE PIPE

Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
M-603-2
Sheet No. 1 of 1



PRECAST MANHOLE BASES NOTES:

1. THE BASE SLAB SHALL BE POURED MONOLITHICALLY WITH BOTTOM RISER SECTION.
2. PRECAST MANHOLE BASES SHALL FIT THE CONDITIONS AND LOCATIONS FOR WHICH THEY ARE INTENDED WITHOUT ANY FIELD MODIFICATIONS, ANY MANHOLE BASE WHICH REQUIRES FIELD CUTTING OR MODIFICATION IN ORDER TO FIT THE LOCATIONS INTENDED WILL BE REJECTED BY THE ENGINEER AND REMOVED AND REPLACED BY THE CONTRACTOR AT NO COST TO THE DEPARTMENT.
3. PRECAST MANHOLE BASES SHALL BE BEDDED ON AN APPROVED GRANULAR BEDDING MATERIAL AS SHOWN ABOVE.

Computer File Information	Sheet Revisions		
Creation Date: 07/04/12 Initials: DD	Date:	Comments	
Last Modification Date: 07/04/12 Initials: LTA			
Full Path: www.coloradodot.info/business/designsupport			
Drawing File Name: M060402002D3.dgn			
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English			

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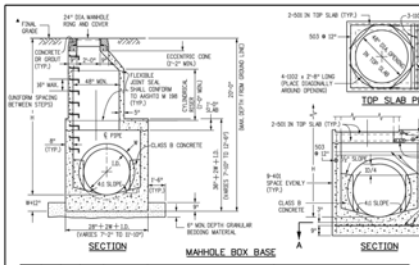
Project Development Branch DD/LTA

MANHOLES

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-604-20
Sheet No. 2 of 3

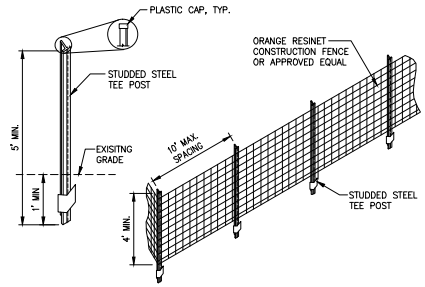


GENERAL NOTES

1. SINCE ALL PIPE ENTRIES INTO THE BASE ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK.
2. THE PRECAST FLAT TOP MAY BE USED ON ANY MANHOLE. THE ECCENTRIC CONE MAY BE USED WHEN THE MANHOLE "H" HEIGHT IS AT LEAST 8 FT.
3. THE MANHOLE RING FRAME SHALL BE SET IN A BED OF GROUT. THE FRAME SHALL BE SURROUNDED WITH A CEMENT GROUT IN UNPAVED AREA, OR A CONCRETE COLLAR IN PAVED AREA. SEE DETAILS ON SHEETS 2 AND 3.
4. DESIGN OF BOX BASE IS BASED ON STRAIGHT RUNS OF PIPE OR CHANGE IN DIRECTION OF LESS THAN 45°. SPECIAL DESIGN IS REQUIRED FOR 45° OR GREATER.
5. PRECAST MANHOLES AND REINFORCEMENT SHALL CONFORM TO AASHTO M 198 (ASTM C 478).
6. CAST-IN-PLACE MANHOLES SHALL BE CLASS B CONCRETE.
7. STEPS SHALL BE REQUIRED WHEN THE MANHOLE DEPTH EXCEEDS 2 FT.-6 IN. AND SHALL CONFORM TO AASHTO M 199.
8. ALL REINFORCING STEEL SHALL BE GRADE 60 AND EPOXY COATED. VERTICAL STEEL SHALL BE PLACED AT CENTERLINE OF WALL. ALL BARS SHALL HAVE A 2 IN. MINIMUM CLEARANCE.
9. ALL PIPE ENTRIES INTO THE BASE OF MANHOLE SHALL BE CONNECTED BY OPEN CHANNELIZATION ADJUSTED FOR PIPE SIZE, SHAPE, SLOPE, AND DIRECTION OF FLOW. DETAILS SHOWN ARE TYPICAL FOR INSTALLATIONS WITH ALL INVERTS OF SAME RELATIVE ELEVATION. IN PROGRESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, SPECIAL BASE/CHANNEL DETAILS WILL BE SHOWN ON THE PLANS.
10. FLOW CHANNELS AND INVERTS SHALL BE FORMED BY SHAPING WITH CLASS B CONCRETE OR APPROVED GROUT.
11. STUB-OUTS SHALL EXTEND 2 FT. MINIMUM BEYOND OUTSIDE WALL SURFACE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
12. THE SLOPE OF THE MANHOLE COVER SHALL MATCH THE ROADWAY PROFILE AND CROSS SLOPE.

▲ WHEN FINAL GRADE IS PAVEMENT SURFACE, RECESS MANHOLE RING AND COVER 1/2" MIN. TO 1/2" MAX.

MARK	SIZE	TYPE	WT. APPX.	BARS	24"	30"	36"	42"	48"	60"	FORMULAS
402	4	I	0.668	(NO. REQD.) (LENGTH) (WEIGHT)	19 8'-6" 107.2	19 8'-6" 134.3	19 8'-6" 161.3	19 8'-6" 188.3	19 8'-6" 215.2	19 8'-6" 269.1	402 BAR LENGTH = 32" + 2W + 1.0.
402	4	III	0.668	(NO. REQD.) (LENGTH) (WEIGHT)	5 9'-6" 26.7	5 9'-6" 33.5	5 9'-6" 40.3	5 9'-6" 47.0	5 9'-6" 53.8	5 9'-6" 67.2	402 BAR LENGTH = 1.0. + 2W
501	5	I	1.043	(NO. REQD.) (LENGTH) (WEIGHT)	17 5'-0" 73.5	17 5'-0" 91.9	17 5'-0" 110.3	17 5'-0" 128.7	17 5'-0" 147.0	17 5'-0" 183.8	501 BAR LENGTH = 24" + 1.0. + 2W
502	5	I	1.043	(NO. REQD.) (LENGTH) (WEIGHT)	27 5'-0" 116.7	27 5'-0" 145.9	27 5'-0" 175.1	27 5'-0" 204.4	27 5'-0" 233.6	27 5'-0" 291.9	502 NUMBER BARS REQD. = 3 + $\left(\frac{24+1.0+2W}{3"}+1\right)$
503	5	II	1.043	(NO. REQD.) (LENGTH) (WEIGHT)	18 13'-00" 243.6	18 13'-00" 243.6	18 14'-00" 273.8	18 14'-00" 273.8	18 15'-00" 292.5	18 15'-00" 351.0	503 NUMBER BARS REQD. = 2 $\left(\frac{12+1.0+2W}{3"}+1\right)$ BAR LENGTH = 4'-6"+2(36+W+1.0)
504	5	I	1.043	(NO. REQD.) (LENGTH) (WEIGHT)	9 5'-0" 50.3	9 5'-0" 62.8	9 5'-0" 75.4	9 5'-0" 87.9	9 5'-0" 100.5	9 5'-0" 125.6	504 NUMBER BARS REQD. = 2 $\left(\frac{28+1.0}{3"}+1\right)$ BAR LENGTH = 33"+2W+1.0.
1502	II	I	5.313	(NO. REQD.) (LENGTH) (WEIGHT)	4 5'-0" 212.3	4 5'-0" 264.9	4 5'-0" 317.1	4 5'-0" 369.3	4 5'-0" 421.5	4 5'-0" 526.0	1502 BAR LENGTH = 27" + 1.0. + 2W
1503	II	I	5.313	(NO. REQD.) (LENGTH) (WEIGHT)	4 5'-0" 56.7	4 5'-0" 56.7	4 5'-0" 56.7	4 5'-0" 56.7	4 5'-0" 56.7	4 5'-0" 56.7	BENDING
REINFORCING STEEL TOTAL					965.6	1,137.5	1,277.2	1,204.0	1,360.2	1,601.6	TYPE I STRAIGHT
CONCRETE - CUBIC YARDS - TOTAL					6.0	6.6	7.3	8.0	8.5	10.1	TYPE III 4'-0" 12-1/2" 18" 12-1/2" 12-1/2" 12-1/2" 18" 12-1/2" 12-1/2" 12-1/2" 18" 12-1/2" 12-1/2



CF-1 PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

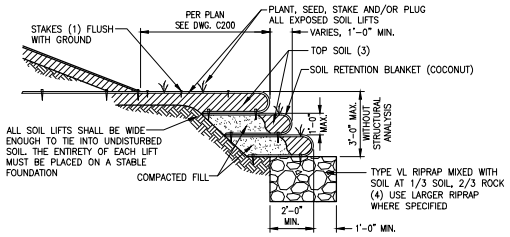
1. SEE PLAN VIEW FOR: -LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND /OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISTDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

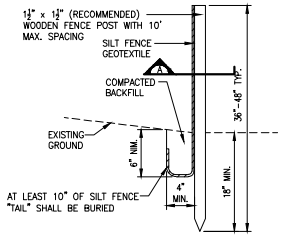
1 DETAIL
CONSTRUCTION FENCE
N.T.S.



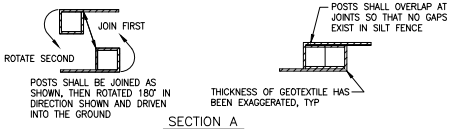
NOTES:

1. ALL MATERIALS INCLUDING PLANTINGS AND SOIL RETENTION BLANKET ARE INCLUDED IN THE L.F. MEASUREMENT.

2 DETAIL
SOIL LIFT SECTION
N.T.S.



SILT FENCE



SECTION A

SILT FENCE INSTALLATION NOTES

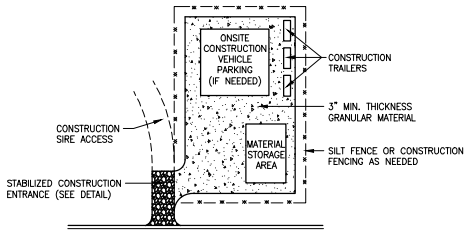
1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FEET) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6"X4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACH HOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A 'JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J--HOOK". THE "JJ--HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OD SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10'-20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORK DAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24N HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATION AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTION AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPS HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THER BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMANTS IS APPROXIMATELY 6".
5. REPAIR OF REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AND EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

3 DETAIL
SILT FENCE
N.T.S.



SSA-1 STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

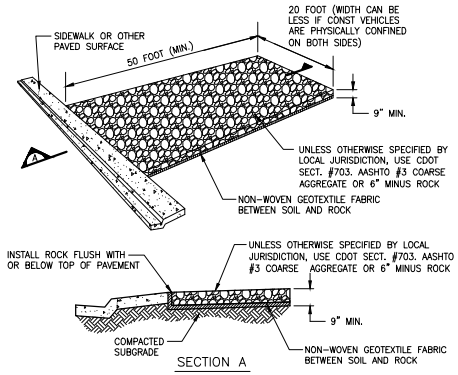
NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STARAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

4 DETAIL
STABILIZED STAGING AREA
N.T.S.



SECTION A

5 DETAIL
VEHICLE TRACKING CONTROL
N.T.S.

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN FOR:
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXHIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRACE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AAS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOUD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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Revision	By	Appd.
3 - TWO CONSTRUCTION DRAWINGS	SJH	CFH 17.05.03
A - DESIGN REVIEW APPLICATION	SJH	CFH 16.08.31
Issued	By	Appd.

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY
PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

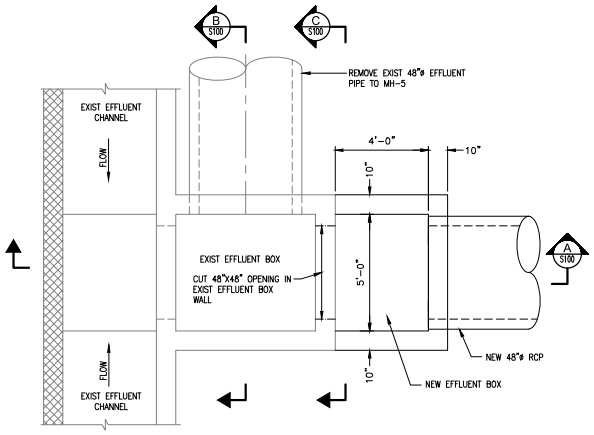
Title
EROSION CONTROL DETAILS

Permit-Seal

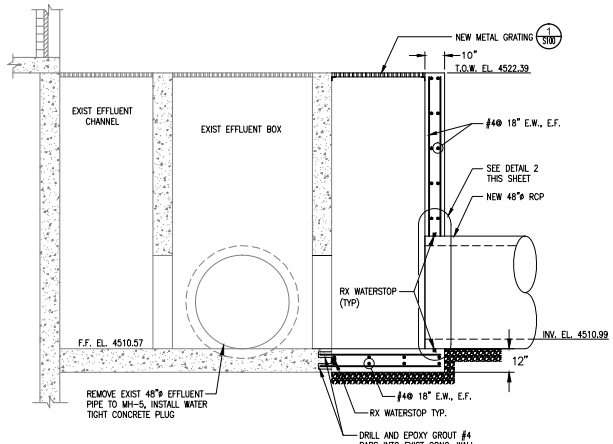
Project Number: 205305055
File Name: 05055-C503.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

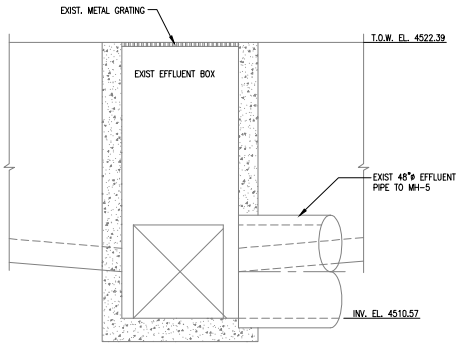
Drawing No. C503
Revision B
Sheet 16 of 17



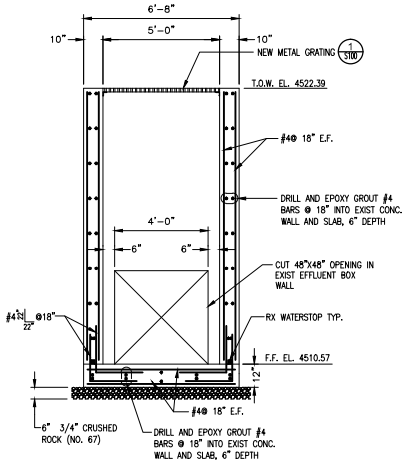
EFFLUENT BOX PLAN
3/8" = 1'-0"



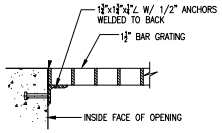
A SECTION
3/8" = 1'-0"



B SECTION
3/8" = 1'-0"



C SECTION
3/8" = 1'-0"



NOTE: ALL GRATING TO BE ALUMINUM

1 DETAIL
N.T.S.

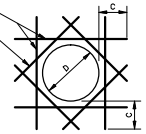
EXTRA BARS EQUAL IN TOTAL AREA TO REGULAR REINFORCING CUT BY OPENING. PLACE ONE HALF TOTAL AREA TO EACH SIDE OF OPENING AND IN THE SAME TRANSVERSE POSITION AS REGULAR REINFORCING.

ONE EXTRA BAR EACH CORNER PER LAYER OF REGULAR REINFORCING (SEE TABLE BELOW). PLACE IN SAME TRANSVERSE POSITION AS REGULAR REINFORCING.

THICKNESS OF CONCRETE	BAR SIZE	BAR LENGTH RECT OPG	BAR LENGTH CIRC OPG
<12"	4	3'-0"	D+12"
12" TO 18"	5	3'-0"	D+12"
>18"	6	3'-8"	D+12"

C=THE REQUIRED LENGTH FOR LAPPED SPLICE FOR TOP BARS AS SHOWN ON THIS SHEET

(TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS)



2 DETAIL
EXTRA REINFORCING
N.T.S.

CONCRETE COVER FOR REINFORCEMENT

LOCATION	MINIMUM COVER
UNFORMED SURFACES ADJACENT TO EXCAVATION	3"
FORMED OR TOP SURFACES EXPOSED TO WEATHER OR SATURATED AIR, SUBMERGED OR IN CONTACT WITH EARTH, INCLUDING STIRRUPS, TIES OR SPIRALS	2"
OTHER LOCATIONS	
BARS IN BEAMS OR GIRDERS, INCLUDING STIRRUPS AND COLUMN SPIRALS OR TIES	1 1/2"
SLABS, WALLS AND JOISTS	
#6 AND LARGER	1 1/2"
#5 AND SMALLER	3/4"

TOLERANCES FOR CONCRETE COVER AND THE FABRICATION AND PLACING OF REINFORCEMENT SHALL CONFORM TO SECTION 6.0 OF ACI 117.

GENERAL NOTE:

1. DETAILS ON THIS SHEET APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED
2. MAINTAIN 3" MINIMUM COVER TO ALL WATERSTOPS.

0 1'-4" 2'-8" 5'-4"
SCALE 3/8" = 1'-0"

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Issued	By	Appd.	YY.MM.DD
A ISSUED FOR REVIEW APPLICATION	SLH	CRH	17.05.03
B FINAL CONSTRUCTION DRAWINGS	SLH	CRH	16.08.31

Revision

Client/Project
CITY OF GRAND JUNCTION / MESA COUNTY
PERSIGO WASTEWATER TREATMENT PLANT
DIFFUSER OUTFALL IMPROVEMENTS

Title
EXISTING EFFLUENT BOX STRUCTURAL PLAN, SECTIONS AND DETAILS

Permit-Seal

Project Number: 205305055
File Name: 05055-S100.dwg

S.L.H.	D.S.	C.R.H.	16.04.12
Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. S100
Revision B
Sheet 17 of 17