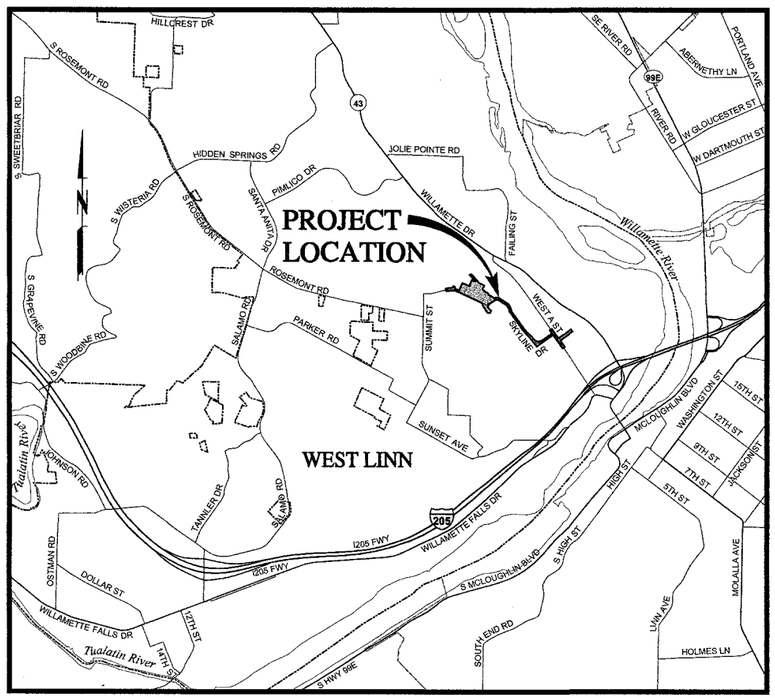
CITY OF WEST LINN
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SEPTEMBER 2015 VOLUME 2 OF 2



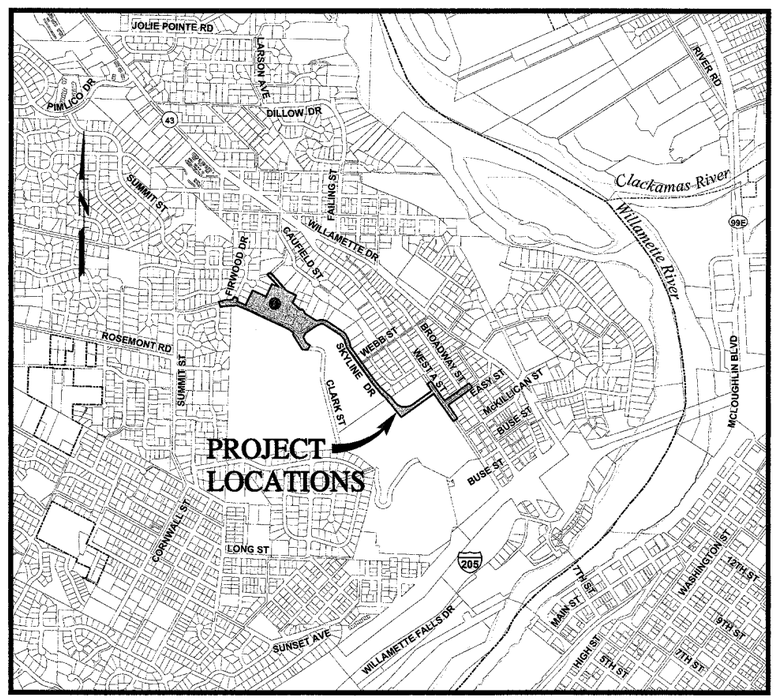
TAX LOT 21E25AD07100
TOWNSHIP 2 SOUTH, RANGE 1 EAST, SECTION 25AD
WILLAMETTE MERIDIAN, CITY OF WEST LINN,
CLACKAMAS COUNTY, OREGON

RESERVOIR SITE ADDRESS:
6111 SKYLINE DRIVE
WEST LINN, OREGON 97068

LOCATION MAP
SCALE: 1"=2,000'

ATTENTION: OREGON LAW REQUIRES THE CONTRACTOR TO FOLLOW THE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. THE CONTRACTOR MAY OBTAIN COPIES OF THE RULES BY CALLING THE UTILITY NOTIFICATION CENTER. (NOTE: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS 503-232-1987.) THE ONE-CALL NUMBER IS 1-800-332-2344.

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022



VICINITY MAP
SCALE: 1"=1,000'

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ODOT STANDARD DRAWINGS (SCHEDULE D)

RD100, RD101, RD140, RD150, RD160

RD300, RD302, RD306, RD312, RD317, RD318, RD325, RD326, RD335, RD336, RD339, RD344, RD345, RD356, RD364, RD365, RD370, RD371, RD373, RD380, RD386

RD610

RD700, RD715, RD720, RD755, RD756, RD759

RD815

TM500, TM501, TM503, TM520, TM521, TM530, TM531, TM560, TM561

TM800, TM810, TM820, TM821, TM840, TM841, TM850

DRAWING NAMING SYSTEM:

C-A#
- C - DISCIPLINE CODE
- A - SCHEDULE LETTER
- # - DRAWING NUMBER

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET G-2 2 of 167

REGISTERED PROFESSIONAL ENGINEER 65540 OREGON DECEMBER 31, 2002 MICHAEL L. MACNAUL
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **INDEX OF DRAWINGS AND ODOT STANDARD DRAWING INDEX**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\GENERAL\14-1586-OR-GEN.dwg G-2 9/4/2015 8:34 AM HCM 20.0s (LMS Tech)

PIPE SYMBOLS

PLANT	SCHEMATIC	
		WELDED JOINT
		FLANGED JOINT
		GROOVED END JOINT
		MECHANICAL JOINT
		PUSH-ON JOINT (RUBBER GASKET)
		FLANGED COUPLING ADAPTER
		DOUBLE BALL FLEXIBLE EXTENSION COUPLING
		FLEXIBLE COUPLING W/ THRUST RING
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		UNION
		BLIND FLANGE
		CAP
		LONG SLEEVE
		FLEXIBLE COUPLING
		CAPPED END OR PLUGGED END
		FITTING

VALVE SYMBOLS

PLANT	SCHEMATIC	
		BUTTERFLY VALVE
		GATE VALVE
		GLOBE VALVE
		BALL VALVE
		BALANCING VALVE
		DIAPHRAGM VALVE
		PLUG VALVE (TOP)
		PLUG VALVE (SIDE)
		3-WAY PLUG VALVE
		SWING CHECK VALVE
		DOUBLE CHECK ASSEMBLY
		BALL SWING CHECK
		SILENT CHECK VALVE
		PRESSURE REDUCING VALVE
		ALTITUDE CONTROL VALVE
		SOLENOID VALVE
		RELIEF VALVE
		NEEDLE VALVE
		HOSE VALVE
		REDUCED PRESSURE BACKFLOW PREVENTER W/ GATE VALVES
		HOSE BIBB

TOPOGRAPHIC LEGEND

	EXISTING	PROPOSED
WATERLINE	10"W	12" DI W
UNDERGROUND POWER	UGP	
OVERHEAD POWER	OHP	
GAS	4"G	
TELEPHONE/TELEMETRY	T	
CABLE TELEVISION	CATV	
SANITARY SEWER LINE	8"SS	
SANITARY SEWER FORCE MAIN	6"FM	
STORM DRAIN	8"SD	8"SD
CULVERT		
ABANDON PIPE		
REMOVE PIPE/STRUCTURE		
DRAINAGE DITCH		
BARBWIRE FENCE		
CHAIN LINK FENCE		
DECORATIVE METAL FENCING		
TEMPORARY SILT FENCE		
GUARDRAIL		
ROCK WALL		
RETAINING WALL		
TREE/BUSH LINE		
CENTERLINE		
EASEMENT/PROPERTY LINE		
RIGHT-OF-WAY		
STRUCTURE OR FACILITY		
MANHOLE		
CLEAN-OUT		
CATCH BASIN		
CATCH BASIN (AT CURB)		
FIELD INLET		
CURB DOOR		
THRUST BLOCK		
VALVE		
AIR INJECTION ASSEMBLY		
BLOW-OFF ASSEMBLY		
AIR RELEASE ASSEMBLY		
FIRE HYDRANT ASSEMBLY		
TEST STATION		
WATER METER		
GUY WIRE		
LIGHT POST		
MAILBOX		
PULL BOX/JUNCTION BOX		
SIGN		
TELEPHONE JUNCTION BOX		
TELEPHONE VAULT/MANHOLE		
TRAFFIC SIGNAL CABINET		
UTILITY POLE		

	EXISTING	PROPOSED
TREE DECIDUOUS		
TREE CONIFEROUS		
TREE TO BE REMOVED		
BENCHMARK		
IRON ROD		
CONTOUR MINOR		
CONTOUR MAJOR	200	200
SURFACE ELEVATION	+ 176.63	+ 176.63
TOE OF SLOPE		
TOP OF CUT		
EDGE OF PAVEMENT/AC		
EDGE OF GRAVEL		
CURB		
SIDEWALK	S/W	S/W
SAWCUT		
AC BERM		
AC PAVING		

0"-2" TAPER GRIND SHOWN THUS:

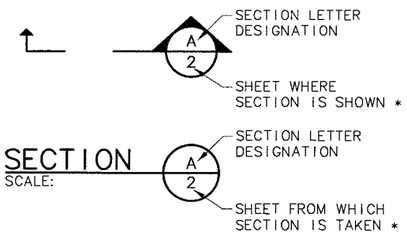
2" GRIND SHOWN THUS:

6" GRIND SHOWN THUS:

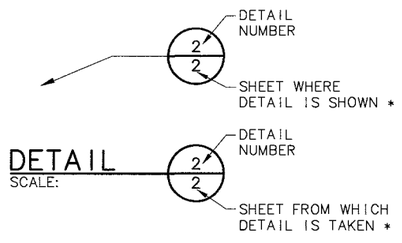
REMOVE EXIST SURFACING SHOWN THUS:

SECTION AND DETAIL DESIGNATIONS

SECTION DESIGNATIONS



DETAIL DESIGNATIONS



* NOTE: IF PLAN AND SECTION FOR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON THE SAME DRAWING, DRAWING NUMBER IS REPLACED WITH A DASH.

MISCELLANEOUS PIPING SYMBOLS

	STRAINER
	SIGHT GLASS
	PRESSURE GAUGE W/ COCK
	PRESSURE SWITCH W/ COCK
M	METER
SP	SLIP-ON JOINT PIPE
R	RESTRAINED JOINT PIPE

BY | REVISION | DATE | NO.

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET G-3 3 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 31, 1980 MICHAEL L. MURRAY
RENEWS 12-31-16

SCALE VERT: NONE HORIZ: NONE
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **SYMBOLS AND LEGEND**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

@	AT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AB	ANCHOR BOLT
ABAN (D)	ABANDON (ED)
ABS	ACRYLONITRILE BUTADIENE STYRENE
ABV	ABOVE
AC	ASPHALTIC CONCRETE
ACP	ASPHALTIC CONCRETE PAVING
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHR	ANCHOR
AL	ALUMINUM
ALIGN	ALIGNMENT
ALT	ALTERNATE
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APPVD	APPROVED
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASSN	ASSOCIATION
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
B&S	BELL & SPIGOT
BC	BOTTOM OF CURB / BOLT CIRCLE
BCR	BEGIN CURB RETURN
BD	BOARD
BETW	BETWEEN
BF	BOTH FACE
BFD	BACKFLOW PREVENTION DEVICE
BFILL	BACKFILL
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BKGD	BACKGROUND
BLDG	BUILDING
BLK	BLOCK
BLVD	BOULEVARD
BM	BENCHMARK / BEAM
BMP	BEST MANAGEMENT PRACTICE
BO	BLOWOFF
BOC	BACK OF CURB
BOW	BACK OF WALK
BR	BREAK
BS	BOTH SIDES
BSMT	BASEMENT
BTF	BOTTOM FACE
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BW	BACK OF WALK / BOTH WAYS
C	CELSIUS
C TO C	CENTER TO CENTER
CARV	COMBINATION AIR RELEASE VALVE
CATV	CABLE TELEVISION
CB	CATCH BASIN
CCP	CONCRETE CYLINDER PIPE
CCW	COUNTER CLOCKWISE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHAN	CHANNEL
CHEM	CHEMICAL
CHFR	CHAMFER
CHKV	CHECK VALVE
CI	CAST IRON
CIP	CAST IRON PIPE
CIPC	CAST IN PLACE CONCRETE
CIR	CIRCLE
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CL or ℄	CENTER LINE
CL2	CHLORINE
CLG	CEILING
CLJ	CONTROL JOINT
CLR	CLEAR
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEANOUT
COL	COLUMN
COMB	COMBINATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS / CONTINUATION
CONTR	CONTRACT (OR)
COORD	COORDINATE
COP	COPPER
CORP	CORPORATION
CORR	CORRUGATED
COWG	CITY OF WEST LINN
CP	CONTROL POINT
CPLG	COUPLING (S)
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CRUSHED ROCK
CS	COMBINED SEWER
CSP	CONCRETE SEWER PIPE
CT	COURT
CTL	CENTURY LINK
CTR	CENTER
CU	CUBIC
CULV	CULVERT
CV	CONTROL VALVE
CW	CLOCKWISE / COLD WATER
CY	CUBIC YARDS
CYL	CYLINDER LOCK
D	DRAIN
DC	DIRECT CURRENT
DEFL	DEFLECTION
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DIR	DIRECTION
DIST	DISTANCE
DN	DOWN
DR	DRIVE
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
DWV	DRAIN WASTE AND VENT
DWY / D/W	DRIVEWAY
EA	EACH
ECC	ECCENTRIC
ECR	END CURB RETURN
EF	EACH FACE
EIFS	EXTERIOR INSULATION FINISHING SYSTEM
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
ENCL	ENCLOSURE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIP	EQUIPMENT
ESMT	EASEMENT
EW	EACH WAY
EXC	EXCAVATE
EXIST	EXISTING
EXIST GR	EXISTING GRADE
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
F	FAHRENHEIT
F TO F	FACE TO FACE
FAB	FABRICATE
FB	FLAT BAR
FCA	FLANGED COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE
FGL	FIBERGLASS
FH	FIRE HYDRANT
FIN FL	FINISH FLOOR
FIN GR	FINISH GRADE
FIPT	FEMALE IRON PIPE THREAD
FITG	FITTING
FL	FLOOR LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLL	FLOW LINE
FLR	FLOOR
FM	FORCE MAIN
FO	FIBER OPTIC
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET / FOOT
FTG	FOOTING
FUT	FUTURE
FW	FACE OF WALK
FXTR	FIXTURE
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GROOVED COUPLING
GFA	GROOVED FLANGE ADAPTER
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GJ	GRIP JOINT
GL	GLASS
GLV	GLOBE VALVE
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GALLONS PER SECOND
GR	GRADE
GR LN	GRADE LINE
GRTG	GRATING
GV	GATE VALVE
GRVL	GRAVEL
GYP	GYPSUM
HB	HOSE BIBB
HC	HOLLOW CORE
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HDWE	HARDWARE
HGR	HANGER
HGT	HEIGHT
HH	HANDHOLD
HM	HOLLOW METAL
HNDRL	HAND RAIL
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HP	HIGH PRESSURE / HORSEPOWER
HPG	HIGH PRESSURE GAS
HPT	HIGH POINT
HR	HOUR
HSB	HIGH STRENGTH BOLT
HV	HOSE VALVE
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWL	HIGH WATER LINE
HWY	HIGHWAY
HYD	HYDRANT
HYDR	HYDRAULIC
I&C	INSTRUMENTATION & CONTROL
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IMPVT	IMPROVEMENT
IN	INCH
INCC	INCLUDE (D) (ING)
INFL	INFLUENT
INJ	INJECTION
INSTL	INSTALLATION / INSTALL
INSUL	INSULATION
INTER	INTERCEPTOR
INTR	INTERIOR
INV	INVERT
IP	IRON PIPE
IPT	IRON PIPE THREAD
IR	IRON ROD
IRRIG	IRRIGATION
JT	JOINT
JUNC	JUNCTION
KPL	KICK PLATE
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWY	KEYWAY
L	LENGTH OF CURVE
LAB	LABORATORY
LAV	LAVATORY
LB	POUND
LF	LINEAL FOOT
LIN	LINEAL / LINEAR
LN	LANE
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW PRESSURE
LPT	LOW POINT
LRG	LARGE
LS	LONG SLEEVE / LUMP SUM
LT	LEFT
LVL	LEVEL
LWL	LOW WATER LINE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MAIL BOX
MCC	MOTOR CONTROL CENTER
MCP	MASTER CONTROL PANEL
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MIPT	MALE IRON PIPE THREAD
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MON	MONUMENT / MONOLITHIC
MOT	MOTOR
MP	MILEPOST
MSL	MEAN SEA LEVEL
MTD	MOUNTED
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO / NO.	NORMALLY OPEN / NUMBER
NOM	NOMINAL
NORM	NORMAL
NRS	NON-RISING STEM
NTS	NOT TO SCALE
O TO O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OF	OVERFLOW / OUTSIDE FACE
OHP	OVERHEAD POWER
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OVHD	OVERHEAD
P&ID	PROCESS & INSTRUMENTATION DIAGRAM
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PCVC	POINT OF CURVATURE ON VERTICAL CURVE
PE	PLAIN END
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PG	PRESSURE GAUGE
PGE	PORTLAND GENERAL ELECTRIC
PH	PIPE HANGER
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL or ℙ	PROPERTY LINE / PLATE / PLASTIC
PLBG	PLUMBING
PNL	PANEL
POC	POINT OF CURVATURE
POLY	POLYETHYLENE
POT	POINT OF TANGENCY
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PRCST	PRECAST
PREP	PREPARATION
PRESS	PRESSURE
PRKG	PARKING
PROP	PROPOSED / PROPERTY
PRV	PRESSURE REDUCING VALVE
PS	PUMP STATION
PSIG	POUNDS PER SQUARE INCH GAGE
PSL	PIPE SLEEVE
PSPT	PIPE SUPPORT
PT	POINT OF TANGENCY
PTVC	POINT OF TANGENCY ON VERTICAL CURVE
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	PUBLIC WORKS
PWR	POWER
QTY	QUANTITY
RAD	RADIUS
RAP	RECLAIMED ASPHALT PAVEMENT
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD / ROOF DRAIN
RDCR	REDUCER
REF	REFERENCE
REINF	REINFORCE (D) (ING) (MENT)
REQ'D	REQUIRED
RES	RESERVOIR
RESTR	RESTRAINED
RFCA	RESTRAINED FLANGE COUPLING ADAPTER
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
R/W	RIGHT OF WAY
RPBPD	REDUCED PRESSURE BACKFLOW PREVENTION DEVICE
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RST	REINFORCING STEEL
RT	RIGHT
SALV	SALVAGE
SAN	SANITARY
SC	SOLID CORE
SCHED	SCHEDULE
SD	STORM DRAIN
SDL	SADDLE
SDR	STANDARD DIMENSION RATIO
SECT	SECTION
SHLDR	SHOULDER
SHT	SHEET
SIM	SIMILAR
SLP	SLOPE
SLV	SLEEVE
SOLN	SOLUTION
SP	SOIL PIPE / SEWER PIPE
SPCL	SPECIAL
SPEC (S)	SPECIFICATION (S)
SPG	SPACING
SPL	SPOOL
SPRT	SUPPORT
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SQ YD	SQUARE YARD
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURE / STRUCTURAL
SUBMG	SUBMERGED
SUCT	SUCTION
SV	SOLENOID VALVE
S/W	SIDEWALK
SWD	SIDEWATER DEPTH
SWGR	SWITCH GEAR
SYMM	SYMMETRICAL
SYS	SYSTEM
T or TEL	TELEPHONE
T&B	TOP & BOTTOM
TAN	TANGENCY
TB	THRUST BLOCK
TBM	TEMPORARY BENCH MARK
TC	TOP OF CONCRETE / TOP OF CURB
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE / TEMPORARY
T&G	TONGUE & GROOVE
THK	THICKNESS
THRD	THREAD(ED)
THRU	THROUGH
TP	TEST PIT / TOP OF PAVEMENT / TURNING POINT
TRANS	TRANSITION
TSP	TRI-SODIUM PHOSPHATE
TST	TOP OF STEEL
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UGP	UNDERGROUND POWER
UH	UNIT HEATER
UN	UNION
UON	UNLESS OTHERWISE NOTED
USGS	UNITED STATES GEOLOGIC SURVEY
UTIL	UTILITY
V	VENT / VOLT
VAC	VACUUM
VAR	VARIES
VB	VACUUM BREAKER
VBOX	VALVE BOX
VC	VERTICAL CURVE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VCP	VITRIFIED CLAY PIPE
VTR	VENT THROUGH ROOF
W	WATER
W/	WITH
W/IN	WITHIN
W/O	WITHOUT
W/W	WALL TO WALL
WD	WOOD
WF	WIDE FLANGE
WH	WALL HYDRANT
WHTR	WATER HEATER
Wi	WROUGHT IRON
WM	WATER METER
WP	WORKING POINT / WATERPROOFING
WS	WATER SERVICE
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WTRT	WATERTIGHT
WWF	WELDED WIRE FABRIC
WWTF	WASTEWATER TREATMENT FACILITY
WWTP	WASTEWATER TREATMENT PLANT
X SECT	CROSS SECTION
XFMR	TRANSFORMER
YD	YARD DRAIN/YARD
YH	YARD HYDRANT
YR	YEAR
ZN	ZINC

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET G-4
4 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON 85640 MICHAEL L. MURRAY
RENEWS 12-31-16

SCALE VERT: NONE HORIZ: NONE
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ABBREVIATIONS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

GENERAL NOTES

1. CONTRACTOR SHALL OBTAIN ALL NECESSARY LOCAL, COUNTY, STATE, AND UTILITY CONSTRUCTION PERMITS NOT OBTAINED BY THE OWNER, AND SHALL CONTACT EACH PERMITTING AGENCY AT LEAST TWO (2) BUSINESS DAYS PRIOR TO STARTING WORK. CONTRACTOR SHALL OBTAIN ALL REQUIRED LICENSES BEFORE STARTING CONSTRUCTION.

2. THE LOCATIONS OF ALL EXISTING UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE BASED ON A FIELD SURVEY AND INFORMATION SUPPLIED BY UTILITY COMPANIES. LOCATIONS ARE NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY LOCATIONS, ELEVATIONS, TYPE AND SIZES OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTING NEW PIPING/CONDUITS AND SHALL ADJUST NEW PIPING/CONDUITS AS REQUIRED. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY CONFLICTS NOT SHOWN ON THE PLANS AND SHALL KEEP EXISTING UTILITIES IN SERVICE AND PROTECT THEM DURING CONSTRUCTION. WHERE INTERRUPTION OF EXISTING FACILITIES IS REQUIRED, CONTRACTOR SHALL PROVIDE 72 HOUR NOTICE TO ENGINEER AND THE AFFECTED UTILITY. CONTRACTOR SHALL ARRANGE FOR THE RELOCATION OF ANY IN CONFLICT WITH THE PROPOSED CONSTRUCTION.

3. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF ORS 757.541 TO 757.571. THE CONTRACTOR SHALL NOTIFY EACH UNDERGROUND UTILITY AT LEAST 48 BUSINESS-DAY HOURS, BUT NOT MORE THAN 10 BUSINESS DAYS, PRIOR TO EXCAVATING, BORING, OR POTHOLING.

4. NO ADDITIONAL PAYMENT SHALL BE MADE FOR UTILITY RELOCATION COORDINATION OR DELAYS CAUSED BY UTILITY CONFLICTS. ALL COSTS RELATED TO UTILITY COORDINATION AND RELOCATION, INCLUDING ADDITIONAL POTHOLING, ARE TO BE CONSIDERED INCIDENTAL AND INCLUDED IN THE UNIT PRICES OF THE BID.

5. UTILITIES OR INTERFERING PORTIONS OF UTILITIES THAT ARE ABANDONED IN PLACE SHALL BE REMOVED BY THE CONTRACTOR TO THE EXTENT NECESSARY TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL PLUG THE REMAINING EXPOSED ENDS OF ABANDONED UTILITIES, UNLESS OTHERWISE REQUIRED BY THE ENGINEER, OR AS IDENTIFIED ON THE PLANS.

6. CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION (ANY TIME OF YEAR) PER THE REQUIREMENTS OF THE APPROVED 1200-CN PERMIT, CITY OF WEST LINN, CLACKAMAS COUNTY AND THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY.

7. CONSTRUCTION SHALL BE CONFINED TO THE RIGHT-OF-WAY, EASEMENTS, OR OTHER AREAS AS SHOWN ON THE PLANS AND APPROVED FOR CONSTRUCTION. WORK SHALL NOT ENCROACH BEYOND THE AREAS SHOWN ON THE PLANS WITHOUT PRIOR APPROVAL BY ENGINEER.

8. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE PLANS, PROJECT SPECIFICATIONS, CITY OF WEST LINN PUBLIC WORKS DESIGN STANDARDS AND APPLICABLE STANDARD SPECIFICATIONS AND DRAWINGS.

9. CONTRACTOR SHALL KEEP AND MAINTAIN A CURRENT SET OF DRAWINGS ON SITE. CONTRACTOR TO KEEP ACCURATE "AS-BUILT" RECORD COPY OF PLANS. "AS-BUILT" PLANS TO BE RETURNED TO ENGINEER AT COMPLETION OF PROJECT.

10. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL HOMES AND BUSINESSES AT ALL TIMES. PROVIDE WRITTEN NOTICE TO ALL PROPERTY OWNERS AT LEAST TWO BUSINESS DAYS IN ADVANCE OF WORK IN AND/OR CROSSING OF DRIVEWAYS.

11. CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER 48 HOURS BEFORE STARTING CONSTRUCTION, AND 24 HOURS BEFORE RESUMING WORK AFTER SHUTDOWNS EXCEPT FOR NORMAL RESUMPTION OF WORK FOLLOWING SATURDAYS, SUNDAYS, OR HOLIDAYS. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 48 HOURS PRIOR TO ANY TESTING OR REQUIRED INSPECTION.

12. ANY ALTERATION OR VARIANCE FROM THESE PLANS, EXCEPT MINOR FIELD ADJUSTMENT NEEDED TO MEET EXISTING FIELD CONDITIONS, SHALL FIRST BE APPROVED BY THE ENGINEER. ANY ALTERATIONS OR VARIANCE FROM THESE PLANS SHALL BE DOCUMENTED ON CONSTRUCTION FIELD PRINTS AND TRANSMITTED TO THE ENGINEER. ANY PROPOSED CHANGES IN CONSTRUCTION PLANS MUST BE SUBMITTED IN WRITING AND APPROVED BY ENGINEER PRIOR TO COMMENCING WORK.

13. CONTRACTOR SHALL PROTECT ALL PROPERTY CORNERS, SURVEY MONUMENTS AND CONTROL POINTS. SURVEY MONUMENTS OF THIS TYPE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE, WITH APPROPRIATE SURVEYS FILED WITH THE COUNTY SURVEYOR.

14. THE CONTRACTOR SHALL DISPOSE OF ALL REMOVED OR REPLACED MATERIAL AND EQUIPMENT IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS, EXCEPT THOSE ITEMS DESIGNATED BY THE OWNER FOR SALVAGING. SALVAGED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER, AND SHALL BE CAREFULLY REMOVED AND STORED AS DIRECTED.

15. ALL STRUCTURES, LOTS, SWALES, DITCHES, CURBS, SPEED BUMPS, FENCES, WALLS, MAILBOXES, SIGNS, POLES, GUY WIRES, PIPING, AND UTILITIES DISTURBED DURING CONSTRUCTION TO BE RESTORED TO EXISTING CONDITION UNLESS OTHERWISE SPECIFIED. SUCH REPAIR SHALL BE CONSIDERED INCIDENTAL.

16. ALL CONCRETE SHALL BE A MINIMUM OF 3000 PSI STRENGTH.

17. "AS CONSTRUCTED" DRAWINGS SHALL BE SUBMITTED AS A CONDITION OF ACCEPTANCE OF THE WATER FACILITIES INSTALLED. PROVIDE "AS CONSTRUCTED" DRAWINGS INDICATING ALL CHANGES IN GRADE. ALIGNMENT FITTINGS AND MATERIALS INSTALLED AND ANY OTHER UTILITIES OR OBSTACLES NOT SO INDICATED ON THESE PLANS. "AS CONSTRUCTED" DRAWINGS SHALL BE "RED LINES" OF THE DESIGN DRAWINGS.

WATER SYSTEM NOTES

1. AT THE END OF EACH WORK DAY ALL OPEN TRENCHES SHALL BE BACKFILLED AND ALL TRENCHES WITHIN STREETS SHALL BE TEMPORARILY PAVED OR COVERED TO THE SATISFACTION OF THE OWNER.

2. CONTRACTOR SHALL COMPLY WITH ALL OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIREMENTS IN THE DISPOSAL OF SUPER CHLORINATED WATER. SEE TECHNICAL SPECIFICATIONS.

3. CONTRACTOR SHALL PROVIDE TEMPORARY CONNECTIONS, BLOW-OFFS AND THRUST RESTRAINTS AS REQUIRED TO FACILITATE FLUSHING, TESTING AND DISINFECTION OF WATERLINES. TAPS ON WATER MAINS ARE NOT ALLOWED.

4. CONNECTIONS TO EXISTING WATERLINES MAY REQUIRE TEMPORARY SHUTDOWNS OF EXISTING FACILITIES. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH THE AFFECTED UTILITY AND PROVIDE A MINIMUM OF 72 HOURS ADVANCE NOTICE PRIOR TO PERFORMING THIS WORK.

5. ALL VALVES AND FITTINGS SHALL BE CLASS 150. DUCTILE IRON PIPE SHALL BE CLASS 52 UNLESS OTHERWISE SPECIFIED.

6. THE CONTRACTOR SHALL COMPLY WITH ALL CITY OF WEST LINN, AND CLACKAMAS COUNTY PERMIT REQUIREMENTS FOR WORK IN AND RESTORATION OF CITY AND COUNTY STREETS AND RIGHT-OF-WAYS. SEE SPECIAL PROVISIONS SECTION IN THE TECHNICAL SPECIFICATIONS FOR DETAILS.

7. OPERATION OF WATER VALVES SHALL BE BY CITY OF WEST LINN STAFF ONLY.

8. NO UNDERGROUND WORK SHALL BE "BURIED" UNTIL INSPECTED AND APPROVED BY THE ENGINEER.

9. PIPE DEFLECTION IS LIMITED TO THE ONE-HALF OF THE MANUFACTURER'S RECOMMENDATIONS.

10. UNLESS OTHERWISE NOTED ALL ON-SITE WATERLINES AND FITTING SHALL BE RESTRAINED.

11. MINIMUM HYDROSTATIC TEST PRESSURE SHALL BE 150 PSI AT THE POINT OF HIGHEST ELEVATION OF THE PIPE BEING TESTED. MAXIMUM HYDROSTATIC TEST PRESSURE SHALL BE 180 PSI AT THE LOWEST ELEVATION OF THE PIPE BEING TESTED.

12. FINAL LOCATIONS OF ALL VALVE BOXES, WATER QUALITY STATIONS, AIR RELEASE VALVES AND BLOWOFFS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION BY OWNER.

13. THE USE OF CONCRETE THRUST BLOCKS IS ALLOWED ONLY WHERE SHOWN ON PLANS. REQUIRED THRUST RESTRAINT IN ALL OTHER LOCATIONS WILL BE ACCOMPLISHED WITH APPROVED JOINT RESTRAINT SYSTEM.

14. ALL FLANGE CONNECTIONS TO BE PROVIDED WITH FULL-FACE GASKETS.

15. PROVIDE TWO SHEETS OF 8 MIL POLYETHYLENE ENCASEMENT FOR ALL PIPING WITHIN 10 FT OF EXISTING GAS MAIN ACCORDING TO ANSI/AWWA C105/A21.5.

16. COMPLY WITH OAR CHAPTER 333 RULES FOR REQUIRED WATERLINE – SEWER LINE SEPARATION AND CROSSING REQUIREMENTS.

17. ALL PIPING SHALL HAVE A MINIMUM OF 3 FEET OF COVER FROM TOP OF PIPE TO STREET GRADE OR OTHER FINISH GRADE, UNLESS OTHERWISE SHOWN OR APPROVED BY ENGINEER.

SURVEY NOTES

1. TOPOGRAPHIC MAP WAS COMPLETED BY HDJ DESIGN GROUP, PLLC. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SURVEYS. SEE CONTRACT DOCUMENT FOR SURVEY REQUIREMENTS.

2. THE ELEVATION DATUM FOR THIS SURVEY IS NAVD 88 (CITY OF WEST LINN DOES NOT CURRENTLY HAVE BENCHMARK OR DATUM SYSTEM).
ELEVATION=447.33'; HDJ CONTROL POINT NUMBER: 1
THE BENCHMARK IS A MAG NAIL WITH WASHER LOCATED INSIDE THE BOLTON RESERVOIR COMPLEX ON THE OUTSIDE EDGE OF A CONCRETE CURB APRON, APPROXIMATELY 11.2 FEET NORTHEAST OF A FIRE HYDRANT AND APPROXIMATELY 20.5 FEET SOUTHWEST OF THE SOUTHEAST CORNER OF THE MAIN NORTHERN FACILITY BUILDING.

3. THE HORIZONTAL DATUM FOR THIS SURVEY IS NAD 83 (2011), STATE PLANE OREGON NORTH (ZONE 3601).

4. THE UNDERGROUND UTILITIES SHOWN HEREON WERE BASED ON UTILITY LOCATE PAINT MARKS SUPPLIED BY THE OREGON UTILITY NOTIFICATION CENTER AS WELL AS SURFACE EVIDENCE AND PRIVATE AS-BUILT RECORDS. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED.

DRAINAGE NOTES

1. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO KEEP ALL EXISTING UTILITIES IN SERVICE AND TO PROTECT THEM DURING CONSTRUCTION. CONTRACTOR SHALL PROPERLY DIVERT ALL STORM FLOWS AS NECESSARY TO ACCOMPLISH WORK. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE CONSTRUCTION DOES NOT INCREASE DITCH OR OVERLAND FLOWS OR FLOODING RISKS.

2. ALL NON-METAL STORM DRAIN PIPING SHALL HAVE ELECTRICALLY CONDUCTIVE TRACER WIRE.

3. ALL MANHOLE INVERT ELEVATIONS (IE IN, IE OUT) SHOWN ON PLANS, ARE PROJECTED TO MANHOLE CENTER RATHER THAN MANHOLE FACE.

4. ALL PIPE CONNECTIONS TO MANHOLES, CATCH BASINS AND OTHER STRUCTURES SHALL BE MADE WITH NON-SHRINK GROUT, PVC SAND COLLARS OR KOR-N-SEAL BOOT AS REQUIRED.

5. WHENEVER STORM DRAIN PIPING CROSSES PROPOSED WATERLINES, MAINTAIN A MINIMUM 12-INCH CLEARANCE.

6. WHEN STORM DRAIN PIPING CONNECTIONS ARE LOCATED AT CATCH BASIN CORNER, CATCH BASIN SHALL BE CAST-IN-PLACE OR PRE-CAST CATCH BASIN DESIGNED TO ACCOMMODATE PIPE ENTRANCE AT THE CORNER.

7. WHEN REPLACING MANHOLES, CATCH BASINS, AND PIPE MAINS, ALL EXISTING CONNECTIONS SHALL BE RECONNECTED INCLUDING PIPE MAINS, LATERALS AND SUBGRADE PIPING UNLESS OTHERWISE DIRECTED BY ENGINEER. ALL CONNECTIONS OF EXISTING PIPING SHALL BE ACCOMPLISHED USING APPROVED CONNECTION METHODS & MATERIALS.

8. MAINLINE STORM DRAIN PIPING SHALL BE TV INSPECTED.

9. ALL MANHOLES AND CATCH BASINS INSTALLED SHALL HAVE SUFFICIENT CLEARANCE TO PROVIDE ACCESS FOR TV INSPECTION CAMERAS.

10. CONTRACTOR SHALL MATCH SLOPE AND ALIGNMENT OF EXISTING PIPE WHEN CONNECTING TO EXISTING PIPING.

STREET IMPROVEMENT NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY FOR APPROVAL. A COPY OF THE APPROVED TRAFFIC CONTROL PLAN SHALL BE PROVIDED TO THE ENGINEER AND AVAILABLE AT THE WORK SITE. THE CITY RESERVES THE RIGHT TO ADD TO OR MODIFY TRAFFIC CONTROL REQUIREMENTS AS MAY BE NECESSARY TO EFFECTIVELY CONTROL TRAFFIC AND TO ASSURE PUBLIC SAFETY.

2. CONTRACTOR SHALL PROTECT TRAFFIC AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, TRAFFIC CONES PER CITY REQUIREMENTS IN ACCORDANCE WITH MUTCD (INCLUDING OREGON SUPPLEMENTS). ALL TRAFFIC CONTROL MEASURES SHALL BE APPROVED AND IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITY.

3. FOR STREET IMPROVEMENTS, ADJUST ALL MANHOLES, CLEANOUTS AND VALVE BOXES TO FINISH GRADE. FOR MANHOLE RAISES, MANHOLE RINGS SHALL BE GROUTED ON THE INSIDE WITH NON-SHRINK GROUT.

4. TRENCH COMPACTION: TESTS OF TRENCH FILL MATERIALS SHALL BE PER THE ODOT MANUAL OF FIELD TEST PROCEDURES (MFTP) AND MADE ON EACH LIFT OF FILL. TESTS SHALL BE TAKEN AT THE LOCATION AND FREQUENCY ESTABLISHED BY THE ENGINEER.

5. ROADWAY MATERIALS COMPACTION: COMPACT PER THE MFTP. TESTS SHALL BE TAKEN AT THE LOCATION AND FREQUENCY ESTABLISHED BY THE ENGINEER.

6. ALL REFERENCED ODOT STANDARD DRAWINGS ARE INCLUDED AS PART OF THE CONTRACT DOCUMENTS.

7. OVER-EXCAVATION OF UNSUITABLE MATERIALS AND BACKFILL WITH SUBGRADE STABILIZATION SHALL BE APPROVED BY THE ENGINEER ON AN AS-NEEDED BASIS.

8. SAWCUTTING OF EXISTING SURFACES, WHICH INCLUDES ASPHALTIC CONCRETE AND CONCRETE SURFACES, SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN THE UNIT PRICES OF THE BID.

Know what's **below.**
Call before you dig.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET G-5 5 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 19, 2006 MICHAEL L. MURRAY
RENEWS 12-31-16

SCALE VERT: NONE HORIZ: NONE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
NOTICE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **GENERAL NOTES**

Murray, Smith & Associates, Inc.
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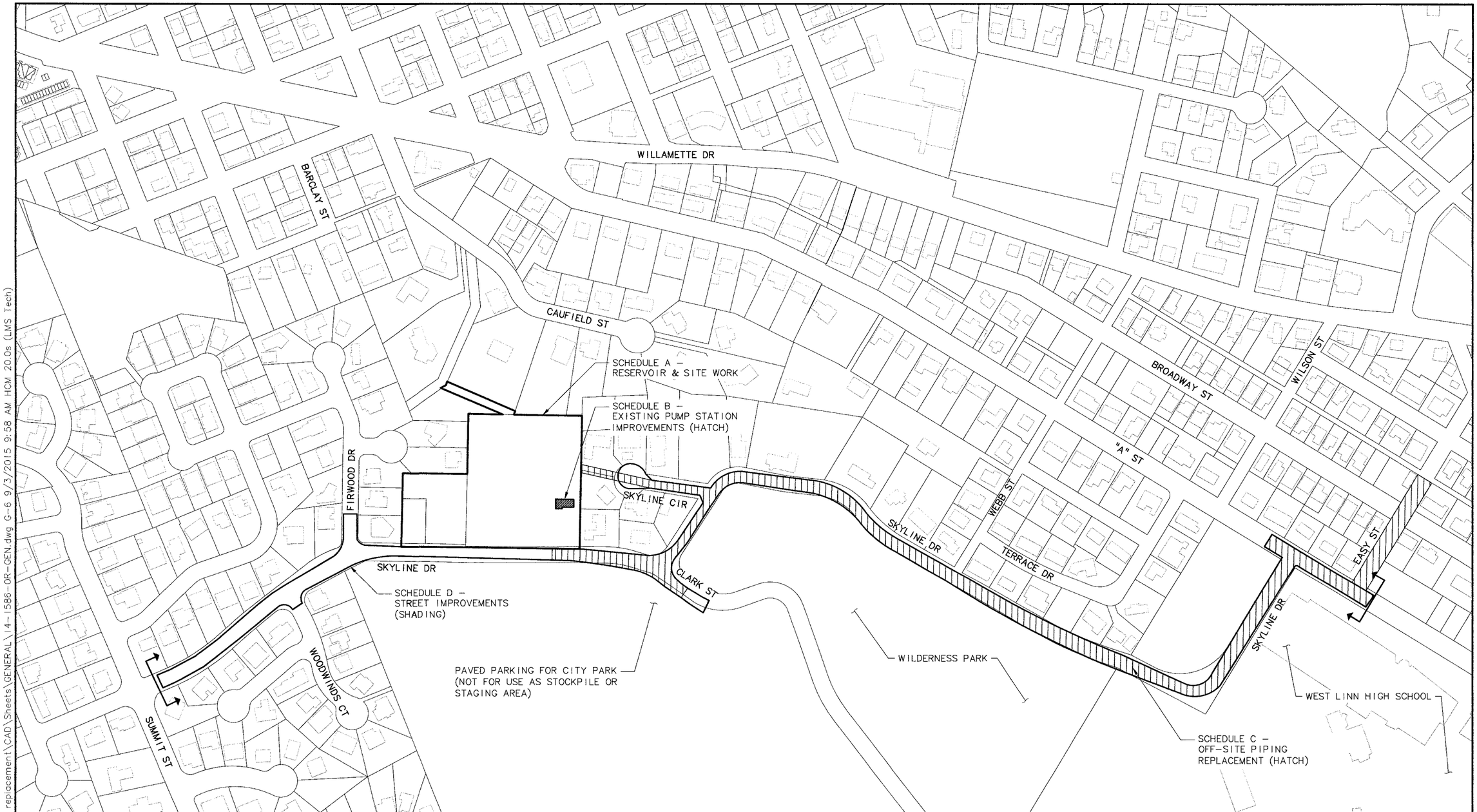
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"=150'

NOTE:

THE PROJECT OVERVIEW IS PROVIDED TO ILLUSTRATE THE WORK LIMITS AND BREAKDOWN OF WORK SCHEDULES AND DOES NOT IDENTIFY WORK OR MATERIALS REQUIRED FOR CONSTRUCTION.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: BAW
CHECKED: TPB
APPROVED: TPB

SHEET C-6 6 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON 65840 MICHAEL L. MACKEY RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NOTICE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

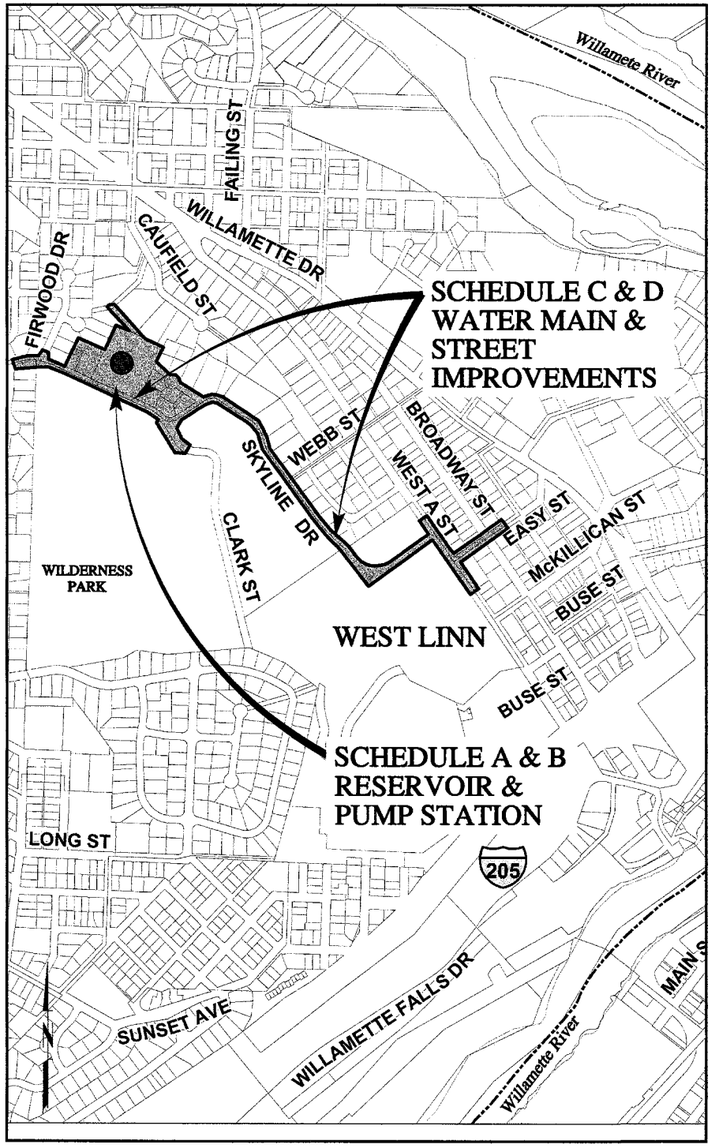
SHEET TITLE: **PROJECT OVERVIEW**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\GENERAL\14-1586-OR-GEN.dwg G-6 9/3/2015 9:58 AM HCM 20.0s (LWS Tech)

ESC PLAN FOR 1200-C SITES



VICINITY MAP

SCALE: 1"=500'

SHEET INDEX

EROSION AND SEDIMENT CONTROL PLANS

ESC-1	EROSION AND SEDIMENT CONTROL COVER SHEET
ESC-2	EROSION AND SEDIMENT CONTROL SCHEDULES A & B - INITIAL CLEARING AND GRADING
ESC-3	EROSION AND SEDIMENT CONTROL SCHEDULES A & B - FINAL GRADING
ESC-4	EROSION AND SEDIMENT CONTROL SCHEDULES C - TYPICAL PIPELINE INSTALLATION MEASURES
ESC-5	EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 1
ESC-6	EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 2
ESC-7	EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 3
ESC-8	EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 4
ESC-9	EROSION AND SEDIMENT CONTROL ALL SCHEDULES - STANDARD DETAILS - 1
ESC-10	EROSION AND SEDIMENT CONTROL ALL SCHEDULES - STANDARD DETAILS - 2

OWNER:

CITY OF WEST LINN
CONTACT: KHOI LE, CIVIL ENGINEER II
22500 SALAMO, RD
WEST LINN, OR 97068
PHONE: (503) 722-5517

PLANNING / ENGINEERING:

MURRAY, SMITH & ASSOCIATES
CONTACT: JUSTIN FORD, P.E.
121 SW SALMON (SUITE 900)
PORTLAND, OR 97204
PHONE: (503) 225-9010

NARRATIVE DESCRIPTIONS:

EXISTING SITE CONDITIONS

* WATER RESERVOIR, PUMP STATION BUILDING; CITY OF WEST LINN ROADWAYS AND RIGHTS-OF-WAY

DEVELOPED CONDITIONS

* WATER RESERVOIR, PUMP STATION BUILDING, ASSOCIATED UTILITIES (WATER AND STORM PIPING), WATER MAIN, SIDEWALK, AND STREET IMPROVEMENTS.

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

* MOBILIZATION & PIPING IMPROVEMENTS (12/2015-4/2016)
* DEMOLITION, MASS EXCAVATION & GROUND IMPROVEMENT (4/2016-9/2016)
* RESERVOIR CONSTRUCTION (9/2016-5/2017)

DISTURBED AREAS = SCHEDULES A & B: RESERVOIR & PUMP STATION = 2.8 ACRES
SCHEDULE C: WATER MAIN = 0.7 ACRES
SCHEDULE D: SIDEWALK AND ROAD IMPROVEMENTS = 1.7 ACRES

TOTAL DISTURBED AREA = 5.2 ACRES

SITE SOIL CLASSIFICATION:
LANDSLIDE DEPOSITS, SILT (PORTLAND HILLS), ALLUVIAL DEPOSITS, FINE GRAINED SAND, CLAYEY SILT, DECOMPOSED BASALT.

RECEIVING WATER BODIES:
BOLTON CREEK AND MADDAX CREEK DRAINAGE BASINS

ATTENTION EXCAVATORS:

OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 503-232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. CALL 503-246-6699.

PERMITTEE'S SITE INSPECTOR:

NAME: _____
COMPANY/AGENCY: _____
PHONE: _____
FAX: _____
E-MAIL: _____
DESCRIPTION OF EXPERIENCE: _____

THE PERMITTEE IS REQUIRED TO MEET ALL THE CONDITIONS OF THE 1200C PERMIT. THIS ESCP AND GENERAL CONDITIONS HAVE BEEN DEVELOPED TO FACILITATE COMPLIANCE WITH THE 1200C PERMIT REQUIREMENTS. IN CASES OF DISCREPANCIES OR OMISSIONS, THE 1200C PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS OF THIS PLAN.

INSPECTION FREQUENCY:

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOWMELT, IS OCCURRING. AT LEAST ONCE EVERY TWO WEEKS, REGARDLESS OF WHETHER OR NOT RUNOFF IS OCCURRING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREATER THAN FOURTEEN (14) CALENDAR DAYS.	ONCE EVERY TWO (2) WEEKS.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.

* HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
* ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.
* INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS.
* RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, RETAIN THE ESCP AT THE CONSTRUCTION SITE OR AT ANOTHER LOCATION. (SCHEDULE B.2.A)

PROJECT LOCATIONS:

RESERVOIR & PUMP STATION - SCHEDULES A AND B - NORTH OF SKYLINE DRIVE AVE AND WEST OF SKYLINE CIRCLE IN THE CITY OF WEST LINN.

WATER MAIN AND STREET IMPROVEMENTS - SCHEDULES C AND D - PRIMARILY WITHIN THE FOLLOWING RIGHTS-OF-WAY: CLARK STREET, SKYLINE CIRCLE, SKYLINE DRIVE, EASY STREET, BROADWAY STREET, AND BUSE STREET.

PROPERTY DESCRIPTIONS:

RESERVOIR & PUMP STATION - SCHEDULES A AND B - TOWNSHIP 2 SOUTH, RANGE 1 EAST, SECTION 25, TAXLOT 7100.

WATER MAIN AND STREET IMPROVEMENTS - SCHEDULES C AND D - CITY OF WEST LINN ROADWAYS: CLARK STREET, SKYLINE CIRCLE, SKYLINE DRIVE, EASY STREET, BROADWAY STREET, AND BUSE STREET.

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ'S GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP'S WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

JHF
INITIAL

LOCAL AGENCY-SPECIFIC EROSION CONTROL NOTES:

1. WHEN RAINFALL AND RUNOFF OCCURS DAILY INSPECTIONS OF THE EROSION AND SEDIMENT CONTROLS AND DISCHARGE OUTFALLS MUST BE PROVIDED BY SOME ONE KNOWLEDGEABLE AND EXPERIENCED IN THE PRINCIPLES, PRACTICES, INSTALLATION, AND MAINTENANCE OF EROSION AND SEDIMENT CONTROLS WHO WORKS FOR THE PERMITTEE.
2. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR.
3. DURING WET WEATHER PERIOD, TEMPORARY STABILIZATION OF THE SITE MUST OCCUR AT THE END OF EACH WORK DAY.
4. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION. THEY MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED.
5. ALL ACTIVE INLETS MUST HAVE SEDIMENT CONTROLS INSTALLED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. UNLESS OTHERWISE APPROVED, A SURFACE MOUNTED AND ATTACHABLE, U-SHAPED FILTER BAG IS REQUIRED FOR ALL CURB INLET CATCH BASINS.
6. SIGNIFICANT AMOUNTS OF SEDIMENT WHICH LEAVES THE SITE MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FOUND AND PREVENTED FROM CAUSING A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DEPARTMENT OF STATE LANDS REQUIRED TIME FRAME.
7. SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES.
8. SEDIMENT MUST BE REMOVED FROM BEHIND ALL SEDIMENT CONTROL MEASURES WHEN IT HAS REACHED A HEIGHT OF 1/3RD THE BARRIER HEIGHT, AND PRIOR TO THE CONTROL MEASURES REMOVAL.
9. CLEANING OF ALL STRUCTURES WITH SUMPS MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY 50% AND AT COMPLETION OF PROJECT.
10. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL.
11. THE PERMITTEE MUST PROPERLY MANAGE HAZARDOUS WASTES, USED OILS, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION.
12. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS. NUTRIENT RELEASES FROM FERTILIZERS TO SURFACE WATERS MUST BE MINIMIZED. TIME RELEASE FERTILIZERS SHOULD BE USED AND CARE SHOULD BE MADE IN APPLICATION OF FERTILIZERS WITHIN ANY WATER WAY RIPARIAN ZONE.
13. DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH CURRENT CITY OF WEST LINN PUBLIC WORKS STANDARDS AND STATE, AND FEDERAL REGULATIONS.
14. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BOUNDARIES OF THE CLEARING LIMITS, VEGETATED BUFFERS, AND ANY SENSITIVE AREAS SHOWN ON THIS PLAN SHALL BE CLEARLY DELINEATED IN THE FIELD. UNLESS OTHERWISE APPROVED, NO DISTURBANCE IS PERMITTED BEYOND THE CLEARING LIMITS. THE PERMITTEE MUST MAINTAIN THE DELINEATION FOR THE DURATION OF THE PROJECT. NOTE: VEGETATED CORRIDORS TO BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL.
15. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BMPS THAT MUST BE INSTALLED ARE GRAVEL CONSTRUCTION ENTRANCE, PERIMETER SEDIMENT CONTROL, AND INLET PROTECTION. THESE BMPS MUST BE MAINTAINED FOR THE DURATION OF THE PROJECT.
16. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE NO LATER THAN SEPTEMBER 1ST; THE TYPE AND PERCENTAGES OF SEED IN THE MIX ARE AS IDENTIFIED ON THE PLANS OR AS SPECIFIED BY THE DESIGN ENGINEER.
17. WATER-TIGHT TRUCKS MUST BE USED TO TRANSPORT SATURATED SOILS FROM THE CONSTRUCTION SITE. AN APPROVED EQUIVALENT IS TO DRAIN THE SOIL ON SITE AT A DESIGNATED LOCATION USING APPROPRIATE BMPS; SOIL MUST BE DRAINED SUFFICIENTLY FOR MINIMAL SPILLAGE.
18. ALL PUMPING OF SEDIMENT LADEN WATER MUST BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP (I.E. FILTER BAG).
19. THE ESC PLAN MUST BE KEPT ONSITE. ALL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED PROPERLY TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER A SURFACE WATER SYSTEM, ROADWAY, OR OTHER PROPERTIES.
20. THE ESC MEASURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE MEASURES SHALL BE UPGRADED AS NEEDED TO MAINTAIN COMPLIANCE WITH ALL REGULATIONS.
21. WRITTEN ESC LOGS ARE SUGGESTED TO BE MAINTAINED ONSITE AND AVAILABLE TO CITY OF WEST LINN INSPECTORS UPON REQUEST.
22. IN AREAS SUBJECT TO WIND EROSION, APPROPRIATE BMPS MUST BE USED WHICH MAY INCLUDE THE APPLICATION OF FINE WATER SPRAYING, PLASTIC SHEETING, MULCHING, OR OTHER APPROVED MEASURES.
23. ALL EXPOSED SOILS MUST BE COVERED DURING WET WEATHER PERIOD.

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

1. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.A)
2. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT. (SCHEDULE A.12.C.II)
3. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A B.C.II.(1)(D))
4. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.B.III(1) AND A.7.B.III(3))
5. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.C.I.(6))
6. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS. (SCHEDULE A.8.C.I.(2))
7. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCH A 7.E.III.)
8. IF A STORMWATER TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
9. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.B)
10. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT. AND BEFORE BMP REMOVAL. (SCHEDULE A.9.C.II)
11. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
12. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)

BMP MATRIX FOR CONSTRUCTION PHASES:

REFER TO DEQ GUIDANCE MANUAL FOR A LIST OF AVAILABLE BMP'S.

	CLEARING	MASS GRADING	UTILITY INSTALLATION	STREET CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (OCT. 1 - MAY 31ST)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION	**X	X	X	X	X	X
GROUND COVER					X	X
PLASTIC SHEETING						X
DUST CONTROL	X	X	X	X		X
TEMPORARY/ PERMANENT SEEDING		X	X	X	X	X
MATTING					X	X
SEDIMENT CONTROL						
SEDIMENT FENCE (PERIMETER)	**X	X	X	X		X
SEDIMENT FENCE (INTERIOR)			X	X		X
BIO BAGS		X	X	X		X
INLET PROTECTION	**X	X	X	X		X
DEWATERING (GENERAL)			X	X		
STRAW WATTLES			X	X	X	X
FILTER BERM	X	X	X	X		
RUN-OFF CONTROL						
CONSTRUCTION ENTRANCE	**X	X	X	X		
CHECK DAMS	**X	X	X	X	X	
OUTLET PROTECTION	X	X	X	X		
SURFACE ROUGHENING						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
CONCRETE WASH OUT AREA	X	X	X	X		X

** SIGNIFIES BMP THAT WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBING ACTIVITY.

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

SHEET ESC-1 X of 167

OREGON JUSTIN HENRY FORD 89988 RENEWS 12-30-15

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

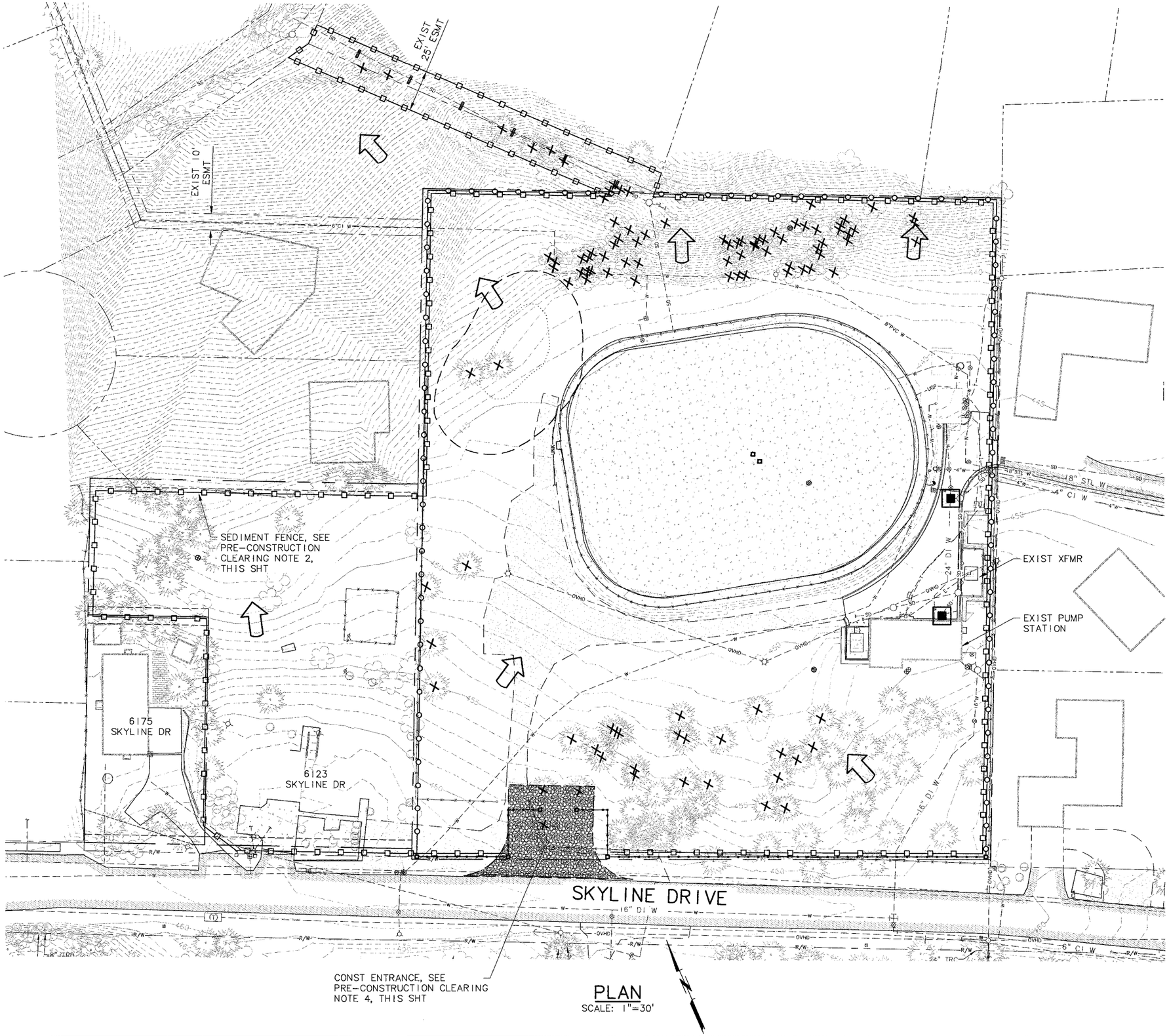
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: EROSION AND SEDIMENT CONTROL COVER SHEET

Murray, Smith & Associates, Inc.
Engineers/ Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\ESC\14-1586-OR-ESC-1.dwg ESC-1 9/1/2015 12:28 PM JHF 20.0s (LMS Tech)



PLAN
SCALE: 1"=30'

LEGEND

- EXISTING CONTOURS (1')
- EXISTING CONTOURS (5')
- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING (PERIMETER)
- TREES TO BE REMOVED

PRE-CONSTRUCTION CLEARING NOTES:

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

2. SEDIMENT BARRIERS APPROVED FOR USE INCLUDE SEDIMENT FENCE, BERMS CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.

3. SENSITIVE RESOURCES INCLUDING, BUT NOT LIMITED TO, TREES, WETLANDS, AND RIPARIAN PROTECTION AREAS SHALL BE CLEARLY DELINEATED WITH ORANGE CONSTRUCTION FENCING OR CHAIN LINK FENCING IN A MANNER THAT IS CLEARLY VISIBLE TO ANYONE IN THE AREA. NO ACTIVITIES ARE PERMITTED TO OCCUR BEYOND THE CONSTRUCTION BARRIER.

4. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, STREET SWEEPING, AND VACUUMING, MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT. SEE DETAIL SHEET ESC-10.

5. RUN-ON AND RUN-OFF CONTROLS SHALL BE IN PLACE AND FUNCTIONING PRIOR TO BEGINNING SUBSTANTIAL CONSTRUCTION ACTIVITIES. RUN-ON AND RUN-OFF CONTROL MEASURES INCLUDE: SLOPE DRAINS (WITH OUTLET PROTECTION), CHECK DAMS, SURFACE ROUGHENING, AND BANK STABILIZATION.

6. LIMIT SPEED OF VEHICLES ON SITE AND MOISTEN HAUL ROADS AS necessary TO CONTROL DUST.

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

SHEET ESC-2
X of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 21, 2007 JUSTIN HENRY TORO 69688
RENEWS 12-30-15

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULES A & B - INITIAL CLEARING AND GRADING**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\ESC\14-1586-OR-ESC-2_3.dwg ESC-2 8/31/2015 12:58 PM JHF 20.0s (LMS Tech)

GRADING, STREET AND UTILITY EROSION AND SEDIMENT CONSTRUCTION NOTES:

1. SEED USED FOR TEMPORARY OR PERMANENT SEEDING SHALL BE COMPOSED OF ONE OF THE FOLLOWING MIXTURES, UNLESS OTHERWISE AUTHORIZED:
   A. VEGETATED CORRIDOR AREAS REQUIRE NATIVE SEED MIXES. SEE RESTORATION PLAN FOR APPROPRIATE SEED MIX.
   B. DWARF GRASS MIX (MINIMUM 100 LB/AC).
      1. DWARF PERENNIAL RYEGRASS (80% BY WEIGHT).
      2. CREEPING RED FESCUE (20% BY WEIGHT).
   C. STANDARD HEIGHT GRASS MIX (MINIMUM 100 LB/AC).
      1. ANNUAL RYEGRASS (40% BY WEIGHT).
      2. TURF-TYPE FESCUE (60% BY WEIGHT).

2. SLOPES AND DISTURBED AREAS TO RECEIVE TEMPORARY OR PERMANENT SEEDING SHALL HAVE THE SURFACE ROUGHENED BY MEANS OF TRACK-WALKING OR THE USE OF OTHER APPROVED IMPLEMENTS. SURFACE ROUGHENING IMPROVES SEED BEDDING AND REDUCES RUN-OFF VELOCITY.

3. LONG TERM SLOPE AND DISTURBED AREAS STABILIZATION MEASURES SHALL INCLUDE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER VIA SEEDING WITH APPROVED MIX AND APPLICATION RATE. SEE SPECIFICATIONS. IN ADDITION, ALL SLOPES OF 2:1 OR GREATER SHALL RECEIVE MATTING.

4. TEMPORARY SLOPE AND DISTURBED AREAS STABILIZATION MEASURES SHALL INCLUDE: COVERING EXPOSED SOIL WITH PLASTIC SHEETING, STRAW MULCHING, WOOD CHIPS, OR OTHER APPROVED MEASURES.

5. STOCKPILED SOIL OR STRIPPINGS SHALL BE PLACED IN A STABLE LOCATION AND CONFIGURATION. DURING "WET WEATHER" PERIODS, STOCKPILES SHALL BE COVERED WITH PLASTIC SHEETING OR STRAW MULCH. SEDIMENT FENCE IS REQUIRED AROUND THE PERIMETER OF THE STOCKPILE.

6. EXPOSED CUT OR FILL AREAS SHALL BE STABILIZED THROUGH THE USE OF TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS OR MATS, MID-SLOPE SEDIMENT FENCES OR WATTLES, OR OTHER APPROPRIATE MEASURES. SLOPES EXCEEDING 25% MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES.

7. AREAS SUBJECT TO WIND EROSION SHALL USE APPROPRIATE DUST CONTROL MEASURES INCLUDING THE APPLICATION OF A FINE SPRAY OF WATER, PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.

8. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES INCLUDING, BUT NOT LIMITED TO, TIRE WASHES, STREET SWEEPING, AND VACUUMING MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

9. ACTIVE INLETS TO STORM WATER SYSTEMS SHALL BE PROTECTED THROUGH THE USE OF APPROVED INLET PROTECTION MEASURES. ALL INLET PROTECTION MEASURES ARE TO BE REGULARLY INSPECTED AND MAINTAINED AS NEEDED.

10. SATURATED MATERIALS THAT ARE HAULED OFF-SITE MUST BE TRANSPORTED IN WATER-TIGHT TRUCKS TO ELIMINATE SPILLAGE OF SEDIMENT AND SEDIMENT-LADEN WATER.

11. AN AREA SHALL BE PROVIDED FOR THE WASHING OUT OF CONCRETE TRUCKS IN A LOCATION THAT DOES NOT PROVIDE RUN-OFF THAT CAN ENTER THE STORM WATER SYSTEM. IF THE CONCRETE WASH-OUT AREA CAN NOT BE CONSTRUCTED GREATER THAN 50' FROM ANY DISCHARGE POINT, SECONDARY MEASURES SUCH AS BERM OR TEMPORARY SETTLING PITS MAY BE REQUIRED. THE WASH-OUT SHALL BE LOCATED WITHIN SIX FEET OF TRUCK ACCESS AND BE CLEANED WHEN IT REACHES 50% OF THE CAPACITY.

12. SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE SHALL NOT BE TRANSFERRED TO THE STORM WATER SYSTEM. SWEEPINGS SHALL BE PICKED UP AND DISPOSED IN THE TRASH.

13. AVOID PAVING IN WET WEATHER WHEN PAVING CHEMICALS CAN RUN-OFF INTO THE STORM WATER SYSTEM.

14. USE BMPS SUCH AS CHECK-DAMS, BERMS, AND INLET PROTECTION TO PREVENT RUN-OFF FROM REACHING DISCHARGE POINTS.

15. COVER CATCH BASINS, MANHOLES, AND OTHER DISCHARGE POINTS WHEN APPLYING SEAL COAT, TACK COAT, ETC. TO PREVENT INTRODUCING THESE MATERIALS TO THE STORM WATER SYSTEM.

EROSION AND SEDIMENT CONTROL BMP IMPLEMENTATION:

1. ALL BASE ESC MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

2. "STOCK PILE AREA" SHALL BE DESIGNATED PRIOR TO EXCAVATION CUT ACTIVITIES.

3. ALL "SEDIMENT BARRIERS (TO BE INSTALLED AFTER GRADING)" SHALL BE INSTALLED IMMEDIATELY FOLLOWING ESTABLISHMENT OF FINISHED GRADE AS SHOWN ON THESE PLANS.

4. LONG TERM SLOPE STABILIZATION MEASURES "INCLUDING SEEDING, JUTE MATTING, WATTLES, AND ROCK CHECK DAMS" SHALL BE IN-PLACE OVER ALL EXPOSED SOILS BY OCTOBER 1.

5. THE STORM WATER FACILITIES SHALL BE CONSTRUCTED AND LANDSCAPED PRIOR TO THE STORM WATER SYSTEM FUNCTIONING AND SITE PAVING.

6. INLET PROTECTION SHALL BE IN-PLACE IMMEDIATELY FOLLOWING PAVING ACTIVITIES.

EROSION CONTROL NOTES

(1) EMERGENCY EROSION CONTROL MATERIALS MUST BE KEPT ON SITE AT ALL TIMES.

(2) INSTALL, INSPECT, CLEAN, AND MAINTAIN SEDIMENT FENCE TO PREVENT SEDIMENT LADEN WATER FROM LEAVING THE SITE THROUGHOUT CONSTRUCTION. SEDIMENT FENCE SHALL BE INSTALLED PARALLEL TO SLOPE CONTOURS. ADDITIONAL SEDIMENT FENCE MAY BE REQUIRED BASED ON SITE CONDITIONS AND MEANS AND METHODS DEVELOPED BY CONTRACTOR. OVERLAY SEDIMENT FENCE 6" MINIMUM.

(3) INSPECT, CLEAN, AND MAINTAIN GRAVEL CONSTRUCTION ENTRANCE TO PREVENT SEDIMENT AND SEDIMENT LADEN WATER FROM LEAVING THE SITE THROUGHOUT CONSTRUCTION.

(4) ADDITIONAL TRACKING CONTROL MEASURES SUCH AS A WHEEL WASH MAY BE NECESSARY IF CONSTRUCTION ENTRANCE IS NOT SUFFICIENT.

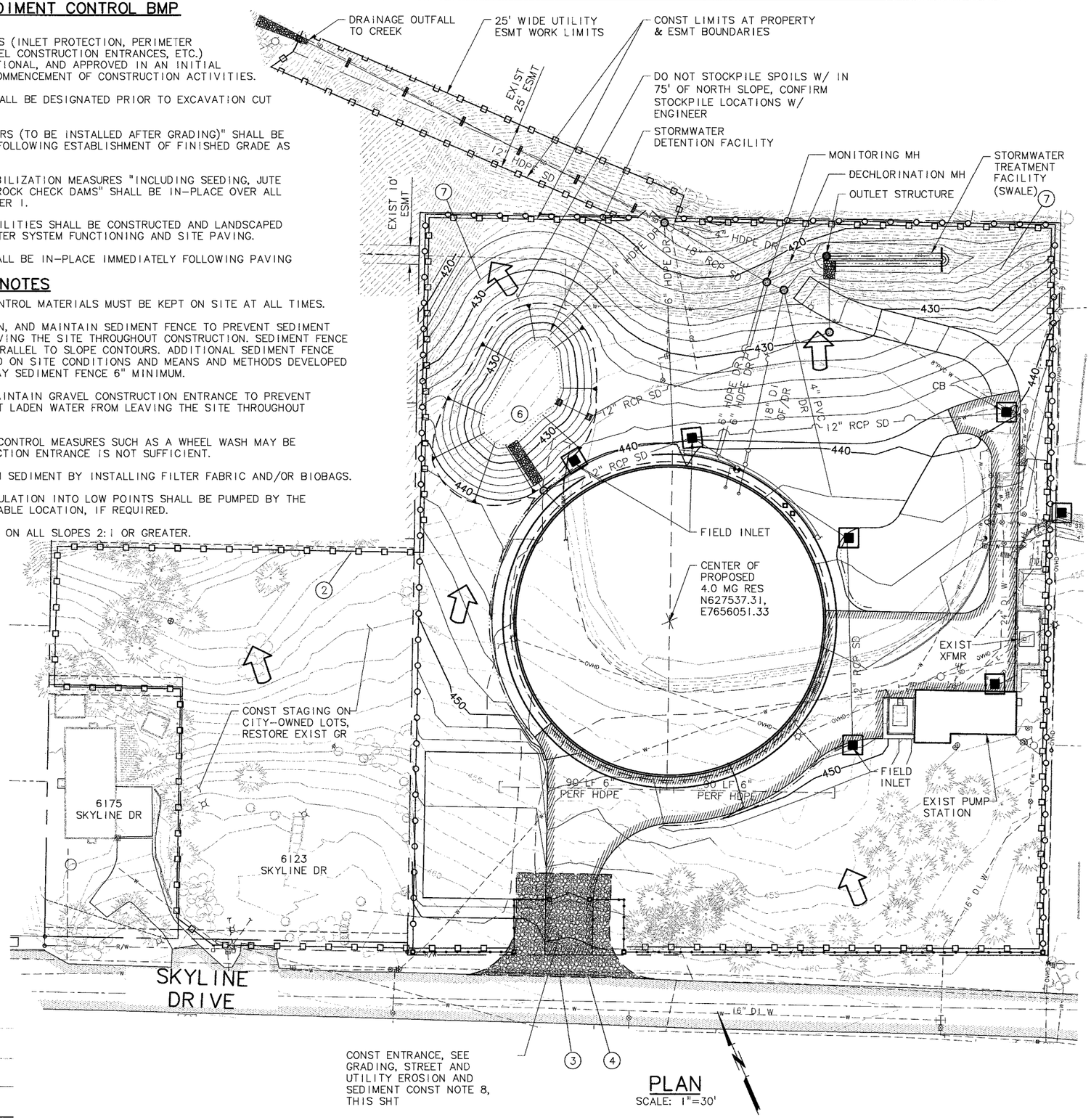
(5) PROTECT CULVERTS FROM SEDIMENT BY INSTALLING FILTER FABRIC AND/OR BIOBAGS.

(6) ON-SITE RUNOFF ACCUMULATION INTO LOW POINTS SHALL BE PUMPED BY THE CONTRACTOR TO A SUITABLE LOCATION, IF REQUIRED.

(7) INSTALL SLOPE MATTING ON ALL SLOPES 2:1 OR GREATER.

LEGEND

- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING (PERIMETER)
- TREES TO REMAIN AND BE PROTECTED
- EXISTING CONTOURS (1')
- EXISTING CONTOURS (5') 445'
- PROPOSED CONTOURS (2')
- PROPOSED CONTOURS (10') 450'



PLAN
SCALE: 1"=30'

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\ESC\14-1586-OR-ESC-2_3.dwg ESC-3 8/31/2015 12:58 PM JHF 20.0s (LMS Tech)

REVISION | BY | NO. | DATE

DESIGNED: JHF
DRAWN: RLF
CHECKED: AJG
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUSTIN HENRY LONG — 69588 — RENEWS 12-30-15

SCALE — VERT: AS SHOWN — HORIZ: AS SHOWN
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1")

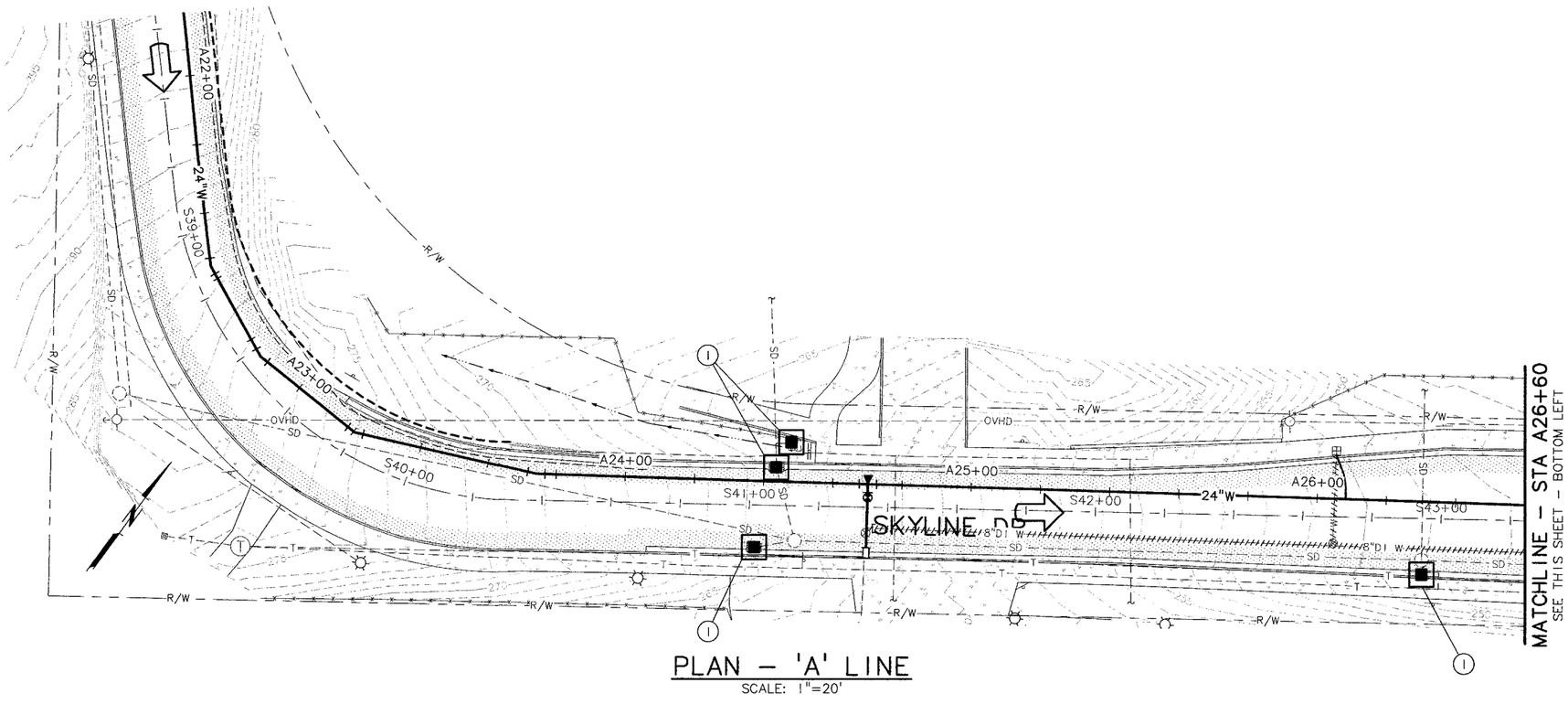
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULES A & B - CONSTRUCTION AND FINAL GRADING**

SHEET ESC-3 x of 167

Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

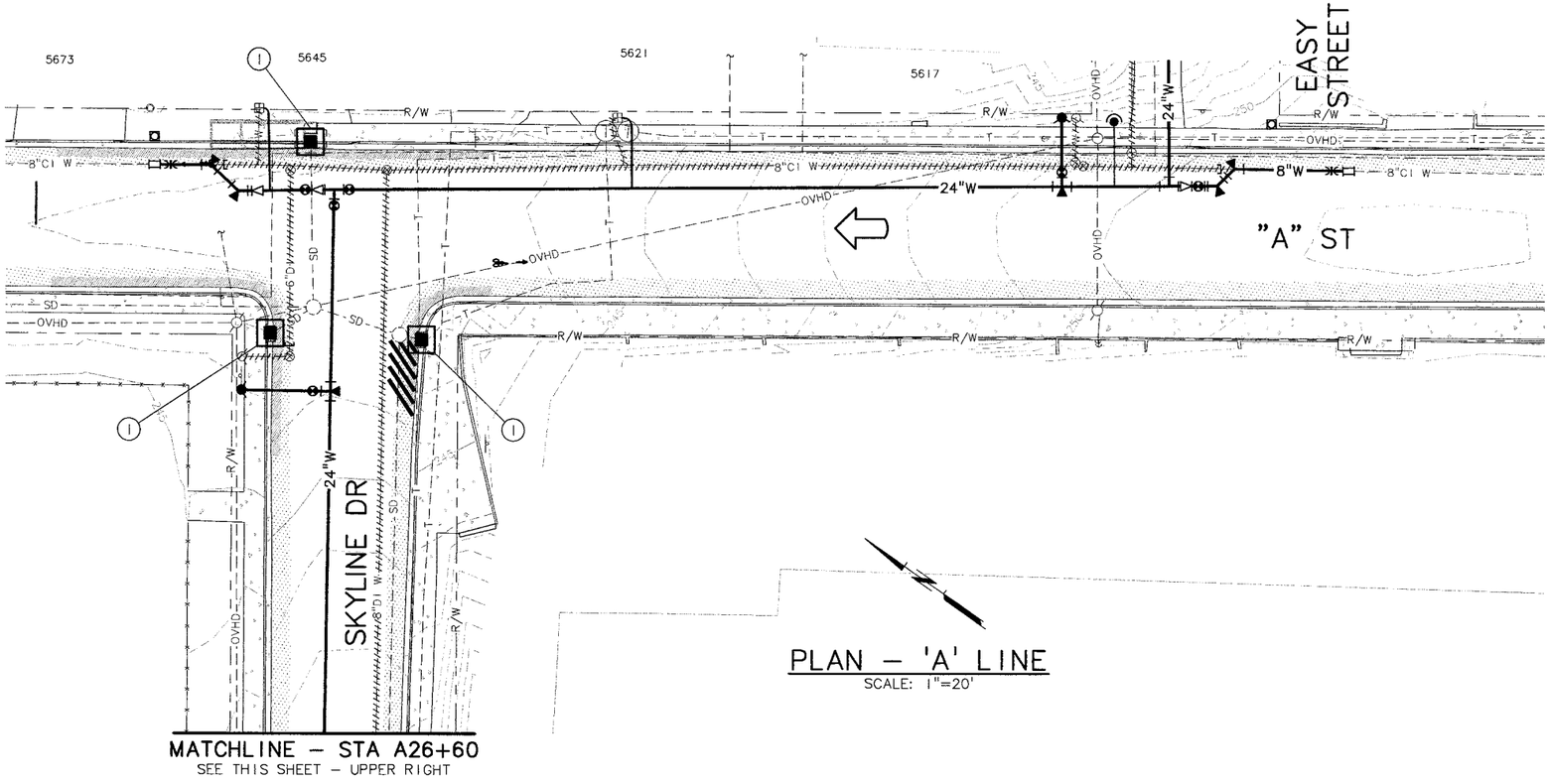
MSA PROJECT: 14-1586 — DATE: SEPTEMBER 2015



PLAN – 'A' LINE
SCALE: 1"=20'

KEY NOTES:

(1) INSTALL TYPE 5 INLET PROTECTION WITH TYPE 4 INLET PROTECTION WHEN CURB OPENINGS ARE PRESENT



PLAN – 'A' LINE
SCALE: 1"=20'

NOTES:

1. BEST MANAGEMENT PRACTICES (BMPS) SHOWN ARE THOSE OF A TYPICAL URBAN ROADWAY WITH PIPE ALIGNMENT IN PAVEMENT. PROVIDE BMPS AS NECESSARY TO SATISFY REQUIREMENTS OF THE 1200–C PERMIT.

2. WATTLES, PLASTIC SHEETING, AND SEDIMENT FENCE MUST BE KEPT ONSITE AS AN EMERGENCY EROSION AND SEDIMENT CONTROL BMPS.

3. GRAPHIC SYMBOLS ARE APPROXIMATE. PLACE EROSION CONTROL MEASURES AS REQUIRED OR DIRECTED.

4. SEE SHEETS ESC–9 AND ESC–10 FOR EROSION AND SEDIMENT CONTROL STANDARD DETAILS.

5. FOR ACCESS POINTS ONTO PAVED SURFACES, INSTALL CONSTRUCTION ENTRANCES OR CONSTRUCT AGGREGATE ROAD BASE AND GEOTEXTILE PER THE TYPICAL STREET SECTIONS, WHEN MUD AND DIRT TRACKING IS STILL EVIDENT, TAKE ADDITIONAL STEPS TO ELIMINATE TRACKING BY HOSING OFF TIRES BEFORE VEHICLES LEAVE THE SITE. PERFORM TIRE WASHING ON GRAVEL PADS.

LEGEND

EXISTING CONTOURS (1')

EXISTING CONTOURS (5') 270

INLET PROTECTION

DRAINAGE FLOW DIRECTION

PROPOSED WATERLINE 24"W

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON MAY 21, 1987 JUSTIN HENRY FORD 88868 RENEWS 12-30-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THIS DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULE C - TYPICAL PIPELINE INSTALLATION MEASURES**

SHEET ESC–4 X of 167

Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14–1586 DATE: SEPTEMBER 2015

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NOTES:

1. WATTLES, PLASTIC SHEETING, AND SEDIMENT FENCE MUST BE KEPT ONSITE AS EMERGENCY ESC BMPS.

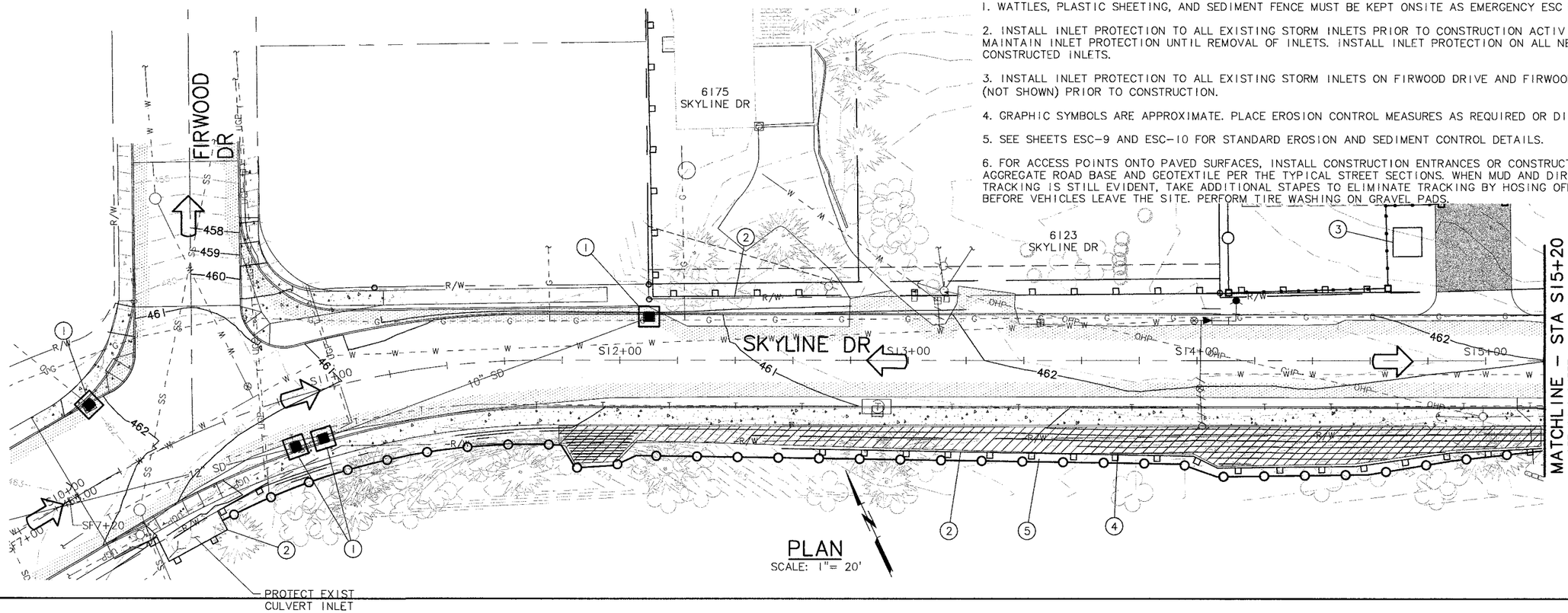
2. INSTALL INLET PROTECTION TO ALL EXISTING STORM INLETS PRIOR TO CONSTRUCTION ACTIVITIES. MAINTAIN INLET PROTECTION UNTIL REMOVAL OF INLETS. INSTALL INLET PROTECTION ON ALL NEWLY CONSTRUCTED INLETS.

3. INSTALL INLET PROTECTION TO ALL EXISTING STORM INLETS ON FIRWOOD DRIVE AND FIRWOOD COURT (NOT SHOWN) PRIOR TO CONSTRUCTION.

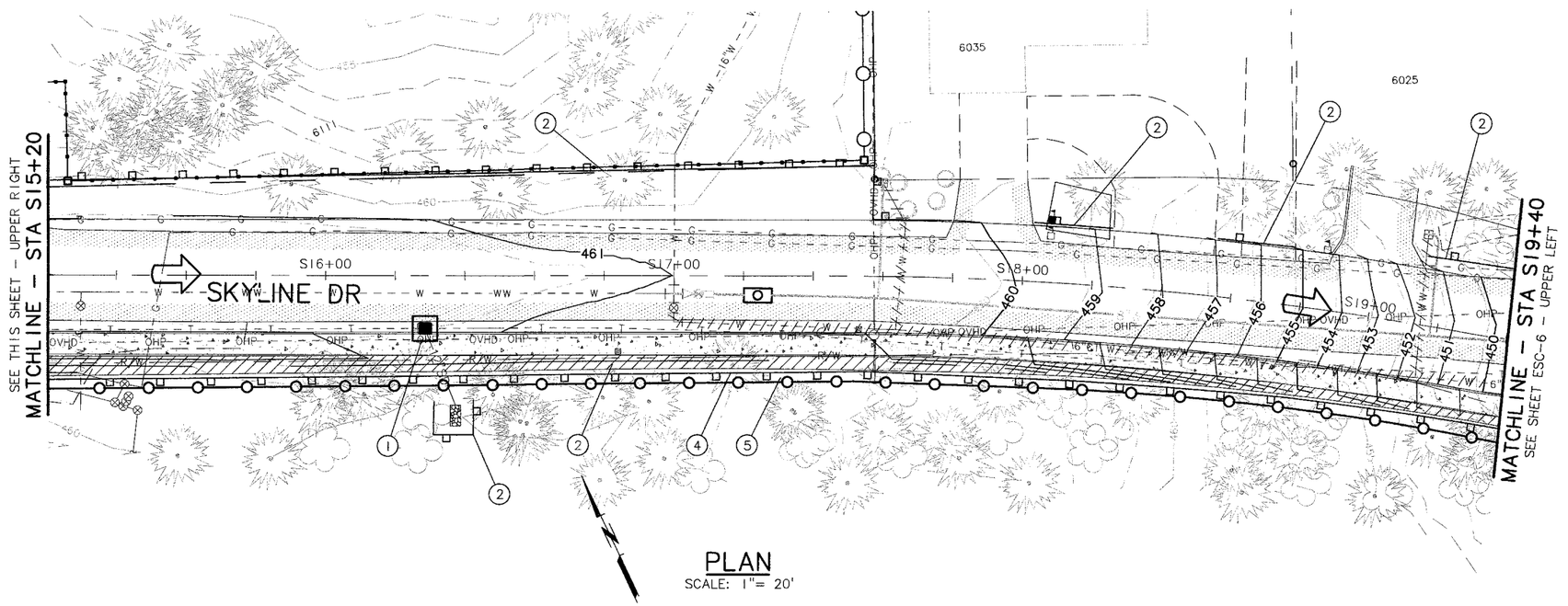
4. GRAPHIC SYMBOLS ARE APPROXIMATE. PLACE EROSION CONTROL MEASURES AS REQUIRED OR DIRECTED.

5. SEE SHEETS ESC-9 AND ESC-10 FOR STANDARD EROSION AND SEDIMENT CONTROL DETAILS.

6. FOR ACCESS POINTS ONTO PAVED SURFACES, INSTALL CONSTRUCTION ENTRANCES OR CONSTRUCT AGGREGATE ROAD BASE AND GEOTEXTILE PER THE TYPICAL STREET SECTIONS. WHEN MUD AND DIRT TRACKING IS STILL EVIDENT, TAKE ADDITIONAL STAPES TO ELIMINATE TRACKING BY HOSING OFF TIRES BEFORE VEHICLES LEAVE THE SITE. PERFORM TIRE WASHING ON GRAVEL PADS.



PLAN
SCALE: 1"= 20'



PLAN
SCALE: 1"= 20'

LEGEND

- EXISTING CONTOURS (1') — 459
- EXISTING CONTOURS (5') — 460
- PROPOSED CONTOURS (1') — 459
- PROPOSED CONTOURS (5') — 460
- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING
- PLASTIC MESH FENCE (NO WORK ZONE)
- CHECK DAM
- MATTING

KEY NOTES:

1. INSTALL INLET PROTECTION
2. INSTALL SEDIMENT FENCE
3. CONCRETE TRUCK WASHOUT, LOCATION PER CONTRACTOR, 10' SQUARE MIN
4. INSTALL SLOPE MATTING
5. INSTALL TEMP ORANGE PLASTIC FENCE

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 21, 1989 JUSTIN M. HENRY 83888 RENEWS 12-30-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
EROSION AND SEDIMENT CONTROL
SCHEDULE D - PLAN 1

SHEET ESC-5
11 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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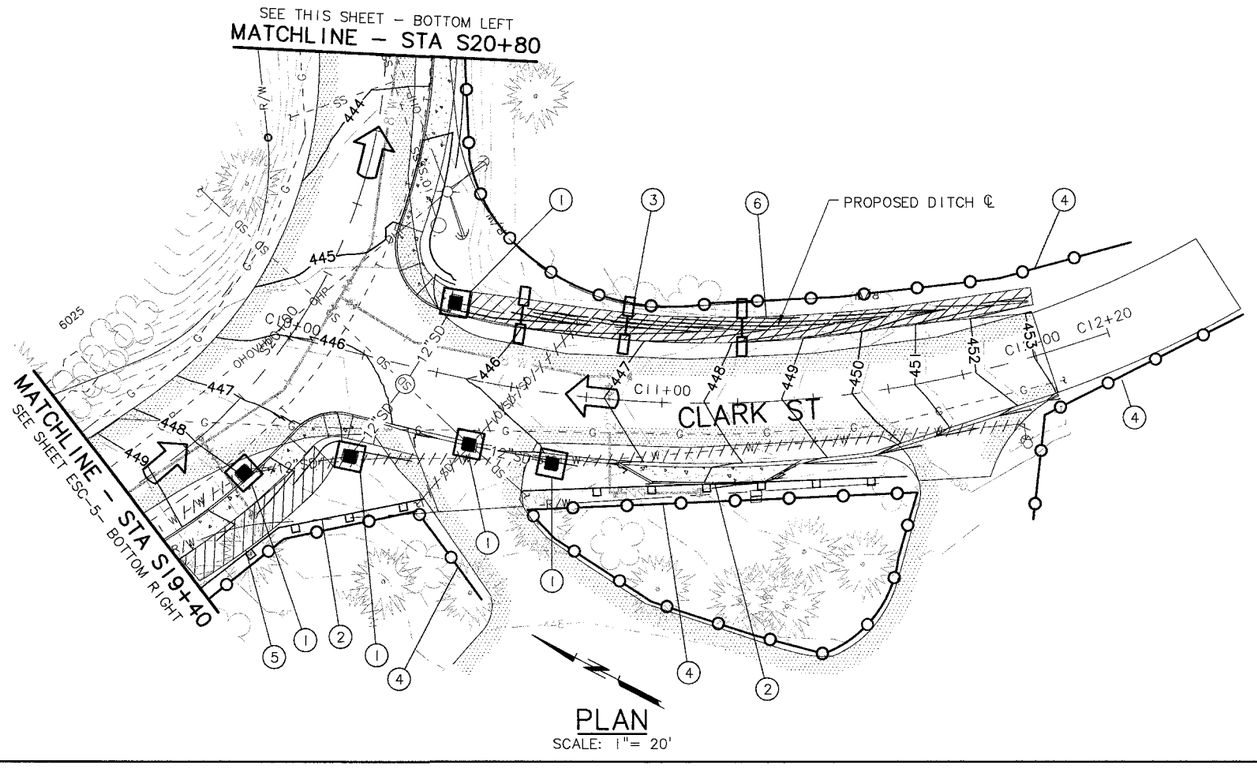


NOTES:

1. WATTLES, PLASTIC SHEETING, AND SEDIMENT FENCE MUST BE KEPT ONSITE AS EMERGENCY ESC BMPS.

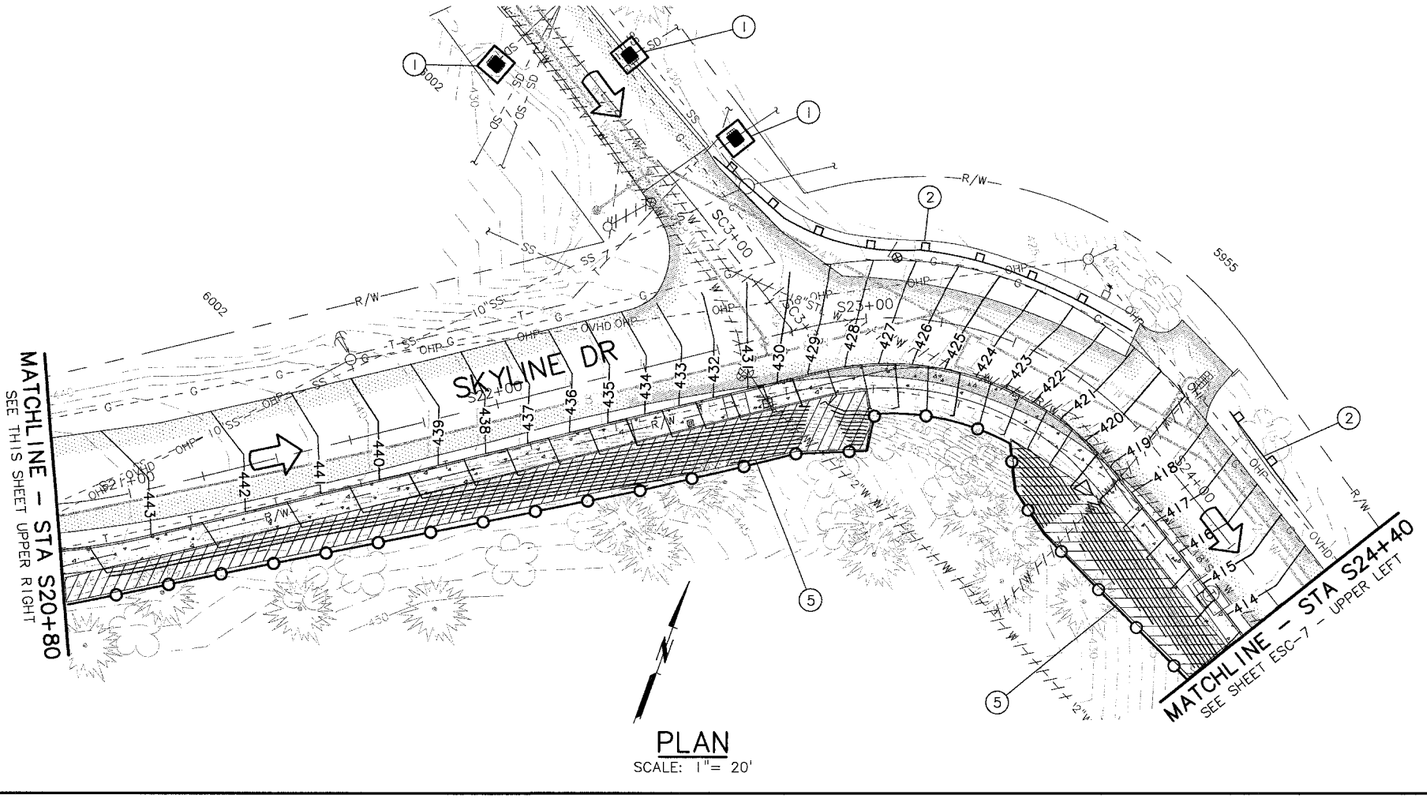
2. GRAPHIC SYMBOLS ARE APPROXIMATE. PLACE EROSION CONTROL MEASURES AS REQUIRED OR DIRECTED.

3. SEE SHEETS ESC-9 AND ESC-10 FOR STANDARD EROSION AND SEDIMENT CONTROL DETAILS.

4. FOR ACCESS POINTS ONTO PAVED SURFACES, INSTALL CONSTRUCTION ENTRANCES OR CONSTRUCT AGGREGATE ROAD BASE AND GEOTEXTILE PER THE TYPICAL STREET SECTIONS. WHEN MUD AND DIRT TRACKING IS STILL EVIDENT, TAKE ADDITIONAL STAPES TO ELIMINATE TRACKING BY HOSING OFF TIRES BEFORE VEHICLES LEAVE THE SITE. PERFORM TIRE WASHING ON GRAVEL PADS.

KEY NOTES:

1. INSTALL INLET PROTECTION
2. INSTALL SEDIMENT FENCE
3. INSTALL ROCK CHECK DAMS
4. INSTALL TEMP ORANGE PLASTIC FENCE
5. INSTALL SLOPE MATTING
6. INSTALL CHANNEL MATTING



LEGEND

- EXISTING CONTOURS (1')
- EXISTING CONTOURS (5')
- PROPOSED CONTOURS (1')
- PROPOSED CONTOURS (5')
- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING
- PLASTIC MESH FENCE (NO WORK ZONE)
- CHECK DAM
- MATTING

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG/MLM
APPROVED: TPB

SHEET ESC-6
12 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 21, 1972 JUSTIN M. HENRY 85688
RENEWS 12-30-15

SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 2**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

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NOTES:

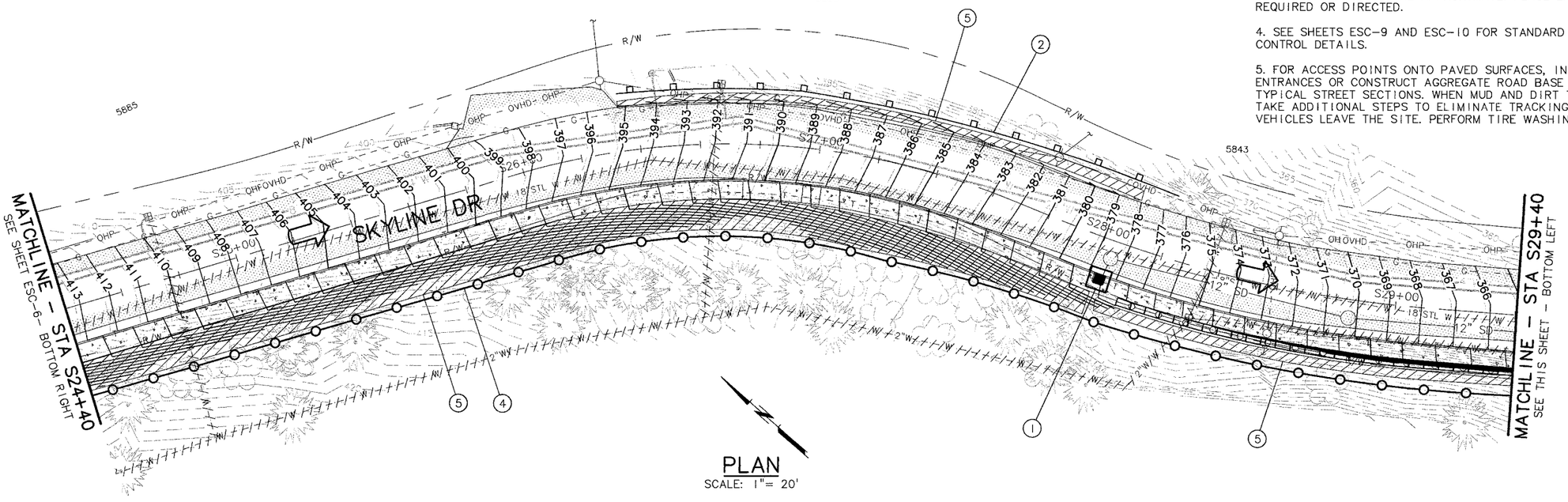
1. WATTLES, PLASTIC SHEETING, AND SEDIMENT FENCE MUST BE KEPT ONSITE AS EMERGENCY ESC BMPS.

2. INSTALL INLET PROTECTION TO ALL EXISTING STORM INLETS PRIOR TO CONSTRUCTION ACTIVITIES. MAINTAIN INLET PROTECTION UNTIL REMOVAL OF INLETS. INSTALL INLET PROTECTION ON ALL NEWLY CONSTRUCTED INLETS.

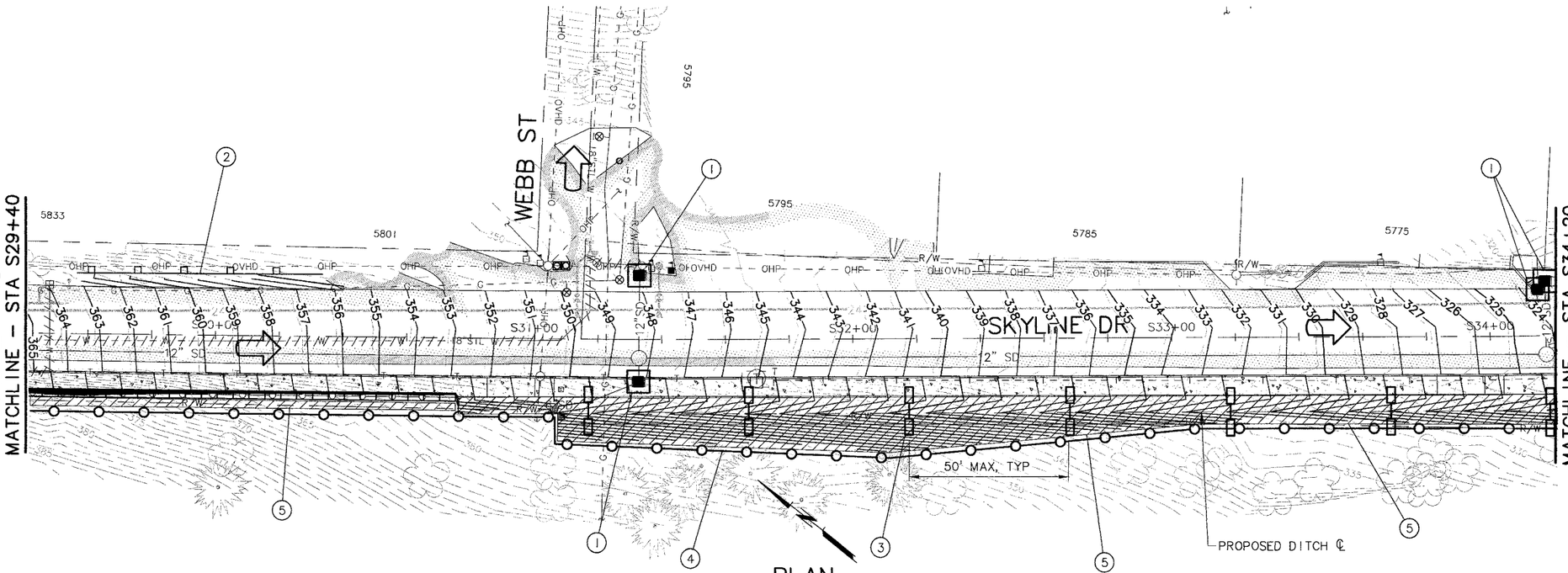
3. GRAPHIC SYMBOLS ARE APPROXIMATE. PLACE EROSION CONTROL MEASURES AS REQUIRED OR DIRECTED.

4. SEE SHEETS ESC-9 AND ESC-10 FOR STANDARD EROSION AND SEDIMENT CONTROL DETAILS.

5. FOR ACCESS POINTS ONTO PAVED SURFACES, INSTALL CONSTRUCTION ENTRANCES OR CONSTRUCT AGGREGATE ROAD BASE AND GEOTEXTILE PER THE TYPICAL STREET SECTIONS. WHEN MUD AND DIRT TRACKING IS STILL EVIDENT, TAKE ADDITIONAL STEPS TO ELIMINATE TRACKING BY HOSING OFF TIRES BEFORE VEHICLES LEAVE THE SITE. PERFORM TIRE WASHING ON GRAVEL PADS.



PLAN
SCALE: 1"= 20'



PLAN
SCALE: 1"= 20'

KEY NOTES:

1. INSTALL INLET PROTECTION
2. INSTALL SEDIMENT FENCE
3. INSTALL ROCK CHECK DAMS
4. INSTALL TEMP ORANGE PLASTIC FENCE
5. INSTALL SLOPE MATTING
6. INSTALL CHANNEL MATTING

LEGEND

- EXISTING CONTOURS (1') ——459——
- EXISTING CONTOURS (5') ——460——
- PROPOSED CONTOURS (1') — — —459— — —
- PROPOSED CONTOURS (5') ——460——
- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING
- PLASTIC MESH FENCE (NO WORK ZONE)
- CHECK DAM
- MATTING

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG/MLM
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 21, 2006 — JUSTIN M. HENRY — RENEWS: 12-30-15

SCALE — VERT: 1"=5' HORIZ: 1"=20'
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

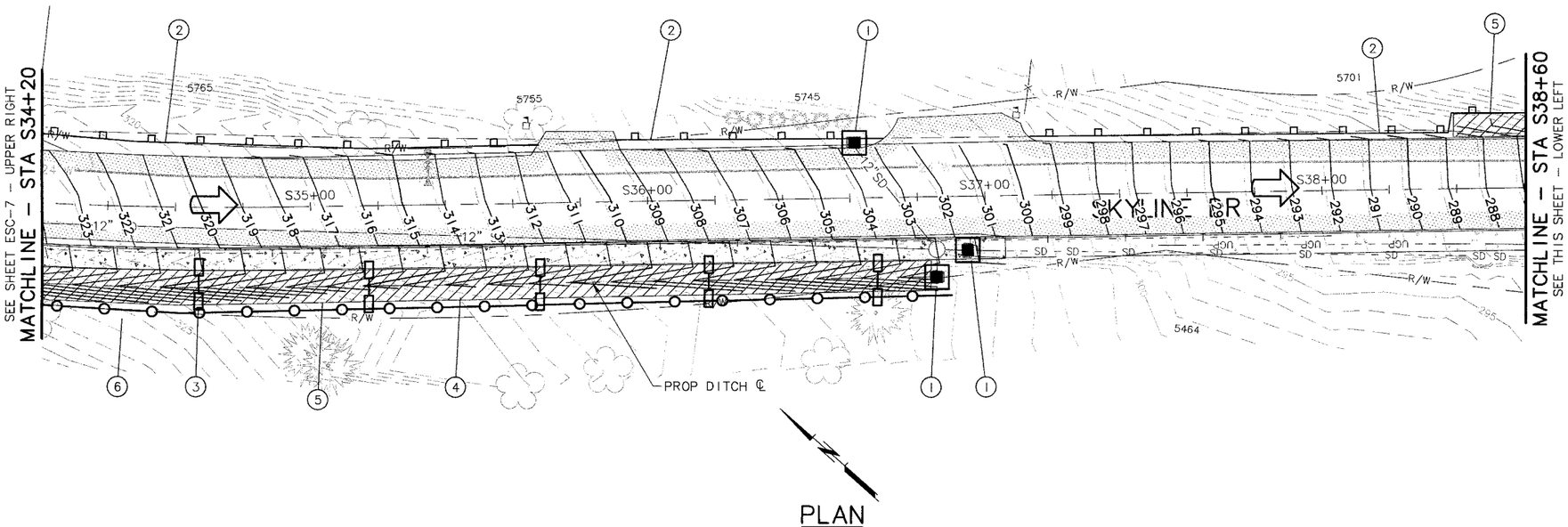
SHEET ESC-7 13 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 3**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586



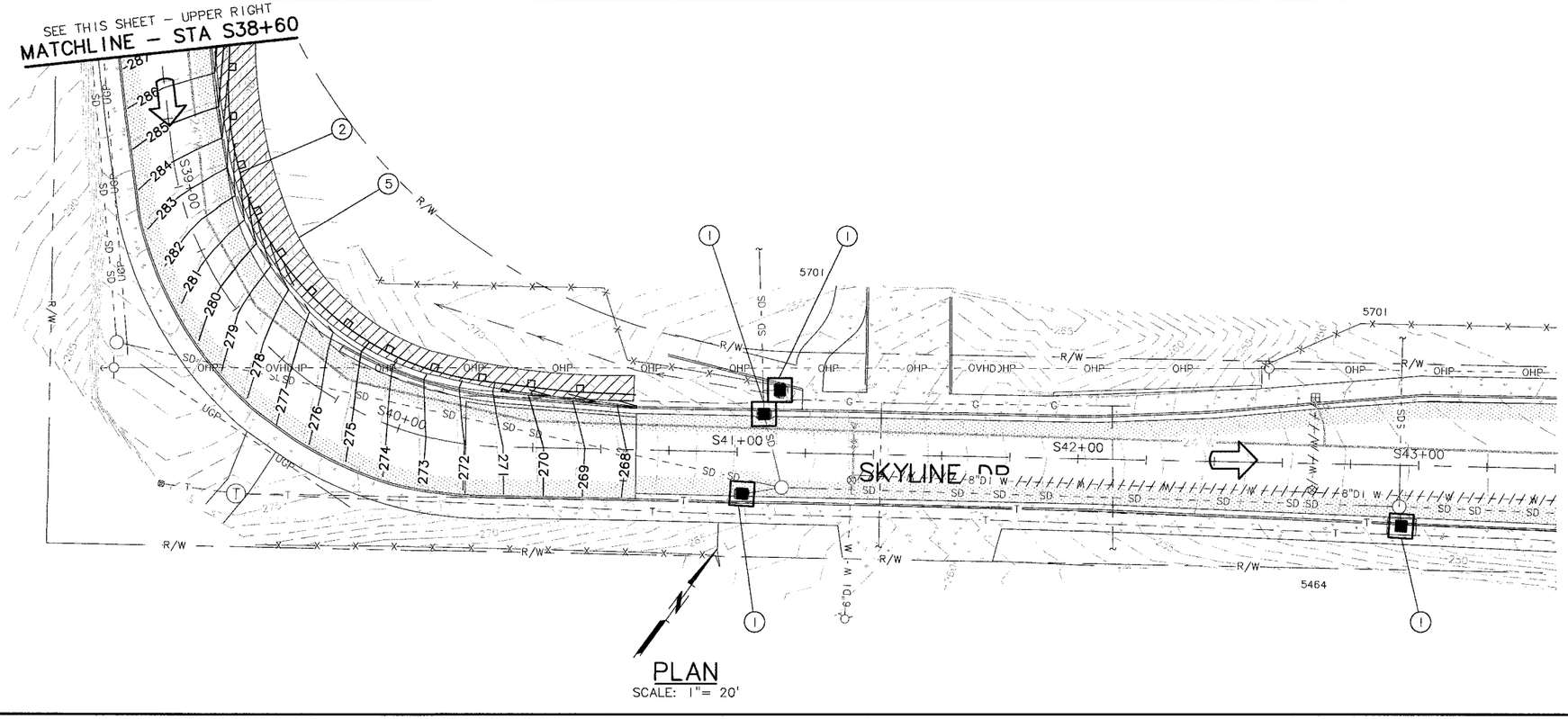
PLAN
SCALE: 1"= 20'

LEGEND

- EXISTING CONTOURS (1') — 459
- EXISTING CONTOURS (5') — 460
- PROPOSED CONTOURS (1') — 459
- PROPOSED CONTOURS (5') — 460
- INLET PROTECTION
- DRAINAGE FLOW DIRECTION
- SEDIMENT FENCING
- PLASTIC MESH FENCE (NO WORK ZONE)
- CHECK DAM
- MATTING

KEY NOTES:

1. INSTALL INLET PROTECTION
2. INSTALL SEDIMENT FENCE
3. CONCRETE TRUCK WASHOUT, LOCATION PER CONTRACTOR, 10' SQUARE MIN
4. INSTALL SLOPE MATTING
5. INSTALL TEMP ORANGE PLASTIC FENCE



PLAN
SCALE: 1"= 20'

NOTES:

1. WATTLES, PLASTIC SHEETING, AND SEDIMENT FENCE MUST BE KEPT ONSITE AS EMERGENCY ESC BMPS.

2. INSTALL INLET PROTECTION TO ALL EXISTING STORM INLETS PRIOR TO CONSTRUCTION ACTIVITIES. MAINTAIN INLET PROTECTION UNTIL REMOVAL OF INLETS. INSTALL INLET PROTECTION ON ALL NEWLY CONSTRUCTED INLETS.

3. GRAPHIC SYMBOLS ARE APPROXIMATE. PLACE EROSION CONTROL MEASURES AS REQUIRED OR DIRECTED.

4. SEE SHEETS ESC-9 AND ESC-10 FOR STANDARD EROSION AND SEDIMENT CONTROL DETAILS.

5. FOR ACCESS POINTS ONTO PAVED SURFACES, INSTALL CONSTRUCTION ENTRANCES OR CONSTRUCT AGGREGATE ROAD BASE AND GEOTEXTILE PER THE TYPICAL STREET SECTIONS. WHEN MUD AND DIRT TRACKING IS STILL EVIDENT, TAKE ADDITIONAL STEPS TO ELIMINATE TRACKING BY HOSING OFF TIRES BEFORE VEHICLES LEAVE THE SITE. PERFORM TIRE WASHING ON GRAVEL PADS.

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG/MLM
APPROVED: TPB

SHEET ESC-8
14 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 21, 1978 JUSTIN HENRY GIBBS
RENEWS 12-30-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL SCHEDULE D - PLAN 4**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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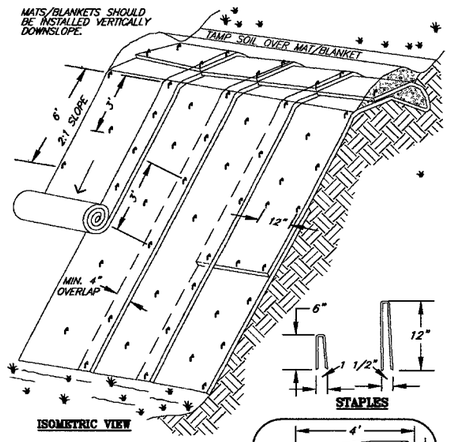


TYPICAL SLOPE SOIL STABILIZATION

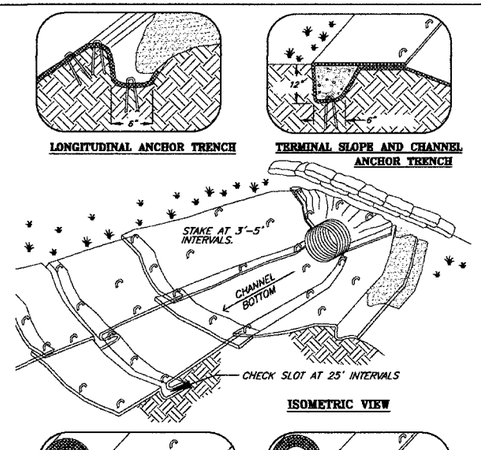
NOT TO SCALE

NOTES:
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

FILE: BLNKTSLP

MATTING - SLOPE INSTALLATION

DETAIL DRAWING 4-1 REVISED 01-09

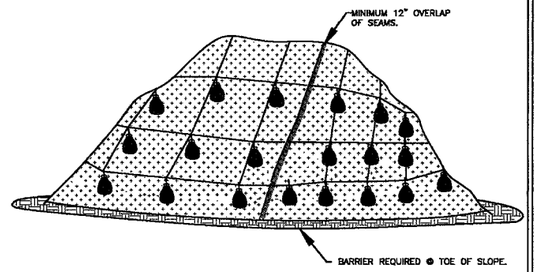


NOTES:
1. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
2. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

FILE: BLNKTCHA

MATTING - CHANNEL INSTALLATION

DETAIL DRAWING 4-2 REVISED 01-09

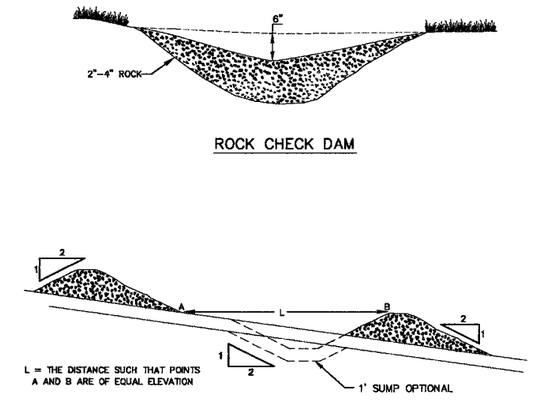


PLASTIC SHEETING

NOTES:
1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER REQUIRED @ TOE OF STOCK PILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS OR TIRES ON ROPES WITH A MAXIMUM 10' GRID SPACING IN ALL DIRECTIONS.

PLASTIC SHEETING

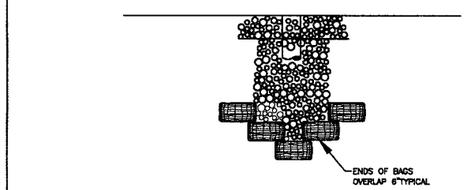
DETAIL DRAWING 4-3 REVISED 01-09



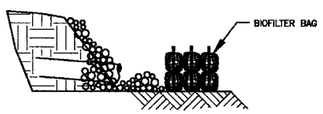
SPACING BETWEEN CHECK DAMS

CHECK DAM - ROCK

DETAIL DRAWING 4-4 REVISED 01-09



PLAN VIEW
NTS

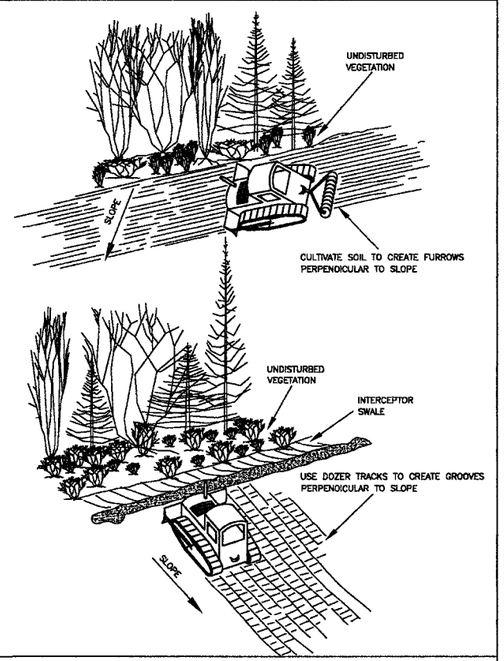


PROFILE

NOTE:
1. BIO BAGS ONLY REQUIRED WHEN DISCHARGING SEDIMENT LADEN WATER.
2. STAKING OF BAGS REQUIRED WITH EITHER METHOD USING (2) 1"x 2" WOOD STAKES OR APPROVED EQUAL PER BAG.

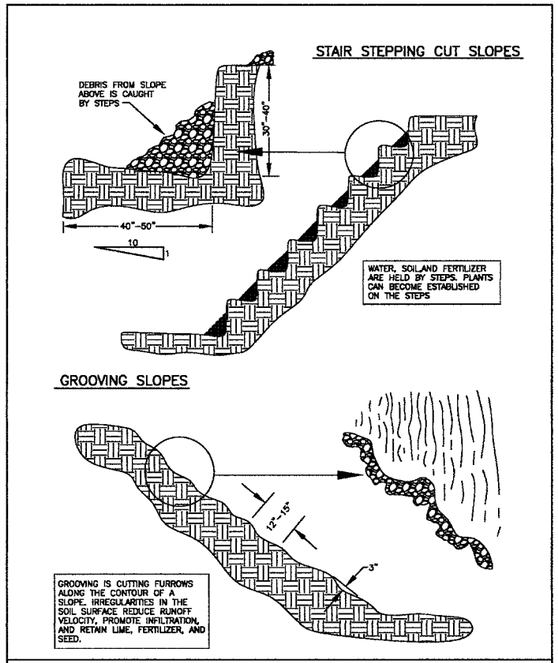
OUTLET PROTECTION - RIP RAP

DETAIL DRAWING 4-7 REVISED 01-09



SURFACE ROUGHENING - CAT TRACKING

DETAIL DRAWING 4-10 REVISED 01-09



SURFACE ROUGHENING - STAIR STEPPING/GROOVING

DETAIL DRAWING 4-11 REVISED 01-09

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

SHEET ESC-9 X of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUSTIN HENRY FORD — 85858 — MAY 21, 2010

RENEWS: 12-30-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

0 1

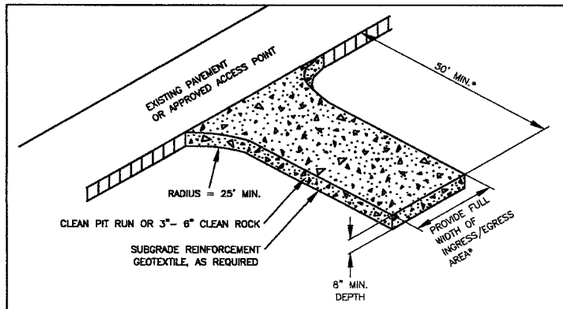
NOTICE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

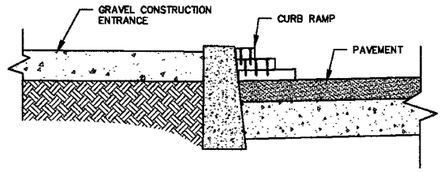
SHEET TITLE: **EROSION AND SEDIMENT CONTROL ALL SCHEDULES - STANDARD DETAILS - 1**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



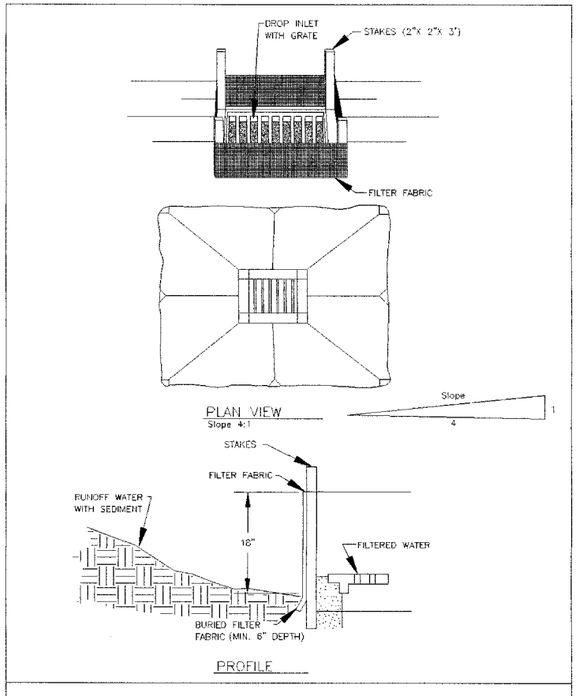
*20' MIN. FOR SINGLE FAMILY AND DUPLEX RESIDENTIAL



NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF- WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
5. DIMENSIONS
   SINGLE FAMILY
   20' LONG BY 20' WIDE 8" DEEP OF ¾" MINUS CLEAN ROCK.
   COMMERCIAL
   50' LONG BY 20' WIDE 3-6" CLEAN ROCK, GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

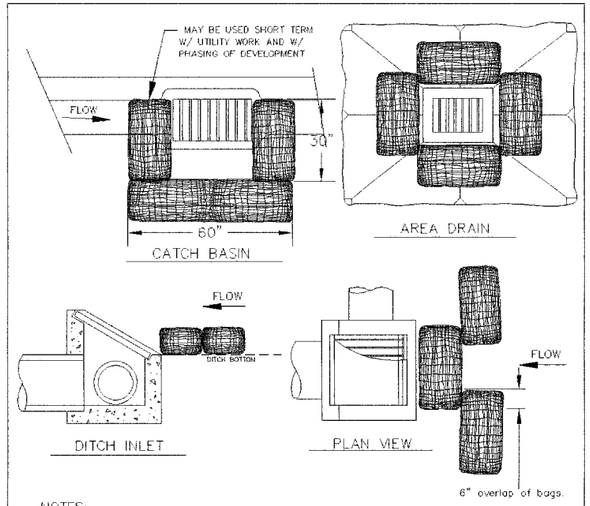
CONSTRUCTION ENTRANCE

DETAIL DRAWING 4-13 REVISED 01-09



INLET PROTECTION TYPE 3

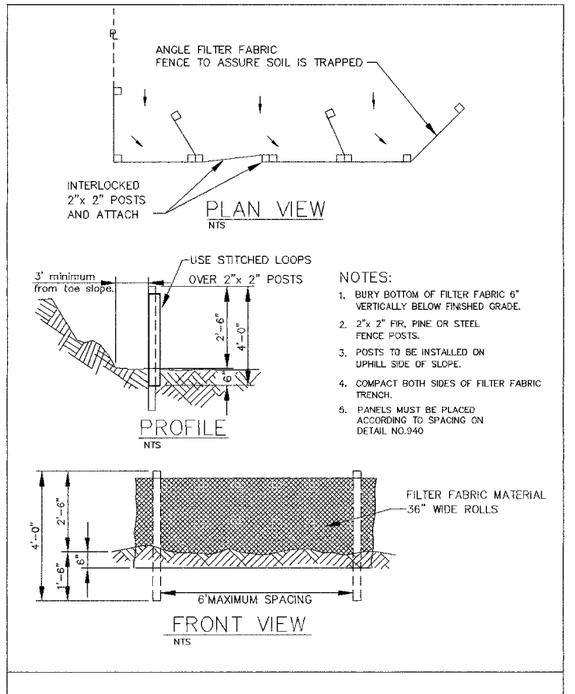
DETAIL DRAWING 4-17 REVISED 01-09



NOTES:
1. ADDITIONAL MEASURES MUST BE CONSIDERED DEPENDING ON SOIL TYPES.
2. BIO-FILTER BAGS SHOULD BE STAKED WHERE APPLICABLE USING (2) 1"x2"WOODEN STAKES OR APPROVED EQUAL PER BAG.
3. WHEN USING 30" BIO-BAGS TO PROTECT A CATCH BASIN YOU MUST HAVE 4 BAGS AND THEY SHALL BE OVERLAPPED BY 6".

INLET PROTECTION TYPE 4

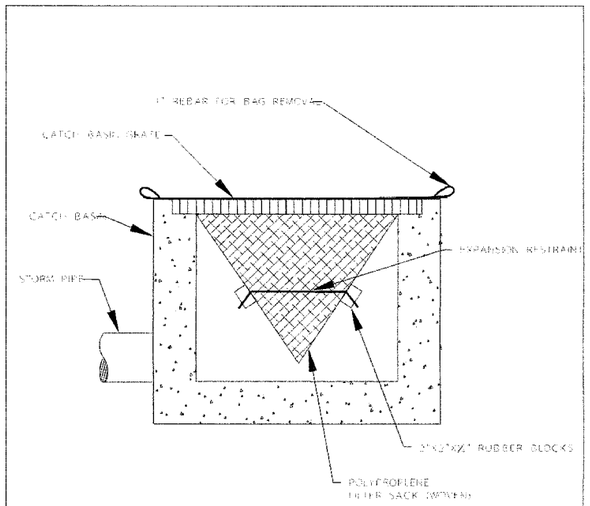
DETAIL DRAWING 4-18 REVISED 01-09



NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.
5. PANELS MUST BE PLACED ACCORDING TO SPACING ON DETAIL NO.940

SEDIMENT FENCE

DETAIL DRAWING 4-23 REVISED 01-09

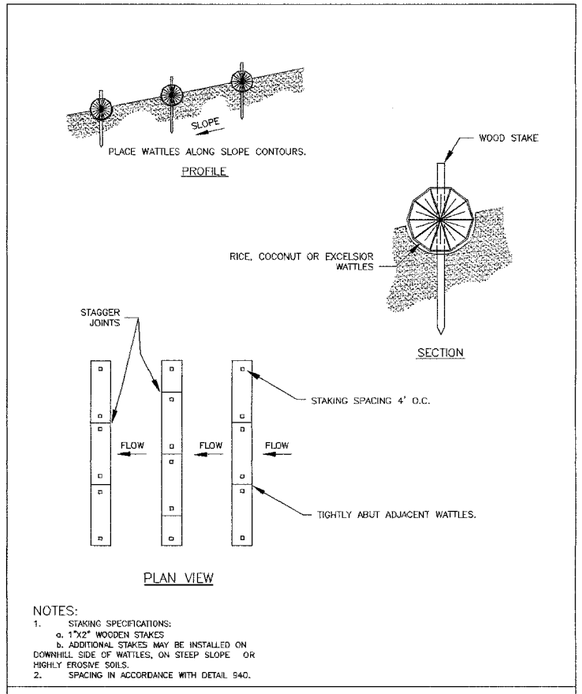


WOVEN POLYPROPLENE SACK

NOTE:
1. RECESSED CURB INLET CATCH BASINS MUST BE BLOCKED WHEN USING FILTER FABRIC INLET SACKS. SIZE OF FILTER FABRIC INLET SACKS TO BE DETERMINED BY MANUFACTURER

INLET PROTECTION TYPE 5

DETAIL DRAWING 4-19 REVISED 01-09



NOTES:
1. STAKING SPECIFICATIONS:
   a. 1"x2" WOODEN STAKES
   b. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.
2. SPACING IN ACCORDANCE WITH DETAIL 940.

WATTLES

DETAIL DRAWING 4-27 REVISED 01-09

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: RLF
CHECKED: AHG
APPROVED: TPB

SHEET ESC-10 X of 167

REGISTERED PROFESSIONAL ENGINEER 66898 OREGON MAY 21, 1987 JUSTIN HENRY

RENEWS: 12-30-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

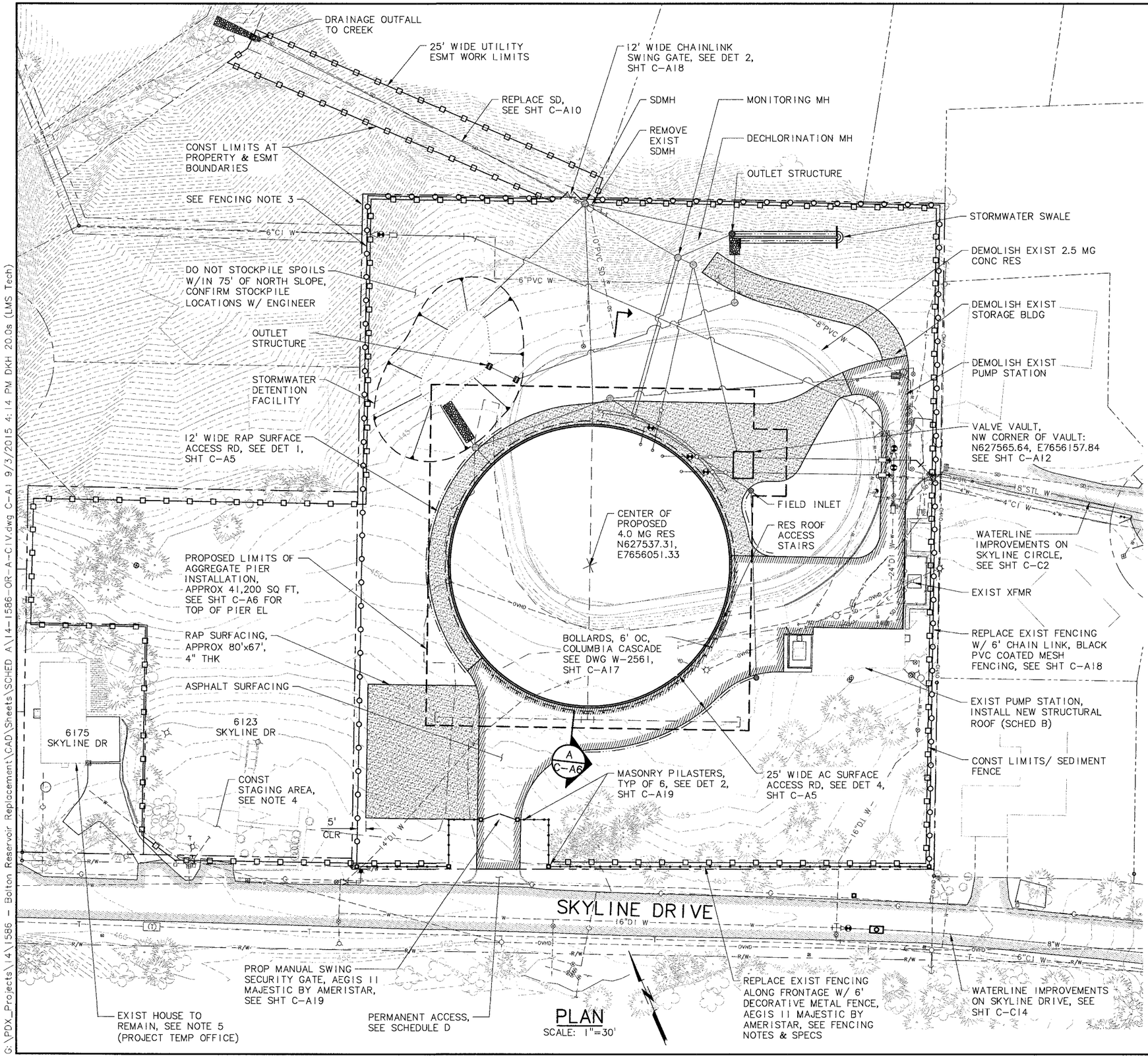
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EROSION AND SEDIMENT CONTROL ALL SCHEDULES - STANDARD DETAILS - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\ESC\14-1586-OR-ESC-9_10.dwg ESC-10 9/1/2015 11:44 AM HCW 20.0s (LMS Tech)



PLAN
SCALE: 1"=30'

NOTES:

1. SEE SHEET SPECIFICATIONS FOR SEQUENCING.

2. PROVIDE TEMPORARY SHORING AS NECESSARY TO PROTECT EXISTING STRUCTURES AND TREES, SEE SHEET C-A2.

3. PROVIDE CONSTRUCTION ENTRANCE, SEE SHEET ESC-10.

4. CITY OWNED PROPERTY, 6123 SKYLINE DRIVE, LOCATED ADJACENT TO THE RESERVOIR SITE, MAY BE USED FOR CONSTRUCTION STAGING.

5. CITY OWNED PROPERTY, 6175 SKYLINE DRIVE MAY BE USED AS A TEMPORARY CONSTRUCTION OFFICE.

FENCING NOTES:

1. OWNER HAS APPROXIMATELY 160 LF OF EXISTING DECORATIVE METAL FENCE. SUPPLIER SHALL MATCH FENCE STYLE. DECORATIVE METAL FENCE SHALL BE AEGIS II MAJESTIC BY AMERISTAR. CONTRACTOR SHALL TRANSPORT FENCING FROM CITY FACILITIES FOR INSTALLATION.

2. COORDINATE FENCE REMOVAL WITH ADJACENT PROPERTY OWNERS. PROVIDE 2 WEEK WRITTEN NOTICE TO CITY PRIOR TO REMOVAL OF FENCING.

3. PROVIDE FENCING STOP TO ALLOW ROLL BACK ACCESS TO UTILITY EASEMENT.

NO.	DATE	REVISION	BY

SHEET C-A1
17 of 167

DESIGNED: M.L.M
DRAWN: D.K.H
CHECKED: T.P.B
APPROVED: T.P.B

REGISTERED PROFESSIONAL ENGINEER 65640 OREGON DECEMBER 31, 2015 MICHAEL L. MAHAN
RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SITE LAYOUT PLAN**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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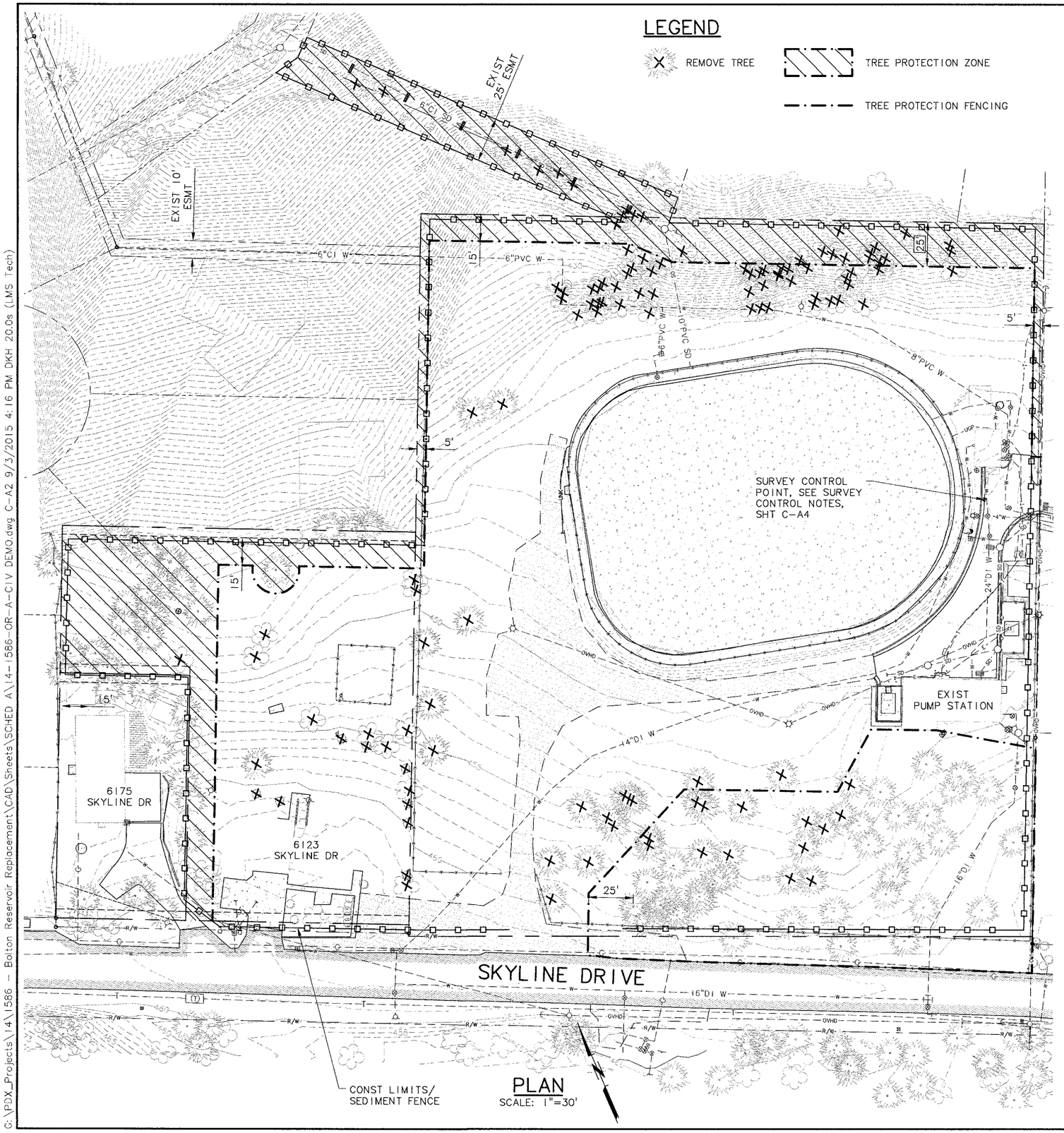

TREE PROTECTION NOTES

TREE REMOVAL NOTES

1. ONLY THOSE TREES IDENTIFIED FOR REMOVAL MAY BE REMOVED.

2. TREE LOCATIONS APPROXIMATE.

3. CONTRACTOR SHALL COMPLY WITH CITY TREE REMOVAL PERMIT, TO BE OBTAINED BY OWNER.

4. TREE REMOVAL AND CLEARING SHALL BE COMPLETED BETWEEN AUGUST 1 AND JANUARY 31, TO AVOID BIRD NESTING SEASON.

BEFORE CONSTRUCTION BEGINS

1. FENCING:
   a. FURNISH AND INSTALL APPROVED TREE PROTECTION FENCING AROUND EACH TREE OR GROVE OF TREES TO BE RETAINED.

   b. THE FENCING SHALL BE INSTALLED PRIOR TO THE GROUND BEING CLEARED IN ORDER TO PROTECT THE TREES AND SOIL AROUND THE TREES FROM ANY DISTURBANCE.

   c. FENCING SHALL BE PLACED AT THE EDGE OF THE ROOT PROTECTION ZONE. ROOT PROTECTION ZONES WILL BE ESTABLISHED BY THE PROJECT ARBORIST BASED IN THE NEEDS OF THE SITE AND THE TREE TO BE PROTECTED. THE TREE PROTECTION ZONE WILL BE APPROXIMATELY 15' FROM THE CENTER OF THE TREE IN ALL DIRECTIONS.

   d. FENCING SHALL REMAIN IN THE LOCATION AS ESTABLISHED BY THE PROJECT ARBORIST AND NOT MOVED WITHOUT WRITTEN PERMISSION FROM THE PROJECT ARBORIST UNTIL THE END OF THE PROJECT.

2. SIGNAGE:
   a. ALL TREE PROTECTION FENCING SHALL HAVE SIGNAGE AS FOLLOWS:

   TREE PROTECTION ZONE

   DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION FENCING

   Please contact the project arborist or owner if alternations to the approved location of the tree protection fencing are necessary.

   b. SIGNAGE SHOULD BE PLACE AS TO BE VISIBLE FROM ALL SIDES OF TREE PROTECTION AREA AND SPACED EVERY 75 FEET.

DURING CONSTRUCTION

1. PROTECTION GUIDELINES WITHIN THE ROOT PROTECTION ZONE:
   a. ENTRY INTO THE TREE PROTECTION AREAS IS PROHIBITED EXCEPT BY THE PROJECT ARBORIST UNLESS THROUGH WRITTEN PERMISSION OF THE PROJECT ARBORIST.

   b. NO TRAFFIC SHALL BE ALLOWED WITHIN THE ROOT PROTECTION ZONE. NO VEHICLE, HEAVY EQUIPMENT, OR REPEATED FOOT TRAFFIC SHALL BE ALLOWED WITHIN THE ROOT PROTECTION ZONE.

   c. STORAGE OF MATERIALS INCLUDING, BUT NOT LIMITED TO, SOIL, CONSTRUCTION MATERIAL, OR WASTE FROM THE SITE WILL NOT BE ALLOWED WITHIN THE TREE PROTECTION ZONE. WASTE INCLUDES, BUT IS NOT LIMITED TO, CONCRETE WASH OUT, GASOLINE, DIESEL, PAINT, CLEANER, THINNERS, ETC.

   d. CONSTRUCTION TRAILERS SHALL BE NOT PARKED/PLACED WITHIN THE ROOT PROTECTION ZONE WITHOUT WRITTEN APPROVAL FROM THE PROJECT ARBORIST.

   e. VEHICLES SHALL NOT BE PARKED WITHIN THE ROOT PROTECTION AREAS.

   f. NO ACTIVITY SHALL BE ALLOWED THAT WILL CAUSE SOIL COMPACTION WITHIN THE ROOT PROTECTION ZONE.

2. TREES TO REMAIN SHALL BE PROTECTED FROM ANY CUTTING, SKINNING OR BREAKING OF BRANCHES, TRUNKS OR ROOTS.

3. PRIOR TO CUTTING ROOTS FROM EXISTING TREES THAT ARE TO BE RETAINED, THE PROJECT ARBORIST SHALL BE NOTIFIED TO EVALUATE AND OVERSEE THE PROPER CUTTING OF ROOTS WITH SHARP CUTTING TOOLS. CUT ROOTS SHALL BE IMMEDIATELY COVERED WITH SOIL OR MULCH TO PREVENT DRYING OF THE ROOT.

4. NO GRADE CHANGES SHALL OCCUR WITHIN THE ROOT PROTECTION ZONE.

5. ANY NECESSARY DEVIATION OF THE ROOT PROTECTION ZONE SHALL BE APPROVED BY THE PROJECT ARBORIST OR THE OWNER, PRIOR TO IMPLEMENTING CHANGES.

6. PROVIDE WATER TO TREES DURING THE SUMMER MONTHS. TREE(S) THAT WILL HAVE HAD ROOT SYSTEM(S) CUT BACK WILL NEED SUPPLEMENTAL WATER TO OVERCOME THE LOSS OF ABILITY TO ABSORB NECESSARY MOISTURE DURING THE SUMMER MONTHS.

7. ANY NECESSARY PASSAGE OF UTILITIES THROUGH THE ROOT PROTECTION ZONE SHALL BE BY MEANS OF TUNNELING UNDER ROOTS BY HAND DIGGING OR BORING.

AFTER CONSTRUCTION

1. CAREFULLY LANDSCAPE IN THE AREA OF THE TREE. DO NOT ALLOW TRENCHING WITHIN THE ROOT PROTECTION ZONE. CAREFULLY PLANT NEW PLANTS WITHIN THE ROOT PROTECTION ZONE. AVOID CUTTING THE ROOTS OF THE EXISTING TREES.

2. DO NOT PLACE IRRIGATION WITHIN THE ROOT PROTECTION ZONE OF EXISTING TREES UNLESS IT IS DRIP IRRIGATION FOR A SPECIFIC PLANTING OR CLEARED BY THE PROJECT ARBORIST.

3. PROVIDE FOR ADEQUATE DRAINAGE OF THE AREA AROUND THE RETAINED TREES.

4. PRUNING OF THE TREES SHALL BE COMPLETED AS ONE OF THE LAST STEPS OF THE LANDSCAPING PROCESS BEFORE THE FINAL PLACEMENT OF TREES, SHRUBS, GROUND COVERS, MULCH OR SEEDING.

NO. | DATE | REVISION | BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET C-A2
18 of 167

REGISTERED PROFESSIONAL ENGINEER 66640 OREGON JANUARY 14, 2003 MICHAEL L. MURRAY
RENEWS 12-31-16

SCALE | VERT: AS SHOWN | HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
RESERVOIR SITE
TREE REMOVAL AND PROTECTION PLAN

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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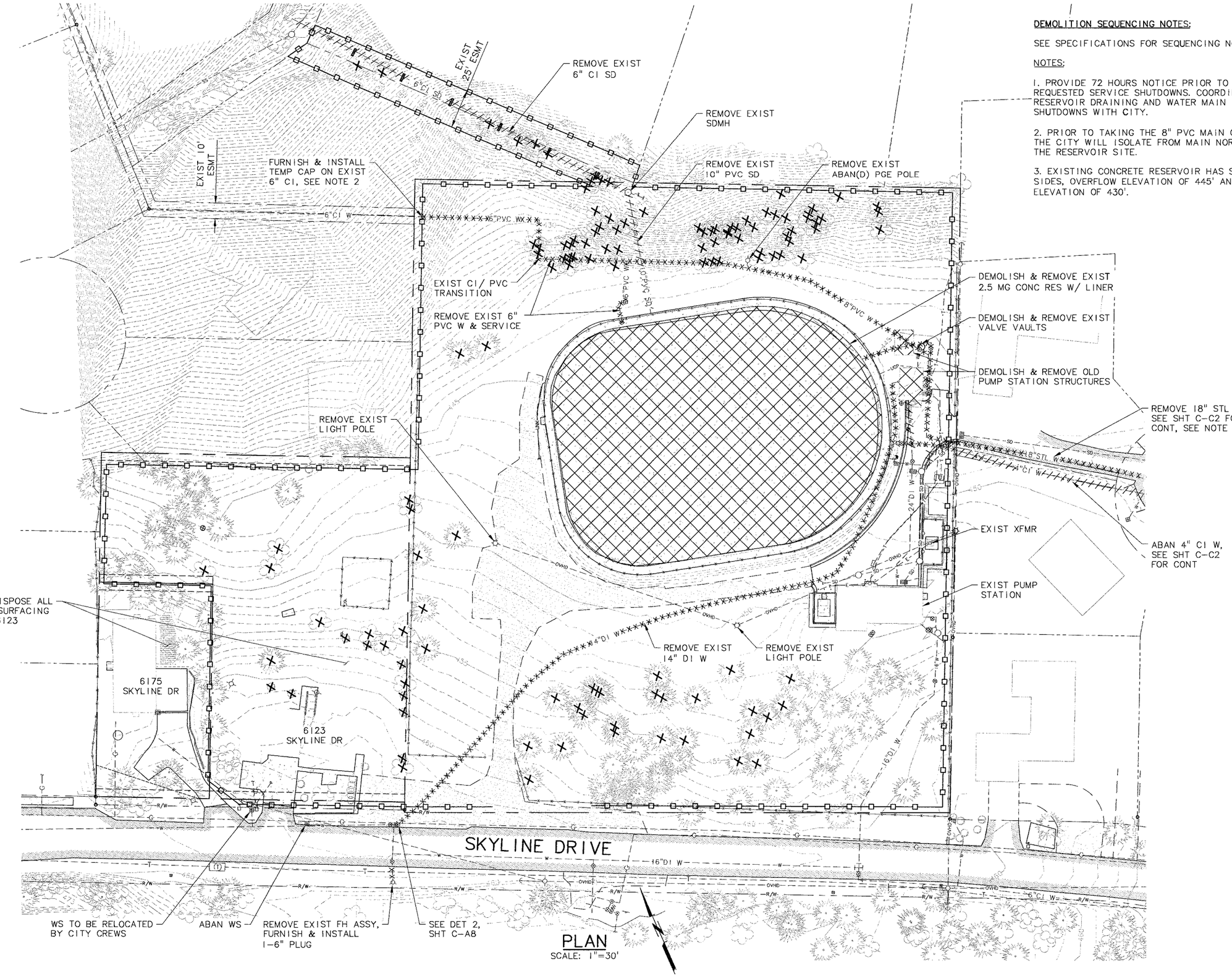

PLAN
SCALE: 1"=30'

DEMOLITION SEQUENCING NOTES:

SEE SPECIFICATIONS FOR SEQUENCING NOTES.

NOTES:

1. PROVIDE 72 HOURS NOTICE PRIOR TO REQUESTED SERVICE SHUTDOWNS. COORDINATE RESERVOIR DRAINING AND WATER MAIN SHUTDOWNS WITH CITY.

2. PRIOR TO TAKING THE 8" PVC MAIN OFFLINE, THE CITY WILL ISOLATE FROM MAIN NORTH OF THE RESERVOIR SITE.

3. EXISTING CONCRETE RESERVOIR HAS SLOPED SIDES, OVERFLOW ELEVATION OF 445' AND FLOOR ELEVATION OF 430'.

NO.	DATE	REVISION	BY

DESIGNED: M.L.M
DRAWN: B.A.W
CHECKED: T.P.B
APPROVED: T.P.B

SHEET C-A3
19 of 167

REGISTERED PROFESSIONAL ENGINEER 65640 OREGON JULY 12, 1994 MICHAEL L. MAH
RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
RESERVOIR SITE DEMOLITION PLAN

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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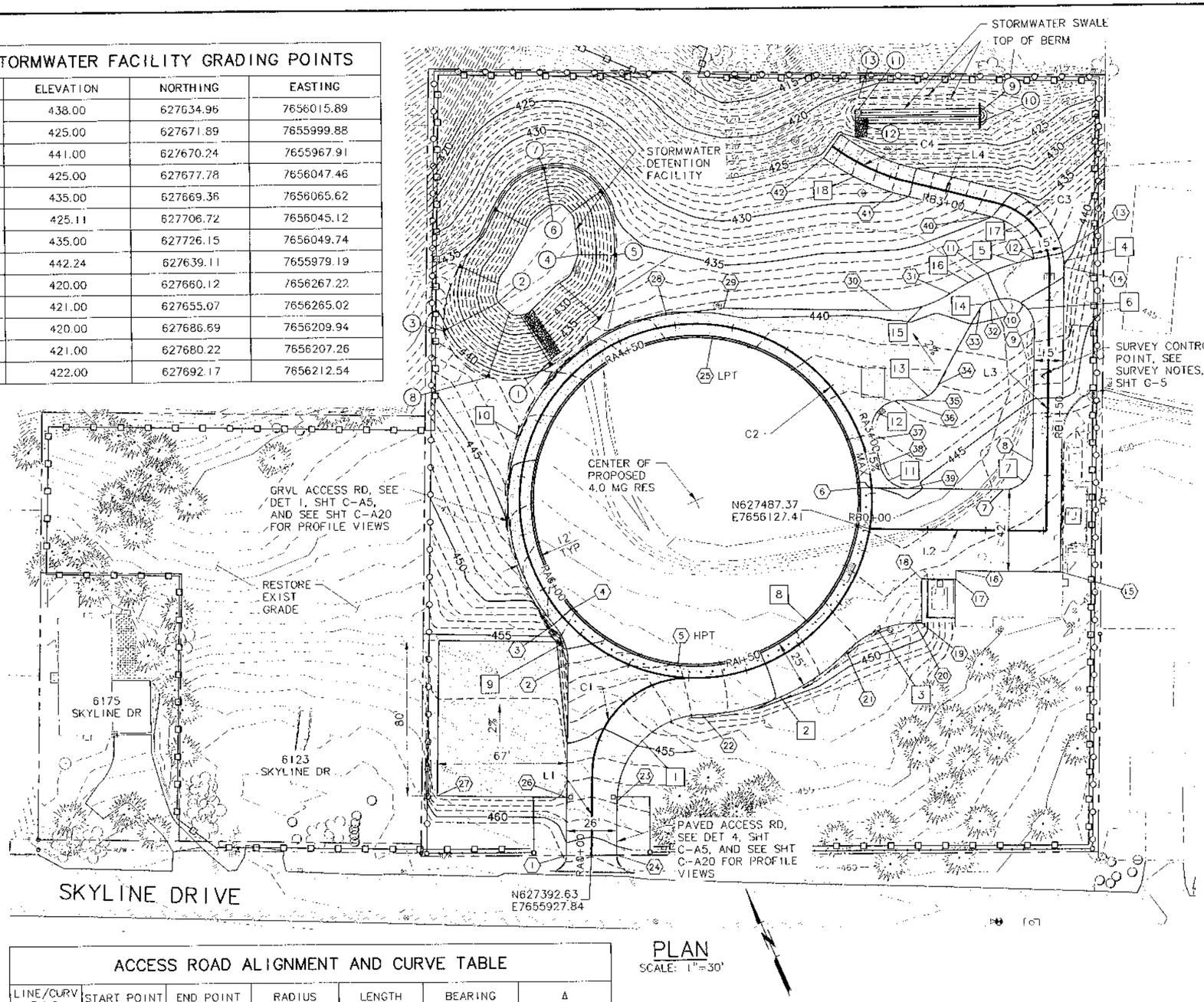
STORMWATER FACILITY GRADING POINTS

NO.	ELEVATION	NORTHING	EASTING
1	438.00	627634.96	7656015.89
2	425.00	627671.89	7655999.88
3	441.00	627670.24	7655967.91
4	425.00	627677.78	7656047.46
5	435.00	627669.36	7656065.62
6	425.11	627706.72	7656045.12
7	435.00	627726.15	7656049.74
8	442.24	627639.11	7655979.19
9	420.00	627660.12	7656267.22
10	421.00	627655.07	7656265.02
11	420.00	627686.69	7656209.94
12	421.00	627680.22	7656207.26
13	422.00	627692.17	7656212.54



PLAN
SCALE: 1"=30'

ACCESS ROAD ALIGNMENT AND CURVE TABLE

LINE/CURVE NO.	START POINT	END POINT	RADIUS	LENGTH	BEARING	Δ
L1	STA RA0+00	STA RA0+42	N/A	42.00	N24°34'27"E	N/A
C1	STA RA0+42	STA RA1+21	50.00	79.30	N/A	90°52'03"
C2	STA RA1+21	STA RA6+93	91.00	571.75	N/A	360°00'00"
L2	STA RB0+00	STA RB0+91	N/A	91.25	S65°11'02"E	N/A
L3	STA RB0+91	STA RB2+27	N/A	136.22	N24°48'58"E	N/A
C3	STA RB2+27	STA RB2+74	34.93	46.96	N/A	77°01'58"
L4	STA RB2+74	STA RB3+27	N/A	52.11	N52°13'59"W	N/A
C4	STA RB3+27	STA RB3+64	119.48	37.25	N/A	17°51'46"

EDGE OF PAVEMENT ELEVATION TABLE

POINT	ELEVATION	POINT	ELEVATION
1	460.68	14	440.00
2	451.00	15	448.25
3	448.17	16	447.35
4	448.89	17	447.43
5	452.00	18	447.29
6	445.12	19	448.05
7	446.16	20	448.03
8	446.95	21	448.32
9	440.05	22	451.50
10	439.95	23	457.86
11	439.95	24	460.43
12	439.90	25	440.30
13	439.85		

EDGE OF GRAVEL ELEVATION TABLE

POINT	ELEVATION	POINT	ELEVATION
26	457.75	35	442.65
27	456.99	36	442.90
28	440.67	37	444.10
29	439.01	38	444.65
30	439.59	39	444.80
31	439.80	40	435.00
32	439.95	41	429.10
33	439.95	42	425.50
34	441.97		

EDGE OF PAVEMENT CURVE TABLE

NO.	PC	PT	DELTA	RADIUS	LENGTH
1	N627435.61 E7656009.40	N627412.72 E7655951.33	87°49'53"	45.00'	68.98'
2	N627434.67 E7656090.89	N627435.61 E7656009.40	43°29'03"	110.00'	83.48'
3	N627433.70 E7656129.17	N627434.67 E7656090.89	45°02'00"	50.00'	39.30'
4	N627570.23 E7656274.48	N627574.29 E7656275.83	5°47'03"	42.43'	4.28'
5	N627582.57 E7656236.74	N627579.57 E7656261.69	11°47'45"	122.29'	25.18'
6	N627546.97 E7656247.23	N627567.98 E7656236.50	103°43'54"	15.00'	27.16'
7	N627477.58 E7656198.62	N627484.90 E7656218.53	90°00'00"	15.00'	23.56'
8	N627512.58 E7655970.01	N627508.68 E7656131.36	143°24'20"	85.00'	212.75'
9	N627487.88 E7655957.11	N627509.08 E7655958.53	41°29'17"	30.00'	21.72'

EDGE OF GRAVEL CURVE TABLE

NO.	PC	PT	DELTA	RADIUS	LENGTH
10	N627630.98 E7656076.52	N627509.08 E7655958.53	121°57'51"	97.00'	206.48'
11	N627515.20 E7656145.78	N627498.17 E7656154.09	78°21'14"	15.00'	20.51'
12	N627541.24 E7656168.97	N627528.83 E7656147.96	108°51'09"	15.00'	28.50'
13	N627538.69 E7656174.74	N627540.78 E7656190.34	62°59'02"	15.07'	16.57'
14	N627567.59 E7656225.83	N627568.84 E7656232.14	47°45'55"	7.94'	6.62'
15	N627585.18 E7656183.84	N627580.95 E7656214.81	34°16'51"	53.04'	31.73'
16	N627580.95 E7656214.81	N627582.57 E7656236.74	10°18'51"	122.29'	22.01'
17	N627579.57 E7656261.69	N627608.29 E7656250.37	68°29'49"	27.43'	32.79'
18	N627640.26 E7656209.11	N627671.31 E7656183.69	18°30'00"	124.83'	40.31'

REVISION | BY | DATE | NO.

SHEET C-A4 20 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 1985 MICHAEL L. MURRAY RENEWS 12-31-16

SCALE: HORIZ. AS SHOWN VERT. AS SHOWN

NOTICE: IF THIS BAR DOES NOT MEASURE 1" THIS DRAWING IS NOT TO SCALE

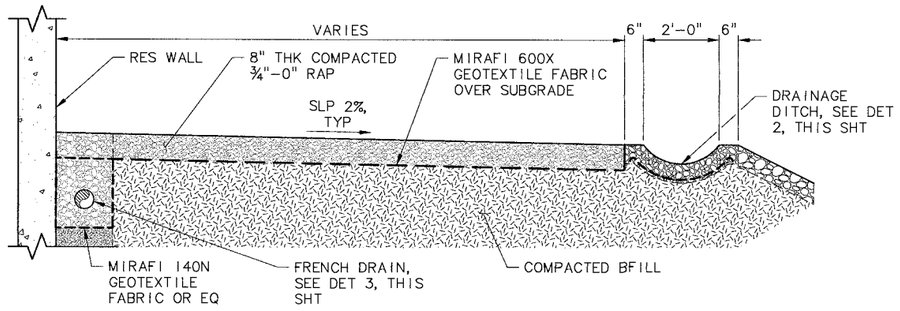
PROJECT NAME: CITY OF WEST LINN, OREGON BOLTON RESERVOIR REPLACEMENT PROJECT NO. PW 14-06

SHEET TITLE: RESERVOIR SITE GRADING AND ACCESS ROAD PAVING PLAN

DESIGNED: MLM DRAWN: JKC CHECKED: TPS APPROVED: TPS

MSA Murray, Smith & Associates, Inc. Engineers/Planners 121 S.W. Salmon, Suite 1100 Portland, Oregon 97204 PHONE 503-225-9010 FAX 503-225-9022

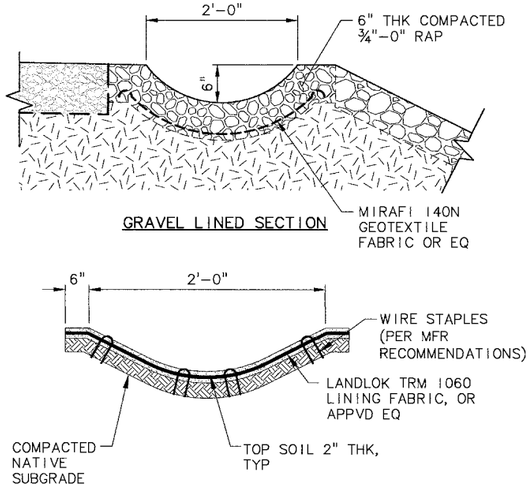
MSA PROJECT: 14-696 DATE: SEPTEMBER 2016



TYPICAL RAP SURFACE SECTION AROUND RESERVOIR

SCALE: NTS

1 / C-A1



NOTES:

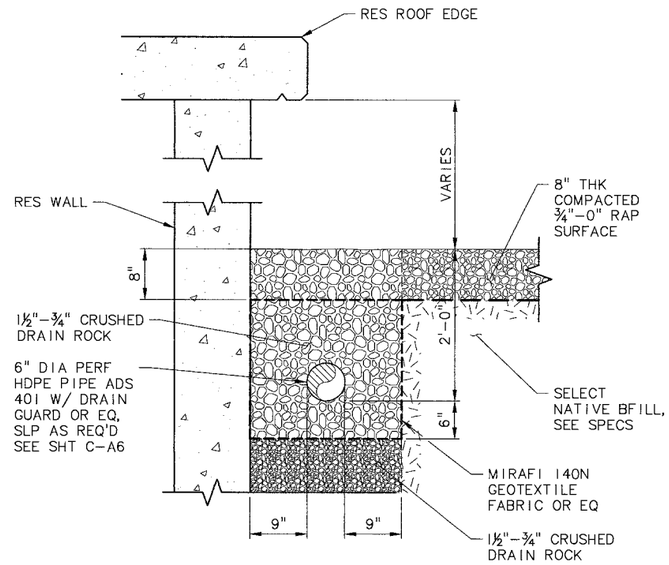
1. MINIMUM SLOPE OF DRAINAGE DITCH TO BE 1%.

2. GEOTEXTILE FABRIC TO BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS USING U-SHAPED WIRE STAPLES.

2' WIDE DRAINAGE DITCH

SCALE: NTS

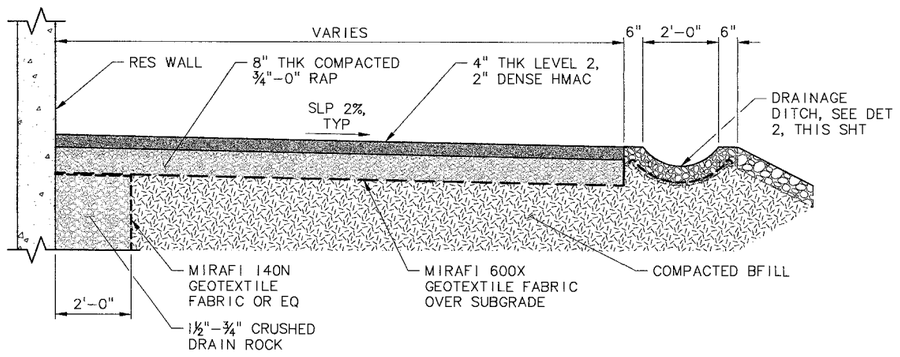
2 / C-A1



RESERVOIR FRENCH DRAIN DETAIL

SCALE: 1"=1'-0"

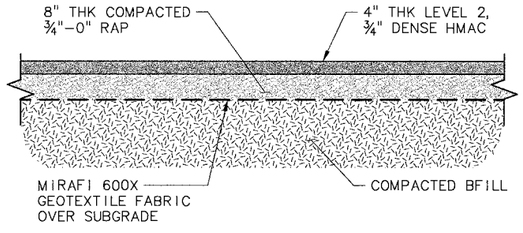
3 / CA-6



TYPICAL ASPHALT SURFACE SECTION AROUND RESERVOIR

SCALE: NTS

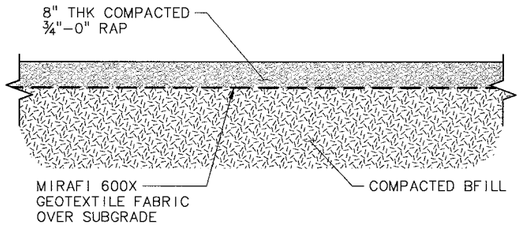
4 / C-A1



TYPICAL ASPHALT PAVEMENT DETAIL

SCALE: NTS

5 / C-A1



TYPICAL RAP SURFACE DETAIL

SCALE: NTS

6 / C-A1

NO.	DATE	REVISION	BY

DESIGNED: ML.M
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER 65840 OREGON DECEMBER 31, 1981 MICHAEL L. MAY

RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ACCESS ROAD DETAILS**

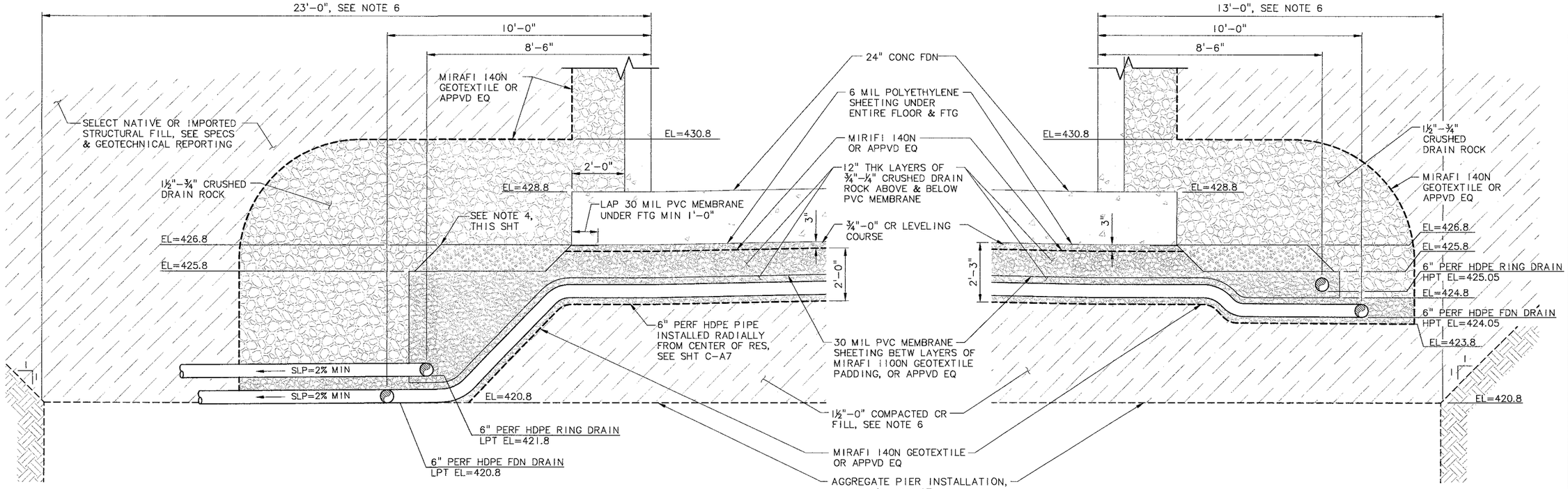
SHEET C-A5
21 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-CIV DETS.dwg C-A5 9/3/2015 4:22 PM DKH 20.0s (LMS Tech)



UNDERDRAIN SYSTEM TO MONITORING MANHOLE DETAIL (1/—)
SCALE: ½"=1'–0"

RING DRAIN & FOUNDATION DRAIN HPT DETAIL (2/—)
SCALE: ½"=1'–0"

NOTES:

1. CAP RING DRAIN AND FOUNDATION DRAIN AT HIGH POINTS AND SLOPE AT APPROXIMATELY 1% IN EACH DIRECTION AROUND TANK TO LOW POINT. ROUTE TO MONITORING MANHOLE AT 2% SLOPE, SEE DETAIL 1, SHEET C–A11.

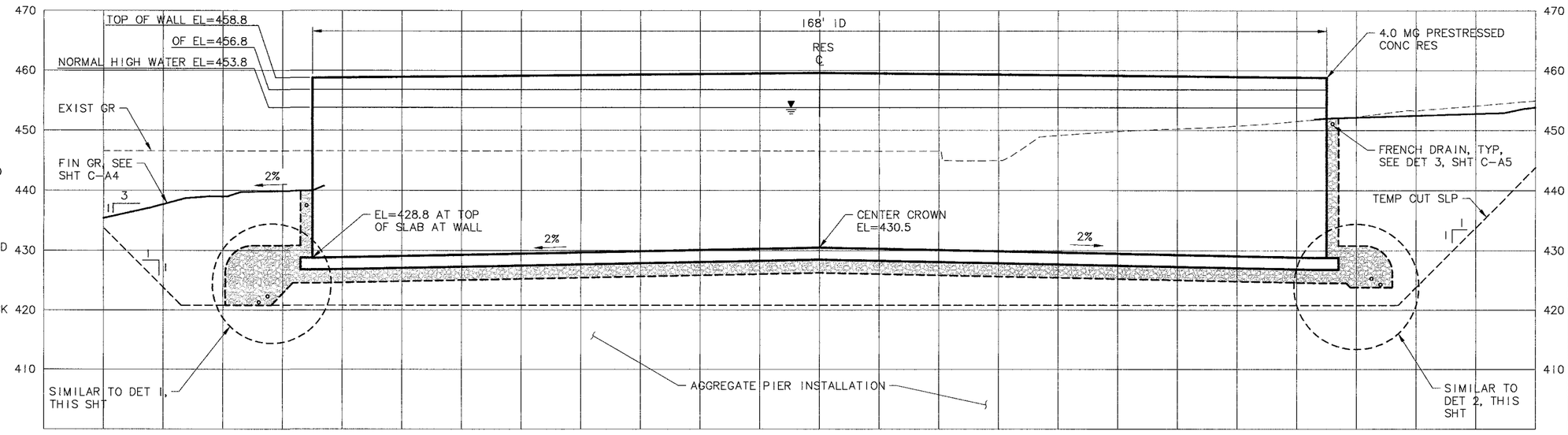
2. OBTAIN GEOTECHNICAL ENGINEER'S APPROVAL OF FINAL SUBGRADE PRIOR TO PLACEMENT OF LEVELING COURSE, GEOTEXTILE, DRAIN ROCK AND STRUCTURAL FILL.

3. ALL DRAIN PIPING ENTERING MONITORING MANHOLE TO HAVE RESTRAINED FLAP VALVES ON INLET, SEE SPECIFICATIONS.

4. FIVE–FOOT SPAN OF ONE–FOOT DEPTH ¾"–0" CRUSHED ROCK TO BE PROVIDED ADJACENT TO FOOTING TO ALLOW FOR SECURING OF FOOTING FORM SUPPORT STAKES. PROVIDE 3–INCH DEPTH OF ¾"–0" CRUSHED ROCK UNDER ENTIRE CONCRETE FOUNDATION.

5. RESERVOIR COLUMNS NOT SHOWN FOR CLARITY.

6. COMPACTED CRUSHED ROCK FILL AND AGGREGATE PIER INSTALLATION SHALL EXTEND 20' BEYOND THE EDGE OF RESERVOIR FOOTING ON NORTH SIDE, 10' BEYOND ON ALL OTHER SIDES. SEE SHEET C–A1 FOR PROPOSED LIMITS OF FILL AND AGGREGATE PIERS. SEE GEOTECHNICAL REPORT.



RESERVOIR SECTION (A/C–A1)
SCALE: 1"=10' HORIZ, 1"=10' VERT

NO.	DATE	REVISION	BY

DESIGNED: ML.M
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 31, 2015 — MICHAEL L. MAHAN — 65840 — RENEWS 12-31-16

SCALE: VERT: AS SHOWN, HORIZ: AS SHOWN

NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE: **RESERVOIR SECTION AND UNDERDRAIN DETAILS**

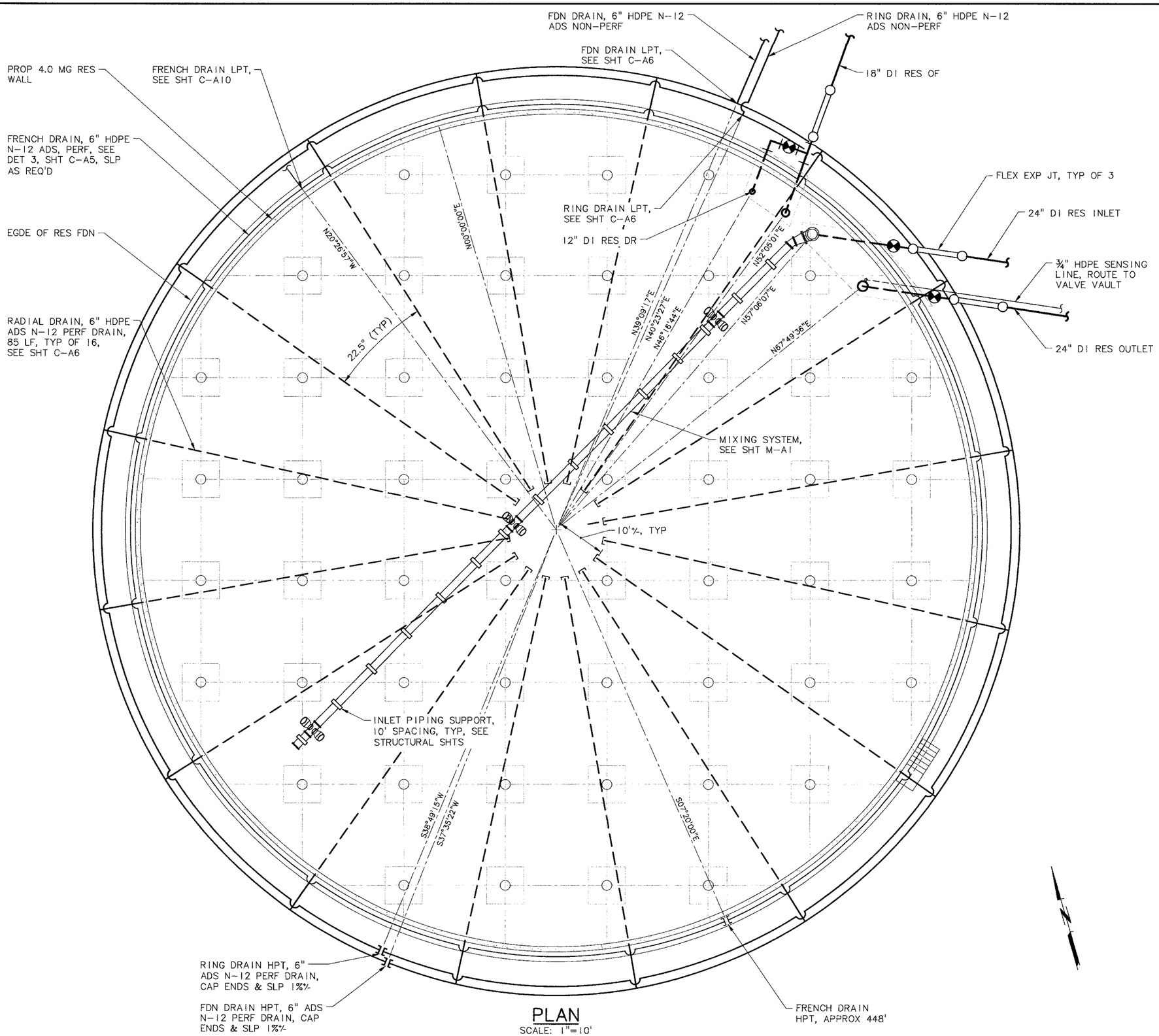
SHEET C–A6
22 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-0852

DATE: SEPTEMBER 2015

MSA PROJECT: 14–1586

G:\PDX_Projects\14\1586 – Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14–1586–OR–A–C1V RES.dwg C–A6 9/3/2015 5:59 PM DKH 20.0s (LMS Tech)



PLAN
SCALE: 1"=10'

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-CIV RES.dwg C-A7 9/3/2015 4:23 PM DKH 20.0s (LMS Tech)

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 25, 1979 MICHAEL L. MAH
RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SHEET C-A7
23 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
RESERVOIR PIPING AND FLOOR PLAN

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-0852

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

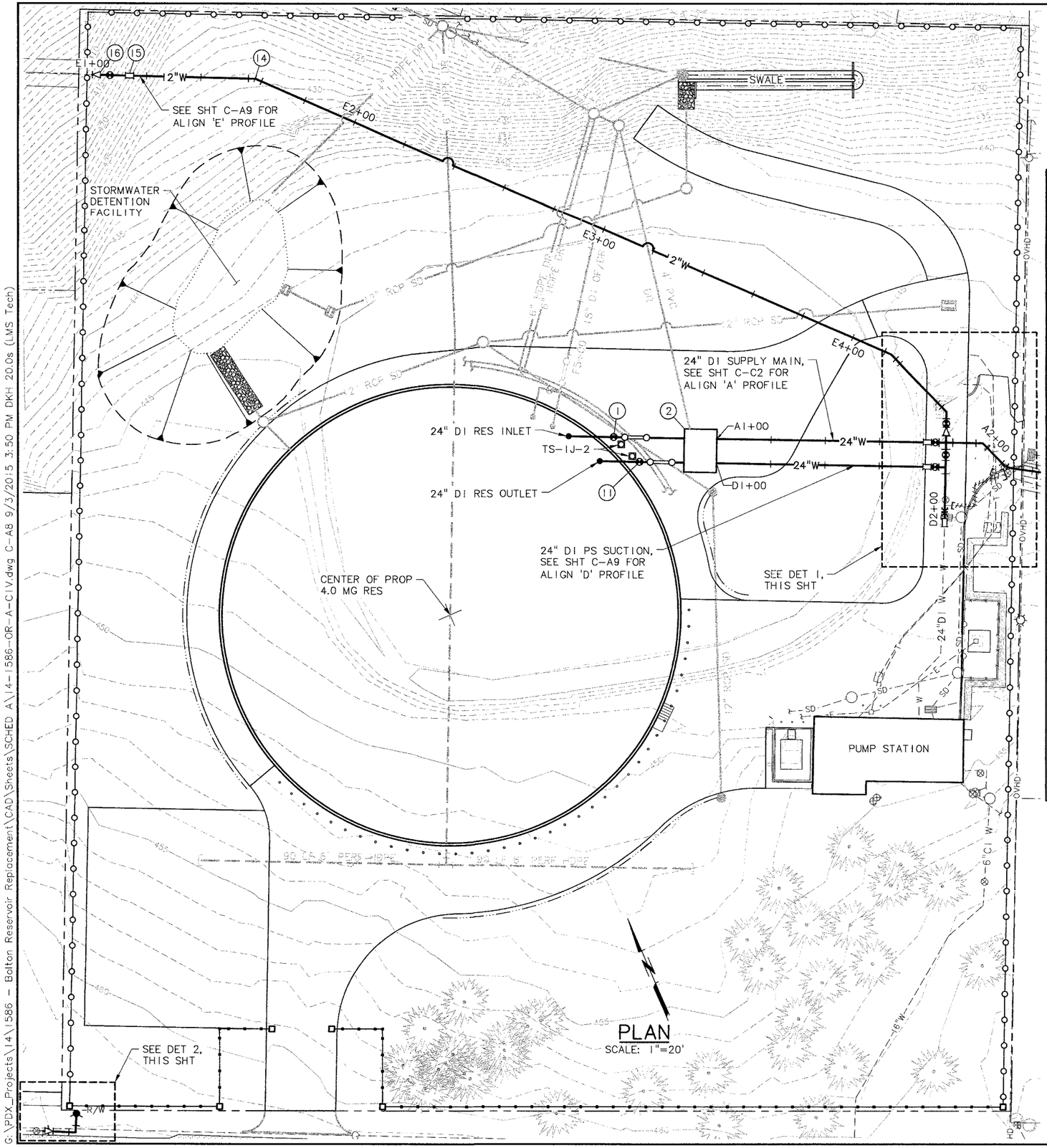
NOTES:

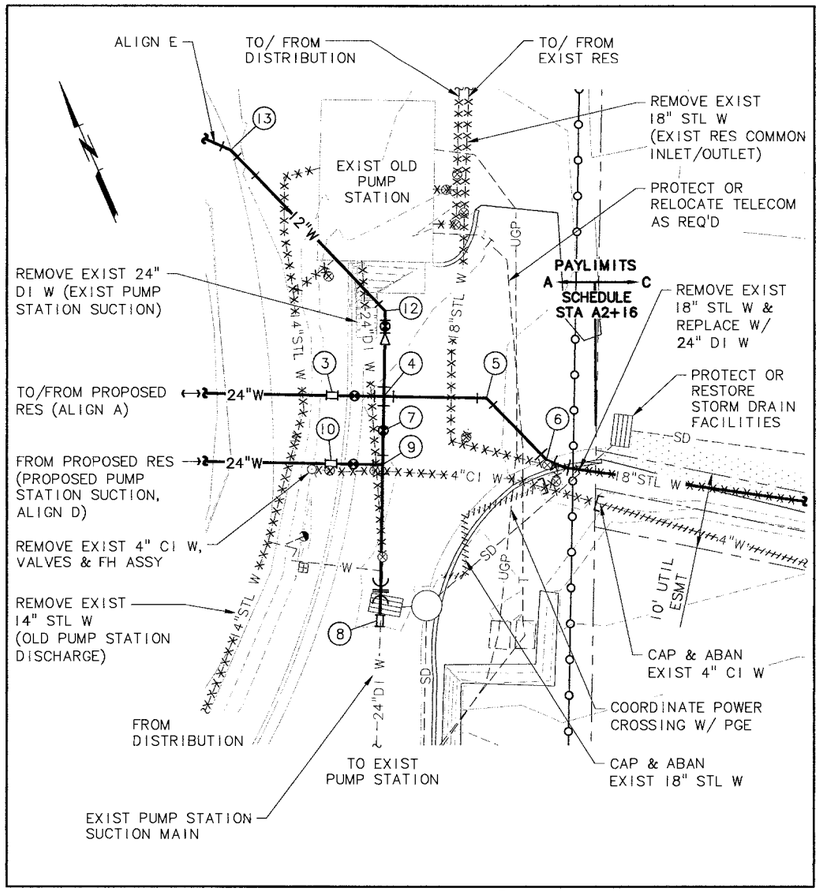
1. ALL ON-SITE WATER PIPING VALVES AND FITTINGS SHALL BE RESTRAINED.

2. FLEX-TENDS TO HAVE A MINIMUM 16" EXPANSION FOR 18" AND 24" DIAMETER AND 12" EXPANSION FOR 12" DIAMETER AND BE WRAPPED IN POLYETHYLENE PER MANUFACTURER'S RECOMMENDATIONS.

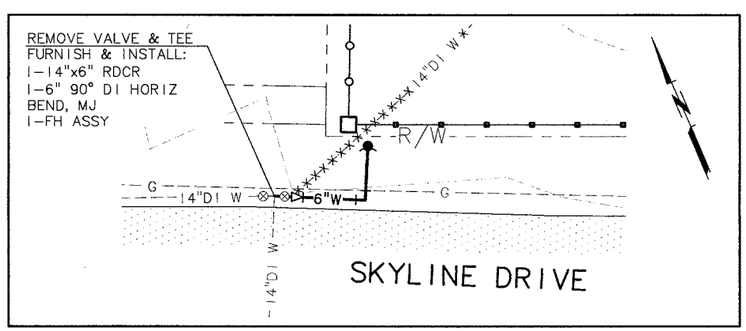
3. FINISH GRADE ON MANHOLE LIDS, VAULTS AND VALVE BOXES PER PROFILES.

4. SEE SHEET C-A9 FOR WATER PIPING SCHEDULE.





DETAIL 1
SCALE: 1"=10'



DETAIL 2
SCALE: 1"=10'

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET C-A8 24 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON 65640 MICHAEL L. MAY
RENEWS: 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1"

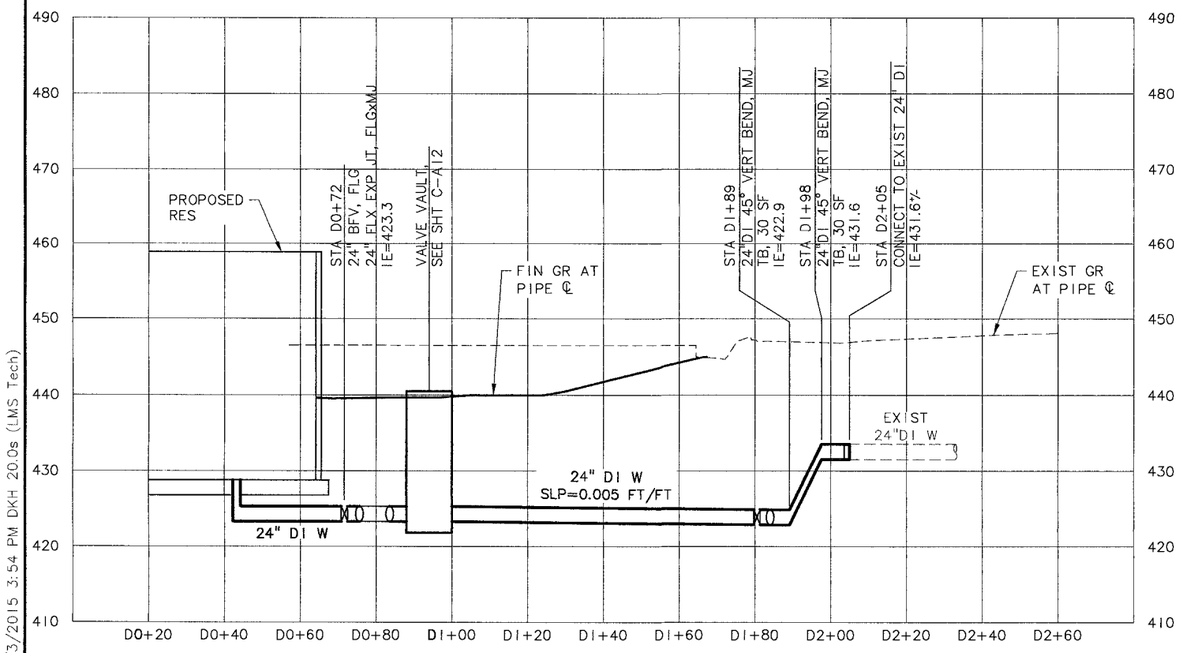
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SITE WATER PIPING PLAN AND DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-C1V.dwg C-A8 9/3/2015 3:50 PM DKH 20.0s (LMS Tech)



PROFILE – 24" PUMP STATION SUCTION LINE – ALIGNMENT 'D'

SCALE: 1"=20' HORIZ, 1"=10' VERT

WATER PIPING SCHEDULE

RESERVOIR INLET/OUTLET:

(1) STA A0+62
N627573.31, E7656132.72
FURNISH & INSTALL:
1–24" BFV, FLG
1–24" FLEX EXP JT, FLGxMJ
1–IJ–2, SEE DET 2, SHT DET–11

(2) STA A1+00
N627565.64, E7656157.84 (NW CORNER)
FURNISH & INSTALL:
CONC VALVE VAULT,
SEE SHT C–A12

(3) STA A1+78
N627525.19, E7656237.83
CONNECT TO 24" DI
FURNISH & INSTALL:
1–24" DI LS, MJ
1–24" DI SPL, PE, LENGTH AS REQ'D

(4) STA A1+84=STA E4+56
N627522.34, E7656244.04
FURNISH & INSTALL:
1–24" DI CROSS, MJ
1–24" BFV, MJ
1–24" DI PLUG, MJ, TEMP

(5) STA A1+98
N627516.70, E7656256.37
FURNISH & INSTALL:
1–24" DI 45° HORIZ BEND, MJ

(6) STA A2+09
N627506.01, E7656260.35
FURNISH & INSTALL:
1–24" DI 45° HORIZ BEND, MJ

(7) STA A1+84, 5' RT
N627518.21, E7656242.15
FURNISH & INSTALL:
1–24" BFV, MJ

PUMP STATION SUCTION:

(8) STA D2+05
N627495.37, E7656231.71
CONNECT TO EXIST 24" DI,
REMOVE EXIST 24"x18" DI TEE,
FURNISH & INSTALL:
1–24" DI LS, MJ
2–24" FLGxMJ ADAPTERS
1–24"IJ, SEE DET 3, SHT DET–10

(9) STA D1+84
N627514.08, E7656240.27
FURNISH & INSTALL:
1–24" DI TEE, MJ
1–24" BFV, MJ
1–24" DI PLUG, MJ, TEMP

(10) STA D1+78
N627516.94, E7656234.06
CONNECT TO 24" DI
FURNISH & INSTALL:
1–24" DI LS, MJ
1–24" DI SPL, PE, LENGTH AS REQ'D

(11) STA D0+72
N627561.10, E7656137.76
FURNISH & INSTALL:
1–24" BFV, FLG
1–24" FLEX EXP JT, FLGxMJ
1–IJ–2, SEE DET 2, SHT DET–11

12" WATER MAIN:

(12) STA E4+45
N627532.62, E7656248.75
FURNISH & INSTALL:
1–24"X12" RDCR, PE
1–12" DI 45° HORIZ BEND, MJ,
ROLLED DOWN
1–12" BFV, MJ
1–12" DI SPL, PE, LENGTH AS REQ'D

(13) STA E4+15
N627560.12, E7656238.51
FURNISH & INSTALL:
1–12" DI 22½° HORIZ BEND, MJ,
ROLLED UP

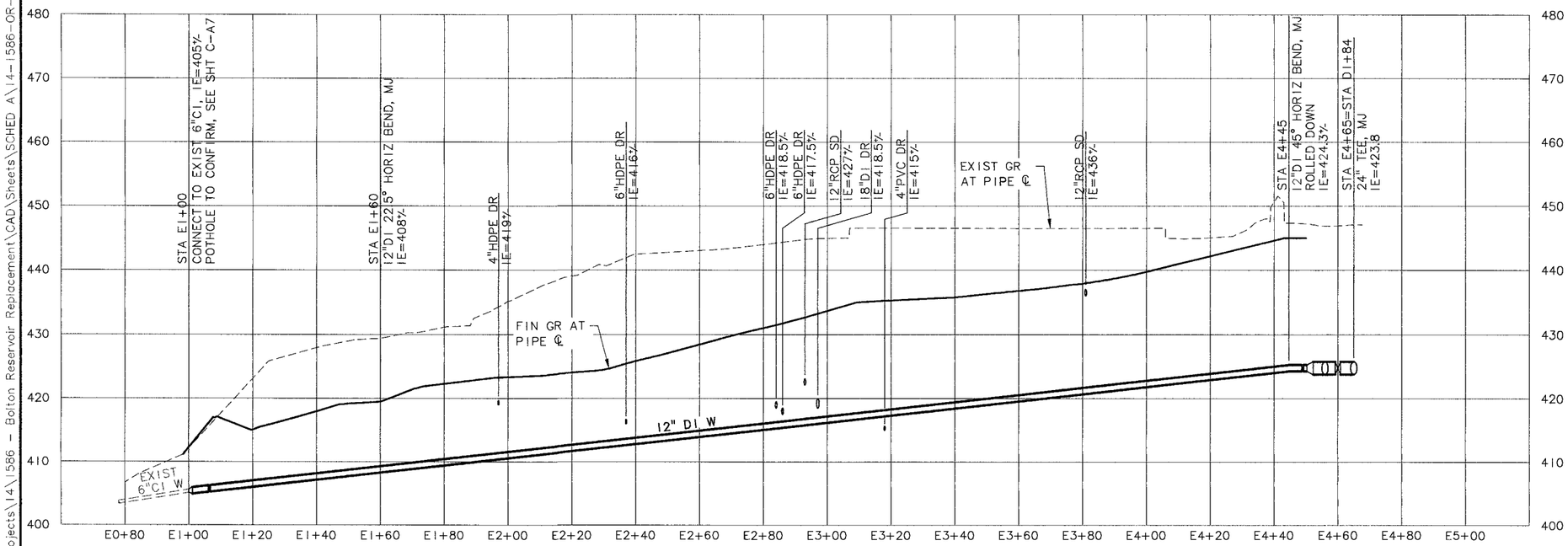
(14) STA E1+60
N627747.10, E7656064.66
FURNISH & INSTALL:
1–12" DI 22½° HORIZ BEND, MJ

(15) STA E1+14
N627766.59, E7656022.72
CONNECT TO 12" DI
REMOVE 12" DI PLUG
FURNISH & INSTALL:
1–12" DI SPL, PE,
LENGTH AS REQ'D
1–12" DI LS, MJ

(16) STA E1+00
N627772.33, E7656010.22
CONNECT TO EXIST 6" CI
FURNISH & INSTALL:
2–6" FLGxMJ ADAPTERS
1–6" DI SPL, PE, LENGTH AS REQ'D
1–6" IJ, SEE DET 3, SHT DET–10
1–6" CAP, MJ, TEMP
1–12"X6" RDCR, MJ
1–12" DI SPL, PE,
LENGTH AS REQ'D
1–12" BFV, MJ
1–12" DI PLUG, MJ, TEMP

NOTE:

1. ALL WATER PIPING AND VALVING SHALL BE RESTRAINED.



PROFILE – 12" WATER MAIN – ALIGNMENT 'E'

SCALE: 1"=20' HORIZ, 1"=10' VERT

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET C–A9
25 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 MICHAEL L. MACY 65640
RENEWS 12–31–16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE:
RESERVOIR SITE WATER PIPING PROFILES AND CALL-OUTS

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14–1586
DATE: SEPTEMBER 2015

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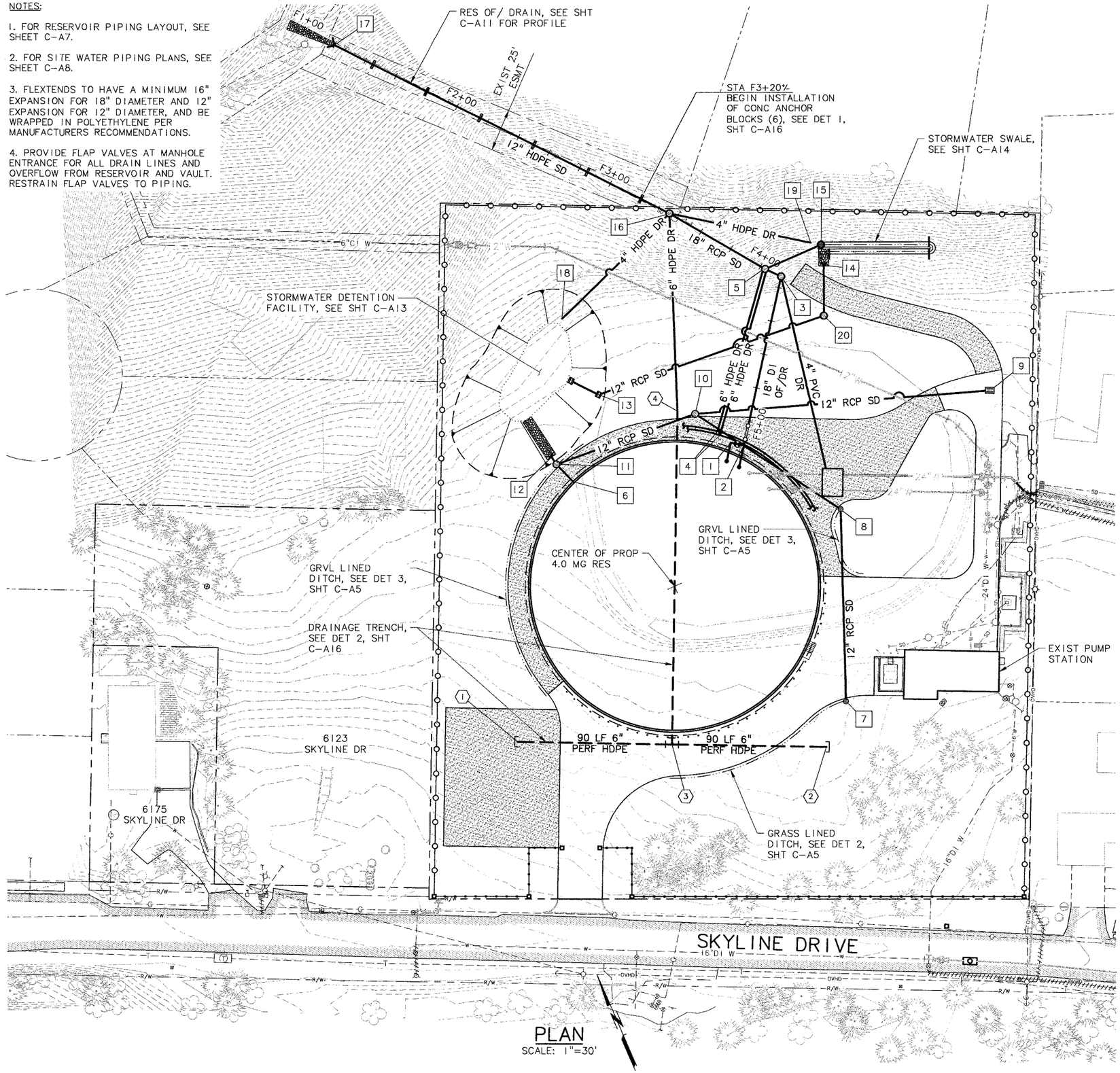
NOTES:

1. FOR RESERVOIR PIPING LAYOUT, SEE SHEET C-A7.

2. FOR SITE WATER PIPING PLANS, SEE SHEET C-A8.

3. FLEXTENDS TO HAVE A MINIMUM 16" EXPANSION FOR 18" DIAMETER AND 12" EXPANSION FOR 12" DIAMETER, AND BE WRAPPED IN POLYETHYLENE PER MANUFACTURERS RECOMMENDATIONS.

4. PROVIDE FLAP VALVES AT MANHOLE ENTRANCE FOR ALL DRAIN LINES AND OVERFLOW FROM RESERVOIR AND VAULT. RESTRAIN FLAP VALVES TO PIPING.



STORMWATER & DRAIN PIPING SCHEDULE

RESERVOIR OVERFLOW & DRAIN:

1. N627600.79, E7656114.90
FURNISH & INSTALL:
1-12" 90° HORIZ BEND, MJ
1-12" BFV, FLG
2-12" DI SPL, LENGTH AS REQ'D

2. STA F5+14
N627596.21, E7656121.20
FURNISH & INSTALL:
1-18" FLEX EXP JT, FLGxMJ
1-18"x12" DI TEE, FLG

3. STA F4+13
N627677.72, E7656180.56
MH-1, DECHLORINATION MH
FURNISH & INSTALL:
1-48" MH,
SEE SHT C-A11

RESERVOIR FOUNDATION & RING DRAINS:

4. N627607.25, E7656110.85
N627609.87, E7656110.42
6" HDPE RES FDN & RING DRAINS,
SEE SHTS C-A6 & C-A7

5. STA F4+03
N627685.44, E7656173.79
MH-2, MONITORING MH
FURNISH & INSTALL:
1-48" MH, SEE SHT C-A11

FRENCH DRAIN:

6. N627616.95, E7656021.63
FURNISH & INSTALL:
1-6" HDPE TEE
IE=438.0%

STORMWATER FACILITIES:

7. N627435.70, E7656115.88
CB-1
FURNISH & INSTALL:
1-CB, PER CITY STD DWG WL-603
RIM=447.0
IE 12" RCP OUT(N)=443.0

8. N627539.86, E7656158.04
CB-2
FURNISH & INSTALL:
1-CB, PER CITY STD DWG WL-603
RIM=443.4
IE 12" RCP IN(S)=439.9
IE 12" RCP OUT(NW)=439.7

9. N627567.93, E7656265.19
CB-3
FURNISH & INSTALL:
1-CB, TYPE G-2
RIM = 440.0
IE 12" RCP OUT(W)=438.0

10. N627624.40, E7656102.55
MH-2
FURNISH & INSTALL:
1-48" MH W/ BEEHIVE INLET
RIM=439.0
IE 12" RCP IN(E)=437.0
IE 12" RCP IN(SE)=437.0
IE 12" RCP OUT(W)=436.5

11. N627630.02, E7656016.76
MH-3, SEDIMENTATION MH
FURNISH & INSTALL:
RIM=439.0
IE 12" RCP IN(E)=436.3
IE 6" HDPE IN(S)=436.3
IE 12" RCP OUT(NW)=436.1
SEE CITY STD DWG WL-607, SHT C-A13

12. N627635.03, E7656015.91
STORMWATER OUTFALL TO POND, SEE CITY STD DWG WL-614, SHT C-A15

13. N627657.12, E7656055.46
FURNISH & INSTALL:
POND OUTLET,
SEE CITY STD DWG WL-610, SHT C-A13

14. N627673.72, E7656205.92
STORMWATER OUTFALL TO SWALE, SEE CITY STD DWG WL-614, SHT C-A15

15. N627685.31, E7656209.34
FURNISH & INSTALL:
SWALE OUTLET,
SEE DET 1, SHT C-A14

16. STA F3+39
N627737.36, E7656135.66
MH-4, TERMINAL DRAINAGE MH
FURNISH & INSTALL:
1-48" MH

17. STA F1+20
N627906.11, E7655996.60
STORMWATER OUTFALL TO CREEK W/ GRATE & ARMORING, SEE CITY STD DWG WL-614, SHT C-A15

18. N627706.29, E7656053.77
DETENTION FACILITY LEAK DETECTION PIPE CONN
FURNISH & INSTALL:
1-4" HDPE
IE=427.0
PROVIDE SEAL PER DET SW-360, SHT C-A15

19. N627688.75, E7656204.32
SWALE FACILITY LEAK DETECTION PIPE CONN
FURNISH & INSTALL:
1-4" HDPE
IE=422.0
PROVIDE SEAL PER DET SW-360, SHT C-A15

20. N627646.77, E7656194.17
MH-5
FURNISH & INSTALL:
1-48" SDMH
RIM=430
GROUND=429%
IE 12" RCP IN(SW)=422.3
IE 12" RCP OUT(N)=422.1

DRAINAGE TRENCH:

1. N627491.07, E7655931.22
FURNISH & INSTALL:
1-6" HDPE CAP
IE=416.0

2. N627416.21, E7656094.92
FURNISH & INSTALL:
1-6" HDPE CAP
IE=416.0

3. N627453.64, E7656013.07
FURNISH & INSTALL:
1-6" HDPE TEE
IE=415.0

4. N627630.07, E7656093.75
TRANSITION TO NON-PERF HDPE
IE=413.0
END DRAINAGE TRENCH
FURNISH & INSTALL:
1-TRENCH DAM, SEE DET 3, SHT C-A16

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET C-A10
26 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON 66640 MICHAEL L. MAY
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SITE DRAIN PIPING PLAN AND CALL-OUTS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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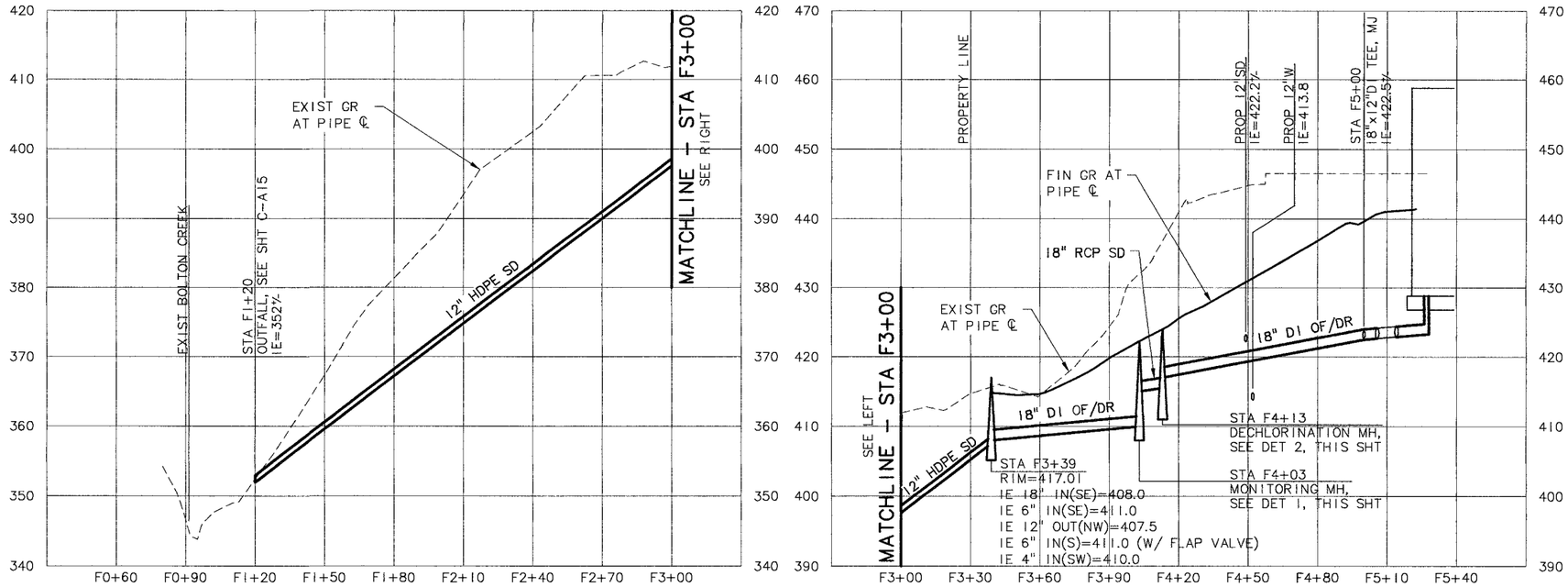
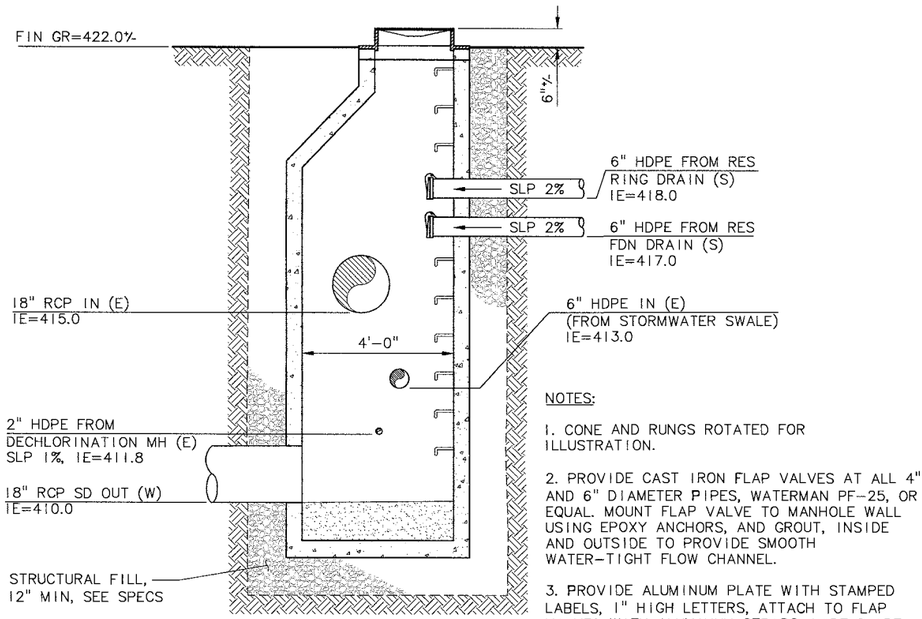


PROFILE – DRAIN LINE – ALIGNMENT 'F'

SCALE: 1"=30' HORIZ, 1"=10' VERT



NOTES:

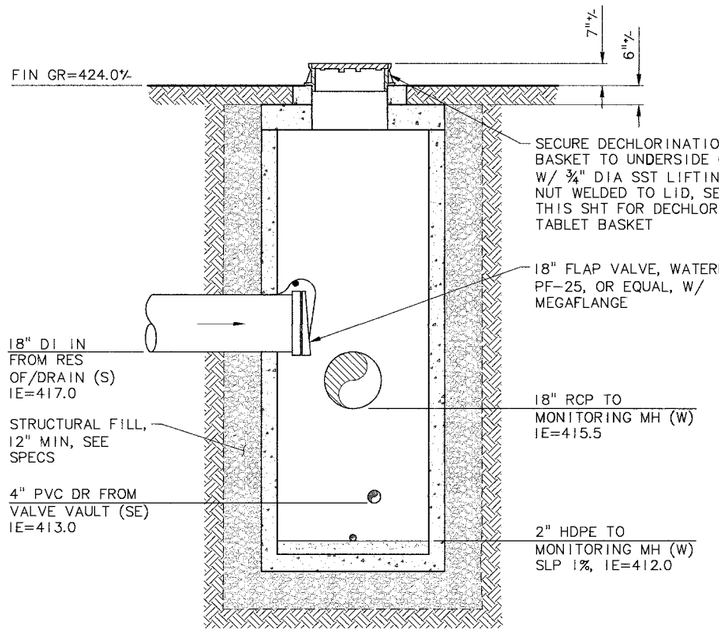
1. CONE AND RUNGS ROTATED FOR ILLUSTRATION.

2. PROVIDE CAST IRON FLAP VALVES AT ALL 4" AND 6" DIAMETER PIPES, WATERMAN PF–25, OR EQUAL. MOUNT FLAP VALVE TO MANHOLE WALL USING EPOXY ANCHORS, AND GROUT, INSIDE AND OUTSIDE TO PROVIDE SMOOTH WATER–TIGHT FLOW CHANNEL.

3. PROVIDE ALUMINUM PLATE WITH STAMPED LABELS, 1" HIGH LETTERS, ATTACH TO FLAP VALVES WITH ALUMINUM STRAPS. LABELS ARE:
   SWALE
   RESERVOIR FOUNDATION DRAIN
   RESERVOIR LINER

RESERVOIR MONITORING MANHOLE 1

SCALE: ½"=1'–0"

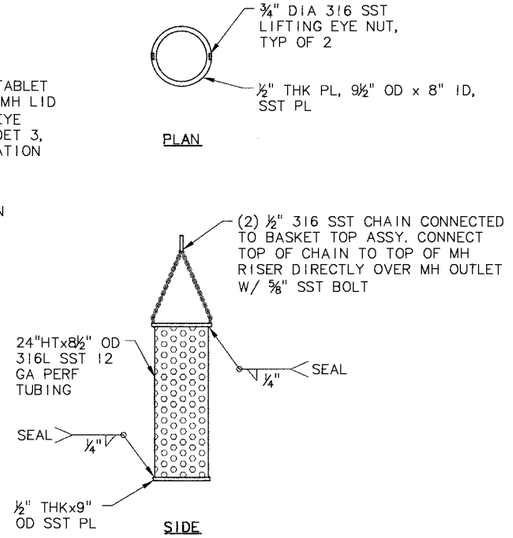


NOTE:

1. PROVIDE 1" ELEVATED GROUTED AREA FOR DECHLORINATION BASKET.

RESERVOIR DECHLORINATION MANHOLE 2

SCALE: ½"=1'–0"



NOTE:

1. CONTRACTOR SHALL PROVIDE 2 BASKETS COMPLETE AS SHOWN IN DETAIL WITH PROJECT.

DECHLORINATION TABLET BASKET 3

SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON 65640 MICHAEL L. MAY RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

SHEET C-A11 27 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SITE DRAIN PIPING PROFILES AND MANHOLE DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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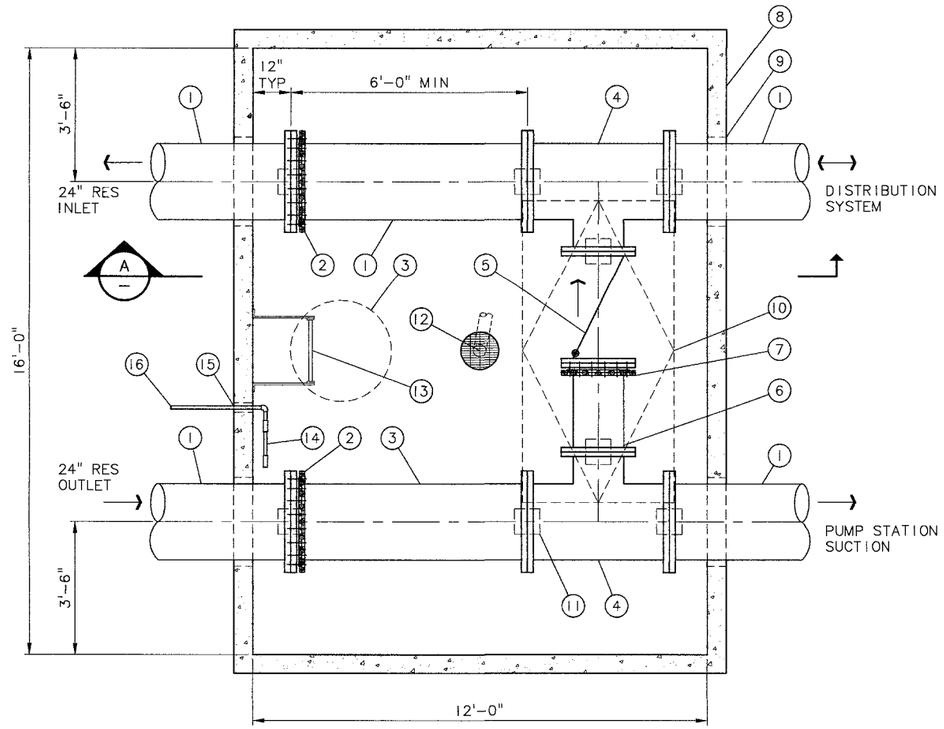


PLAN
SCALE: ½"=1'-0'

MATERIAL LIST

1. 24" DI PIPE, FLGxPE, LENGTH AS REQ'D
2. 24" RESTR FLG ADAPTER
3. 32" DIA MH ACCESS
4. 24"x16" DI TEE, FLG
5. 16" SWING CHKV, FLG, SEE SPECS
6. 16" DI PIPE, FLGxPE, LENGTH AS REQ'D
7. 16" RESTR FLG ADAPTER
8. PRE-CAST CONC PANEL VAULT, 12'x16', OLDCASTLE OR APPV'D EQ
9. PIPE PENETRATION, TYP, SEE DET 4, SHT C-A17
10. 4'x8' DOUBLE LEAF AL HATCH, BILCO JD-AL OR EQ, SEE SPECS
11. PIPE SUPPORTS, (TYP) STAND-ON MODEL S89 OR EQ, SEE NOTES
12. 12" FLR DR, PRE-CAST IN VAULT
13. GALV STL ACCESS LADDER, PER VAULT MFR, W/ 1" AL PULL-UP EXTENSION
14. PRESS TRANSDUCER ASSY, SEE DET 1, THIS SHT
15. WALL PENETRATION, SEE DET 5, SHT C-A17
16. ¾" HDPE SENSING LINE, ROUTE TO RES, SEE C-A7

NOTES:

1. ALL PIPING SHALL BE RESTRAINED UNLESS OTHERWISE SHOWN.

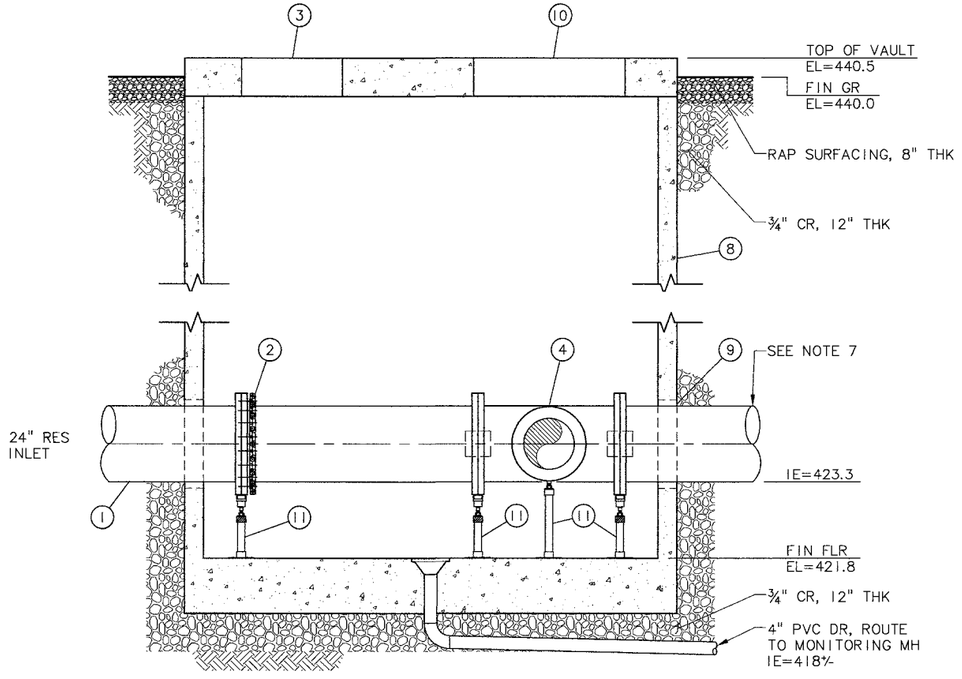
2. WALL PENETRATIONS FOR PIPING TO BE PRECAST IN VAULTS, PROVIDE LINK-SEAL, SEE SPECIFICATIONS.

3. ANCHORS FOR SMALL PIPING SUPPORTS IN VAULT TO BE EXPANSION BOLTS AND SIZED APPROPRIATELY FOR THE SPECIFIED SUPPORT (⅜" MINIMUM DIAMETER), SEE SPECIFICATIONS.

4. PAINT PIPING AND SPECIALS IN VAULT, SEE SPECIFICATIONS. UNLESS NOTED OTHERWISE, PROVIDE A MINIMUM OF 9" CLEARANCE BETWEEN ALL FLANGE FACES AND VAULT WALL.

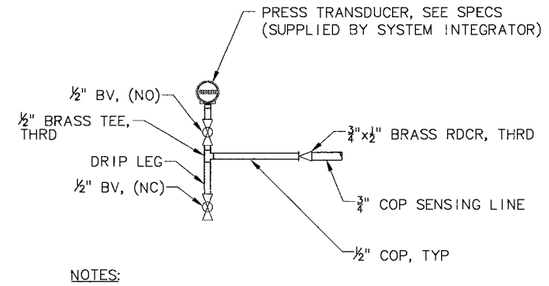
5. PIPE SUPPORTS ARE SHOWN IN SOME LOCATIONS. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION AND NUMBER OF ALL ADDITIONAL SUPPORTS TO PROPERLY SUPPORT PIPING, VALVES AND EQUIPMENT CONNECTIONS TO PREVENT DEFLECTION AND STRESSES.

6. PROVIDE RESTRAINED MECHANICAL JOINT ON PIPING, 2' FROM OUTSIDE EDGE OF VAULTS, TYP.



SECTION
SCALE: ½"=1'-0"

NOTE: VAULT FLOOR DRAIN ROTATED FOR CLARITY.



NOTES:

1. ALL ½" PIPE SHALL BE COPPER, TYPE K, THREADED.

2. FITTINGS SHALL BE BRASS, IPS THREADED.

3. INSTALL ASSEMBLY ON UNISTRUT FRAME MOUNTED TO VAULT WALL WITH 4" WALL OFFSET.

PRESSURE TRANSDUCER ASSEMBLY
SCALE: NTS

NO.	DATE	REVISION	BY

SHEET C-A12 28 of 167

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1989 MICHAEL L. MAY
RENEWS 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **VALVE VAULT PLAN AND SECTION**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0852

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

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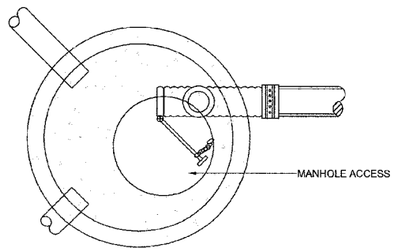
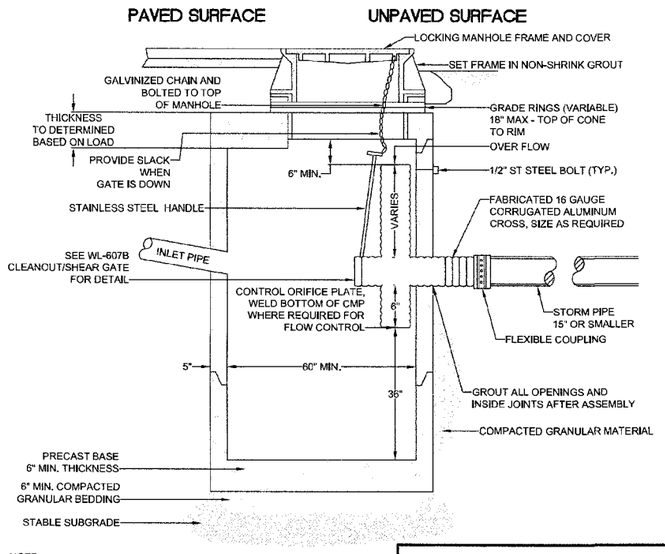


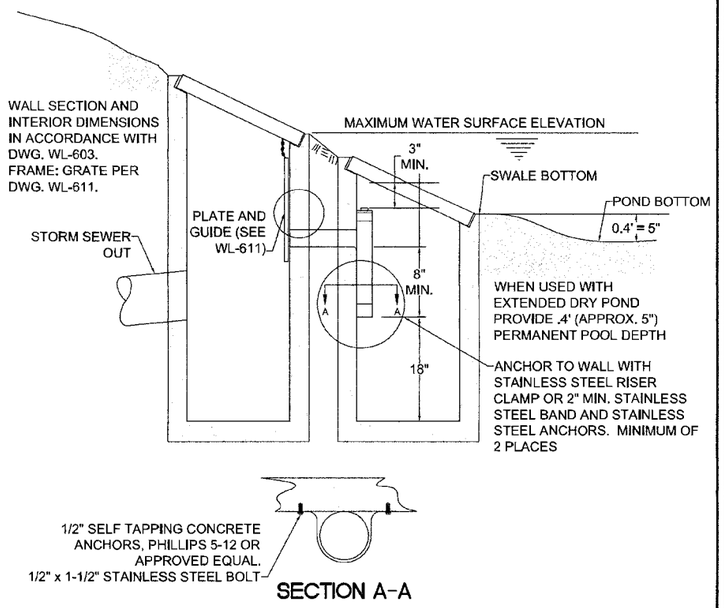


NOTE:
1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
2. DISTANCE FROM TOP OF OVERFLOW TO MH RIM SHALL BE BASED ON OVERFLOW CAPACITY CALC'S BY DESIGN ENGINEER. ASSUME ORIFICE CONTROL.
3. 72" MINIMUM DIA. MANHOLE REQUIRED FOR OUTLET OR INLET > 21".
4. NO STEPS REQUIRED.

POLLUTION/FLOW CONTROL MANHOLE

City of West Linn

DATE: 2010
DRAWING NO. WL-607A
FILE NO.



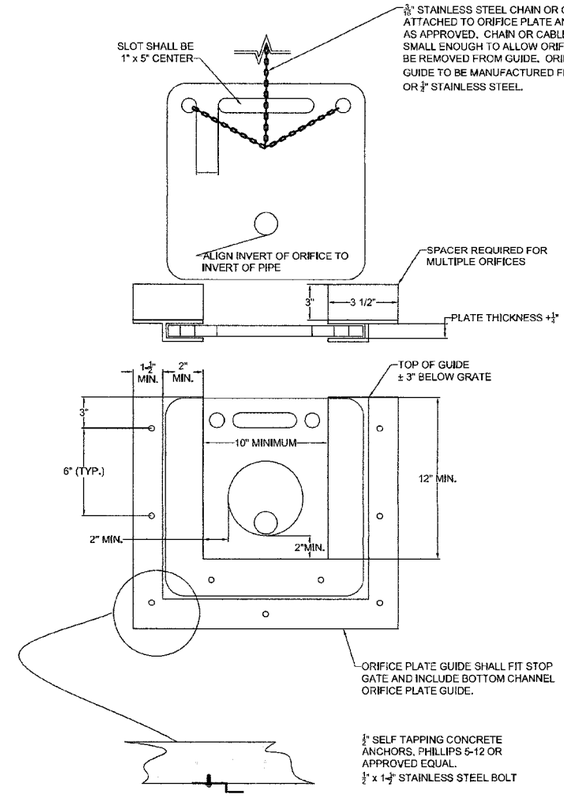
SECTION A-A

NOTE:
1. CONNECTING PIPE AND TEE SHALL BE 4", 6", OR 8" AWWA C-900 OR ASTM 3034 PVC,AND ONE SIZE LARGER THAN THE ORIFICE OPENING.
2. MAXIMUM ORIFICE OPENING SHALL BE 6" DIAMETER.
3. ~~STRUCTURES SHALL CONFORM TO STANDARD DRAWING NO. 390 DITCH INLET.~~
4. ~~FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWING NO. 400, DITCH INLET FRAME AND GRATE.~~
5. PLATE AND GUIDE SHALL BE SECURED FLUSH AGAINST WALL OF STRUCTURE AS APPROVED.
6. MAINTAINANCE ACCESS REQUIRED TO WITHIN 10' OF CENTER OF BOTH STRUCTURES.

STANDARD DETENTION POND OUTLET

City of West Linn

DATE: 2010
DRAWING NO. WL-610
FILE NO.



NOTE:
FOR MULTIPLE ORIFICE APPLICATION, A 3" MIN. SPACER IS REQUIRED AS SHOWN. SPACER TO MATCH PLATE GUIDE DIMENSIONS, WIDTH, MATERIAL WITH A WATER TIGHT SEAL.

PLATE AND GUIDE

City of West Linn

DATE: 2010
DRAWING NO. WL-611
FILE NO.

DRAWING WL-607A NOTES

1. SEDIMENTATION MANHOLE
2. PROVIDE 48" DIAMETER MANHOLE.
3. SEE SHEET C-A10 FOR INLET, OUTLET, RIM, AND FLOOR ELEVATIONS.
4. REPLACE MANHOLE FRAME AND COVER WITH 24" DITCH INLET WITH BEEHIVE GRATE, NEENAH FOUNDARY R-2560 SERIES OR EQUAL.

DRAWING WL-610 NOTES

1. POND OUTLET STRUCTURE.
2. CONNECTING PIPE AND TEE SHALL BE 4" DIAMETER.
3. LOWER GRATE INLET EL=425.25
4. OVERFLOW GRATE INLET EL=434.0
5. STORM SEWER OUT: 12" RCP IE(OUT)=423.0
6. FOR ORIFICE PLATE, SEE DRAWING WL-611.

DRAWING WL-611 NOTES

1. POND OUTLET, OUTLET CONTROL PLATE.
2. PROVIDE ORIFICE PLATE WITH ORIFICE SIZE AND ELEVATIONS SHOWN BELOW.

DIA	ELEV
1.5"	432.0
1.0"	430.0
1.0"	425.5

NO.	DATE	REVISION	BY

SHEET C-A13
29 of 167

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 13, 2005 MICHAEL L. MAY
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

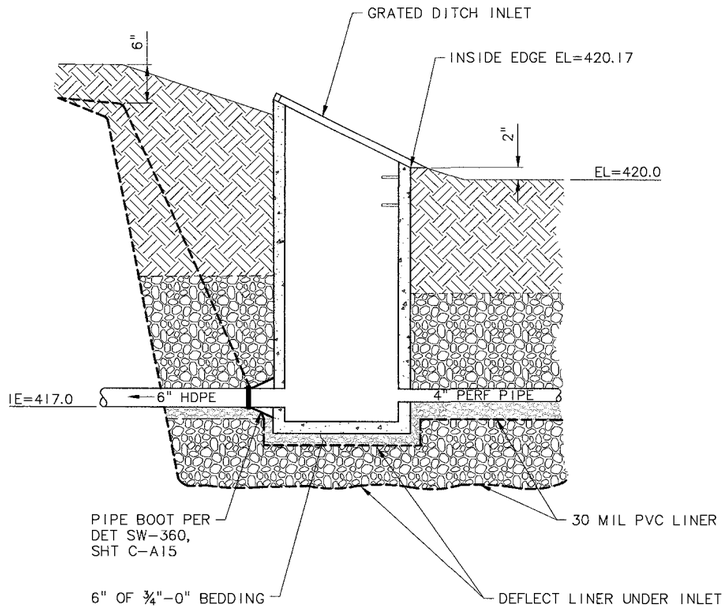
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

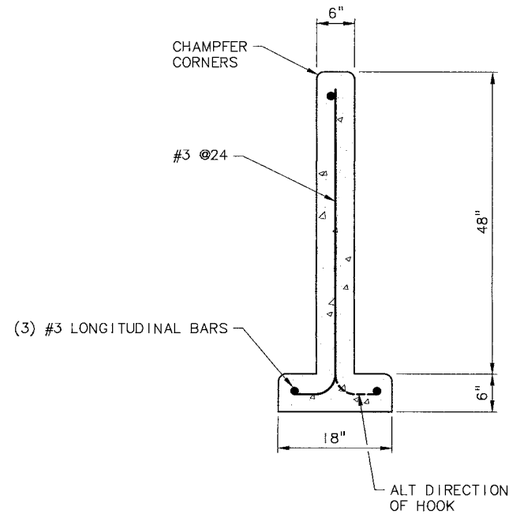
SHEET TITLE: STORMWATER DETENTION FACILITY DETAILS

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

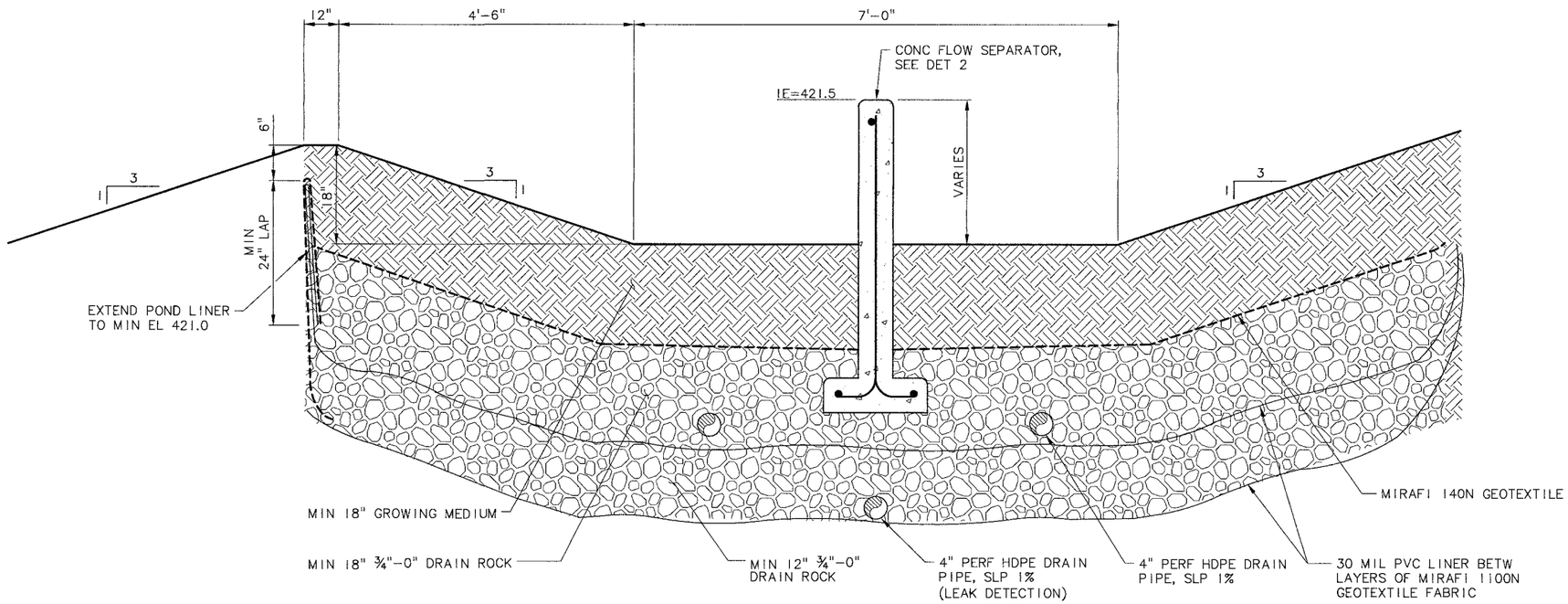
DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586



SWALE OUTLET DETAIL (1/—)
SCALE: ⅜"=1'-0"



CONCRETE FLOW SEPARATOR DETAIL (2/—)
SCALE: 1"=1'-0"



TYPICAL SWALE SECTION (3/—)
SCALE: 1"=1'-0"

NOTES:

1. SEE LANDSCAPING DETAILS FOR STORMWATER SWALE PLANTINGS.
2. SLOPE SWALE 1%.
3. FORM CONCRETE FLOW SEPARATOR ON GEOTEXTILE OVER LINER.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET C-A14 30 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 MICHAEL L. MAH 65640
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

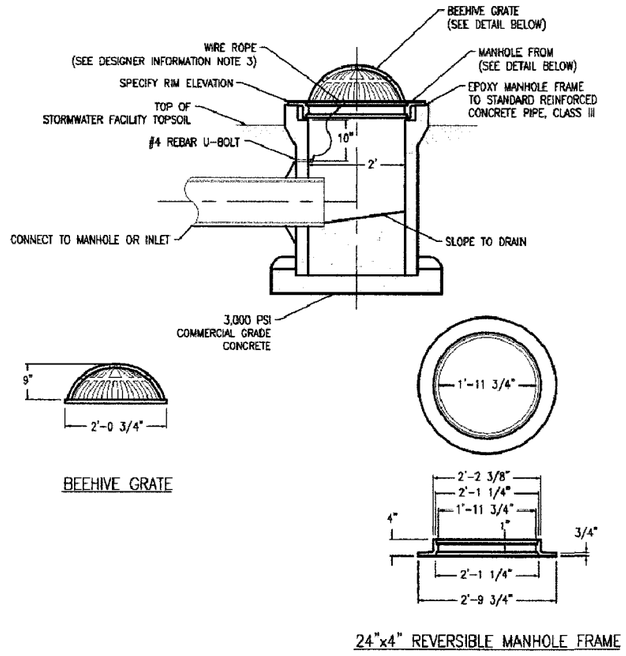
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STORMWATER SWALE DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



DESIGNER INFORMATION

1. If connecting to a combination sewer main install a flapper valve or approved equal to prevent odor emissions.
2. Size inlet based on calculated flows & manufacturers recommendations.
3. Wire rope between 1/8"-3/16" diameter, stainless steel, 7 strands of 19 wires.

CONSTRUCTION NOTES

1. Secure grate in place with 54" of wire rope. Loop ends of wire rope around U-bolt and grate. Crimp each end of wire rope with 3" overlap.
2. Drill 2" deep holes into pipe and epoxy #4 rebar U-bolt (2"x 4") in holes.
3. Grate to be cast iron, ASTM A48 CL30.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

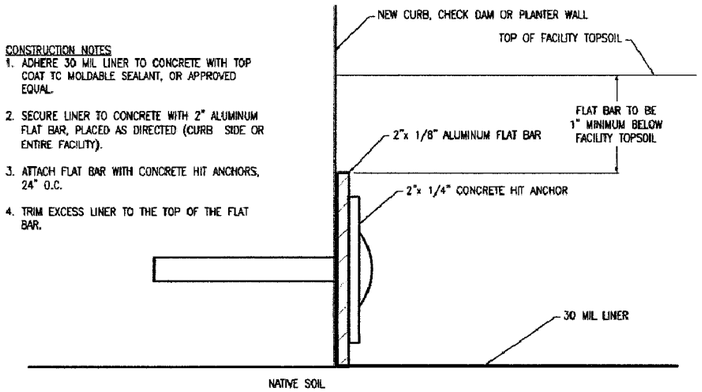
– Green Streets –
Beehive Inlet Grate
Overflow Inlets

Bureau of Environmental Services

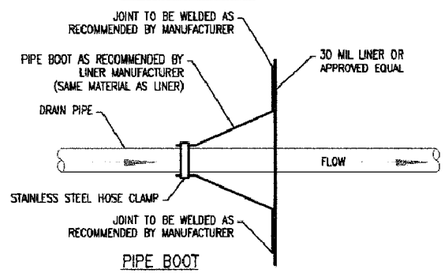
NUMBER SW-350

CONSTRUCTION NOTES

1. ADHERE 30 MIL LINER TO CONCRETE WITH TOP COAT TC MOLDABLE SEALANT, OR APPROVED EQUAL.
2. SECURE LINER TO CONCRETE WITH 2" ALUMINUM FLAT BAR, PLACED AS DIRECTED (CURB SIDE OR ENTIRE FACILITY).
3. ATTACH FLAT BAR WITH CONCRETE HIT ANCHORS, 24" O.C.
4. TRIM EXCESS LINER TO THE TOP OF THE FLAT BAR.



LINER ATTACHMENT



PIPE BOOT

DESIGNER INFORMATION

1. Liner materials to be HDPE or PVC. Liner to extend from top of topsoil to the bottom of excavation.
2. 3" of concrete is required on all sides of attachment. Adjust sidewalk depth as necessary.
3. Liner required when face of new curb is less than 2' from OD of adjacent water main.
4. Liner required on neighborhood collectors and higher street classifications.
5. Liner may be required on local streets with transit routes, higher traffic volumes, or when a facility is adjacent to travel lane at the discretion of the City Engineer.
6. In the Columbia South Shore Well Field Wellhead Protection Area or areas with contaminated soils the facility must be completely lined with a 40 mil liner unless facility's bottom and sides are monolithic concrete.
7. Liners may be required near basements or other underground structures.
8. Trees allowed in lined facilities only at the discretion of City of Portland staff.

- DRAWING NOT TO SCALE -

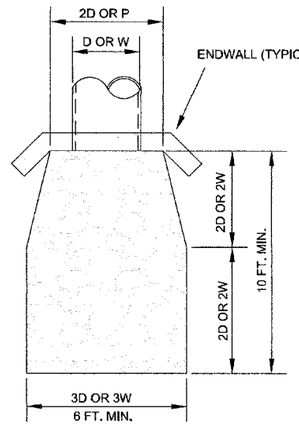
STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

– Green Streets –
Liner Attachment & Pipe Boot Detail
Miscellaneous

Bureau of Environmental Services

NUMBER SW-360

D = PIPE DIAMETER
W = BOTTOM WIDTH OF CHANNEL
P = WETTED PERIMETER OF CHANNEL

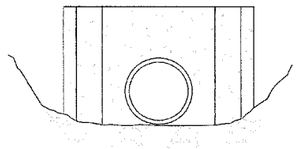


DESIGN VELOCITY FT./SEC	ROCK CLASSIFICATION BY WEIGHT
6 - 10	200 LBS.
10 - 12	1/4 TON
12 - 14	1/2 TON
14 - 16	1 TON
16 - 18	2 TON

SELECTION OF RIP RAP
(SEE NOTE 1)

NOTE:

1. DIMENSIONS FOR RIP RAP APPLY TO FLOWS
   < 2 CFS RIP RAP FOR FLOWS
   > 2 CFS MUST BE DESIGNED BY AN ENGINEER
   FLOWS > 20 FPS SHALL USE ENERGY DISSIPATOR
2. TYPE OF RIP RAP
   A. REGULAR QUARRY STONE CLASS 50-200
   B. COBBLESTONE
   C. CONCRETE (ONLY ALLOWED UPON APPROVAL OF THE CITY)
3. PLACEMENT
   A. MINIMUM DEPTH = 1 1/2 TIMES AVERAGE STONE SIZE.
   B. ROCKS SHALL BE PLACED TO PROVIDE A MINIMUM OF VOIDS.
   C. SURFACE ROCKS OR CONCRETE SHALL PROTRUDE AT LEAST 1/2 THEIR VERTICAL DIMENSION.
   D. RIP RAP IS TO BE PLACED OVER A NATURAL BEDDING, OR IT MAY BE GROUTED OR PLACED OVER A GRAVEL BEDDING AS REQUIRED BY THE CITY.



STORM SEWER OUTFALL

City of West Linn

DATE: 2010
DRAWING NO. WL-614
FILE NO.

DRAWING WL-614 NOTES

A. POND INLET ARMORING:
   1. PEAK RUNOFF < 1 CFS.
   2. PIPE DIA=12"
   3. PIPE IE=437.0
   4. REFER TO CITY STANDARD DRAWING WL-613 FOR ENDWALL.
   5. RIP RAP SHALL BE 200 LBS, 25'L, 6'W WITH 2' MINIMUM DEPTH.

B. SWALE INLET ARMORING:
   1. PEAK RUNOFF <1 CFS.
   2. PIPE DIA=12"
   3. PIPE IE=422.0
   4. ENDWALL NOT REQ'D
   5. RIP RAP SHALL BE 200 LBS, 10'L, 6'W, WITH 2' MINIMUM DEPTH.

C. CREEK OUTFALL ARMORING:
   1. PEAK RUNOFF 7,000 GPM (EMERGENCY OVERFLOW).
   2. RIP RAP SHALL BE 1 TON, 10'L, 6'W, WITH 2' MINIMUM DEPTH.
   3. REPLACE ENDWALL WITH CITY STANDARD DITCH INLET, CITY STANDARD DRAWING WL-603.

   RIM=354'-
   GROUND=353'-
   IE (IN)=352'-

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET C-A15
31 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 MICHAEL L. MURRAY
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

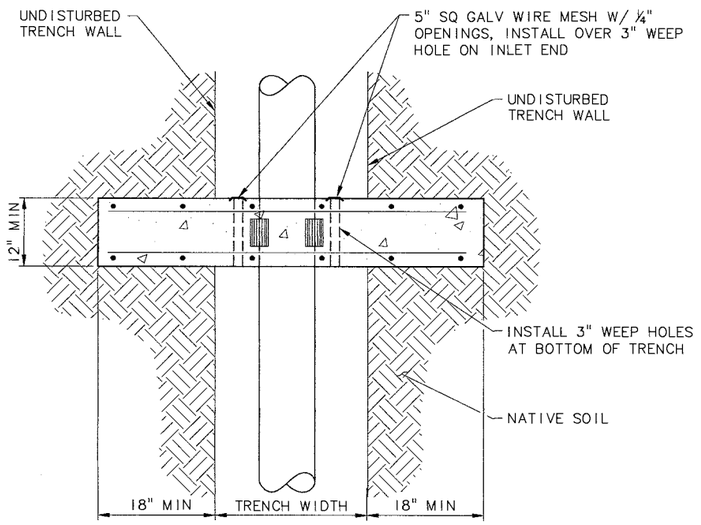
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: STORMWATER DETAILS

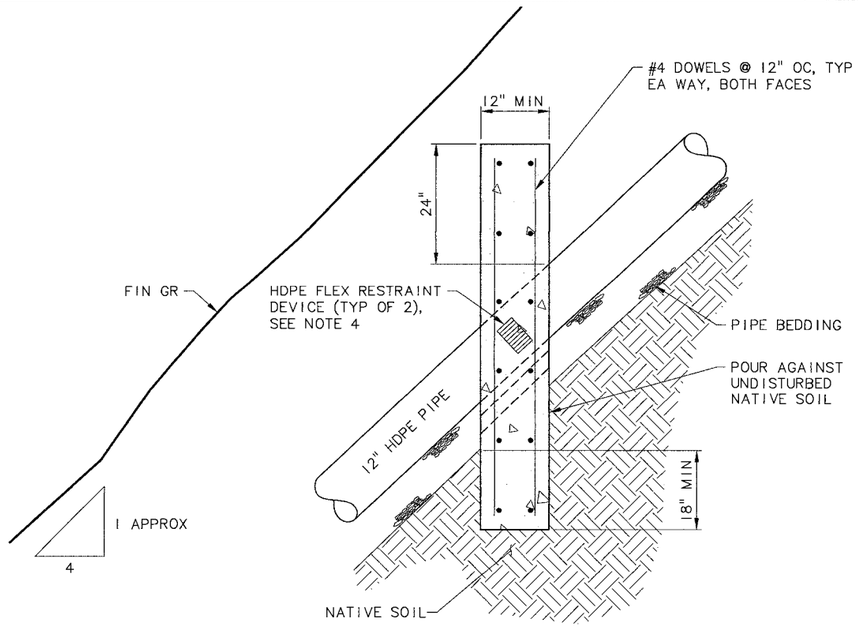
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



PLAN



ELEVATION

NOTES:

1. CONCRETE ANCHOR BLOCKS SHALL BE CONSTRUCTED USING FORMS. REMOVE FORMS PRIOR TO BACKFILLING TRENCH.

2. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE, 3000 PSI COMPRESSIVE STRENGTH OR GREATER.

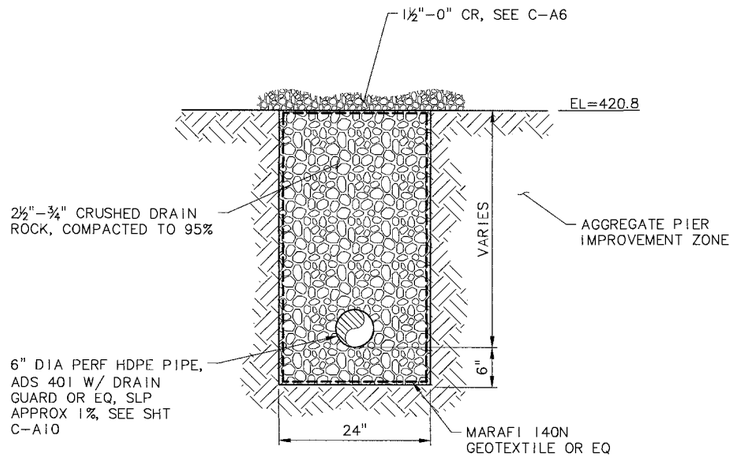
3. CENTER TO CENTER MAX SPACING OF CONCRETE ANCHOR BLOCKS SHALL BE 35'.

4. TWO (2) HDPE FLEX RESTRAINT DEVICES TO BE ATTACHED BY THE METHOD OF ELECTROFUSION TO OPPOSING EXTERIOR SIDES OF HDPE PIPE, AND PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE A MINIMUM OF 3" OF CONCRETE COVER OVER RESTRAINT DEVICE WITHIN ANCHOR BLOCK. SEE SPECIFICATIONS.

5. FURNISH & INSTALL FILTER FABRIC ON 5" SQUARE WIRE MESH INLET COVER PRIOR TO INSTALLING INLET COVER OVER 3" WEEPHOLE'S INLET END. FILTER FABRIC SHALL BE MIRAFI 140N, OR APPROVED EQUAL.

CONCRETE ANCHOR BLOCK (1 / –)

SCALE: NTS

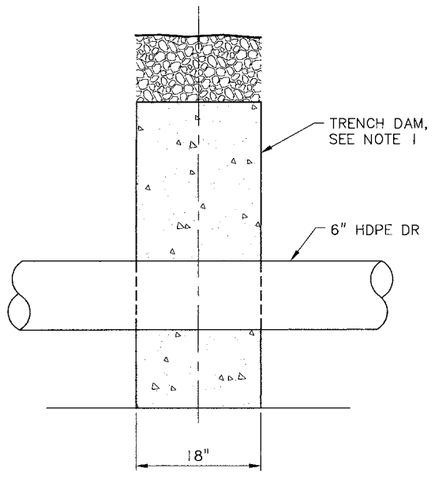


NOTE:

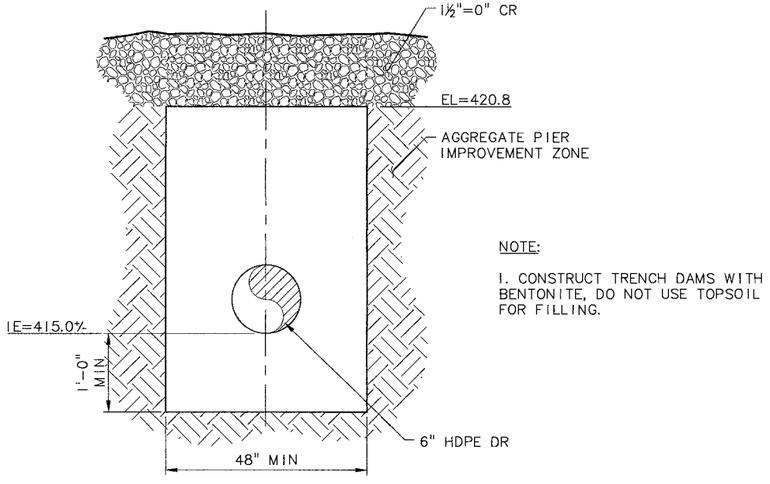
1. INSTALL DRAINAGE TRENCH AFTER COMPLETING AGGREGATE PIERS IMPROVEMENTS.

DRAINAGE TRENCH DETAIL (2 / C-A10)

SCALE: NTS



SECTION



NOTE:

1. CONSTRUCT TRENCH DAMS WITH BENTONITE, DO NOT USE TOPSOIL FOR FILLING.

DRAINAGE TRENCH – TRENCH DAM (3 / C-A10)

SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH/RLF
CHECKED: TPB
APPROVED: TPB

SHEET C-A16
32 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 2013 MICHAEL L. MAY
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

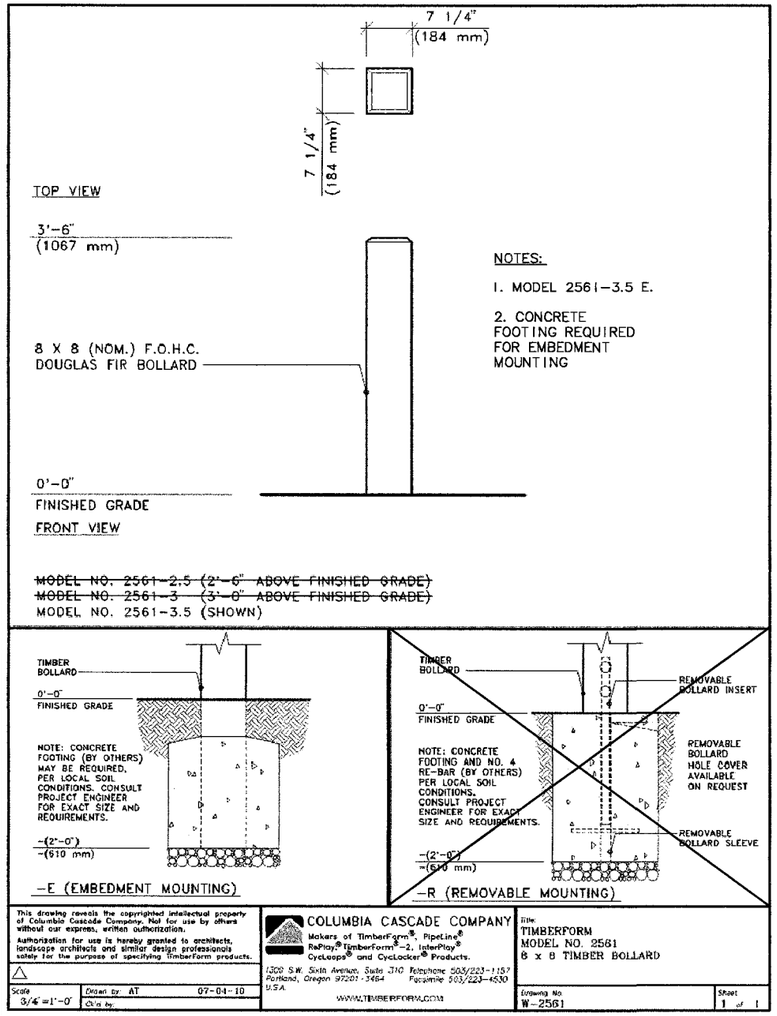
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

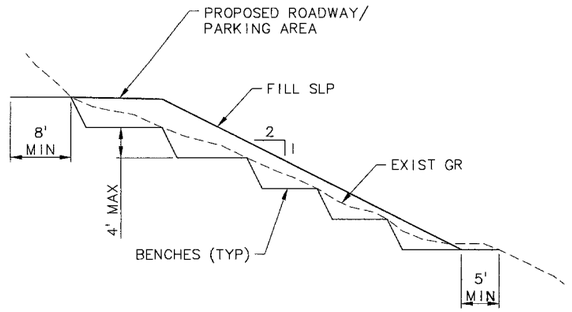
SHEET TITLE: **MISCELLANEOUS SITEWORK DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



BOLLARD DETAIL (1)
SCALE: NTS

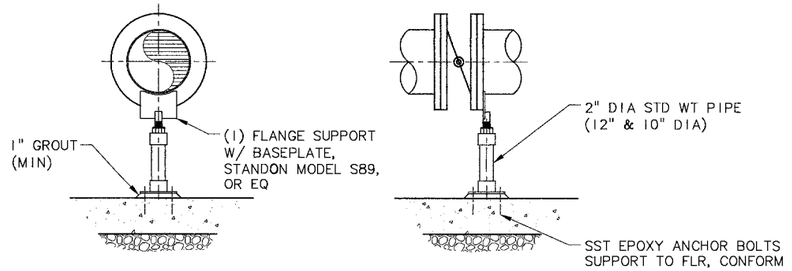


NOTES:

1. STRUCTURAL FILL MATERIALS PLACED ON EXISTING SLOPES STEEPER THAN 5H:1V SHALL PROCEED IN HORIZONTAL LIFTS FROM A MAXIMUM 8-FT WIDE HORIZONTAL BENCH EXCAVATED INTO THE FACE OF EXISTING SLOPE AT THE TOE OF THE NEW FILL SLOPE.

2. FILL SLOPES SHALL BE OVERBUILT THEN CUT BACK TO FINAL GRADE.

TYPICAL DETAIL FOR FILLING ON SLOPES (2)
SCALE: NTS

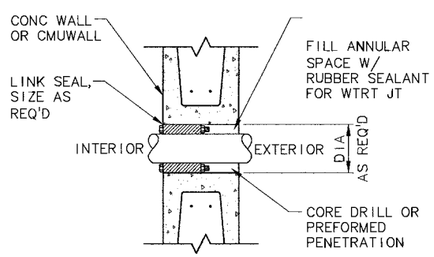


NOTES:

1. SUPPORTS AND HARDWARE SHALL BE TYPE 304 STAINLESS STEEL.

2. PROVIDE INSULATING WASHERS.

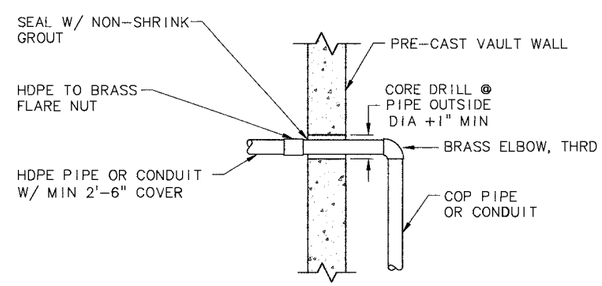
S89 PIPE SUPPORT AT FLANGE (3)
SCALE: NTS



NOTE:

1. SEAL ALL WALL PIPE PENETRATIONS WITH LINK SEAL TYPE SEAL UNLESS OTHERWISE NOTED. FOR PIPE SIZES TOO SMALL FOR LINK SEALS, SEAL WITH EPOXY SEALANT.

WALL PIPE PENETRATION (4)
SCALE: NTS



CONDUIT/SMALL PIPE WALL PENETRATION (5)
SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: M.L.M
DRAWN: D.K.H
CHECKED: T.P.B
APPROVED: T.P.B

SHEET C-A17 33 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 MICHAEL L. MAY 66540 RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **MISCELLANEOUS DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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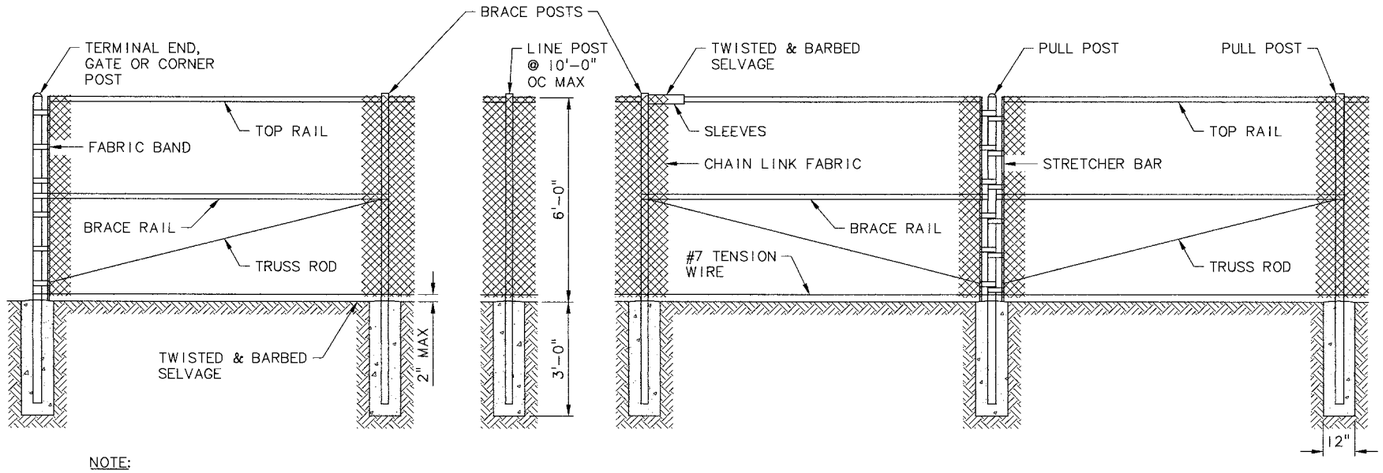
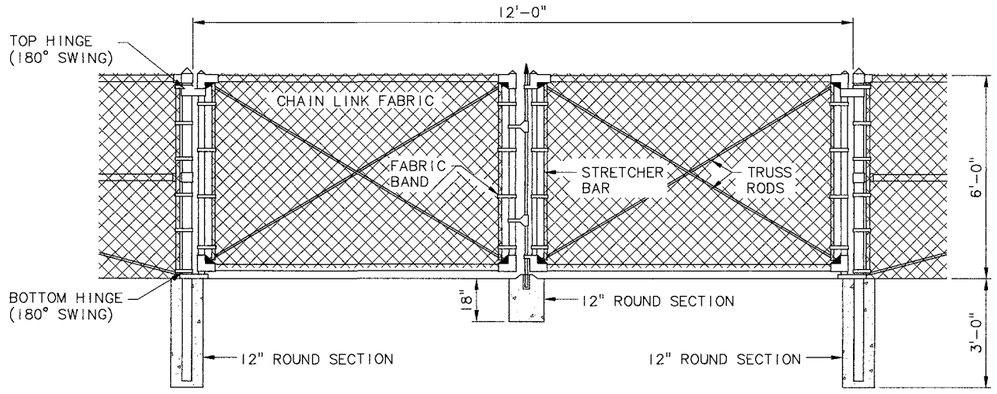


NOTE:

1. CHAIN LINK FABRIC SHALL BE BLACK PVC COATED.

CHAIN LINK FENCE (1 / C-A1)

SCALE: NTS



CHAIN LINK GATE (2 / C-A1)

SCALE: NTS

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NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET C-A18
34 of 167

REGISTERED PROFESSIONAL ENGINEER 66840 OREGON DECEMBER 31, 2016 MICHAEL L. MAH
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

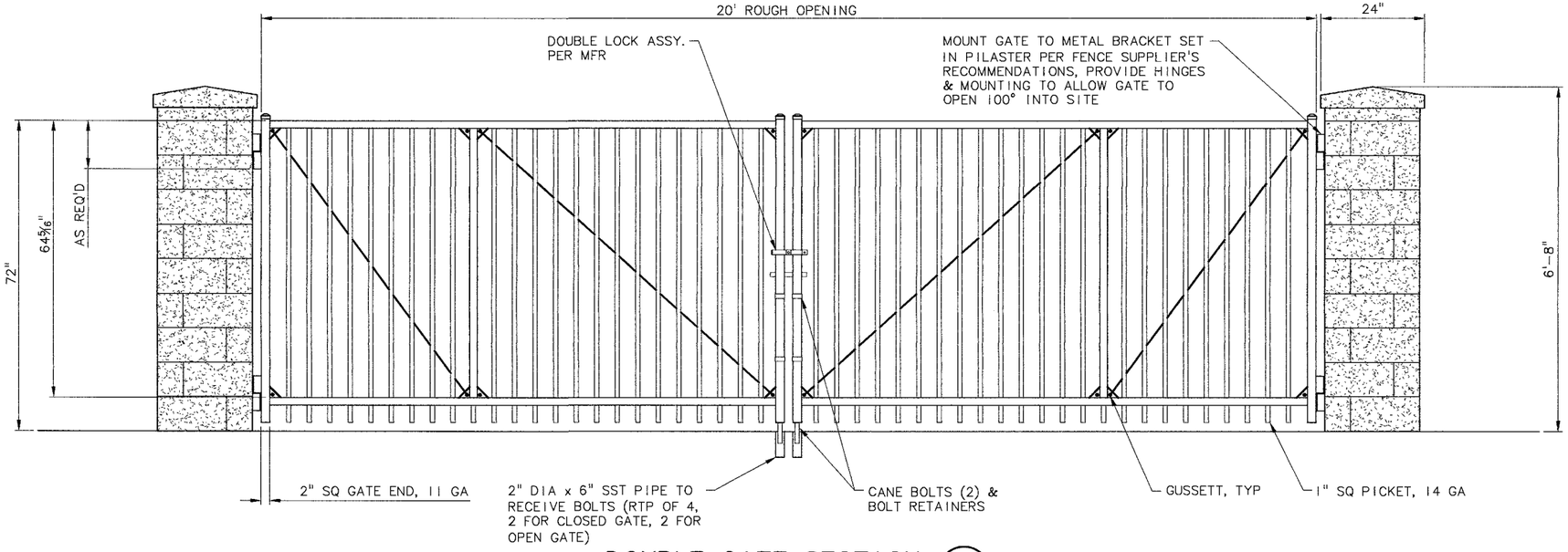
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

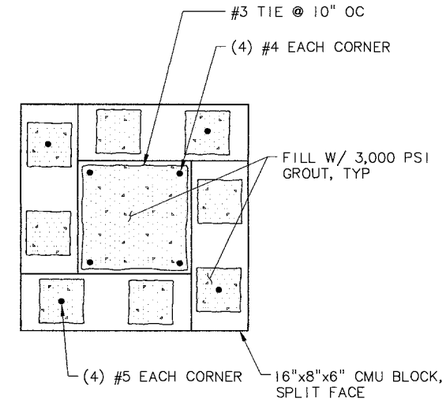
SHEET TITLE: **FENCING DETAILS - 1**

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

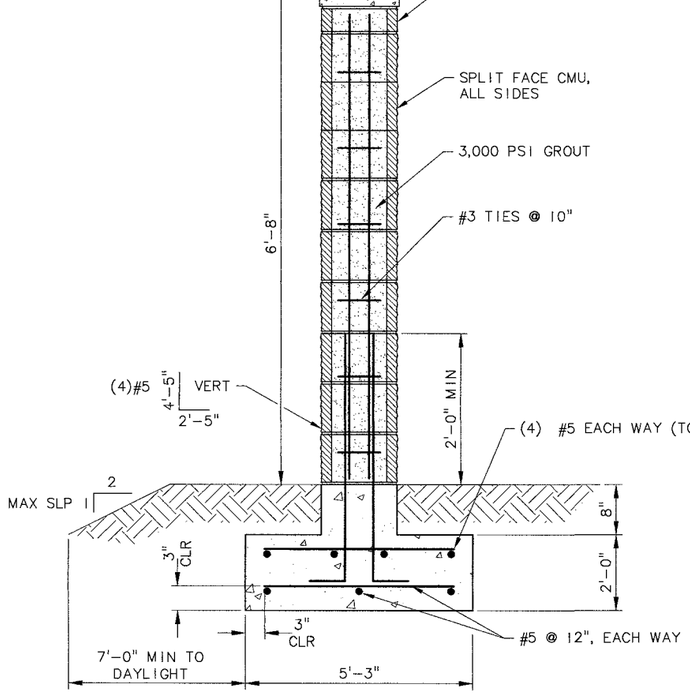
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



DOUBLE GATE SECTION (1/—)
SCALE: ¾"=1'-0"



TYP PILASTER DETAIL (2/—)
SCALE: 3"=1'-0"



NOTES:

1. CONTRACTOR SHALL VERIFY SOIL CONDITIONS AT THE FOOTINGS AND MAKE ANY NECESSARY CORRECTIONS TO PLACE THE FOOTINGS ON FIRM NATIVE SOIL OR STRUCTURAL FILL COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE PER ASTM D698 OR ASTM D1557. THE COMPACTION SHALL BE VERIFIED BY THE ENGINEER.

2. CONCRETE SHALL BE 3,000 PSI MINIMUM AT 28 DAYS. MIXING, PLACING AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 318 AND IBC SECTION 1903. ALL CONCRETE SHALL HAVE A MAXIMUM WATER/CONCRETE RATION 0.45.

3. ALL NON-SHRINK GROUT SHALL BE NON-METALLIC GROUT CONFORMING TO ASTM C1107, AND SHALL HAVE A SPECIFIED MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 5,000 PSI.

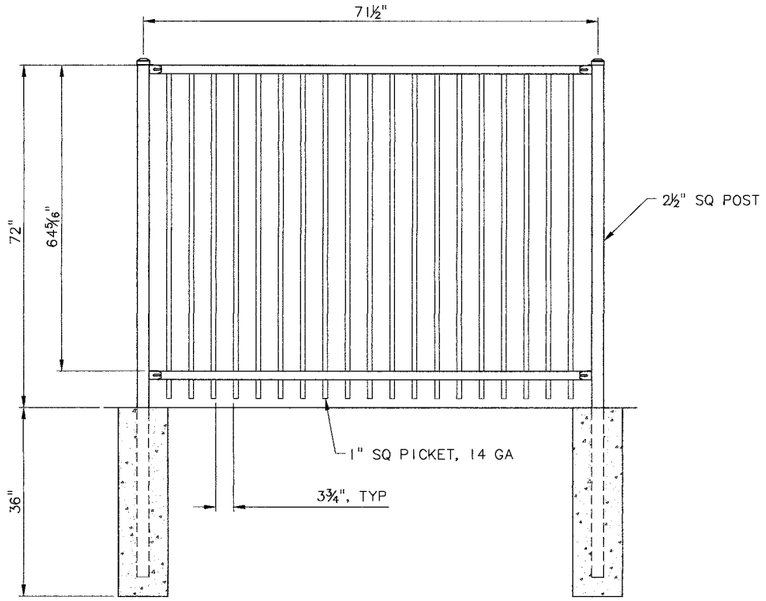
4. GROUT SOLID.

5. HOOK ALL REINFORCING THAT CANNOT BE EXTENDED.

6. TYPICAL REINFORCING SHOWN. REFER TO DETAILS FOR SPECIFIC OR ADDITIONAL REINFORCING.

7. LAP ALL REINFORCING A MINIMUM OF 46 BAR DIAMETERS.

TYPICAL PILASTER SECTION (3/—)
SCALE: NTS



TYPICAL PANEL SECTION (4/—)
SCALE: ¾"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF/DKH
CHECKED: TPB
APPROVED: TPB

SHEET C-A19 35 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 2006 MICHAEL L. MAY
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0 — 1)

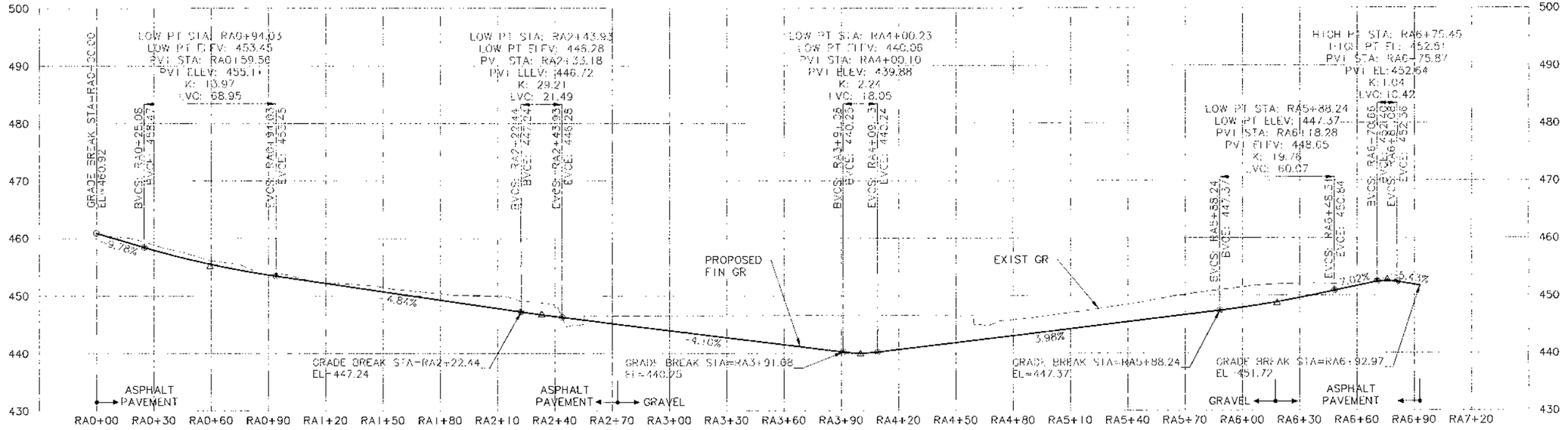
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **FENCING DETAILS - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0852

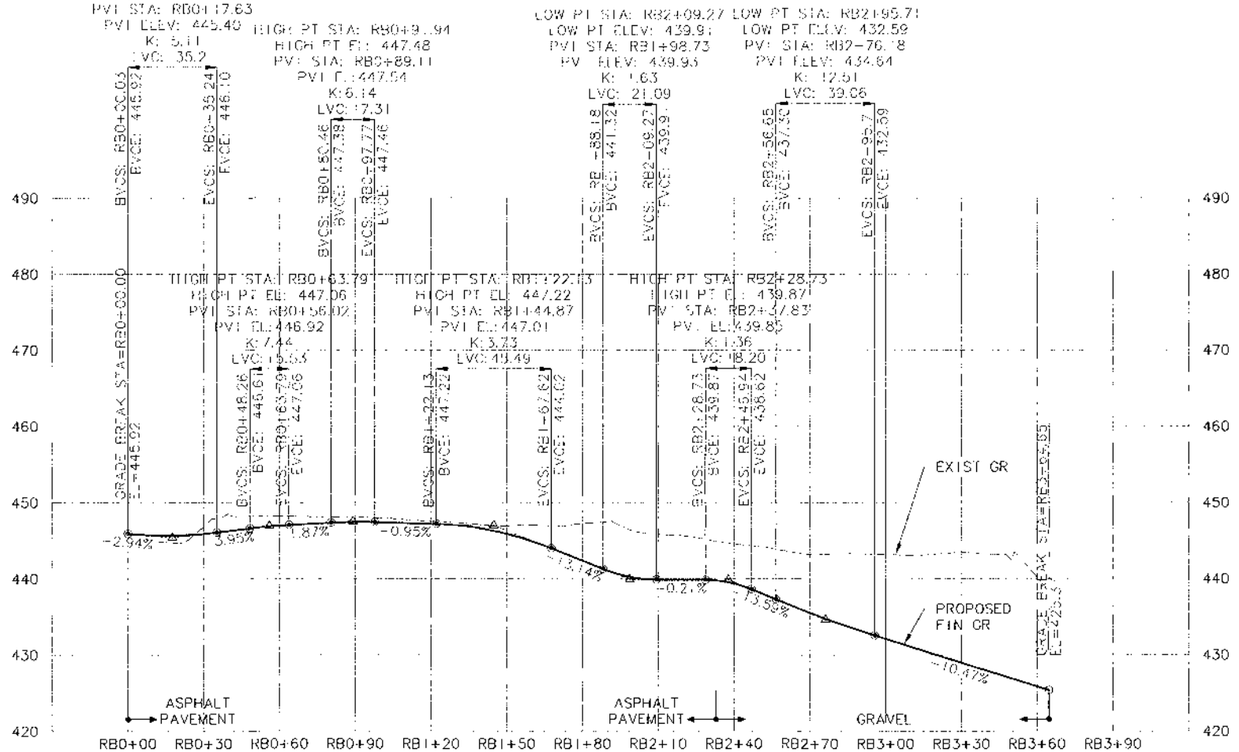
DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-CIV DETS.dwg C-A19 9/3/2015 11:45 AM DKT 20.0s (LWS Tech)



ACCESS ROAD – ALIGNMENT 'RA' PROFILE

SCALE: 1"=30' HORIZ, 1"=10' VERT



ACCESS ROAD – ALIGNMENT 'RB' PROFILE

SCALE: 1"=30' HORIZ, 1"=10' VERT

NO.	DATE	REVISION	BY

DESIGNED: JHF
DRAWN: KF/DAC
CHECKED: MLB
APPROVED: TPS

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1995 MICHAEL L. NOBLE RENEWS 12-31-16

SCALE: HOR: AS SHOWN VERT: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

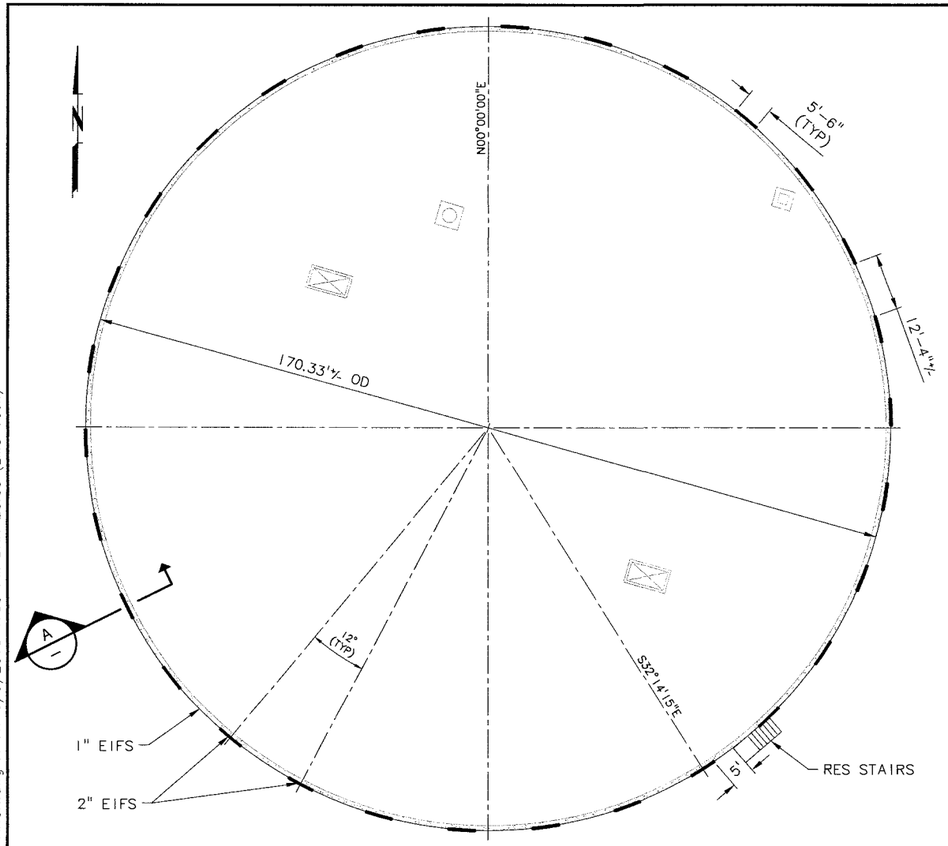
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SITE ACCESS ROAD VERTICAL PROFILES**

SHEET C-A20 36 of 187

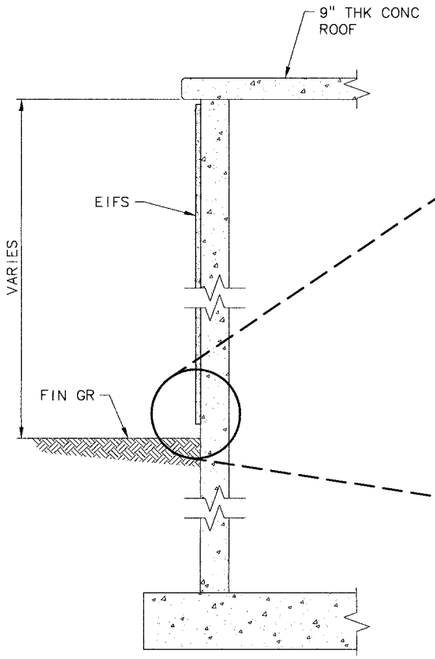
MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-??SR DATE: SEPTEMBER 2015



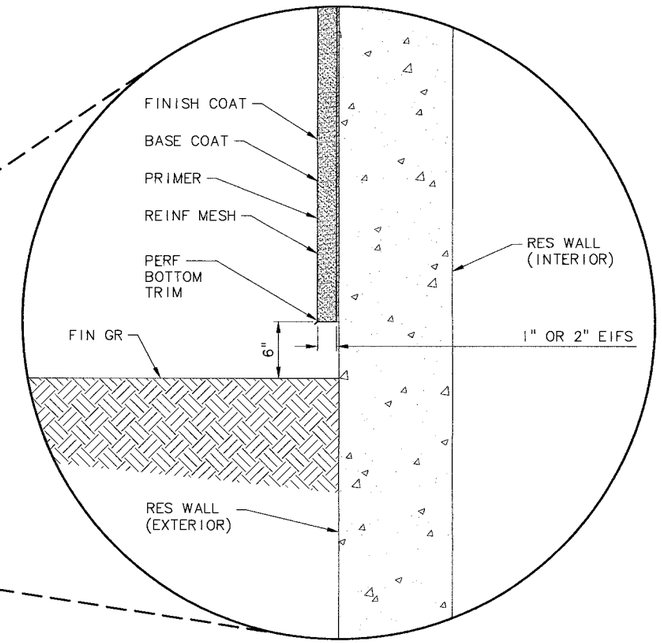
RESERVOIR EIFS PLAN

SCALE: 1/16"=1'-0"



WALL SECTION (A/1)

SCALE: 3/8"=1'-0"

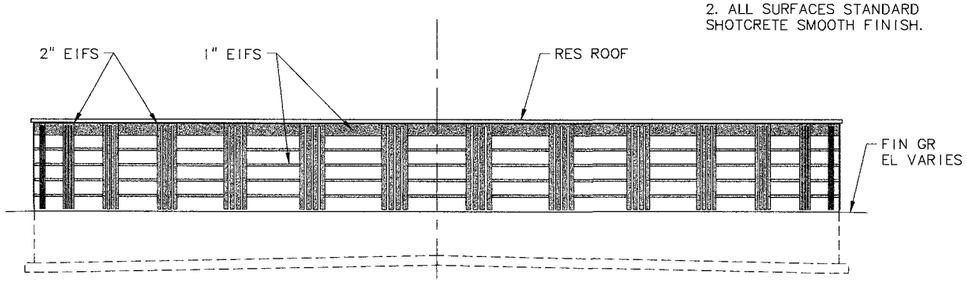


RESERVOIR WALL EIFS DETAIL

SCALE: NTS

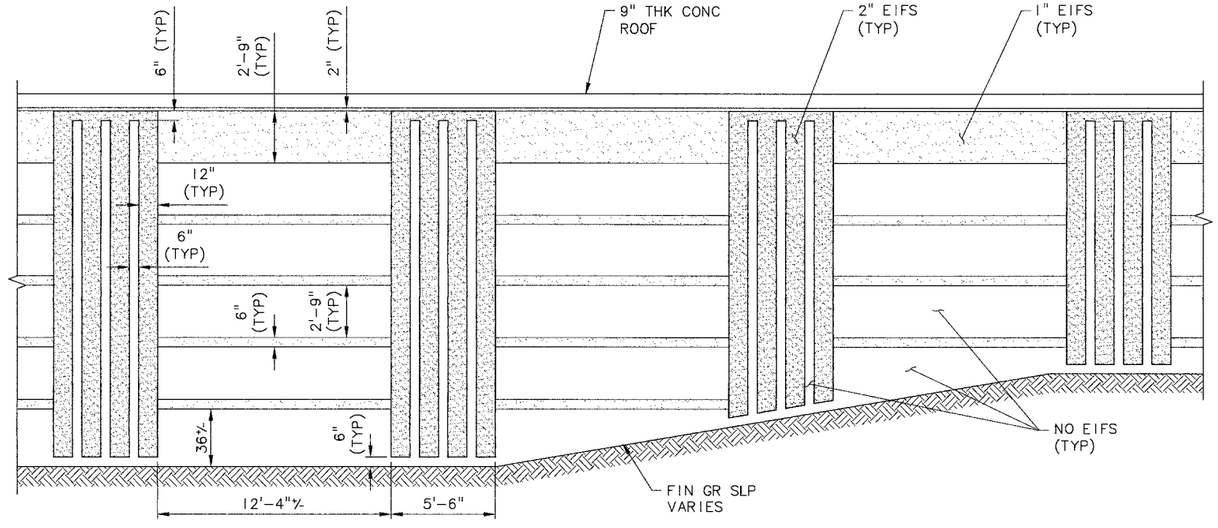
NOTES:

1. ALL 2" EIFS SECTIONS AND CUTOUTS TO HAVE 1" BEVELED EDGES.
2. ALL SURFACES STANDARD SHOTCRETE SMOOTH FINISH.



RESERVOIR ELEVATION (2/1)

SCALE: 1/16"=1'-0"



RESERVOIR ART DECO EXTERIOR FINISH (3/1)

SCALE: 1/4"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET A-A1 37 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON 65640 MICHAEL L. MURRAY

RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR EXTERIOR FINISH WORK**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

RESERVOIR STRUCTURAL SHEETS

S-A1 RESERVOIR GENERAL STRUCTURAL NOTES
S-A2 RESERVOIR QUALITY CONTROL PLAN
S-A3 RESERVOIR ROOF AND FLOOR PLANS
S-A4 RESERVOIR SECTION AND COLUMN DETAILS
S-A5 RESERVOIR ROOF SLAB REINFORCING DETAILS
S-A6 RESERVOIR ROOF HATCH AND SLAB JOINT REINFORCING DETAILS
S-A7 PRESTRESSED RESERVOIR WALL SECTIONS & DETAILS
S-A8 PRESTRESSED RESERVOIR WALL ELEVATION & DETAILS
S-A9 MISCELLANEOUS RESERVOIR DETAILS & PRESTRESSING NOTES
S-A10 RESERVOIR FOUNDATION AND PIPE BLOCK DETAILS
S-A11 RESERVOIR INTERIOR LADDER AND HATCH DETAILS
S-A12 RESERVOIR EXTERIOR ROOF ACCESS STAIRWAY
S-A13 RESERVOIR EXTERIOR ROOF ACCESS STAIRWAY DETAILS

GENERAL STRUCTURAL NOTES:

1. THESE NOTES ARE GENERAL IN NATURE AND ARE INTENDED TO SET MINIMUM STANDARDS FOR CONSTRUCTION.

2. ALL WORK SHALL BE IN STRICT CONFORMANCE WITH THE 2012 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2014 OREGON STATE STRUCTURAL SPECIALTY (OSSC) BUILDING CODE AND ALL OTHER APPLICABLE BUILDING CODES.

3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BEFORE CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.

4. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE. METHODS, PROCEDURES, AND SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

5. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LIVE LOAD FOR THE STRUCTURE. PROVIDE SHORING AND/OR BRACING WHERE LOADS EXCEED DESIGN CAPACITY AND WHERE STRUCTURES HAVE NOT ATTAINED DESIGN STRENGTH.

6. THE FOLLOWING DOCUMENTS HAVE BEEN GENERATED FOR THE CONSTRUCTION OF A 4.0 MILLION GALLON PRESTRESSED BASE ISOLATED CONCRETE WATER RESERVOIR.

JOB SITE CONDITIONS AND SAFETY:

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE ENGINEER AND IT'S REPRESENTATIVE HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE ENGINEER.

DESIGN LOADS: PER 2012 IBC & AWWA D110-13

1603.1.1 – FLOOR LOADS: NA
1603.1.2 – ROOF LOADS:
ROOF – DL ..... AS CALCULATED
ROOF – LL ..... SEE SNOW LOADS

1603.1.3 – SNOW LOADS:
GROUND SNOW LOAD, Pg ..... 20 PSF
SNOW EXPOSURE FACTOR, Ce 1.0
SNOW LOAD IMPORTANCE FACTOR, Is ..... 1.2, CATEGORY IV
THERMAL FACTOR, Ct 1.2
FLAT ROOF SNOW LOAD, Pf ..... 25 PSF MINIMUM

1603.1.5 – EARTHQUAKE DESIGN CRITERIA:
RISK CATERGORY..... IV
SEISMIC IMPORTANCE FACTOR, Ie..... 1.5
MAPPED SPECTRAL RESPONSE FACTORS
Ss..... 0.948g
S1..... 0.408g
SITE CLASS..... D
DESIGN SPECTRAL RESPONSE FACTORS
Sds..... 0.708g
Sd1..... 0.433g
SEISMIC DESIGN CATERGORY..... D
ANALYSIS PROCEDURE..... GENERAL PROCEDURE, PER IBC, SECTION 1613

CONCRETE:

1. ALL CONCRETE SHALL BE HARD ROCK CONCRETE MEETING REQUIREMENTS OF ACI-301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS". MIX PROPORTIONS SHALL BE PER ACI-301, METHOD 2 OR THE ALTERNATE PROCEDURE. SUBMIT MIX DESIGN FOR REVIEW BY STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

2. STRUCTURAL CONCRETE SHALL ATTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

Concrete Mix Class	Class A	Class B	Class C
Minimum Compressive Strength	5,500 psi	4,000 psi	4,000 psi
% Air Entrainment (+/- 1%)	0%	6%	6%
Maximum Water Content (gallon per 94 lb. sack of cement)	4.5 gallons	4.5 gallons	4.5 gallons
Min. Cement Content (94 lb. sack of cement per cubic yard of solid concrete)	7.5 sacks	5.5 sacks	6.0 sacks
Maximum Aggregate Size (** see 1-1/2" grading schedule in specifications)	3/4"	** 1-1/2"	3/4"
Installation Location(s)	Reservoir Corewall	Roof Slab, Floor Slab, Wall Footing	Columns, Wall Base Curb, Pipe Blocks, Appurtenances

SEE THE TECHNICAL SPECIFICATIONS FOR COMPLETE MIX DESIGN REQUIREMENTS.

3. AIR ENTRAINMENT SHALL BE IN CONFORMANCE WITH ASTM C260 AND C494 EXCEPT FOR WALL CONCRETE WHICH SHALL NOT BE AIR-ENTRAINED.

4. COLD WEATHER PLACEMENT SHALL CONFORM TO ACI-306. HOT WEATHER PLACEMENT SHALL CONFORM TO ACI-305. MECHANICALLY VIBRATE ALL FORMED CONCRETE. DO NOT OVER-VIBRATE. PLACE CONCRETE MONOLITHICALLY BETWEEN CONSTRUCTION OR CONTROL JOINTS. PROTECT ALL CONCRETE FROM PREMATURE DRYING.

5. CHAMFER ALL EXTERIOR CORNERS 1/2" UNLESS SHOWN OTHERWISE.

6. CONCRETE SLUMP MAY BE INCREASED BY ADDITION OF ADMIXTURES PROVIDED THAT THE WATER/CEMENT RATIO OF THE ORIGINAL MIX DESIGN IS NOT EXCEEDED. WATER REDUCING ADMIXTURE SHALL BE IN CONFORMANCE WITH ASTM494, USED IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS. SUBMIT ADMIXTURES TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

7. CEMENT SHALL BY TYPE II IN CONFORMANCE WITH ASTM C150. AGGREGATES SHALL BE IN CONFORMANCE WITH ASTM C33. COARSE AGGREGATES SHALL NOT EXCEED 1½". WATER SHALL BE CLEAN AND POTABLE. CEMENTATIOUS MATERIAL SHALL ONLY BE PORTLAND CEMENT OR ASTM CERTIFIED FLY ASH AS DIRECTED BY THE PROJECT SPECIFICATIONS. BLAST FURNACE SLAG AND OTHER SLAG PRODUCTS ARE NOT ALLOWED.

8. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60. DETAIL AND PLACE ACCORDING TO ACI MANUAL SP-66.

9. UNLESS OTHERWISE NOTED, MINIMUM COVER SHALL BE 1 1/2" FOR #5 AND SMALLER BARS, 2" FOR #6 AND LARGER BARS AND 3" WHEN POURED AGAINST EARTH. SUPPORT REINFORCEMENT WITH APPROVED CHAIRS, SPACERS, OR TIES. "BURY" OR "CARRIER" BARS ARE NOT ALLOWED.

10. PROVIDE MINIMUM 48 BAR DIAMETERS AT SPLICES. NO MORE THAN 50% OF REINFORCING SHALL BE SPLICED AT ANY LOCATION, UNLESS SPECIFICALLY DETAILED IN THESE DRAWINGS. UNLESS OTHERWISE NOTED, BEND ALL HORIZONTAL REINFORCING A MINIMUM OF 2'-0" AT CORNERS AND WALL INTERSECTIONS.

11. FORMWORK SHALL BE IN ACCORDANCE WITH ACI-347 "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK". FORMS SHALL BE DESIGNED BY THE CONTRACTOR. BRACING SHALL BE PROVIDED AS REQUIRED OR UNTIL THE CONCRETE HAS REACHED ITS SPECIFIED 28-DAY STRENGTH. ALL SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. FORMWORK, SUPPORTS, AND SHORING SHALL PROVIDE FINISHED CONCRETE SURFACES AT ALL FACES: LEVEL, PLUMB, AND TRUE TO DIMENSIONS AND ELEVATIONS SHOWN IN THE DRAWINGS. FORMS SHALL BE CLEAN AND FREE OF DEBRIS AND ALL WIRE TIES BENT AWAY FROM FINISHED SURFACES PRIOR TO CONCRETE INSTALLATION.

12. CONCRETE CURING PROCEDURES SHALL BE STRICTLY ADHERED TO AS SPECIFIED IN THE CONSTRUCTION SPECIFICATIONS.

FOUNDATIONS:

1. A GEOTECHNICAL REPORT WAS PREPARED BY GEOTECHNICAL RESOURCES, INC. OF BEAVERTON, OR AND DATED 08/10/2015. THE CONTRACTOR SHALL BE FAMILIAR WITH THESE DOCUMENTS AND CONFORM TO THE RECOMMENDATIONS CONTAINED THEREIN.

2. ALL FOUNDATIONS TO BEAR ON GRANULAR CRUSHED ROCK FILL COMPACTED TO ASTM D698 MODIFIED PROCTOR PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. EXCAVATIONS FOR FOUNDATIONS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING OF CONCRETE FOR FOUNDATION.

3. SOIL DESIGN CRITERIA, PER GEOTECHNICAL ENGINEER: SOIL IMPROVEMENTS ARE REQUIRED TO ATTAIN ADEQUATE BEARING REQUIREMENTS. SEE TECHNICAL SPECIFICATIONS FOR SOIL IMPROVEMENT DESIGN REQUIREMENTS.

LADDERS & APPURTENANCES NOTES:

1. WHERE EXTERIOR LADDER, OR OTHER APPURTENANCES REQUIRE ANCHORS TO BE PLACED ON THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE FINAL SHOTCRETING, TAKE EXTREME CARE TO AVOID DAMAGING THE PRESTRESSED STRAND. PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP THE DRILL BIT FROM COMING IN CONTACT WITH THE STRAND. INSTALL INSERT BEFORE SHOTCRETING TO MARK HOLE LOCATION. FOR ALL TYPES OF ANCHORING SYSTEMS, INCLUDING DROP-IN AND EXPANSION WEDGE ANCHORS, FILL HOLE IN SHOTCRETE AND WALL WITH EPOXY BEFORE FINAL INSTALLATION OF ANCHORS TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE STRAND.

2. ADHESIVE ANCHORS WITH 1" MAXIMUM EMBEDMENT INTO THE SHOTCRETE MAY ONLY BE USED IN NON-STRUCTURAL APPLICATIONS AND WHEN APPROVED BY THE ENGINEER. WHEN DRILLING HOLES IN THE SHOTCRETE, THE DRILL MUST BE EQUIPPED WITH A POSITIVE STOP TO PREVENT DRILLING MORE THAN 1" IN DEPTH. USE EPOXY TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE PRESTRESSING STRAND. DO NOT USE EXPANSION, DROP-IN OR OTHER TYPES OF MECHANICAL ANCHORS.

3. USE ASTM A316 STAINLESS STEEL BOLTS AND ANCHORS UNLESS OTHERWISE NOTED. WHERE BOLTS OR ANCHORS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND WASHERS.

POST-INSTALLED ADHESIVE CONCRETE ANCHORS:

1. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND WITH STRICT ADHERENCE TO THE PROVISIONS WITHIN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.

2. AT THE TIME OF ANCHOR INSTALLATION, IN ACCORDANCE WITH ACI 318-11 SECTION D.2.2, ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS.

QUALITY ASSURANCE PLAN:

QUALITY ASSURANCE FOR SEISMIC RESISTANCE:

QUALITY ASSURANCE FOR THE STRUCTURE'S MAIN LATERAL FORCE RESISTING SYSTEM SHALL BE PROVIDED BY SPECIAL INSPECTION AND MATERIAL TESTING OF THE FOLLOWING:

SPECIAL INSPECTIONS:

AN INDEPENDENT TESTING LABORATORY, SELECTED AND ENGAGED BY THE OWNER, SHALL PROVIDE SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AND OF THE TYPE AND FREQUENCY OUTLINED IN THE QUALITY CONTROL SECTION OF THESE GENERAL NOTES.

EACH SPECIAL INSPECTION AND MATERIAL TESTING REPORT SHALL BE DISTRIBUTED TO THE OWNER, CONTRACTOR, BUILDING OFFICIAL AND ENGINEER OF RECORD IN A TIMELY FASHION.

THE CONTRACTOR SHALL MAKE AVAILABLE ALL MEANS AND METHODS NECESSARY FOR THE SPECIAL INSPECTOR TO PERFORM THE REQUIRED INSPECTIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND SPECIAL INSPECTOR A MINIMUM OF 48 HOURS BEFORE THE TIME AT WHICH THE SPECIFIED SPECIAL INSPECTIONS MAY BE PERFORMED.

EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF THE SEISMIC RESISTING SYSTEM SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE ENGINEER OF RECORD, OWNER AND BUILDING OFFICIAL IN COMPLIANCE WITH IBC SECTION 1706 PRIOR TO THE COMMENCEMENT OF WORK ON THAT SYSTEM. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING:

1. ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
2. ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
3. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS.
4. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.

STRUCTURAL OBSERVATION REQUIREMENTS:

THE OWNER SHALL EMPLOY THE ENGINEER OF RECORD OR AN ALTERNATE OREGON LICENSED PROFESSIONAL ENGINEER, APPROVED BY THE ENGINEER OF RECORD, TO PERFORM STRUCTURAL OBSERVATIONS IN ACCORDANCE WITH SECTION 1702 OF THE INTERNATIONAL BUILDING CODE.

STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM BY A REGISTERED DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY OTHER INSPECTION CRITERIA, INCLUDING SPECIAL INSPECTION, AS REQUIRED BY THE BUILDING OFFICIAL OR AS INDICATED WITHIN THE INTERNATIONAL BUILDING CODE.

DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER AND THE BUILDING OFFICIAL (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION). AT THE CONCLUSION OF THE STRUCTURAL SYSTEMS, INCLUDED WITHIN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL AND THE OWNER (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION) A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

THE CONTRACTOR SHALL MAKE AVAILABLE ALL MEANS AND METHODS NECESSARY FOR THE STRUCTURAL OBSERVER TO PERFORM THE REQUIRED STRUCTURAL OBSERVATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND STRUCTURAL OBSERVER A MINIMUM OF 48 HOURS BEFORE THE TIME AT WHICH THE SPECIFIED STRUCTURAL OBSERVATIONS MAY BE PERFORMED. IN ADDITION THE CONTRACTOR SHALL UPDATE THE STRUCTURAL OBSERVER OF THE CONSTRUCTION PROGRESS.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED FOR THE FOLLOWING AREAS OF WORK:

1. WALL FOUNDATION & FLOOR SLAB
   A. AFTER THE FORMING, WATERSTOPS, CABLES, REINFORCING AND ALL OTHER CAST-IN ITEMS HAVE BEEN PUT INTO PLACE, BUT PRIOR TO THE FIRST CONCRETE POUR.
2. FIRST WALL SECTION
   A. AFTER ONE SIDE OF THE FORMING, WATERSTOPS, CABLES, REINFORCING AND ALL OTHER CAST IN ITEMS HAVE BEEN PUT INTO PLACE, BUT PRIOR TO ENCLOSING THE FORMS.
3. COLUMNS
   A. AFTER THE FOOTING INSTALLATION WITH ALL REINFORCING AND SPACERS INSTALLED, PRIOR TO CONCRETE INSTALLATION. DISCUSS FORMING METHOD WITH STRUCTURAL ENGINEER OF RECORD TO DETERMINE ANY ADDITIONAL OBSERVATION REQUIREMENTS.
4. VERTICAL POST-TENSIONING
   A. OBSERVE A SELECT NUMBER OF VERTICAL ASSEMBLY TENSION AND ELONGATION RECORDINGS WITHIN THE FIRST 15 UNITS.
5. ROOF SLAB
   A. AFTER INSTALLATION OF THE FORMING, REINFORCING, SHEAR CANS AND ALL OTHER CAST-IN ITEMS PRIOR TO THE CONCRETE POUR.
6. WALL PRESTRESSING
   A. OBSERVE A SELECT NUMBER OF WRAPS AND DATA RECORDINGS STARTING AT THE INITIATION OF THE WRAPPING INSTALLATION.
7. FINAL OBSERVATION AFTER COMPLETION OF ALL STRUCTURAL ELEMENTS CONTAINED WITHIN THE CONSTRUCTION DOCUMENTS AND AFTER INTERIOR WASH DOWN, PRIOR TO BACKFILLING AND RESERVOIR LEAK TEST TO OBSERVE THE INTERIOR AND EXTERIOR OF THE FINISHED RESERVOIR.

EACH STRUCTURAL OBSERVATION REPORT SHALL BE DISTRIBUTED TO THE OWNER, CONTRACTOR AND BUILDING OFFICIAL AND IN A TIMELY FASHION.

PSE
Peterson Structural Engineers, Inc.
5319 S.W. Westgate Dr., Suite 215
Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

REGISTERED PROFESSIONAL ENGINEER OREGON NOV. 9, 2007 TRAVIS GREGORY
EXPIRES 12/31/16

SHEET S-A1
38 of 167

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: RESERVOIR GENERAL STRUCTURAL NOTES

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

QUALITY CONTROL:

SHOP DRAWINGS & SUBMITTALS:

SHOP DRAWINGS, SUBMITTALS AND/OR MILL CERTIFICATES FOR THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE OWNER AND ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 21 DAYS PRIOR TO FABRICATION:

1. CONCRETE REINFORCING SHOP DRAWINGS FOR ALL ELEMENTS.
2. SEISMIC CABLES, WATERSTOPS, BEARING PADS, STRAND WRAPPING VERTICAL THREADBAR ASSEMBLIES AND SHEAR CAN ASSEMBLIES, JOINT SEALERS, ALL EPOXIES AND GROUTS TO BE USED ON THE PROJECT AND ANY OTHER MATERIAL OUTLINED IN THE CONSTRUCTION DRAWINGS.
3. CONCRETE MIX DESIGNS
4. GRATING AND FRAMING
5. ACCESS STAIRWAY, LADDERS AND APPURTENANCES.

INSPECTIONS:

SPECIAL INSPECTIONS IN ACCORDANCE WITH IBC 1704 SHALL BE PROVIDED FOR THE FOLLOWING ITEMS:

TABLE 1
REQUIRED GEOTECHNICAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
SOILS					
GEOTECHNICAL INVESTIGATIONS	1803				GEOTECHNICAL INVESTIGATION SHALL INCLUDE ITEMS OF SPECIAL INSPECTION AND TESTING AS NOTED IN TABLE 5 OF THE GUIDELINES
VERIFY FOOTING BEARING CAPACITY AND SUBGRADE PREPARATION FOR FILLS	TABLE 1704.7	GEOTECHNICAL REPORT		X (a)	BY THE GEOTECHNICAL ENGINEER
FILL MATERIAL VERIFICATION			X		
FILL PLACEMENT & COMPACTION			X		
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	TABLE 1704.7			X (a)	BY THE GEOTECHNICAL ENGINEER
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	TABLE 1704.7			X	
PERFORM CLASSIFICATION OF COMPACTED FILL MATERIALS	TABLE 1704.7 1803.5.1			X	
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	TABLE 1704.7		X		BY THE GEOTECHNICAL ENGINEER
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	TABLE 1704.7			X	
STONE COLUMNS					
INSTALLATION	1704.15	GEOTECHNICAL RESEARCH AND/OR REPORT AND ICC EVALUATION REPORTS	X		BY THE GEOTECHNICAL ENGINEER SPECIAL INSPECTIONS APPLY TO HOLE SIZE AND DEPTH, VERIFICATION OF AGGREGATE MATERIAL, NUMBER AND LIFTS OF AGGREGATE, INSTALLATION RAMMER ENERGY, AND TOP OF PIER ELEVATION

(a) = PERIODIC SPECIAL INSPECTION DEFINED IN CONTRACT SPECIFICATIONS.

TESTING:

MATERIALS TESTING IN ACCORDANCE WITH IBC 1704 SHALL BE PROVIDED FOR THE FOLLOWING ITEMS:

TABLE 5
REQUIRED TESTING for SPECIAL INSPECTIONS

SYSTEM or MATERIAL	TESTING: IBC CODE REFERENCE	TESTING: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
GEOTECHNICAL					
GEOTECHNICAL ENGINEER TO PERFORM TESTING OF COMPACTED FILL MATERIALS	1803				TESTING PER GEOTECHNICAL REPORT
FILL IN-PLACE DENSITY OR PREPARED SUBGRADE DENSITY	1704.7	VARIES; MINIMUM PER IBC APPENDIX J107.5		X (a)	BY THE GEOTECHNICAL ENGINEER
MATERIAL VERIFICATION		VARIES; CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X (a)	BY THE GEOTECHNICAL ENGINEER
CONCRETE					
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	TABLE 1704.4	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	X		FABRICATE SPECIMENS AT TIME FRESH CONCRETE IS PLACED ONCE EACH DAY FOR A GIVEN CLASS OF CONCRETE, OR LESS THAN ONCE FOR EACH 150 YDS OF CONCRETE, OR LESS THAN ONCE FOR EACH 5,000 FT2 OF SURFACE AREA FOR SLABS/WALLS. ONCE EACH SHIFT FROM IN-PLACE WORK OR
CONCRETE STRENGTH	TABLE 1704.4 1903 1905	ASTM C39	X		
CONCRETE SLUMP		ASTM C143	X		
CONCRETE AIR CONTENT		ASTM C231	X		
CONCRETE TEMPERATURE		ASTM C1064	X		
SHOTCRETE STRENGTH	1704.4 1913.10	ASTM C39	X		IBC 1913.10.1: SPECIMENS SHALL BE TAKEN FROM THE IN-PLACE OR FROM TEST PANELS, AND SHALL BE TAKEN AT LEAST ONCE EACH SHIFT, BUT NOT LESS THAN ONE FOR EACH 50 CUBIC YARDS OF SHOTCRETE

TABLE 2
REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE	FREQUENCY: Continuous	FREQUENCY: Periodic	REMARKS
CONCRETE					
INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE	1912.1	ACI 318: 3.8.6, 8.1.3, 21.1.8		X (a)	
REINFORCING STEEL AND PRESTRESSING TENDON PLACEMENT	1704.4 1907.5 1913.4 1901.4.2	ACI 318: 3.5 ACI 318: 7.1-7.7		X	TOLERANCES AND REINFORCING PLACEMENT PER ACI 7.5; SPACING LIMITS FOR REINFORCING ACI 7.6
PLACEMENT OF BOLTS INSTALLED IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED	TABLE 1704.4 1911.5 1912.1	ACI 318: 1.3.2.C ACI 318: 8.1.3 ACI 318: 21.1.8	X		ALL BOLTS VISUALLY INSPECTED
VERIFYING USE OF REQUIRED MIX DESIGN(S)	TABLE 1704.4 1904 1905.2-4 1913.2 1913.3 1901.4.1	ACI 318: CHAPTER 4 ACI 318: 5.2-5.4		X	
CONCRETE PLACEMENT	TABLE 1704.4 1905.9-10	ACI 318: 1.3.2.D ACI 318: 5.9 - 5.10	X		
SHOTCRETE PLACEMENT	TABLE 1704.4 1913.6-8		X		
CONCRETE/SHOTCRETE CURING	TABLE 1704.4 1905.11-13 1913.9	ACI 318: 1.3.2.D ACI 318: 5.11-5.13		X (a)	
VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE	TABLE 1704.4 1901.4.9	ACI 318: 18.13.4.3		X (a)	
STRESSING OF TENDONS IN POST-TENSIONED CONCRETE	TABLE 1704.4 1901.4.10	ACI 318: 1.3.2.F ACI 318: 18.20.1	X		
INSPECTION OF PRESTRESSED CONCRETE:					
a. APPLICATION OF PRESTRESSING FORCES	TABLE 1704.4	ACI 318: 18.20	X		
b. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM	TABLE 1704.4	ACI 318: 18.18.4	X		
VERIFICATION OF FORMWORK	TABLE 1704.4 1906.1	ACI 318: 6.1.1		X (a)	SPECIAL INSPECTIONS APPLY TO SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED
POST INSTALLED CONCRETE ANCHORS					
INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE	1912.1	ICC EVALUATION REPORT ACI 318: 3.8.6, 8.1.3, 21.1.8		X	SPECIAL INSPECTIONS APPLY TO ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, ADHESIVE EXPIRATION DATE, ANCHOR/ADHESIVE INSTALLATION, ANCHOR EMBEDMENT, AND TIGHTENING T

(a) = PERIODIC SPECIAL INSPECTION DEFINED IN CONTRACT SPECIFICATIONS.

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BY:
REVISION
NO. DATE
DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM
SHEET S-A2
39 of 167

REGISTERED PROFESSIONAL ENGINEER TRAVIS GREGORY OREGON EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR QUALITY CONTROL PLAN**

Murray, Smith & Associates, Inc.
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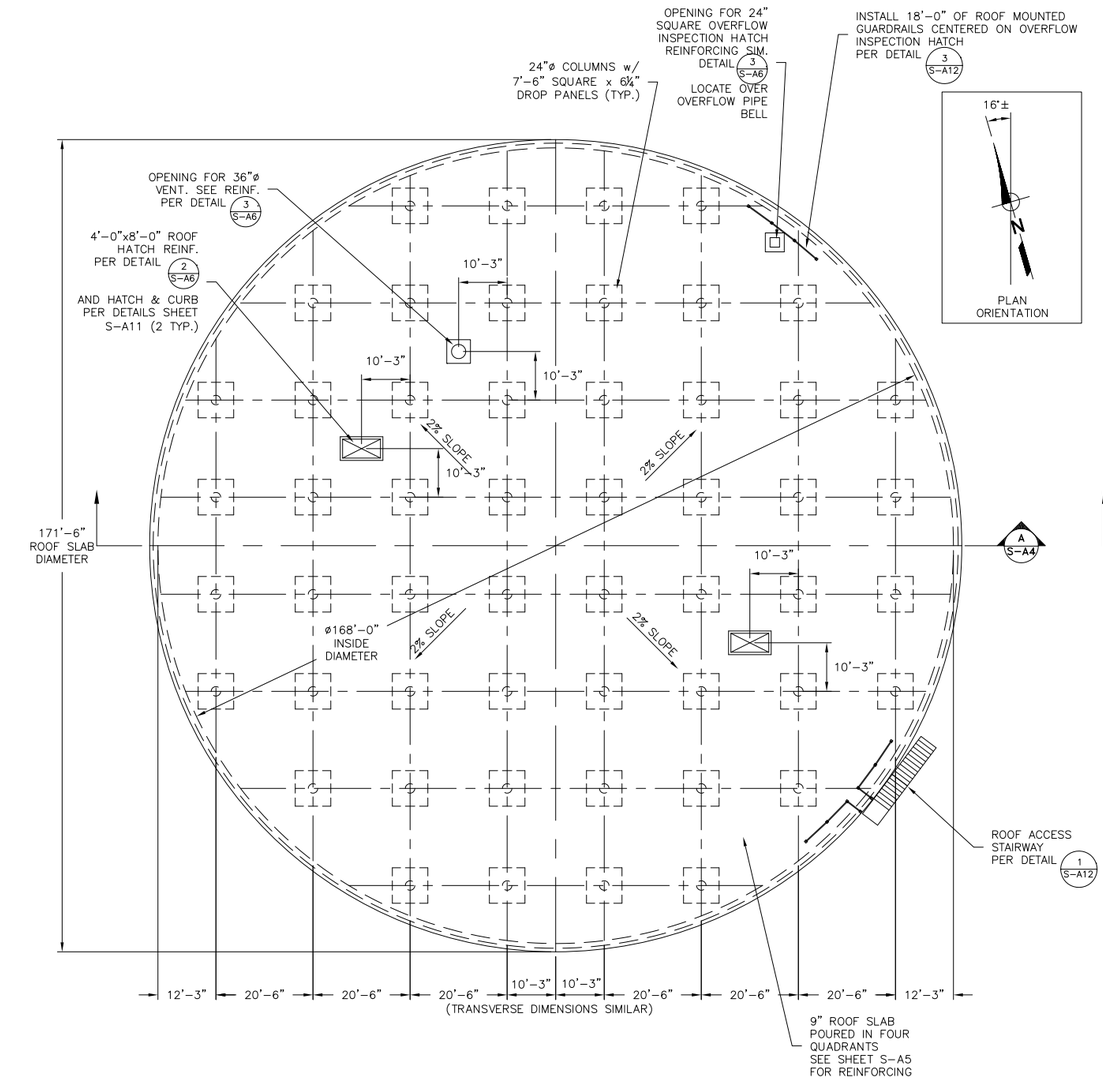
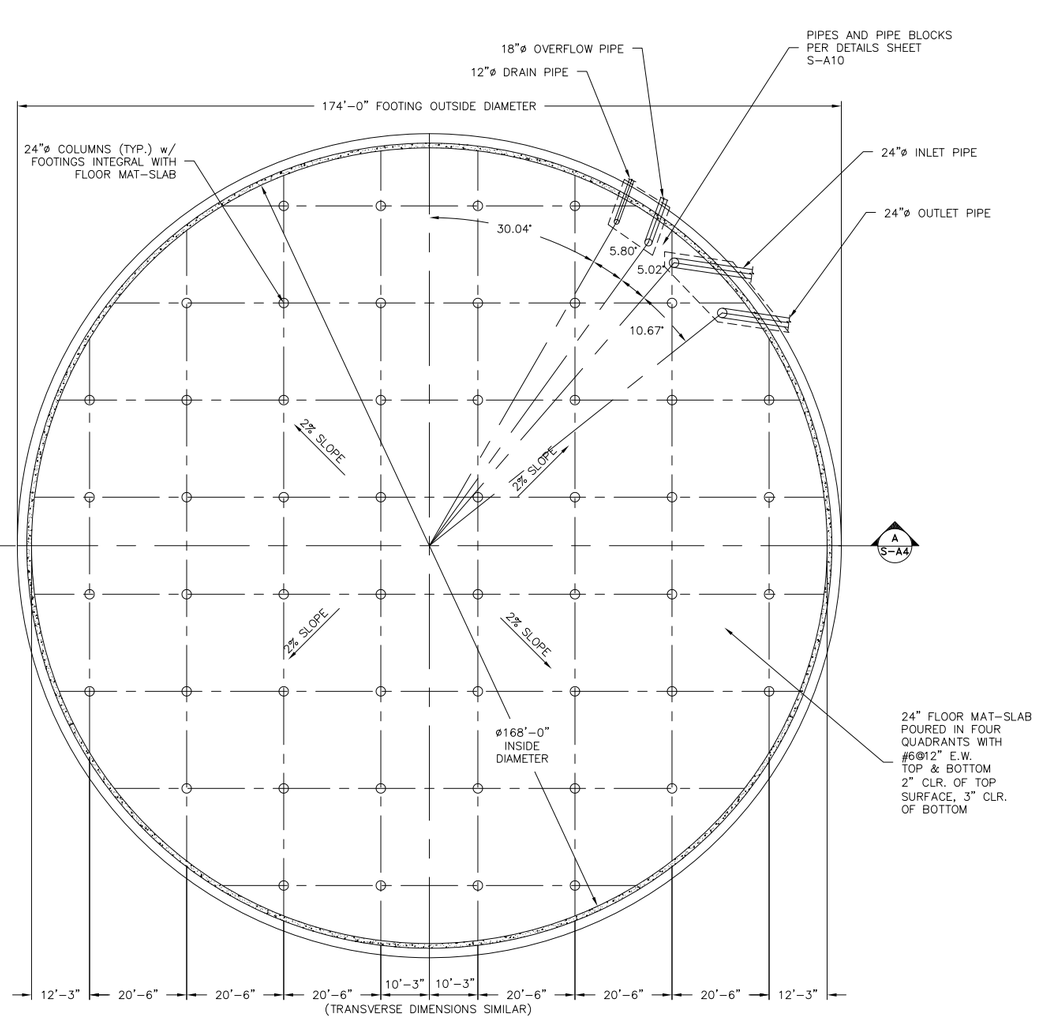
DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586



ROOF SLAB PLAN 1/S-A3

1/16" = 1'-0"



FLOOR AND FOUNDATION PLAN 2/S-A3

1/16" = 1'-0"

NOTE:
SEE CIVIL DRAWINGS FOR PIPING LAYOUT AND DETAILS

SLAB CONSTRUCTION NOTE:

1. AT THE CONTRACTOR'S OPTION, THE ROOF AND FLOOR SLABS SHALL BE POURED IN 4 QUADRANTS. THE CONSTRUCTION JOINTS SHALL BE, BY NATURE, ALONG THE CENTERLINES OF THE RESERVOIR AND ORIENTATION OF THE CONSTRUCTION JOINTS SHALL BE THE SAME FOR BOTH ROOF AND FLOOR SLABS.
2. SEE DETAIL 4/S-A6 FOR ROOF CONSTRUCTION JOINT.
3. SEE DETAIL 5/S-A6 FOR FLOOR SLAB CONSTRUCTION JOINT.

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NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A3
40 of 167

REGISTERED PROFESSIONAL ENGINEER TRAVIS GREGORY NELSON OREGON EXPIRES 12/31/16

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0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR ROOF AND FLOOR PLANS**

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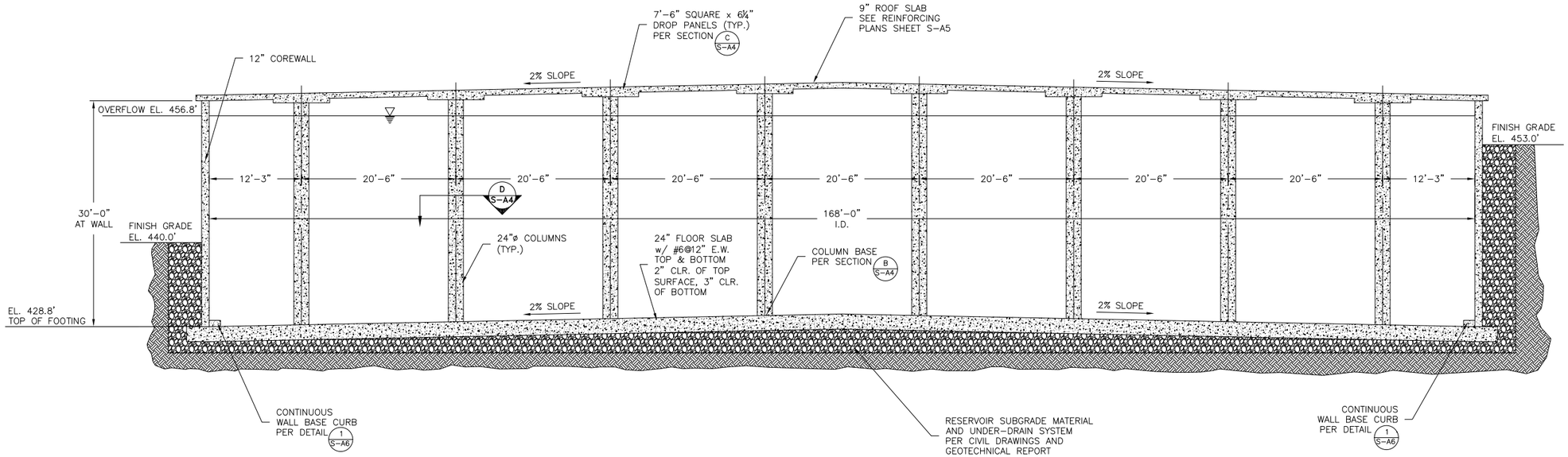
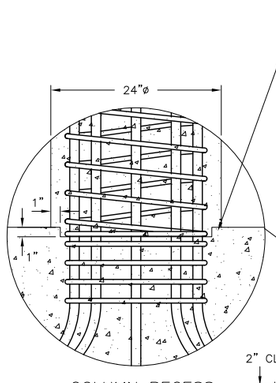
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

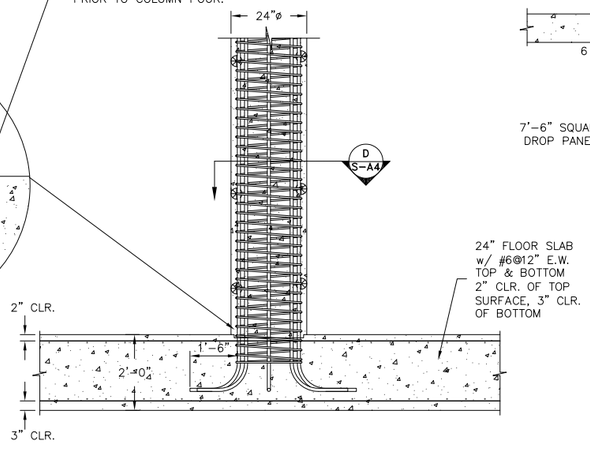


RESERVOIR SECTION A S-A4

1/8" = 1'-0"

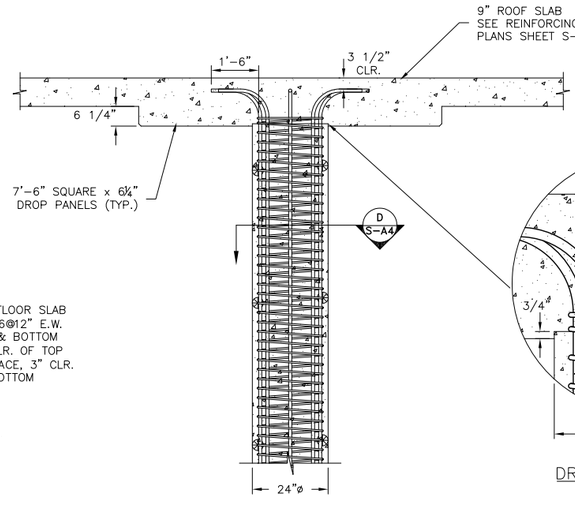


COLUMN RECESS



COLUMN BASE SECTION B S-A4

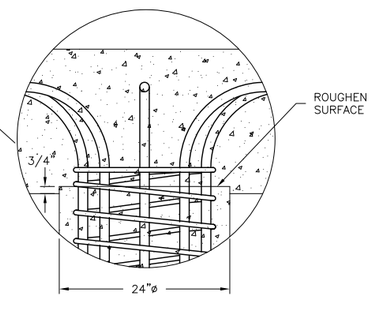
1/2" = 1'-0"



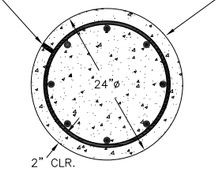
COLUMN/DROP PANEL SECTION C S-A4

1/2" = 1'-0"

HIGH STRENGTH PLASTIC SPACER DISC OR 5,000psi CONCRETE DOBIE. USE (6) SPACERS AT 60° HORIZONTALLY, START AT TOP AND BOTTOM, PLACE HORIZONTAL ROWS AT 36" MAXIMUM VERTICAL SPACING. SPACERS MUST BE OF SUFFICIENT SIZE, STRENGTH, AND SPACING TO HOLD REINFORCING IN PLACE AND TO MAINTAIN PROPER COVERAGE DURING THE ENTIRE CONSTRUCTION SEQUENCE.



DROP PANEL RECESS



LAP REQUIREMENTS:
SPIRAL REINFORCING – ONE TURN
VERTICAL REINFORCING – 70" MIN.

COLUMN SECTION D S-A4

1" = 1'-0"

PSE
Peterson Structural Engineers, Inc.
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Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A4
41 of 167

REGISTERED PROFESSIONAL ENGINEER TRAVIS GREGORY MOLTENON OREGON NOV. 9, 2007 EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

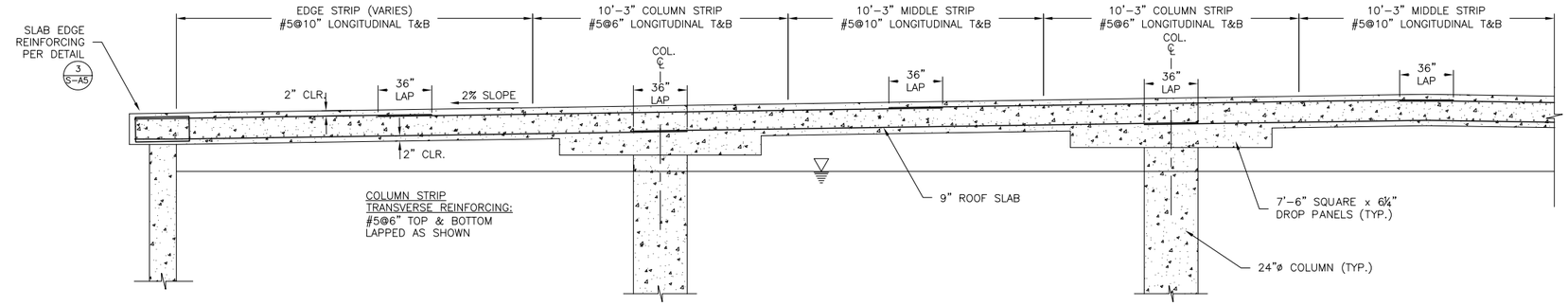
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR SECTION AND COLUMN DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

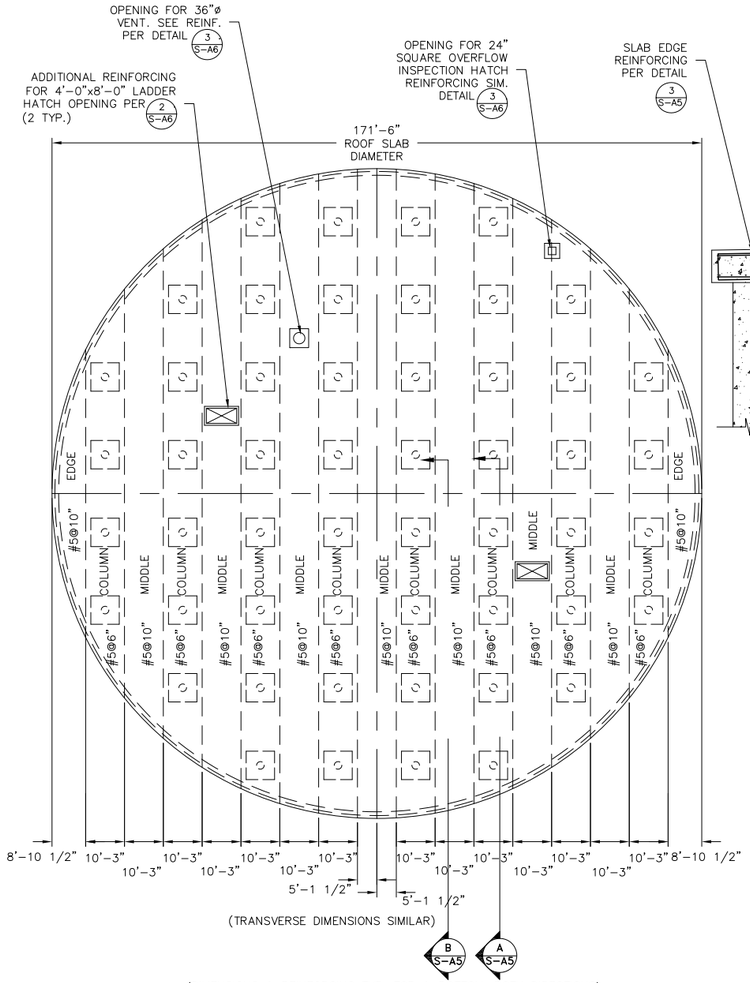
MSA PROJECT: 14-1586



COLUMN STRIP ROOF SLAB SECTION A/S-A5

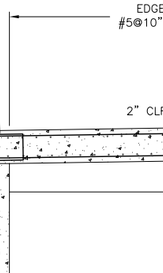
NTS

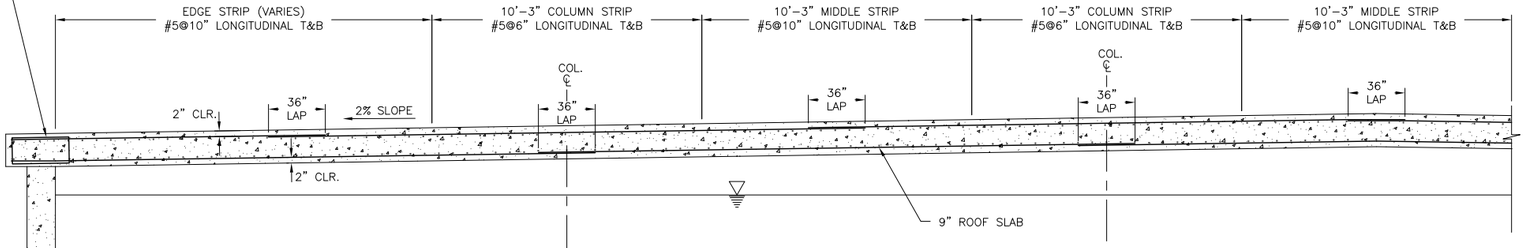
NOMENCLATURE THIS SHEET:
LONGITUDINAL – IN/OUT OF PAGE
TRANSVERSE – LEFT/RIGHT ON PAGE



ROOF REINFORCING PLAN 1/S-A5

1" = 20'





MIDDLE STRIP TRANSVERSE REINFORCING: #5@10" TOP & BOTTOM LAPPED AS SHOWN

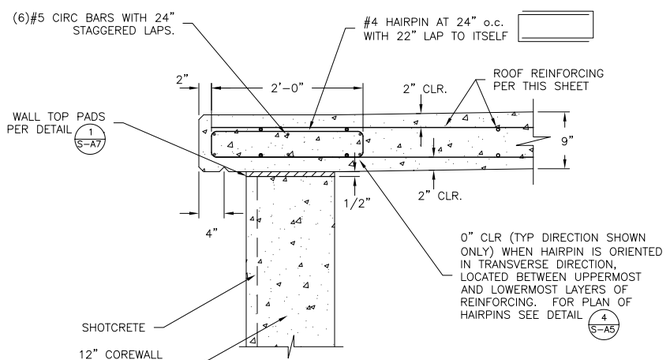
MIDDLE STRIP ROOF SLAB SECTION B/S-A5

NTS

LOCATION	GREENSTREAK	VINYLEX
WALL TO WALL FOOTING	735	RB9-38H
VERTICAL WALL, ROOF AND FLOOR JOINTS	679	R6-38
FLOOR TO PIPE BLOCKS	732	RB6-38H

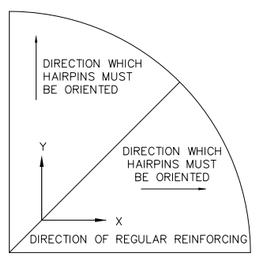
CONSTRUCTION JOINT WATERSTOP SCHEDULE 2/S-A5

NO SCALE



ROOF EDGE DETAIL 3/S-A5

1" = 1'-0"



HAIRPIN ORIENTATION PLAN 4/S-A5

NTS

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(503) 292-1635 9/2/15

BY
REVISION
NO. DATE
DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM
SHEET S-A5 42 of 167

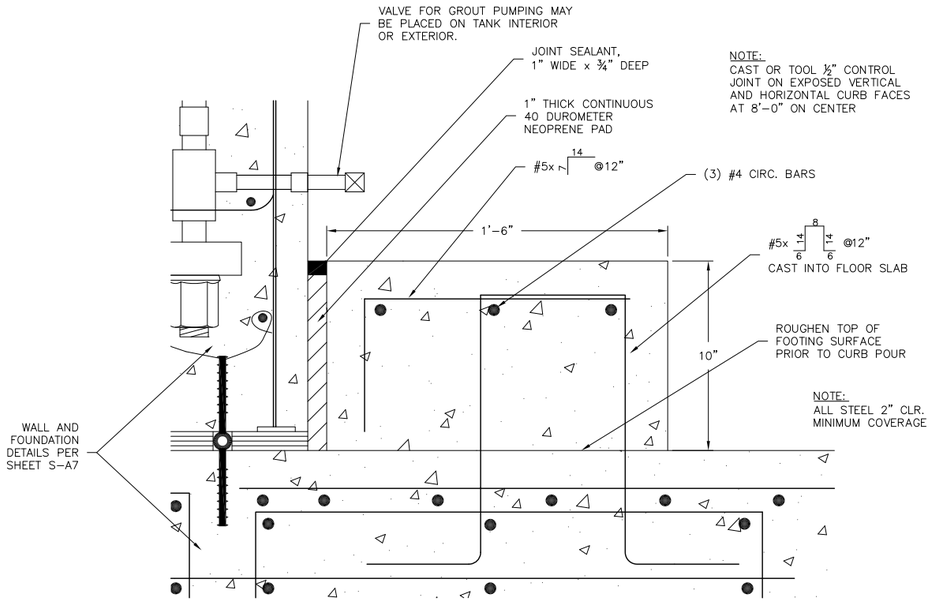
REGISTERED PROFESSIONAL ENGINEER OREGON MARCH 9, 2007 TRAVIS GREGORY MESTEMON EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06
SHEET TITLE: RESERVOIR ROOF SLAB REINFORCING DETAILS

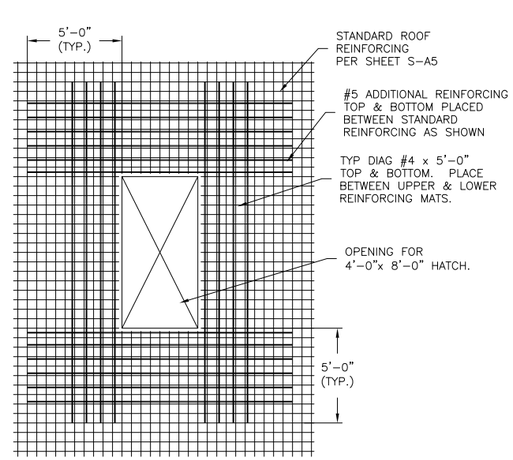
MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0852

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586



INTERIOR WALL BASE CURB DETAIL (1 / S-A6)

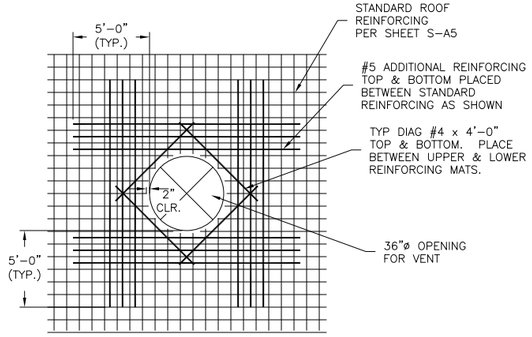
3" = 1'-0"



(DIMENSIONS & REINFORCING TYP. TOP & BOTTOM)

HATCH REINFORCING DETAIL (2 / S-A6)

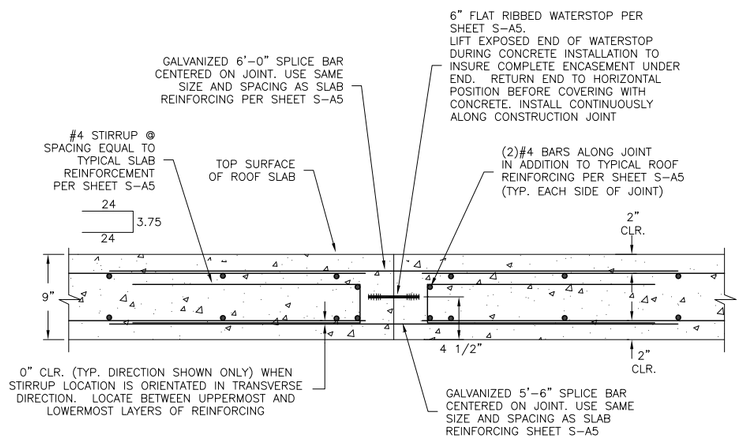
1/4" = 1'-0"



(DIMENSIONS & REINFORCING TYP. TOP & BOTTOM)

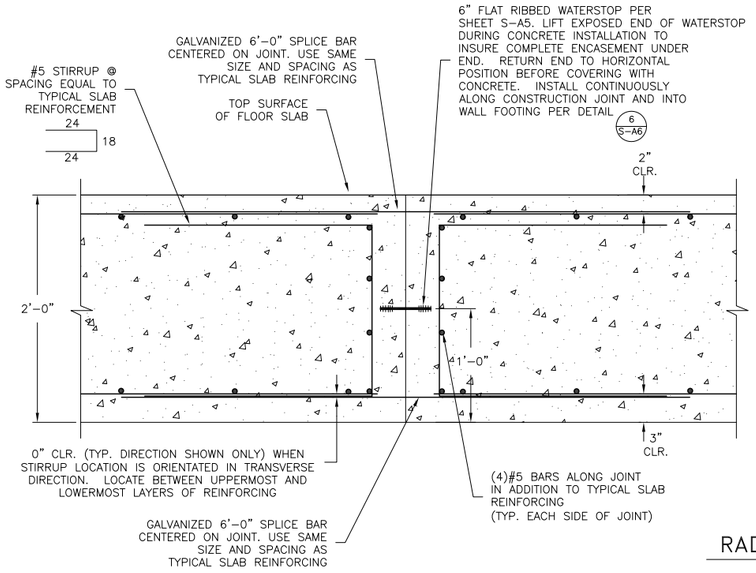
VENT REINFORCING DETAIL (3 / S-A6)

1/4" = 1'-0"



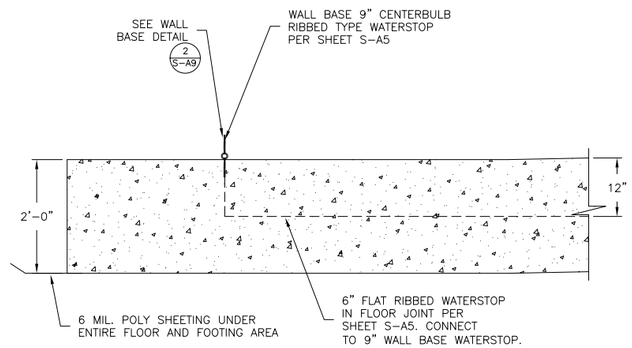
ROOF JOINT DETAIL (4 / S-A6)

1 1/2" = 1'-0"



FLOOR JOINT DETAIL (5 / S-A6)

1 1/2" = 1'-0"



RADIAL SECTION OF WALL FOOTING AT FLOOR JOINT (6 / S-A6)

3/4" = 1'-0"

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Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

SHEET S-A6 43 of 167

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

REGISTERED PROFESSIONAL ENGINEER OREGON TRAVIS GREGORY 90 9, 2007 RENEWAL 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

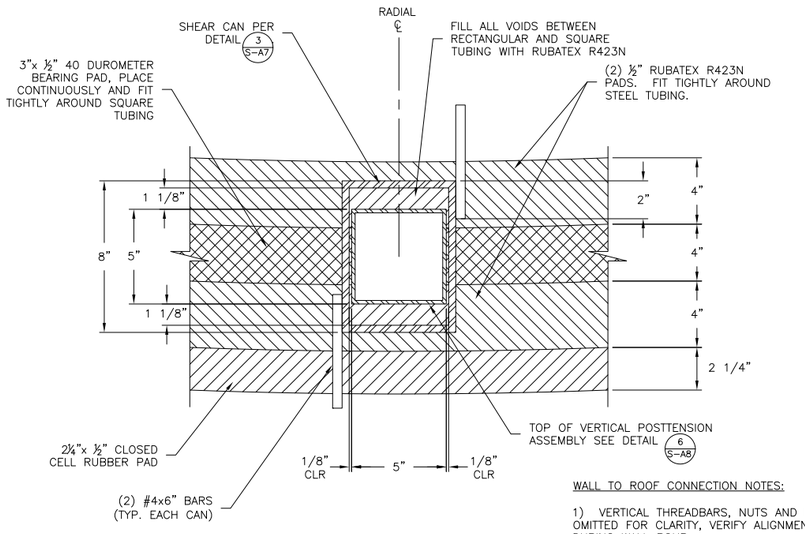
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR ROOF HATCH AND SLAB JOINT REINFORCING DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

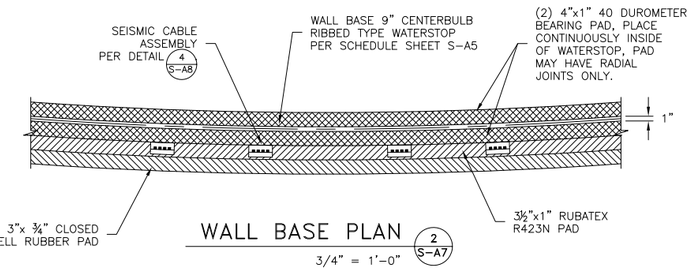


WALL TOP PLAN 1 S-A7

3" = 1'-0"

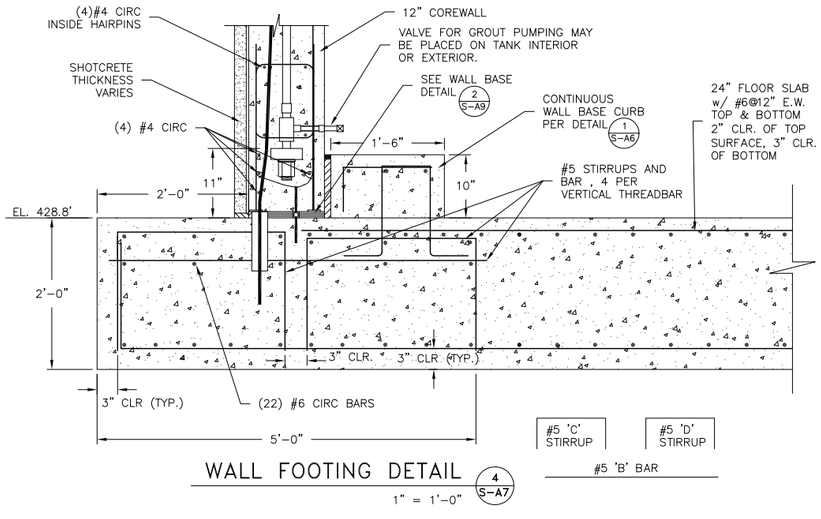
WALL TO ROOF CONNECTION NOTES:

1) VERTICAL THREADBARS, NUTS AND BEARING PLATES OMITTED FOR CLARITY, VERIFY ALIGNMENT AND CLEARANCES DURING WALL POUR.
2) GLUE ALL PADS TO TOP OF WALL WITH CONTACT CEMENT.
3) FILL ALL VOIDS BETWEEN WALL, PADS AND TUBING WITH A SOFT MASTIC.



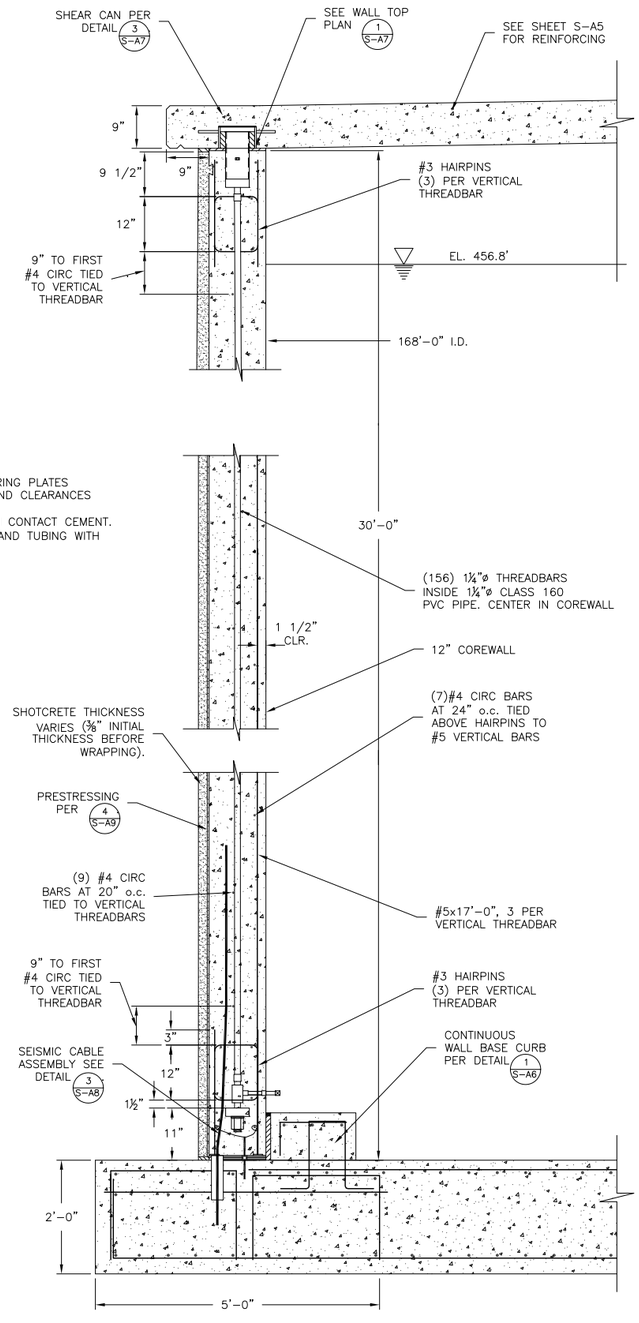
WALL BASE PLAN 2 S-A7

3/4" = 1'-0"



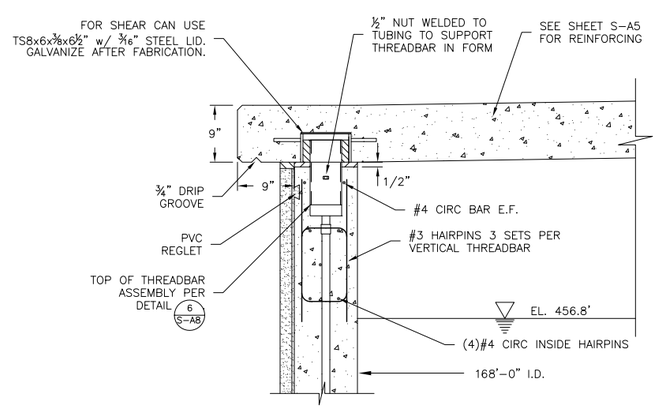
WALL FOOTING DETAIL 4 S-A7

1" = 1'-0"



PRESTRESSED WALL SECTION A S-A7

3/4" = 1'-0"

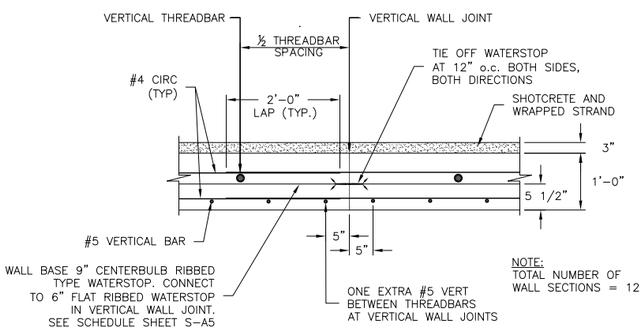


WALL TOP DETAIL 3 S-A7

1" = 1'-0"

CONSTRUCTION NOTES:

1. INSTALL ONE EXTRA SET OF VERTS. AND HAIRPINS AT EACH VERTICAL WALL JOINT.
2. FORM TIE HOLES TO BE PLUGGED WITH DAYTON "SURE PLUG" IN ROUGHENED HOLE AND DRY-PACKED WITH 1C:2S MIXTURE.
3. TIE OFF ALL WATERSTOPS AT 12" OC ON BOTH SIDES AND IN BOTH DIRECTIONS.
4. POUR A 1" THICK LAYER OF 1C:1S MIX AT THE BASE OF THE WALL IMMEDIATELY PRIOR TO BEGINNING THE WALL POUR. THE SLURRY IS TO HELP SEAL THE BOTTOM OF THE FORMS AND PREVENT ROCK POCKETS AND VOIDS AT THE BASE OF THE WALL. EXTREME CARE MUST BE EXERCISED TO INSURE EVEN AND COMPLETE COVERAGE AND CARE EXERCISED TO PREVENT PUSHING THE SLURRY ALONG THE WALL BASE TOWARDS THE ENDS OF THE FORMS RESULTING IN A CONCENTRATION OF SLURRY NOT INTEGRATED WITH THE REGULAR WALL CONCRETE. SLURRY PLACED TOO SOON BEFORE THE REGULAR WALL CONCRETE MAY FORM A CRUST OVER THE WATERSTOP REDUCING ITS EFFECTIVENESS. ALTERNATIVES TO USING THE SLURRY MAY BE SUBMITTED FOR CONSIDERATION.
5. THE TOP OF THE WALL FOOTING AND FLOOR SHALL RECEIVE A SMOOTH AND HARD STEEL-TROWELLED FINISH.
6. MAINTAIN CLEARANCE BETWEEN THE INDIVIDUAL STRANDS IN THE SEISMIC CABLE SETS (DO NOT BUNDLE). SEISMIC CABLES MAY BE BENT PRIOR TO INSTALLATION.
7. ALL CIRCUMFERENTIAL REINFORCING MUST EXTEND 2'-6"(±) PAST BOTH ENDS OF THE FIRST WALL SECTION AND ONE END OF ALL INTERMEDIATE WALL SECTIONS IN ORDER TO PROVIDE 2'-0" LAPS. CIRCUMFERENTIAL REINFORCING MAY NOT EXTEND PAST EITHER END OF THE LAST WALL SECTION. CIRCUMFERENTIAL REINFORCEMENT WITHIN THE WALL PANELS TO BE PROVIDED WITH 2'-0" STAGGERED LAPS.
8. WALL FOOTING REINFORCING TO INCLUDE (22) #6 CIRC BARS WITH 36" STAGGERED LAPS. AT CONSTRUCTION JOINTS, STOP CIRC REINFORCING 2" CLEAR OF JOINT AND INSTALL (21)#6x6'-0" GALVANIZED SPLICE BARS CENTERED AND PERPENDICULAR TO THE CONSTRUCTION JOINT.



VERTICAL WALL JOINT SECTION B S-A7

3/4" = 1'-0"

PSE
Peterson Structural Engineers, Inc.
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Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

SHEET S-A7 44 of 167

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

REGISTERED PROFESSIONAL ENGINEER OREGON MAY 9, 1997 TRAVIS GREGORY MCNEIGON EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON BOLTON RESERVOIR REPLACEMENT PROJECT NO. PW 14-06

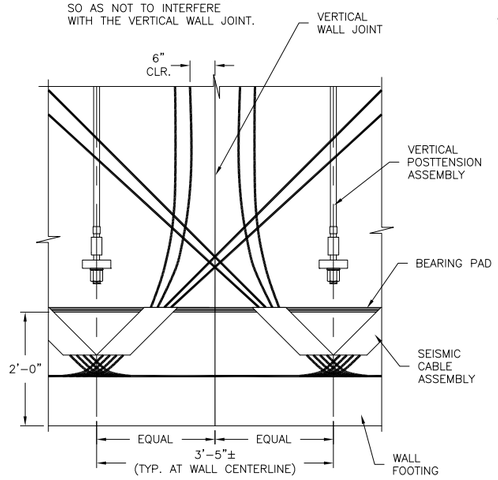
SHEET TITLE: **PRESTRESSED RESERVOIR WALL SECTIONS & DETAILS**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

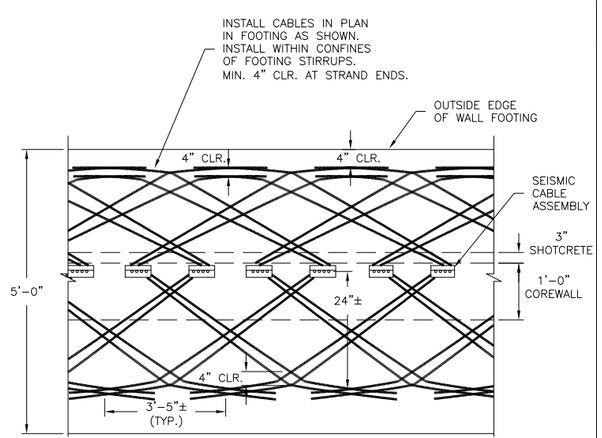
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

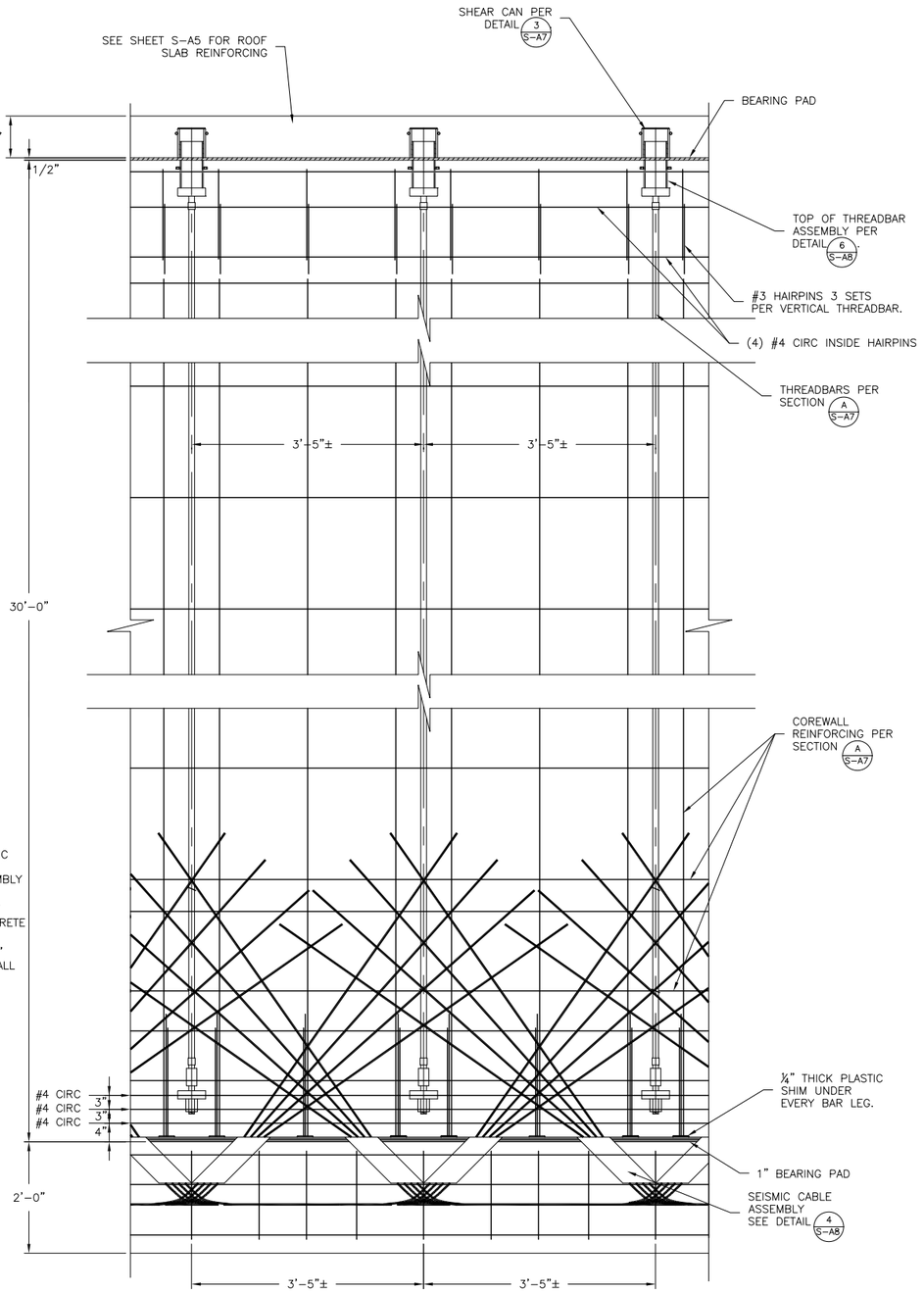
NOTE:
AT THE CONTRACTOR'S OPTION SOME OR ALL OF THE SEISMIC CABLES MAY BE BENT BACK SO AS NOT TO INTERFERE WITH THE VERTICAL WALL JOINT.



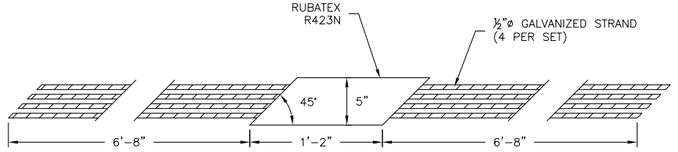
CABLE ELEV. AT WALL JOINT (1/S-A8)
3/4" = 1'-0"



SEISMIC CABLES IN WALL FOOTING (2/S-A8)
3/4" = 1'-0"

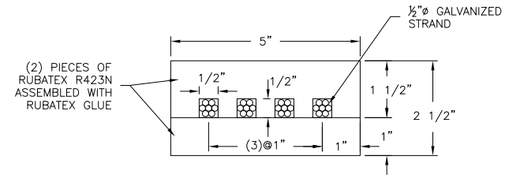


PRESTRESSED WALL ELEVATION (3/S-A8)
3/4" = 1'-0"

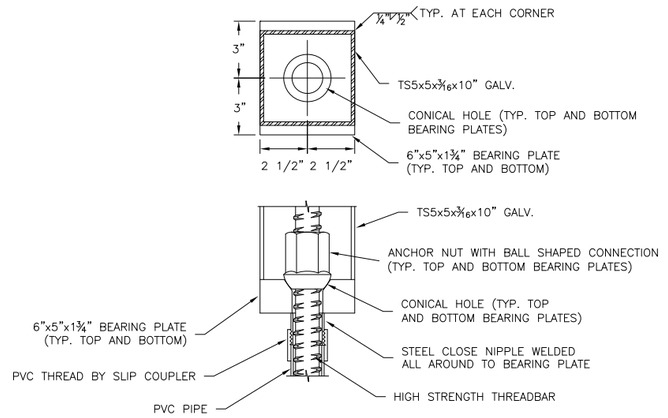


(156) SETS EACH DIRECTION
(312) TOTAL SETS

SEISMIC CABLE SET PLAN (4/S-A8)
1 1/2" = 1'-0"



SEISMIC CABLE SET SECTION (5/S-A8)
6" = 1'-0"



THREADBAR, NUT AND BEARING PLATE DETAIL (6/S-A8)
3" = 1'-0"

PSE
Peterson Structural Engineers, Inc.
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Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A8
45 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 2007 TRAVIS GREGORY 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

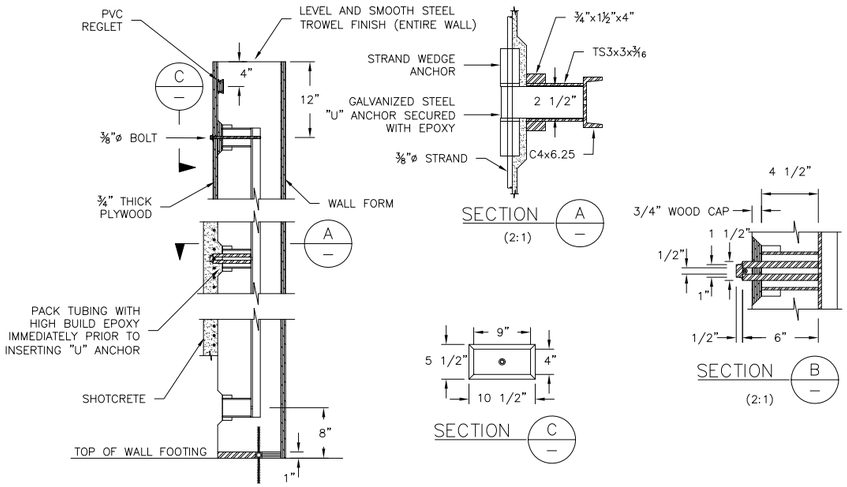
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **PRESTRESSED RESERVOIR WALL ELEVATION & DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

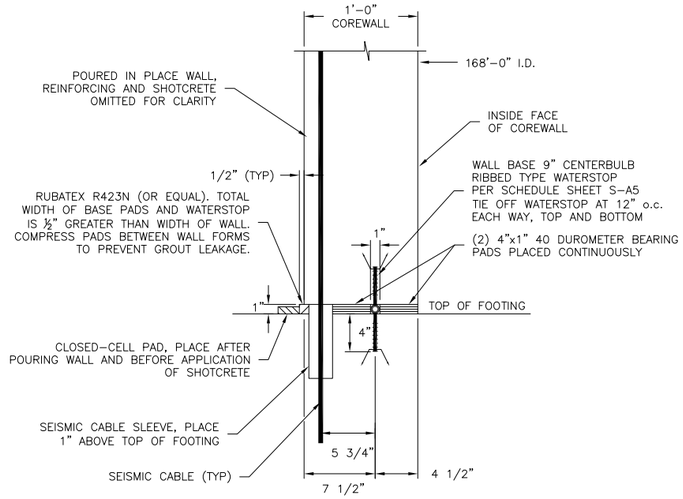
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



WALL ANCHOR DETAIL (1 / S-A9)

1" = 1'-0"

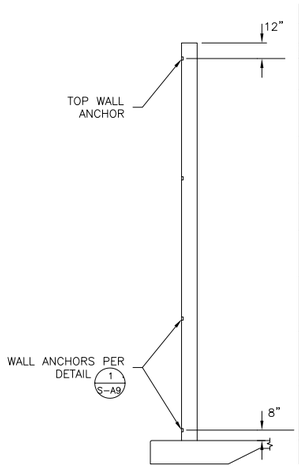


WALL BASE JOINT NOTES:
1) GLUE ALL PADS TO TOP OF WALL FOOTING WITH CONTACT CEMENT.
2) FILL ALL VOIDS BETWEEN BASE PADS, SEISMIC CABLE SLEEVE AND WATERSTOP WITH A SOFT MASTIC.

WALL BASE JOINT DETAIL (2 / S-A9)

1 1/2" = 1'-0"

NUMBER OF WRAPS		HEIGHT ABOVE TOP OF FOOTING
2nd LAYER	1st LAYER	30'-0"
		29'-0"
0	14	25'-0"
0	20	21'-0"
0	26	17'-0"
0	34	13'-0"
0	42	9'-0"
0	36	6'-0"
6	36	3'-0"
12	28	0'-0"
		TOTAL WRAPS = 254



PRESTRESSING WRAPS SCHEDULE (4 / S-A9)

NTS

CIRCUMFERENTIAL PRESTRESSING NOTES:

1. THE MAXIMUM STRESS TOLERANCE IN ANY STRAND AT ANY POINT AT ANY ELEVATION ON THE TANK WALL AT ANY TIME DURING THE WRAPPING OPERATION SHALL NOT EXCEED ± 320 POUNDS FROM THE AVERAGE FORCE SETTING OF 14,950 POUNDS.
2. THE CONTRACTOR SHALL PROVIDE A CONTINUOUSLY ELECTRONICALLY RECORDED FORCE APPLICATION GRAPH FOR THE FULL LENGTH OF ALL WRAPPED STRAND AS PERMANENT DOCUMENTED EVIDENCE THAT THE FORCE APPLICATION REQUIREMENTS HAVE BEEN MET. ALL SUCH FORCE READINGS MUST BE BASED ON CONTINUOUS SENSING OF THE STRAND BETWEEN THE TENSIONING DRUM AND THE AND THE WALL AS THE STRAND IS BEING LAID ON THE WALL.
3. MANUAL, INDIVIDUAL, OR INTERMITTENT FORCE READINGS TAKEN WHEN THE STRAND IS IN FULL BODILY CONTACT WITH THE WALL WILL NOT BE ACCEPTED.
4. FORCE READINGS BASED ON ANYTHING OTHER THAN INSTANTANEOUS MONITORING AS THE STRAND IS BEING TENSIONED WILL NOT BE ACCEPTED.
5. INTERNAL TENDONS PLACED CIRCUMFERENTIALLY INSIDE THE COREWALL WILL NOT BE ACCEPTED.
6. THE STRAND SHALL BE ⅜"ø BEFORE GALVANIZING WITH A MINIMUM GALVANIZING OF 0.85 OUNCES PER SQUARE FOOT AND A MINIMUM BREAKING STRENGTH OF 21,400 POUNDS AFTER GALVANIZING.
7. THE STRAND SHALL BE INSTALLED AS INDICATED BY THE WRAPPING SCHEDULE.
8. PRIOR TO APPLYING THE CIRCUMFERENTIAL PRESTRESSING, APPLY A ⅜" THICK LAYER OF SHOTCRETE OVER THE ENTIRE COREWALL.
9. IF MULTIPLE LAYERS OF STRAND ARE REQUIRED, PROVIDE ⅜" MINIMUM OF SHOTCRETE COVERAGE BETWEEN LAYERS.
10. PROVIDE 1½" MINIMUM OF SHOTCRETE COVERAGE OVER THE OUTER LAYER OF STRAND.
11. ALL SHOTCRETE TO BE APPLIED WITH AN AUTOMATED PROCESS KEEPING THE NOZZLE AT A CONSTANT DISTANCE AND ANGLE AS IT TRAVELS AT A UNIFORM BI-DIRECTIONAL SPEED. FINAL SHOTCRETE COVER TO HAVE A NATURAL GUN FINISH.

VERTICAL PRESTRESSING NOTES:

1. PRESTRESSING STEEL SHALL BE 1¼"ø THREADBARS MEETING THE TENSILE, PHYSICAL AND DEFORMATION REQUIREMENTS FOR ASTM A-722 TYPE II BARS.
2. THREADBARS WITH QUENCHED OR TEMPERED STEELS WILL NOT BE ALLOWED.
3. THREADBARS SHALL BE COATED WITH UNOCAL SOLUBLE OIL 10 RUSTBAN OR EQUAL PRIOR TO INSTALLATION INTO PVC PIPE.
4. THREADBARS SHALL HAVE A MAXIMUM CARBON CONTENT OF 0.55%.
5. DEFORMATIONS SHALL BE UNIFORM AND SUCH THAT ANY LENGTH OF BAR MAY BE CUT AT ANY POINT THE INTERNAL THREADS OF THE PROPER NUT CAN BE FREELY THREADED INTO THE BAR.
6. MINIMUM ULTIMATE STRENGTH OF THE NUT MUST EQUAL AT LEAST 95% OF THE MINIMUM ULTIMATE STRENGTH OF THE BAR.
7. DURING EACH WALL POUR, FLUSH THE VERTICAL THREADBARS WITH CLEAN WATER FROM A HOSE PLACED THROUGH AN OPENING IN THE WOODEN CAP OVER THE SQUARE TUBING.
8. EACH VERTICAL TENDON SHALL BE STRESSED PRIOR TO WRAPPING AS FOLLOWS:

INITIAL FORCE	ELONGATION
137.3 K	1.311"

9. GROUT PUMP EACH VERTICAL THREADBAR FROM THE BOTTOM GROUT CONNECTION WITH A 2-PART WATER INTENSIVE EPOXY UNTIL THE ENTIRE NUT AT THE TOP ANCHOR CONNECTION HAS BEEN COVERED. DRYPACK THE REMAINDER OF THE TUBING WITH A 1C:2S MIX IMMEDIATELY AFTER THE INSIDE OF THE TUBING HAS BEEN COATED WITH GROUT. IN LIEU OF DRYPACKING, THE TUBING MAY BE FILLED WITH PEAGRAVEL PRIOR TO GROUT PUMPING AND THE ENTIRE TUBING MAY BE PUMPED FULL OF GROUT.
10. VERTICAL PRESTRESSING MAY COMMENCE ONCE WALL CONCRETE STRENGTH HAS REACHED A MINIMUM OF 4,000psi.

PSE
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(503) 292-1635 9/2/15

NO. | DATE | REVISION | BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A9 46 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 2007 TRAVIS GREGORY NELSON EXPIRES: 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

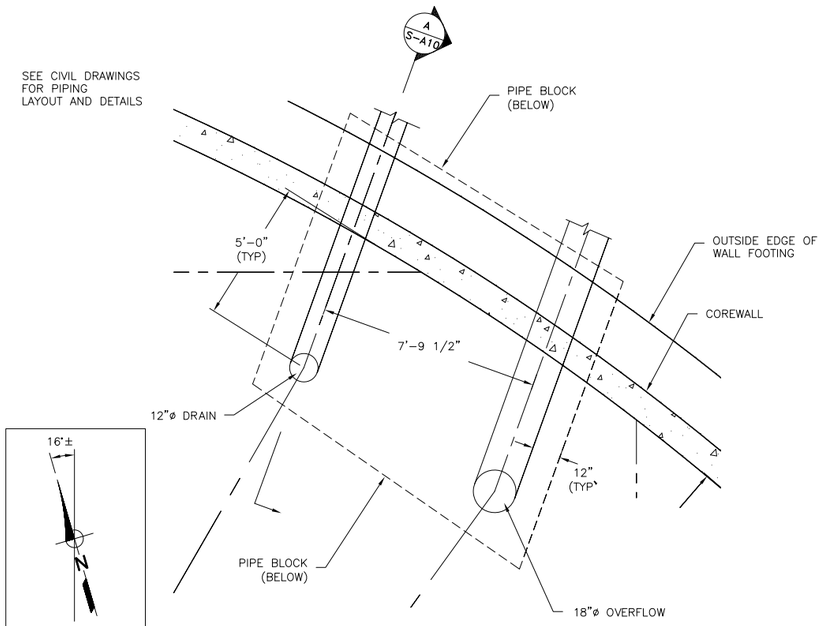
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: MISCELLANEOUS RESERVOIR DETAILS & PRESTRESSING NOTES

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

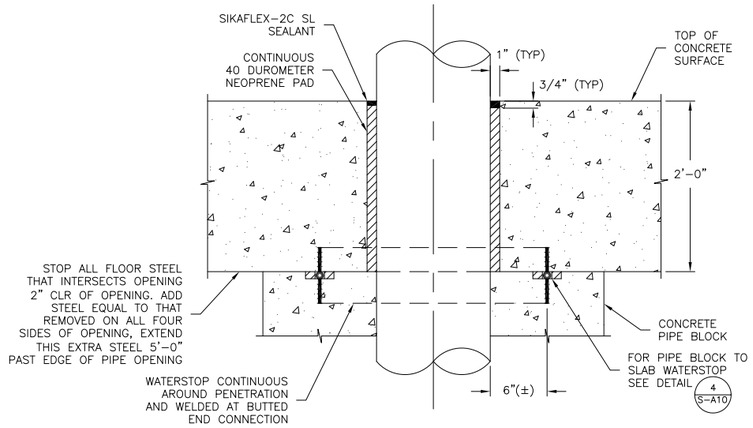
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



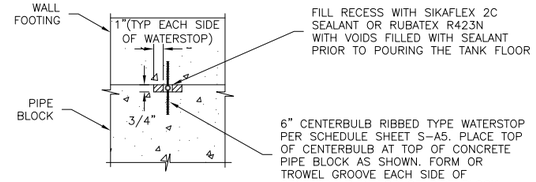
DRAIN/OVERFLOW PIPE PLAN (1 S-A10)

3/8" = 1'-0"



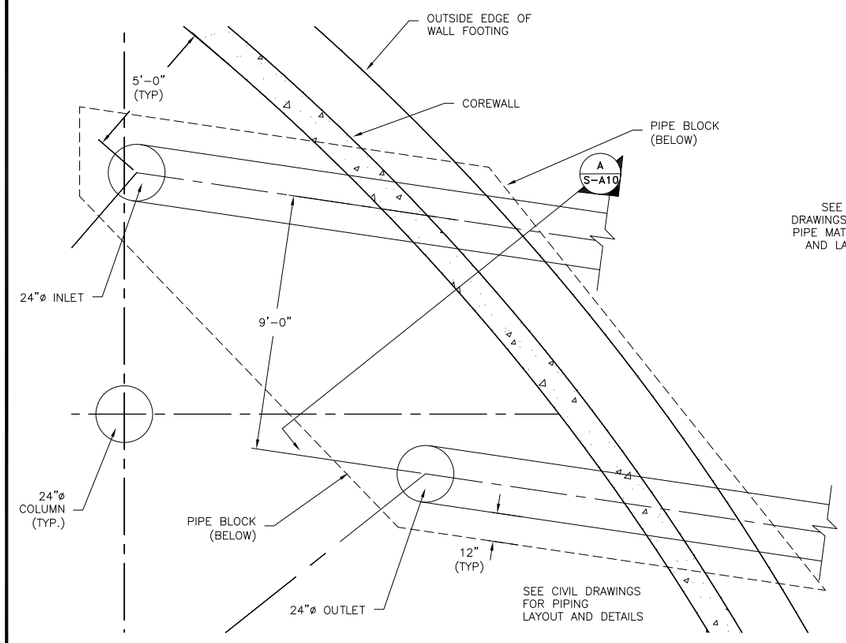
WALL FOOTING PIPE PENETRATION DETAIL (3 S-A10)

1 1/2" = 1'-0"



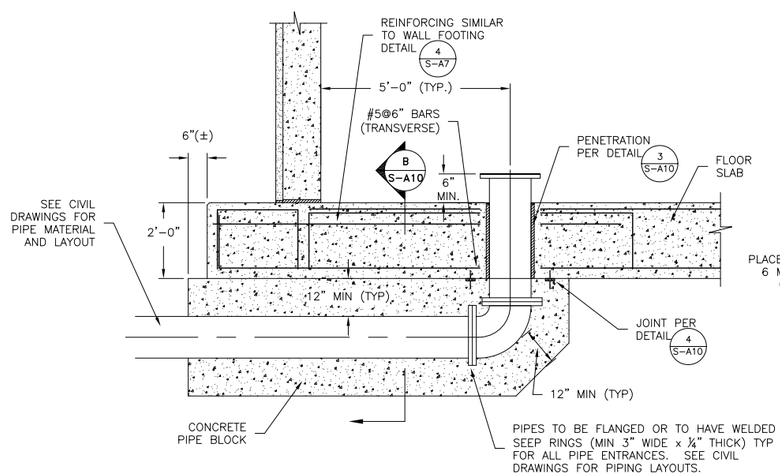
PIPE BLOCK TO SLAB WATER STOP DETAIL (4 S-A10)

1 1/2" = 1'-0"



INLET/OUTLET PIPE PLAN (2 S-A10)

3/8" = 1'-0"

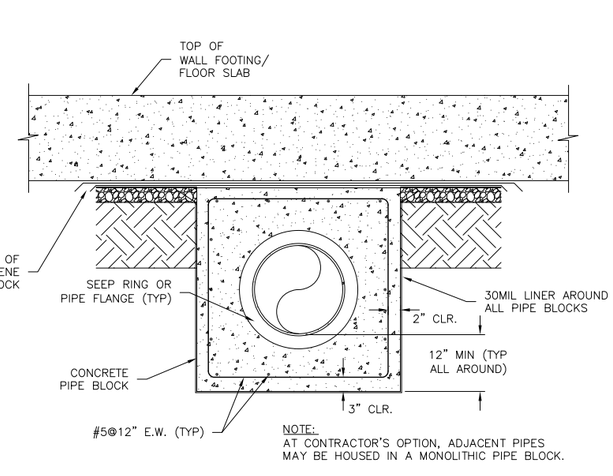


TYP. PIPE BLOCK AND EXTENDED FOOTING SECTION (A S-A10)

1/2" = 1'-0"

NOTES:

1. DRAIN INLET TO BE SET FLUSH WITH TOP SURFACE OF FLOOR SLAB.
2. INDIVIDUAL PIPE BLOCKS DETAILED ON THIS SHEET.



TYPICAL PIPE BLOCK SECTION (B S-A10)

3/4" = 1'-0"

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Portland, Oregon 97221
(503) 292-1635 9/2/15

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DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A10
47 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — TRAVIS GREGORY — 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

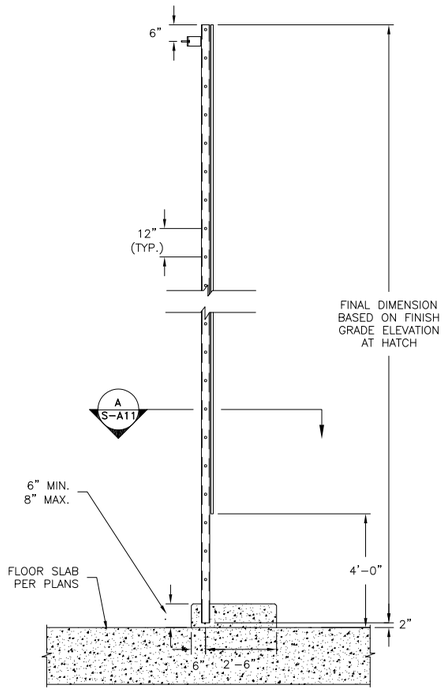
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR FOUNDATION AND PIPE BLOCK DETAILS**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

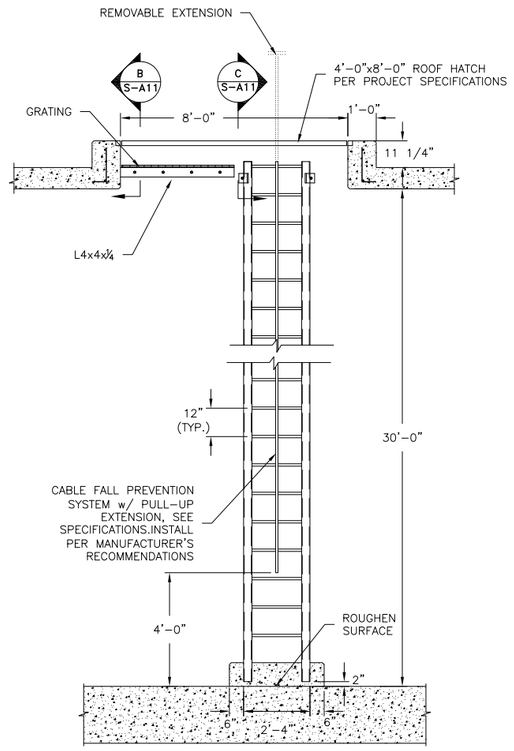
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



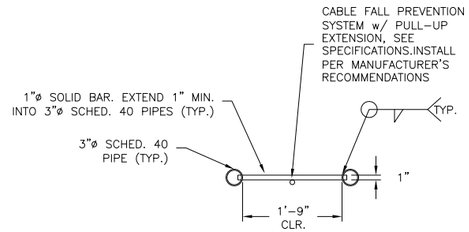
LADDER DETAILS 1 S-A11

3/8" = 1'-0"



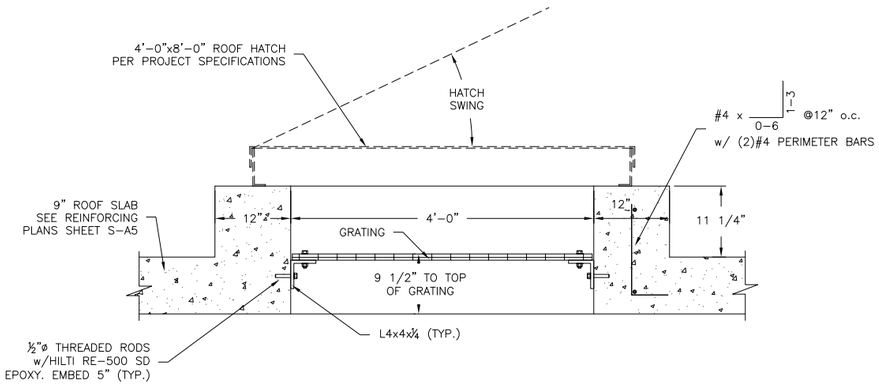
LADDER AND ROOF HATCH ELEVATION 2 S-A11

3/8" = 1'-0"



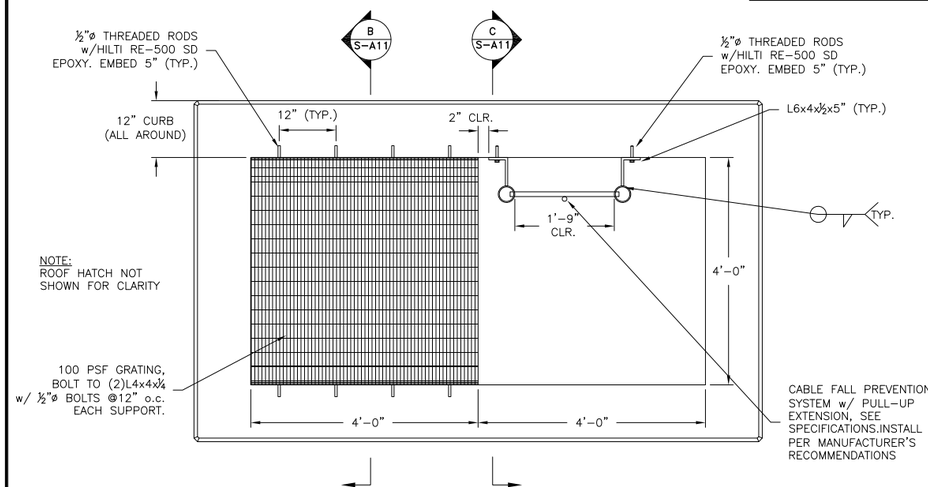
LADDER SECTION A S-A11

3/4" = 1'-0"



SECTION B S-A11

1" = 1'-0"

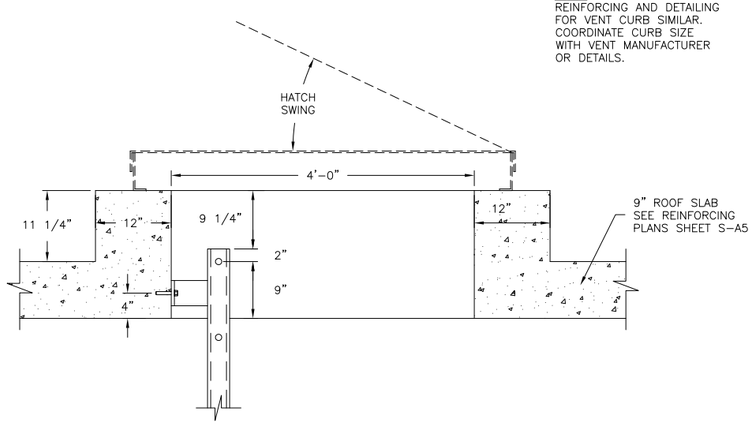


ROOF HATCH PLAN 3 S-A11

3/4" = 1'-0"

INTERIOR LADDER NOTES:

1. ALL MATERIAL FOR INTERIOR LADDER PIPE SIDERAILS, RUNGS, BRACKETS, AND FALL PREVENTION SYSTEM AS WELL AS ROOF HATCH GRATING TO BE A316 STAINLESS STEEL.
2. GRATING SHALL BE A316SS AND ABLE TO WITHSTAND 100 PSF WITH A MAXIMUM DEFLECTION OF L/360.
3. ALL WELDS TO BE 1/4" MINIMUM.
4. ROOF HATCH TO BE MANUFACTURED OF ALUMINUM PER PROJECT SPECIFICATIONS.
5. ALL ALUMINUM IN CONTACT WITH CONCRETE MUST BE COATED WITH A HEAVY BITUMASTIC COATING OR EPOXY PAINT.
6. USE ASTM A316SS FOR ALL BOLTS AND SUPPORT FRAMING UNLESS NOTED OTHERWISE.
7. WHERE STAINLESS STEEL BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.
8. WHERE BOLTS ARE PLACED IN THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE SHOTCRETING. TAKE EXTREME CARE TO AVOID DAMAGING PRESTRESSING STRAND. PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP BIT FROM COMING IN CONTACT WITH THE STRAND. INSERT BOLTS BEFORE SHOTCRETING TO MARK HOLE LOCATION. PACK HOLE IN SHOTCRETE WITH EPOXY BEFORE FINAL INSTALLATION OF BOLTS TO INSURE COMPLETE COVERAGE OF STRAND.
9. LADDER ACCESS AND GRATING PLATFORM PER ROOF PLAN SHEET S-A3.



SECTION C S-A11

1" = 1'-0"

Peterson Structural Engineers, Inc.
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Portland, Oregon 97221
(503) 292-1635 9/2/15

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DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A11 48 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON TRAVIS GREGORY MCKENZIE 90276 EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
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0 1

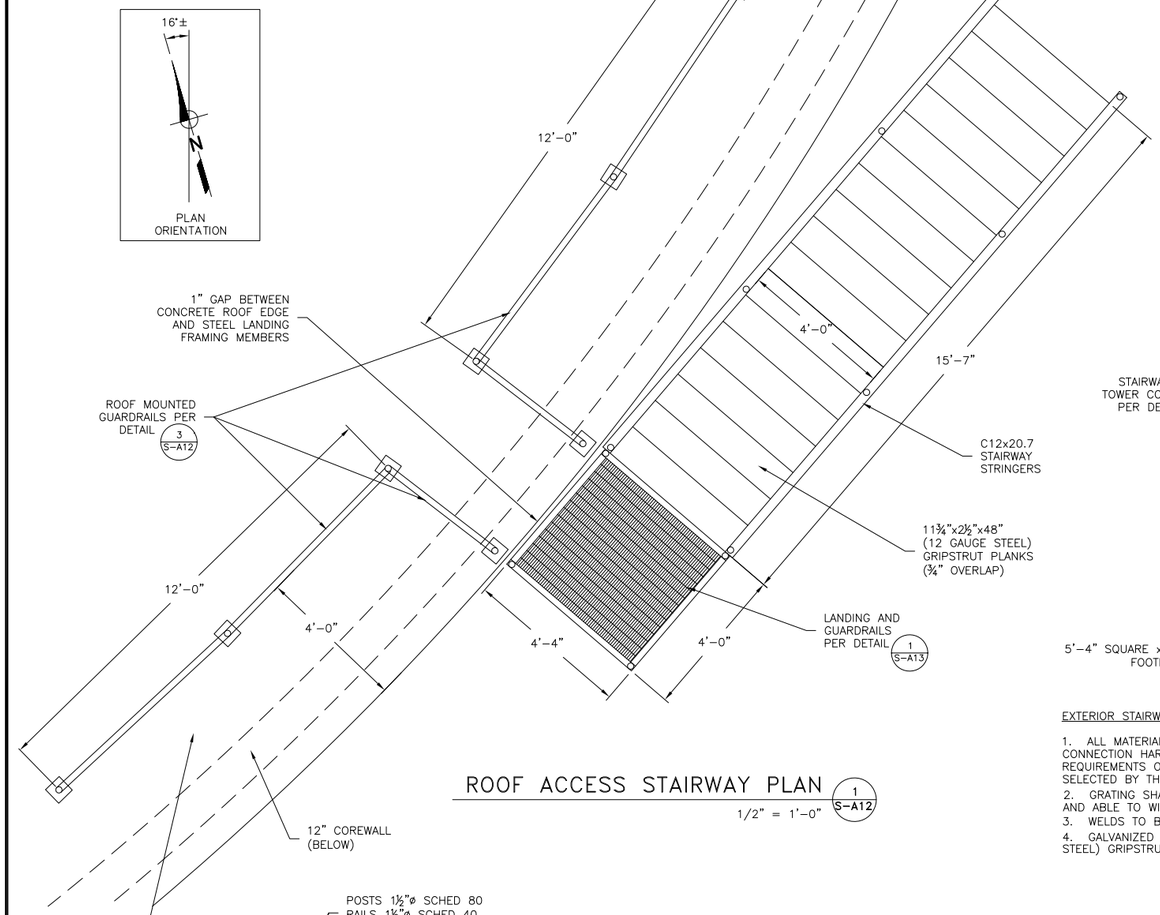
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR INTERIOR LADDER AND HATCH DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

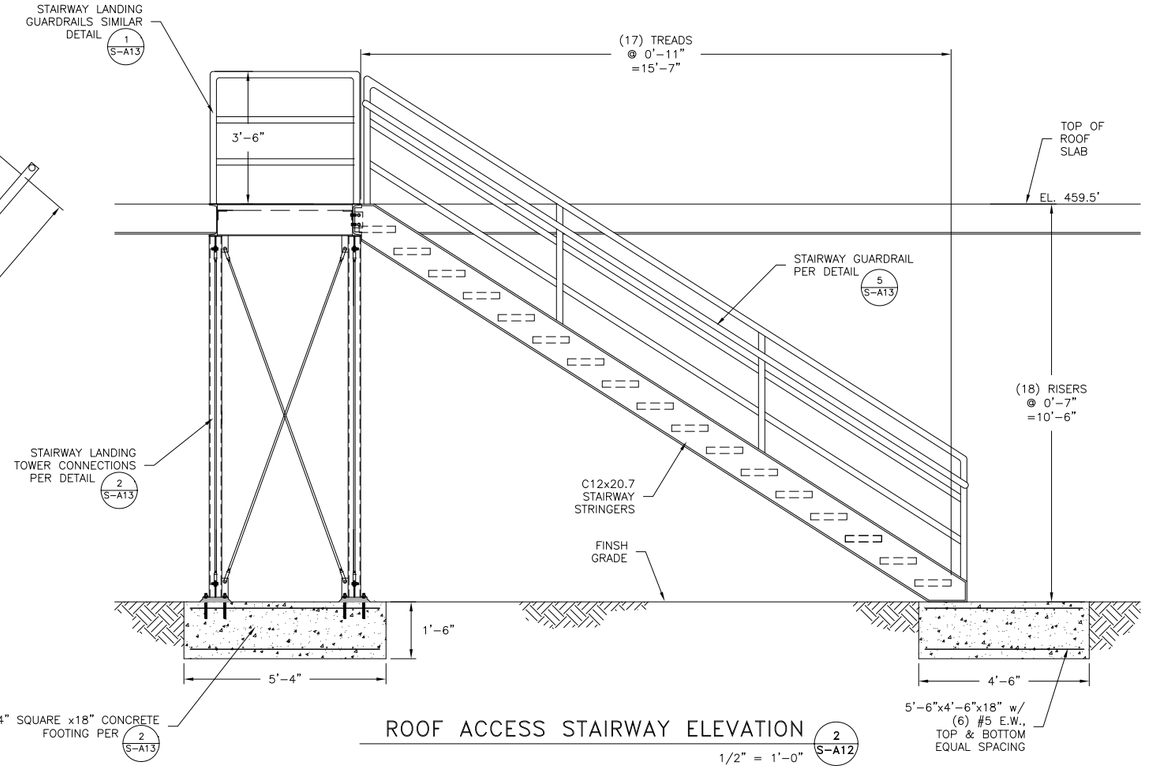
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



ROOF ACCESS STAIRWAY PLAN 1 S-A12

1/2" = 1'-0"

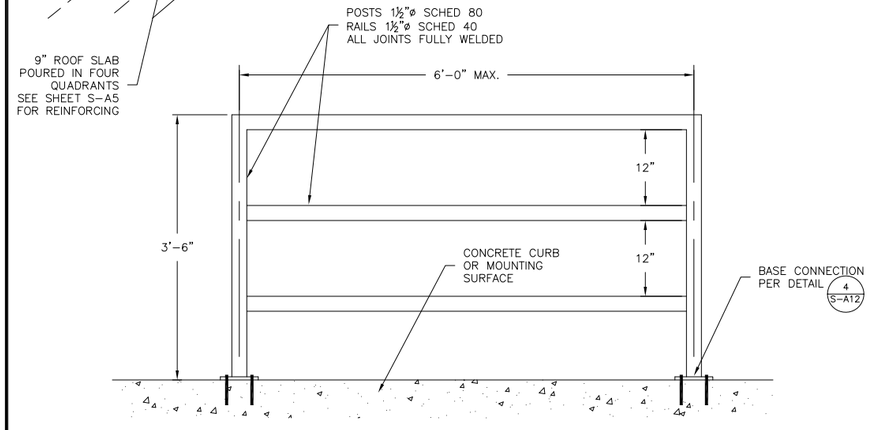


ROOF ACCESS STAIRWAY ELEVATION 2 S-A12

1/2" = 1'-0"

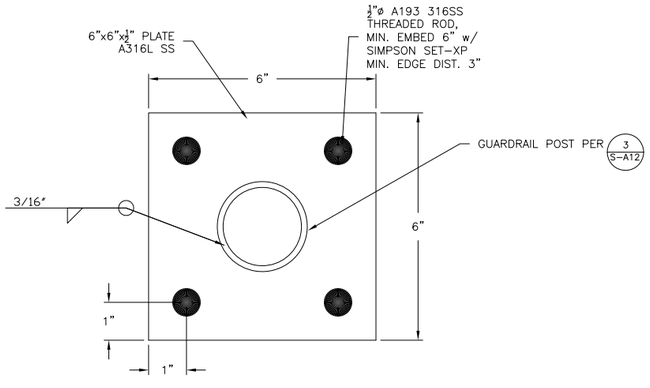
EXTERIOR STAIRWAY NOTES:

1. ALL MATERIAL FOR EXTERIOR STAIRWAY FRAMING, GUARDRAILS, BOLTS AND CONNECTION HARDWARE TO HAVE PROTECTIVE COATING APPLIED PER THE REQUIREMENTS OUTLINED IN THE PROJECT SPECIFICATIONS TO A COLOR TO BE SELECTED BY THE OWNER.
2. GRATING SHALL BE 1½"x⅜" BARGRATE 19-4 STANDARD MESH GRATING AND ABLE TO WITHSTAND 100 PSF WITH A MAXIMUM DEFLECTION OF L/360.
3. WELDS TO BE 3/16" MINIMUM.
4. GALVANIZED STEEL STAIR TREADS SHALL BE 11¾"x2½"x48" (12 GAUGE STEEL) GRIPSTRUT PLANKS.



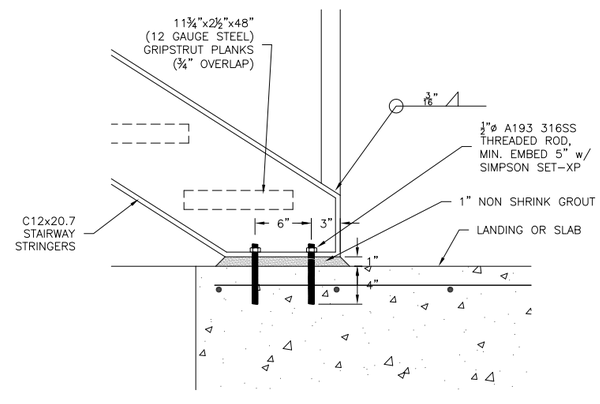
ROOF MOUNTED GUARDRAIL ELEVATION 3 S-A12

1" = 1'-0"



PIPE GUARDRAIL BASE CONNECTION 4 S-A12

HALF SIZE



STRINGER TO FOUNDATION DETAIL 5 S-A12

1 1/2" = 1'-0"

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Portland, Oregon 97221
(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A12
49 of 167

REGISTERED PROFESSIONAL ENGINEER TRAVIS GREGORY 90276 OREGON 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
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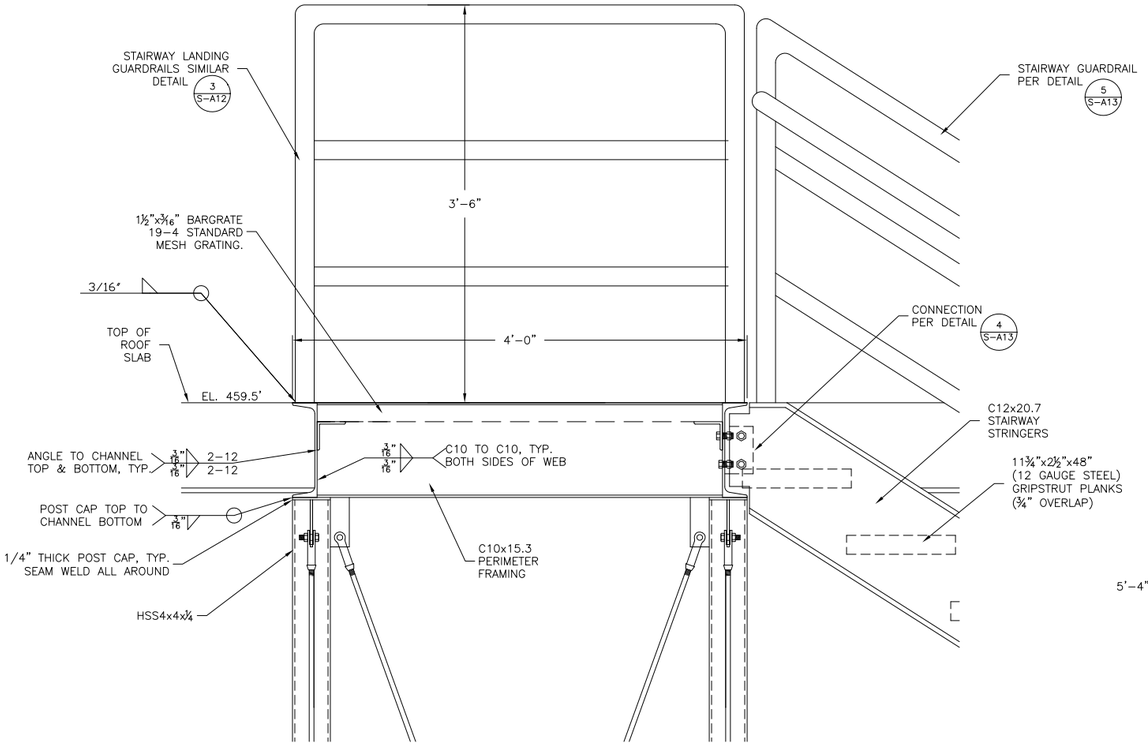
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR EXTERIOR ROOF ACCESS STAIRWAY**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

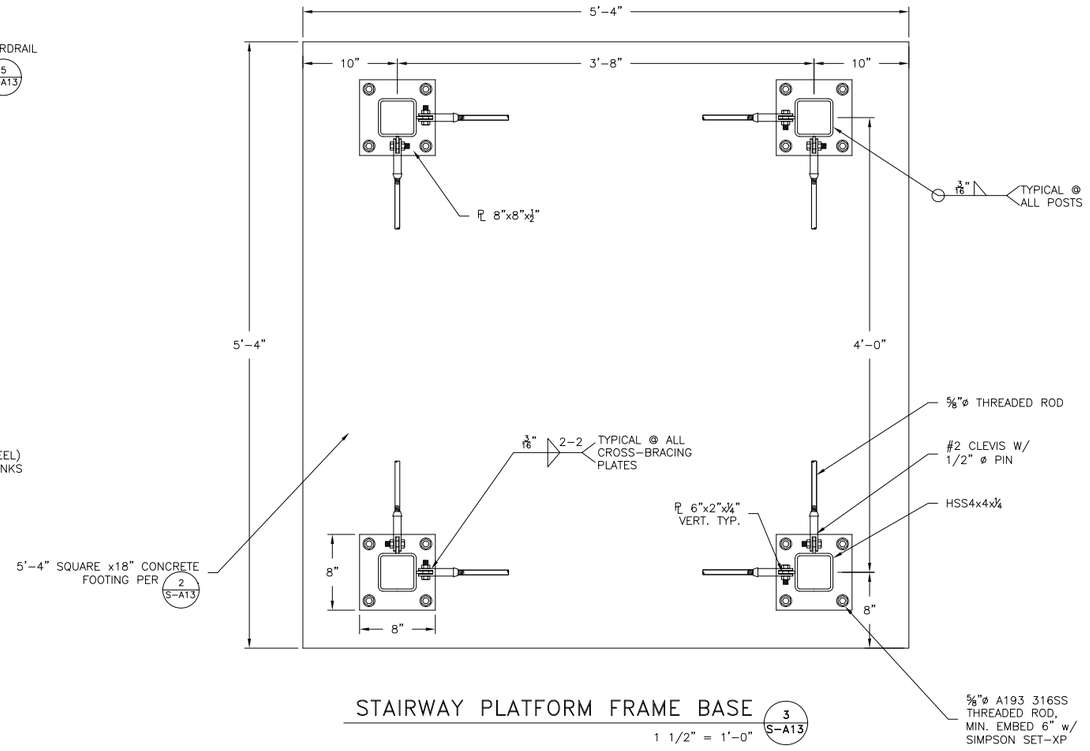
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



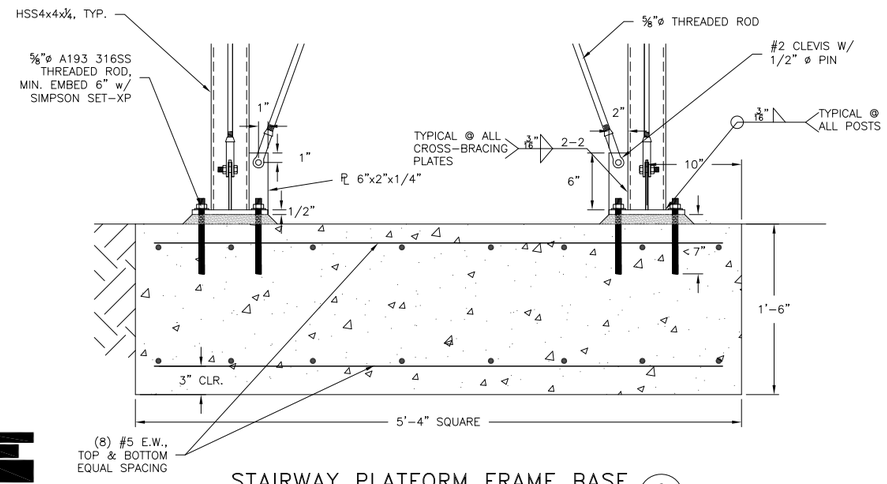
STAIRWAY PLATFORM ELEVATION 1/S-A13

1 1/2" = 1'-0"



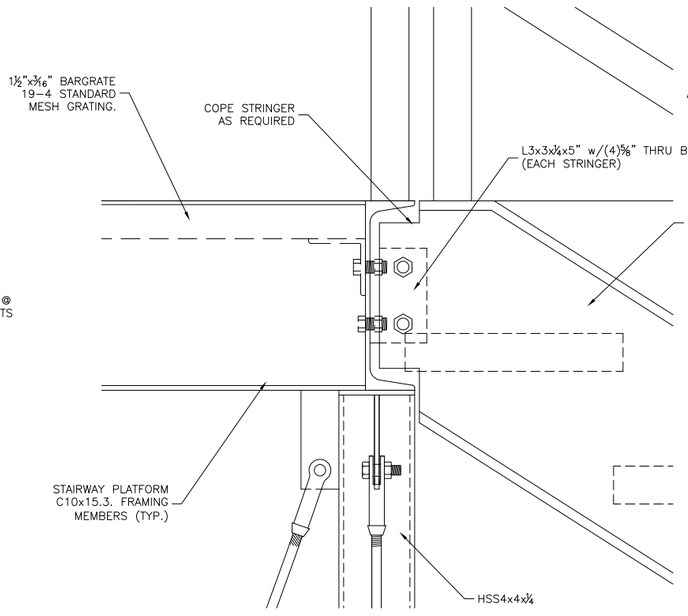
STAIRWAY PLATFORM FRAME BASE 3/S-A13

1 1/2" = 1'-0"



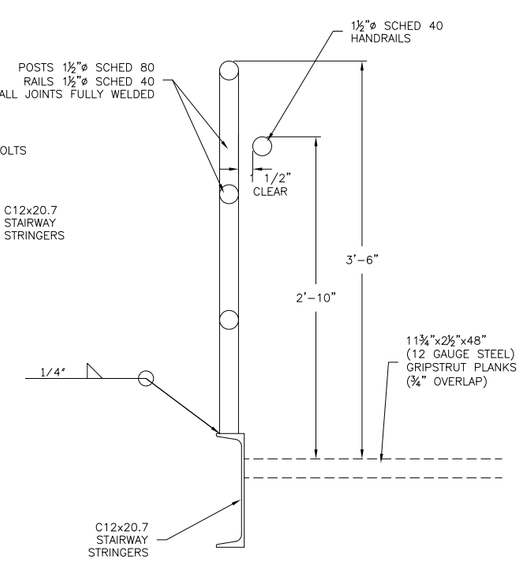
STAIRWAY PLATFORM FRAME BASE 2/S-A13

1 1/2" = 1'-0"



STRINGER/PLATFORM CONNECTION 4/S-A13

3" = 1'-0"



STAIRWAY RAILING SECTION 5/S-A13

1 1/2" = 1'-0"

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(503) 292-1635 9/2/15

NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-A13 50 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON MAY 9, 1989 TRAVIS GREGORY MCKENZIE EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

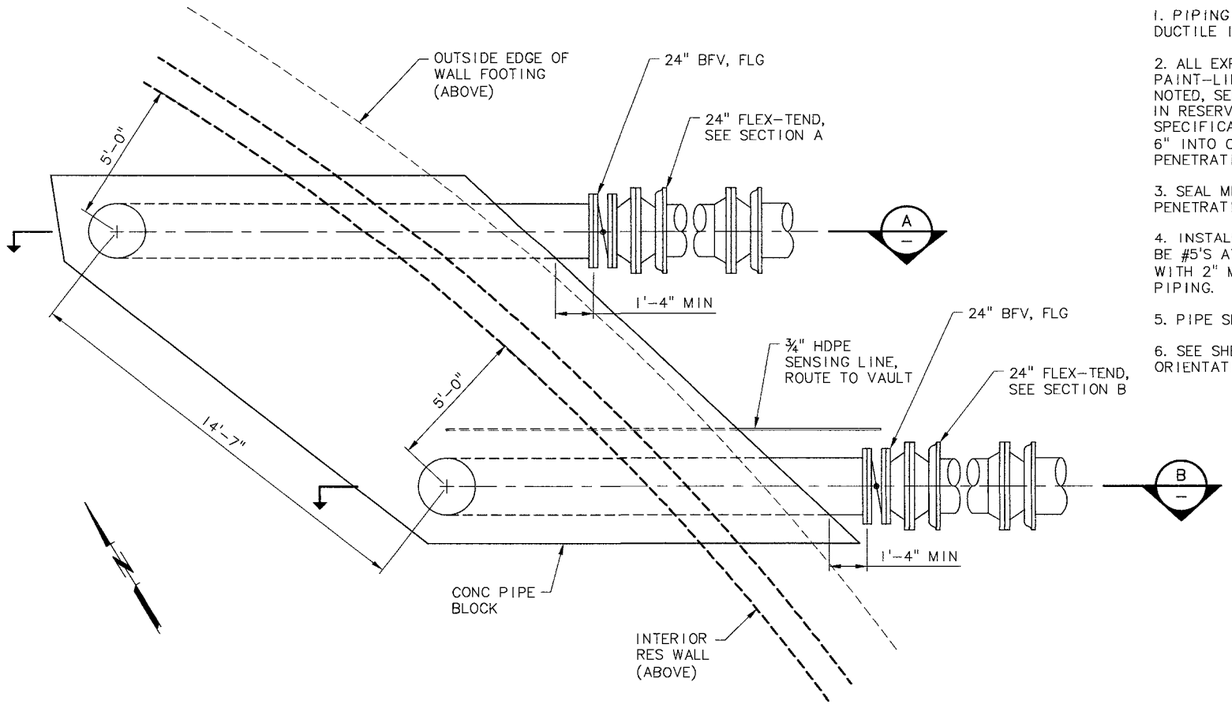
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR EXTERIOR ROOF ACCESS STAIRWAY**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



RESERVOIR INLET AND OUTLET PIPE PLAN (1)

SCALE: ⅜"=1'-0"

NOTES:

1. PIPING ENCASED IN CONCRETE TO BE FLANGED DUCTILE IRON PIPE UNLESS OTHERWISE NOTED.

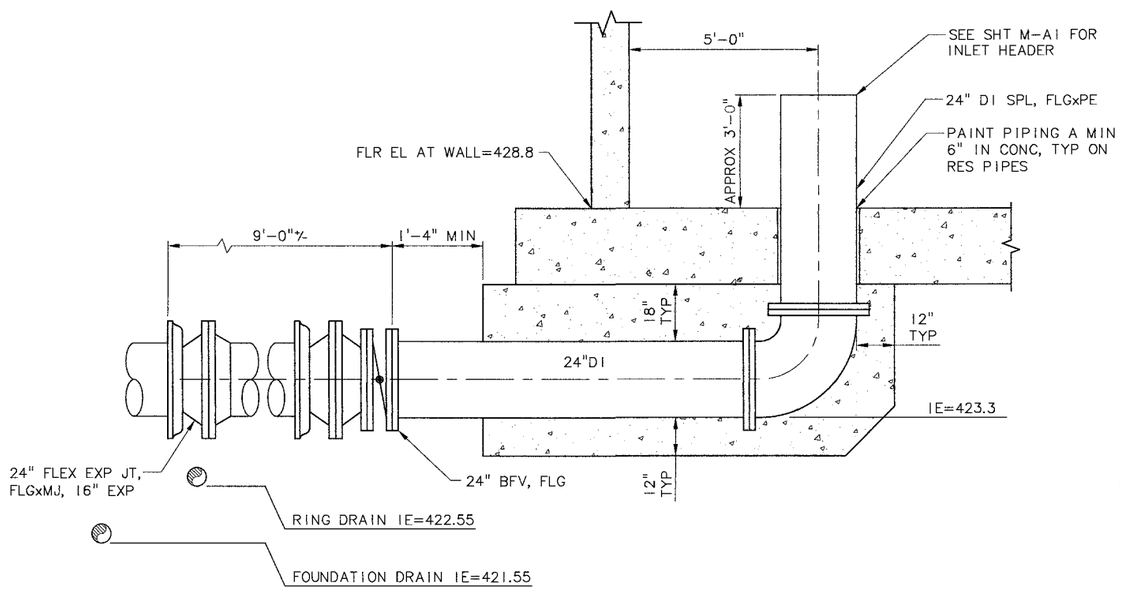
2. ALL EXPOSED PIPING IN RESERVOIR SHALL BE PAINT-LINED AND COATED UNLESS OTHERWISE NOTED, SEE SPECIFICATIONS. DUCTILE IRON PIPE IN RESERVOIR SHALL BE PAINT-COATED, SEE SPECIFICATIONS. EXTEND COATING A MINIMUM OF 6" INTO CONCRETE AT FLOOR PIPING PENETRATIONS.

3. SEAL MEMBRANE AROUND ALL PIPE PENETRATIONS.

4. INSTALL REBAR IN ALL PIPE BLOCKS. REBAR TO BE #5'S AT 12" ON CENTER EACH WAY EACH FACE WITH 2" MINIMUM CLEARANCE FROM EDGE AND PIPING.

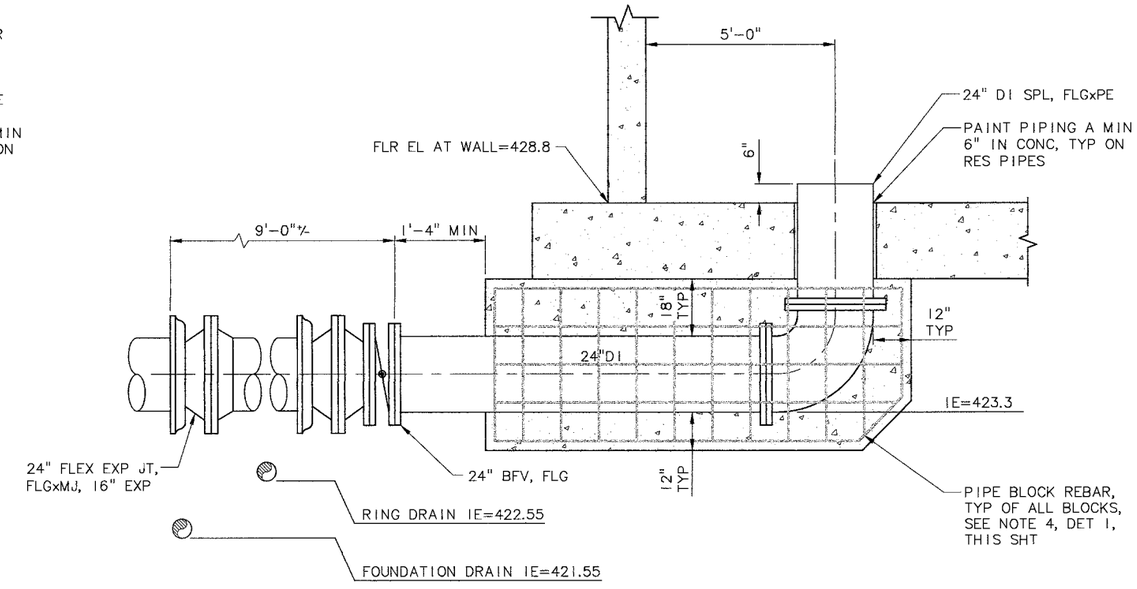
5. PIPE SHALL NOT CONTACT STEEL IN CONCRETE.

6. SEE SHEET C-A7 FOR RESERVOIR PIPING ORIENTATIONS.



INLET PIPE SECTION (A)

SCALE: ½"=1'-0"



OUTLET PIPE SECTION (B)

SCALE: ½"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: BAW/DKH
CHECKED: TPB
APPROVED: TPB

SHEET S-A14
51 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 25, 1979 MICHAEL L. MAH
RENEWS: 12-31-16

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
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PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR INLET/OUTLET PIPING DETAILS**

Murray, Smith & Associates, Inc.
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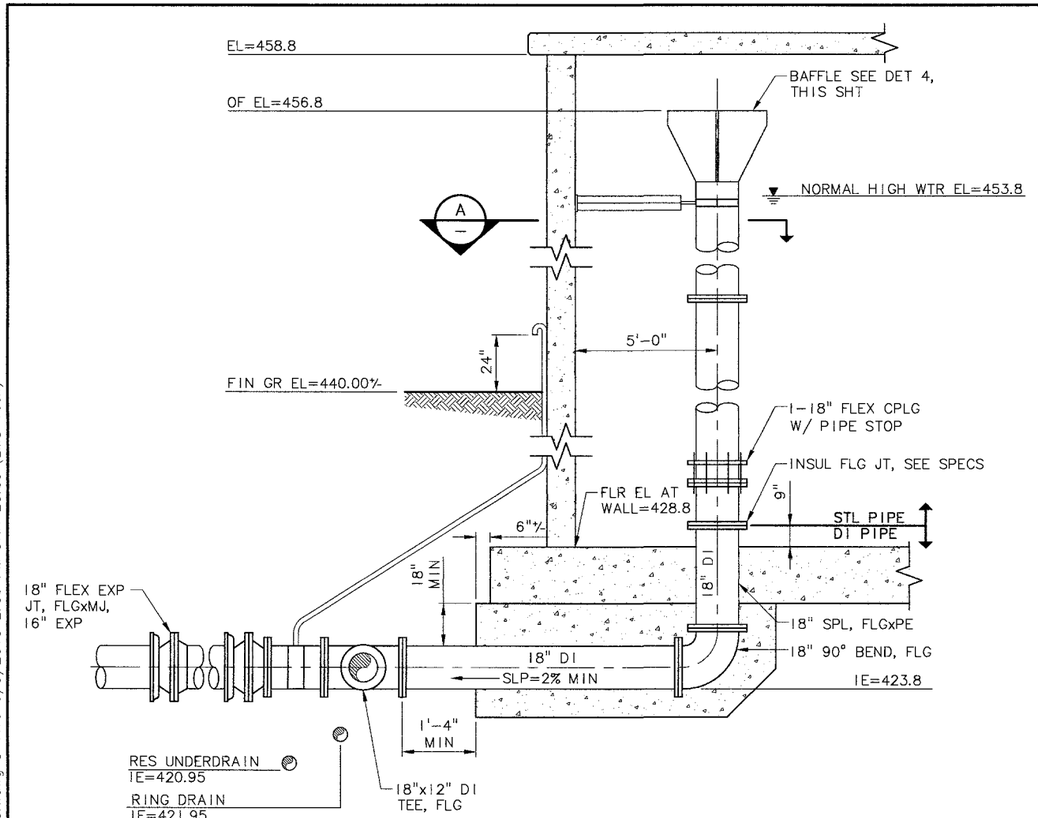
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

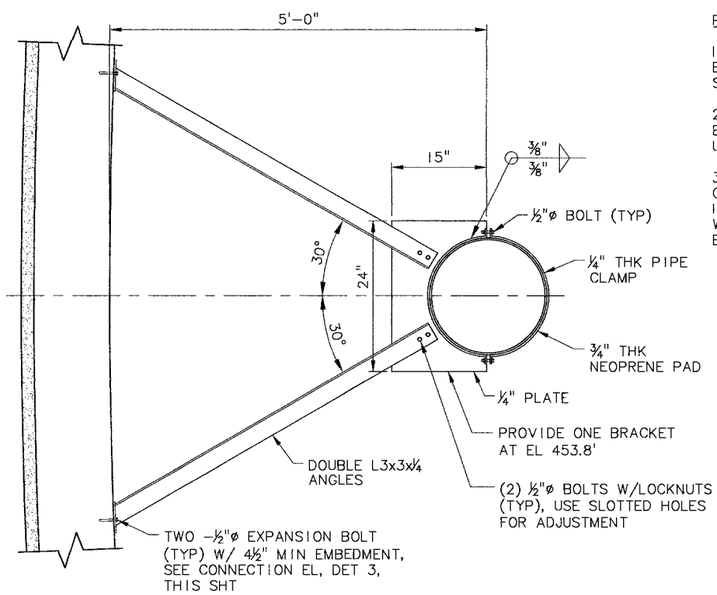
DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



OVERFLOW SECTION

SCALE: 3/8"=1'-0"



PIPE SUPPORT SECTION

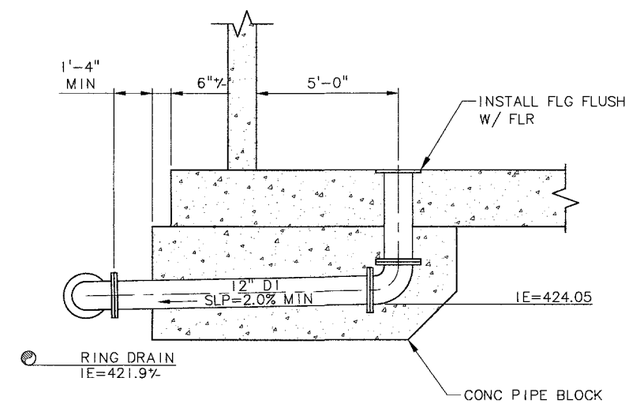
SCALE: 1"=1'-0"

PIPE BRACKET NOTES:

1. ALL MATERIAL FOR SHIM PLATES, PIPE BRACKET AND ANGLE SUPPORTS TO BE STAINLESS STEEL 316.

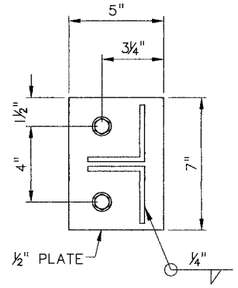
2. USE STAINLESS STEEL 316 FOR ALL BOLTS NOT FULLY ENCASED IN CONCRETE UNLESS NOTED OTHERWISE.

3. WHERE STAINLESS STEEL BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.



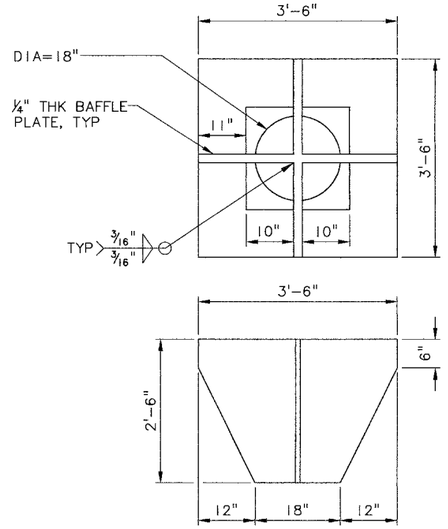
DRAIN PIPE SECTION

SCALE: 3/8"=1'-0"



CONNECTION ELEVATION

SCALE: 3"=1'-0"



NOTES:

1. BAFFLES AND BRACKETS TO BE A36 STEEL.

2. SEAL WELD ALL WELD CONNECTIONS.

3. PAINT SIMILAR TO PIPE. NO CUTTING OR DRILLING OF STEEL PERMITTED FOLLOWING PAINTING.

4. PROVIDE NEOPRENE WASHERS BETWEEN STEEL WASHERS AND PAINTED STEEL.

OVERFLOW BAFFLE

SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: VLM
DRAWN: BAW/DKH
CHECKED: TPB
APPROVED: TPB

SHEET S-A15 52 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON MICHAEL L. MAY RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

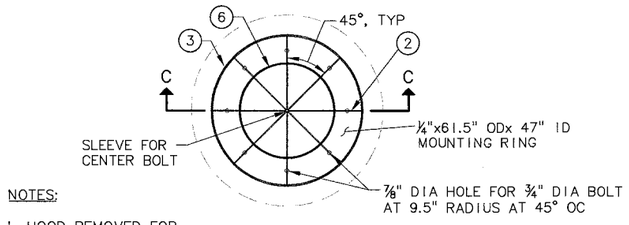
SHEET TITLE: **RESERVOIR OVERFLOW/DRAIN PIPING DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

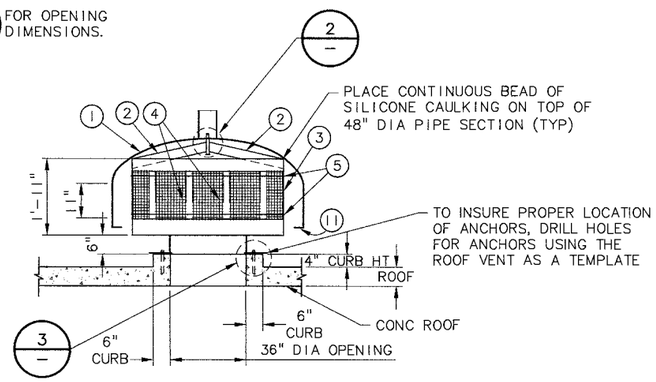
G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-MECH.dwg S-A15 9/3/2015 2:09 PM DKH 20.0s (LMS Tech)



NOTES:

1. HOOD REMOVED FOR CLARITY.
2. 4/– FOR OPENING DIMENSIONS.

PLAN VIEW

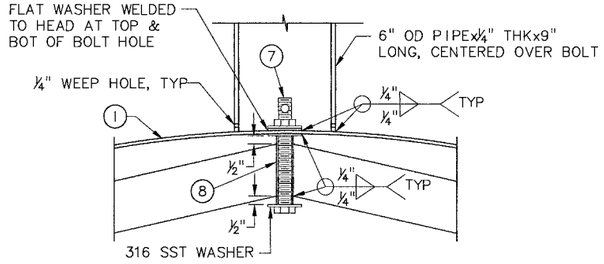


SECTION C–C

ROOF VENT DETAIL

SCALE: NTS

1/C–8



ROOF VENT–BOLT AT TOP DETAIL

SCALE: NTS

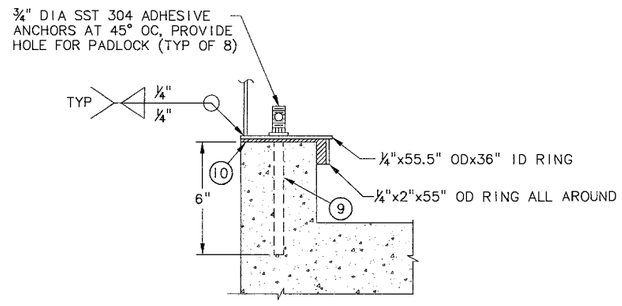
2/–

ROOF VENT PARTS LIST:

1. 62" DIA x 3/16" ALUMINUM HEAD W/ 11" SKIRT, SEE COATING SPECS
2. 2"x¼" STL STIFFENER STRIPS (8 TOTAL)
3. 23" LONG x ¼" WALL x 48" DIA OD STL PIPE
4. 6'–6" LONG x 16" SST 316 MESH WIRE CLOTH, 24 MESH
5. SST 316 0.025" x ½" PERFORATED BAND W/ SST 316 AERO SEAL "BREEZE" GRIPPING STRAP & ADJUSTABLE WORM DRIVE CLAMP (2 TOTAL), INSTALL CLAMPING RINGS AFTER SCREEN IS IN PLACE
6. 36" DIA x 3/16" WALL x 6" LONG STL PIPE
7. ¾" DIA x 7" LONG SST 316 BOLT W/ NUT & WASHERS THROUGH VENT HEAD. PROVIDE HOLE FOR PADLOCK. ADHERE BOLT TO SLV W/ EPOXY
8. ¾" DIA SCHED 40 STL PIPE
9. ¾" DIA SST 316 ANCHOR BOLTS W/ NUT & WASHER (8 TOTAL)
10. ½" THK NEOPRENE GASKET
11. EXPANDED METAL SCREEN WELDED TO VENT HOOD

NOTE:

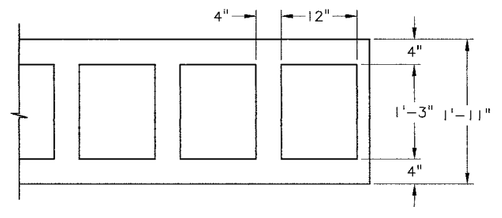
1. PROVIDE GASKETS AGAINST ALL STAINLESS STEEL SURFACES AND INSULATED WASHER AND SLEEVES ON BOLTS.



ROOF VENT MOUNTING DETAIL

SCALE: NTS

3/–



ROOF VENT OPENINGS DETAIL FOR 48" DIA PIPE

SCALE: 1"=1'-0"

4/–

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: DKH
CHECKED: TPB
APPROVED: TPB

SHEET S-A16 53 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 31, 1985 MICHAEL L. MAY RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

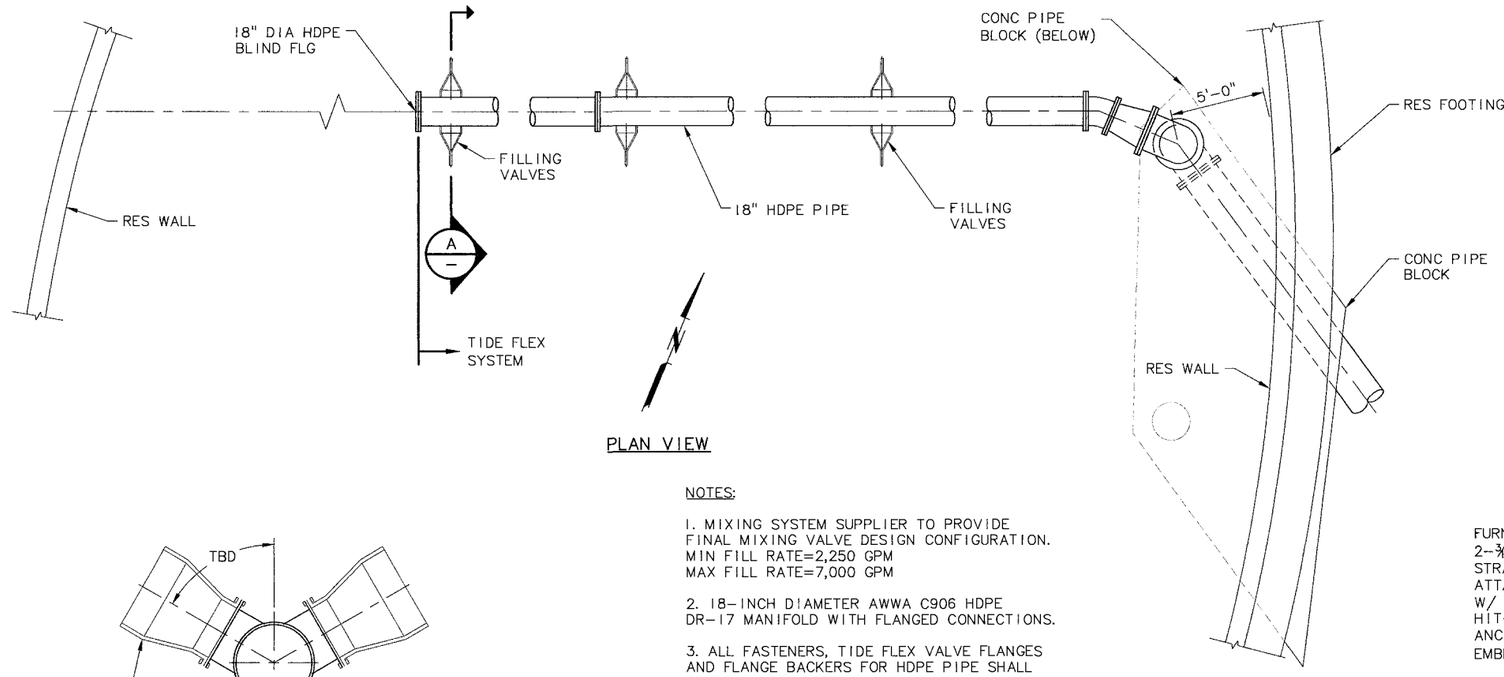
NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **RESERVOIR ROOF VENT DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-226-0022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN VIEW

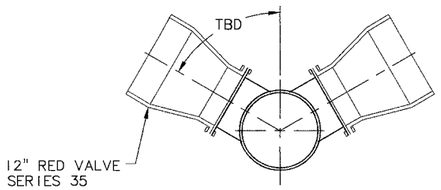
NOTES:

1. MIXING SYSTEM SUPPLIER TO PROVIDE FINAL MIXING VALVE DESIGN CONFIGURATION.
MIN FILL RATE=2,250 GPM
MAX FILL RATE=7,000 GPM

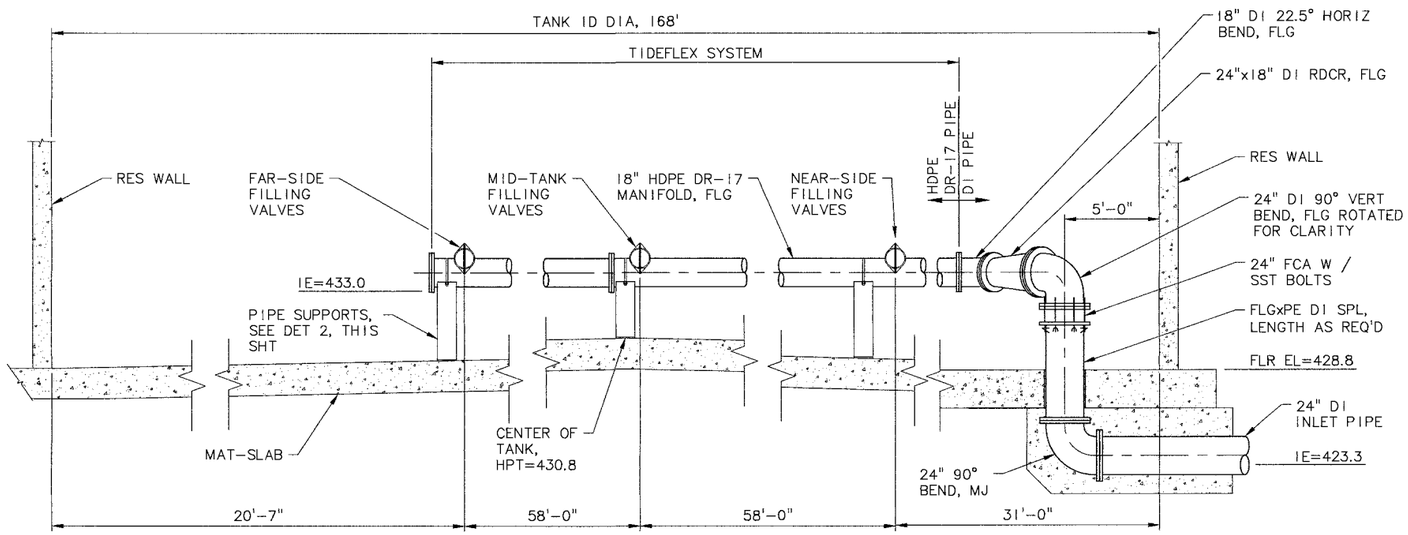
2. 18-INCH DIAMETER AWWA C906 HDPE DR-17 MANIFOLD WITH FLANGED CONNECTIONS.

3. ALL FASTENERS, TIDE FLEX VALVE FLANGES AND FLANGE BACKERS FOR HDPE PIPE SHALL BE STAINLESS STEEL.

4. FINAL VALVE CONFIGURATION AND SIZE TO BE PER MIXING SYSTEM SUPPLIER.

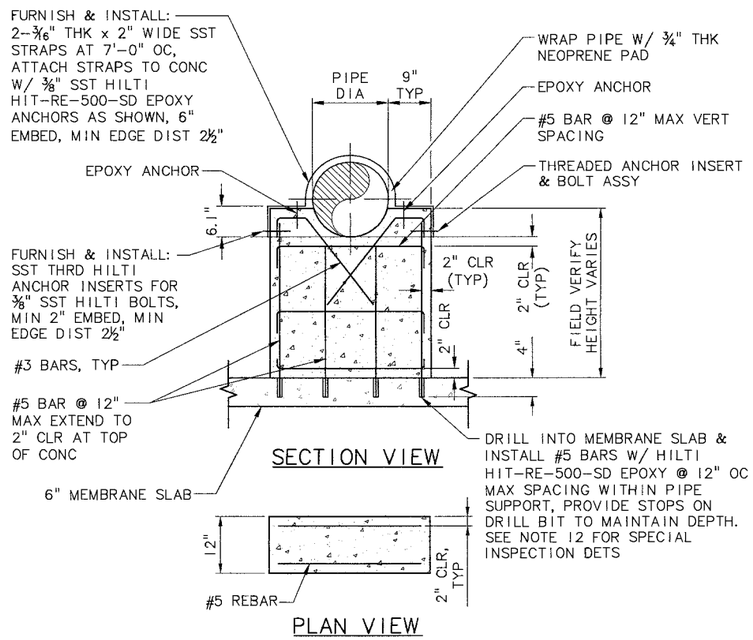


FILLING VALVE SECTION (A)
SCALE: NTS



MANIFOLD ELEVATION

INLET PIPING DETAILS (1)
SCALE: NTS



SECTION VIEW

PLAN VIEW

NOTES:

1. CONCRETE FOR PIPE SUPPORTS TO BE MINIMUM 4000 PSI, SEE SPECIFICATIONS.

2. ALL BOLTS, NUTS, AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.

3. PROVIDE ¾" THICK NEOPRENE PADDING FOR FULL CIRCUMFERENCE OF PIPE AND WIDTH OF SADDLE SECTION, TIGHTEN COVER STRAP SUCH THAT NEOPRENE IS HELD IN PLACE WITH COVER STRAP AND SADDLE IS NOT COMING IN DIRECT CONTACT WITH PIPE. COVER STRAP SHALL BE TIGHTENED SNUG ONLY.

4. INSTALL PIPE SUPPORT AND ALIGN PIPES PRIOR TO SECURING PIPE SUPPORT STRAPS.

CONCRETE PIPE SUPPORT DETAIL (2)
SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: M.L.M
DRAWN: BAW/DKH
CHECKED: L.L.A
APPROVED: T.P.B

SHEET M-A1
54 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 MICHAEL L. MCALLISTER 65840
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

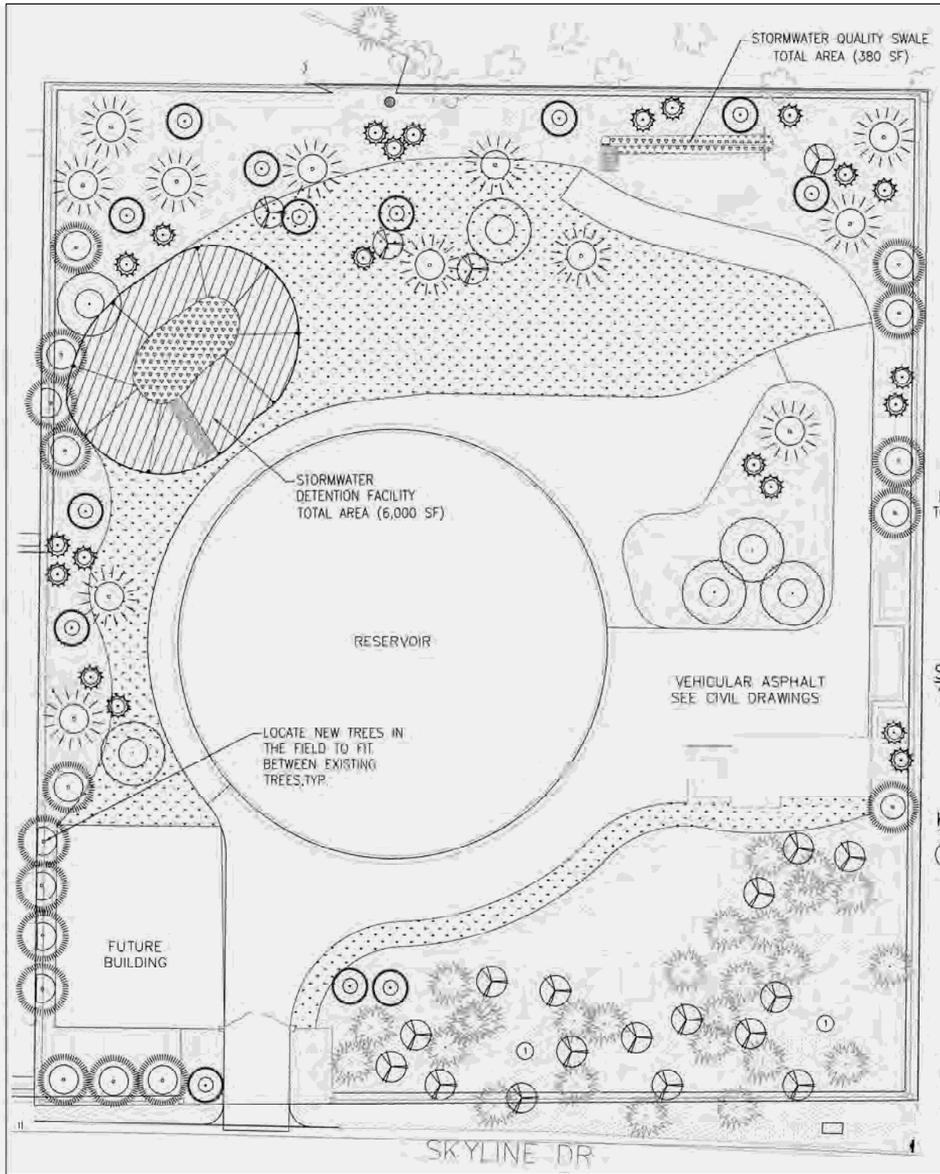
SHEET TITLE:
RESERVOIR INLET MIXING SYSTEM DETAILS

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

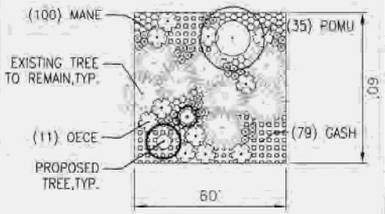
MSA PROJECT: 14-1586

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED A\14-1586-OR-A-MECH.dwg M-A1 9/3/2015 11:12 AM DKT 20.0s (LMS Tech)



LEGEND

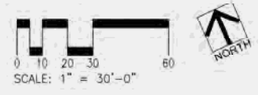
- STORMWATER QUALITY PLANTINGS: SIDE SLOPES
- STORMWATER QUALITY PLANTINGS: TREATMENT AREA
- PLANTING AREAS
- ROUGH SEED
- EXISTING TREES TO REMAIN



SHRUB PLANTING TEMPLATE
1"=30'

KEY NOTES

(1) PROTECT EXISTING TREES IN THIS AREA. REPAIR AND REPLACE ALL EXISTING PLANTING AREAS DAMAGED BY CONSTRUCTION ACTIVITIES. WORK SHALL BE DONE TO THE OWNER'S SATISFACTION. THIS IS A REQUIREMENT FOR ALL SITE WORK ASSOCIATED WITH THE PROJECT WHETHER SPECIFICALLY INDICATED OR OTHERWISE OCCURRING DURING THE COURSE OF NORMAL CONSTRUCTION ACTIVITIES.



PLANT SCHEDULE: GENERAL LANDSCAPE

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QUANTITY	E/D	COMMENTS
	TREES						
	ACER CIRCINATUM	VINE MAPLE	2" CAL.	AS SHOWN	20	D	BRANCHED AT 4'-0"; NARROW FORM
	CALOCEDRUS DECURRENS	INCENSE CEDAR	6-8FT.	AS SHOWN	22	E	
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	6-8FT.	AS SHOWN	14	E	
	QUERCUS GARRYANA	OREGON WHITE OAK	2" CAL.	AS SHOWN	6	D	
	PICEA ENGLEMANNII	ENGLEMANN SPRUCE	6-8FT.	AS SHOWN	17	E	
	THUJA PLICATA	WESTERN RED CEDAR	6-8FT.	AS SHOWN	12	E	
	SHRUBS						
GASH	GAULTHERIA SHALLON	SALAL	#1	36" O.C.		E	
MANE	MAHONIA NERVOSA	DULL OREGON GRAPE	#1	24" O.C.		E	
OECE	OEMLARIA CERASIFORMIS	OCEAN SPRAY	#5	36" O.C.		D	
POMU	POLYSTICHUM MUNITUM	SWORDFERN	#1	36" O.C.		E	
	SEED						
	HYDROSEED PROTIME 710	FLOWERING XERISCAPE MIX 2 LBS/1000 SF					
	BULBS						
	LILIUM COLUMBIANUM	TIGER LILY	BULB		200		PLANT IN CLUSTERS SEE SHEET L-D7

PLANT SCHEDULE: STORMWATER QUALITY SWALE (380 SF)

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QUANTITY	E/D	COMMENTS
	HERBACEOUS						
	JUNCUS PATENS	SPREADING RUSH	4" POT	12" O.C.	218	E	PLANT IN SAME SPECIES GROUPS OF 5-7 PLANTS
	SCIRPUS MICROCARPUS	SMALL FRUITED BULRUSH	4" POT	12" O.C.	219	E	
	SEED						
	HYDROSEED PROTIME 440	NATIVE BIO-FILTER MIX	1 LB/1000 SF				

PLANT SCHEDULE: STORMWATER QUALITY DETENTION FACILITY (6,000 SF)

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QUANTITY	E/D	COMMENTS
	TREATMENT AREA (1,080 SF)						
	HERBACEOUS						
	JUNCUS PATENS	SPREADING RUSH	PLUGS	6/SF	621	E	PLANT IN SAME SPECIES GROUPS OF 5-7 PLANTS
	SCIRPUS MICROCARPUS	SMALL FRUITED BULRUSH	PLUGS	6/SF	621	E	
	SEED						
	HYDROSEED PROTIME 440	NATIVE BIO-FILTER MIX	1 LB/1000 SF				
	SIDE SLOPES (4,920 SF)						
	TREES						
	ACER CIRCINATUM	VINE MAPLE	#2/2' HT.	SINGLE	10	D	
	FRAXINUS LATIFOLIA	OREGON ASH	#2/3' HT.	SINGLE	7	D	
	LARGE SHRUBS						
	CORNUS SERICEA	RED-TWIG DOGWOOD	#1	36" O.C.	98	D	PLANT IN SAME SPECIES GROUPS OF 5-7 PLANTS
	ROSA NUTKANA	NOOTKA ROSE	#1	48" O.C.	99	D	
	MEDIUM/SMALL SHRUBS						
	MAHONIA AQUIFOLIUM	OREGON GRAPE	#1	36" O.C.	148	D	
	SYMPHORICARPOS ALBA	SNOWBERRY	#1	36" O.C.	147	D	
	GROUNDCOVER						
	ARCTOSTAPHYLOS UVA-URSI	KINNIKINNICK	4" POT	12" O.C.	1,722	E	
	MAHONIA REPENS	CREEPING MAHONIA	4" POT	12" O.C.	1,722	E	
	SEED						
	HYDROSEED PROTIME 440	NATIVE BIO-FILTER MIX	1 LB/1000 SF				

PLANTING NOTES

1. CONTRACTOR TO VERIFY LOCATION OF EXISTING TREES INDICATED TO REMAIN PRIOR TO SOIL PREPARATION. PROTECT ALL TREES AND SHRUBS INDICATED TO REMAIN. COORDINATE WITH THE OWNER'S REPRESENTATIVE.

2. PLANTING AREAS TO BE SUFFICIENTLY CLEANED OF ALL CONSTRUCTION MATERIALS, INCLUDING IMPORTED ROCK, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BEFORE BEGINNING ANY LANDSCAPE WORK.

3. IDENTIFY ALL PLANTING AREAS IN FIELD WITH WHITE FIELD-MARKING CHALK OR APPROVED EQUAL. PLANTING BEDS TO BE ADJUSTED AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANT LOCATION.

4. FOR PLANTING OCCURRING IN MASSES OF SAME SPECIES PLANT, LABELING REFERS TO ALL ADJACENT IDENTICAL SYMBOLS. REFER TO DETAILS AND LEGEND FOR SPACING INFORMATION.

5. THE OWNER'S REPRESENTATIVE WILL APPROVE INDIVIDUAL PLANT MATERIAL AND LOCATION OF PLANT MATERIAL PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR PROCEDURE.

6. SHRUBS AND GROUNDCOVER TO BE PLANTED A MINIMUM OF ONE HALF THEIR ON CENTER SPACING AWAY FROM PAVEMENT EDGES; UNLESS OTHERWISE NOTED.

7. PROVIDE ROOT BARRIER AROUND ALL TREES WITHIN 5' OF PAVING, CURBS, WALLS, BUILDINGS, UTILITY DUCTS AND OTHER APPURTENANCES.

8. PLANT QUANTITIES INDICATED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANTS IN QUANTITIES AND LOCATIONS SHOWN ON DRAWINGS.

9. PROVIDE JUTE NETTING ON ALL SLOPES WITH GRADIENT OF 2:1 OR GREATER AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE. STAPLE FABRIC TO GROUND WITH METAL STAKES AT 4' O.C. SEE EROSION CONTROL MATTING DETAIL IN THESE DRAWINGS.

WATER QUALITY PLANTING REQUIREMENTS
(Per City of Portland Stormwater Management Manual)

STORMWATER QUALITY SWALE:

TOTAL AREA=380 SF
PLANTS REQUIRED: 115 herbaceous/100SF=437

DETENTION FACILITY:

TOTAL AREA=6,000 SF

TREATMENT AREA=1,080 SF
PLANTS REQUIRED: 115 Herbaceous Plants/100 SF = 1,242

SIDE SLOPES=4,920 SF
TREES REQUIRED (Ev. or Decid.): 1 TREE/300 SF= 17
SHRUBS REQUIRED:
Large Shrubs: 4/100 SF=197
Medium to Small Shrubs: 6/100 SF=295
Groundcover: 70/100 SF=3,444

WALKER MACY
111 SW OAK, SUITE 230
PORTLAND, OR 97204
503-228-3122

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET L-A1 55 of 167

REGISTERED 586 Chelsea M. McCann 6/30/15 OREGON LANDSCAPE ARCHITECT

SCALE VERT: AS SHOWN HORIZ:AS SHOWN

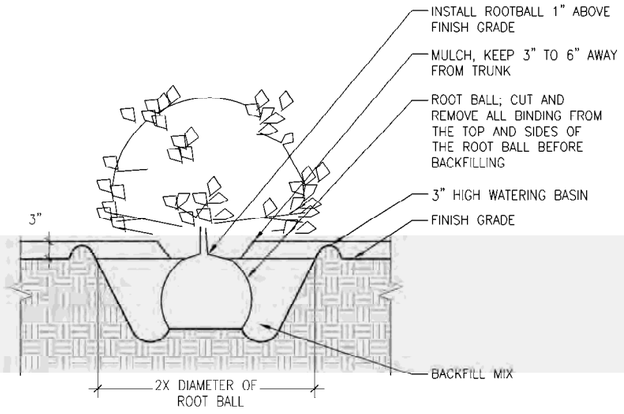
NOTICE 0 1" IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

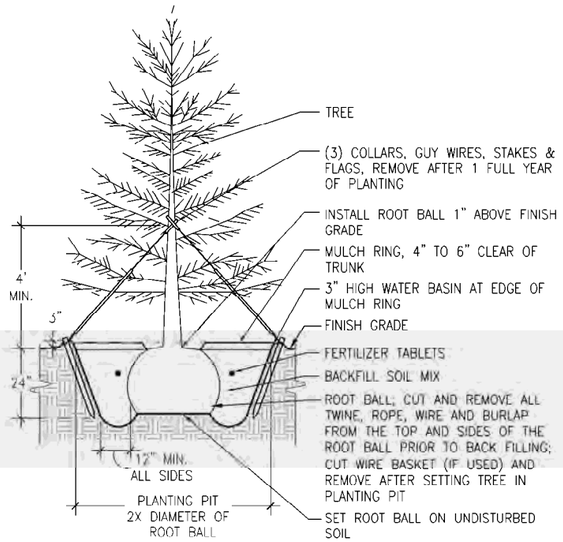
SHEET TITLE: LANDSCAPE PLAN
RESERVOIR SITE

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

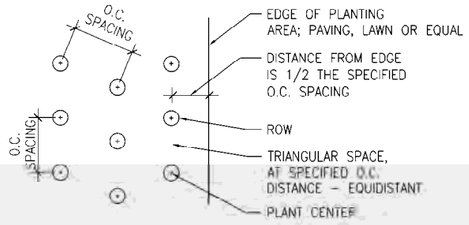
MSA PROJECT: 14-1565.0601 DATE: SEPTEMBER 2015



3 SHRUB AND GROUND COVER PLANTING
SCALE: 3/4" = 1'-0"

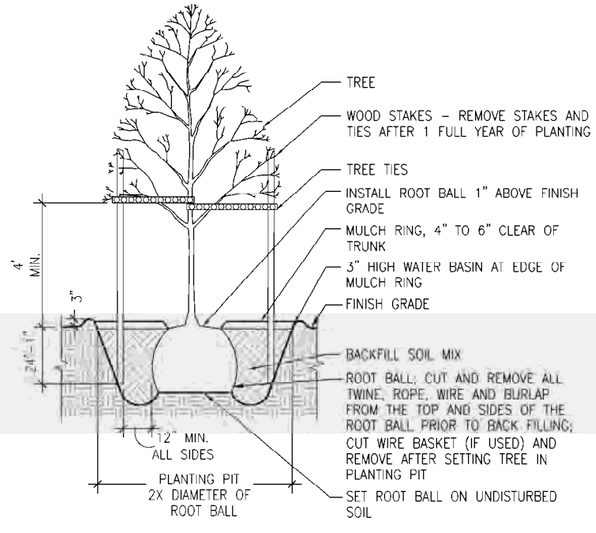


1 CONIFER TREE PLANTING
SCALE: 3/8" = 1'-0"



NOTE:
- SEE PLANT SCHEDULE FOR EACH PLANT'S APPROPRIATE O.C. SPACING.
- PLANTING PLAN SHOWING INDIVIDUAL LOCATION OF A SHRUB AND OR GROUND COVER TAKE PRECEDENT OVER THIS DETAIL.

4 SHRUB AND GROUND COVER TRIANGULAR SPACING
SCALE: 3/4" = 1'-0"



2 DECIDUOUS TREE PLANTING
SCALE: 3/8" = 1'-0"

WALKER MACY
111 SW OAK, SUITE 300
PORTLAND, OR 97204
503-228-3122

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET L-A2
56 of 167

REGISTERED 588
Chelsea M. McCann
12/31/16
OREGON LANDSCAPE ARCHITECT

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

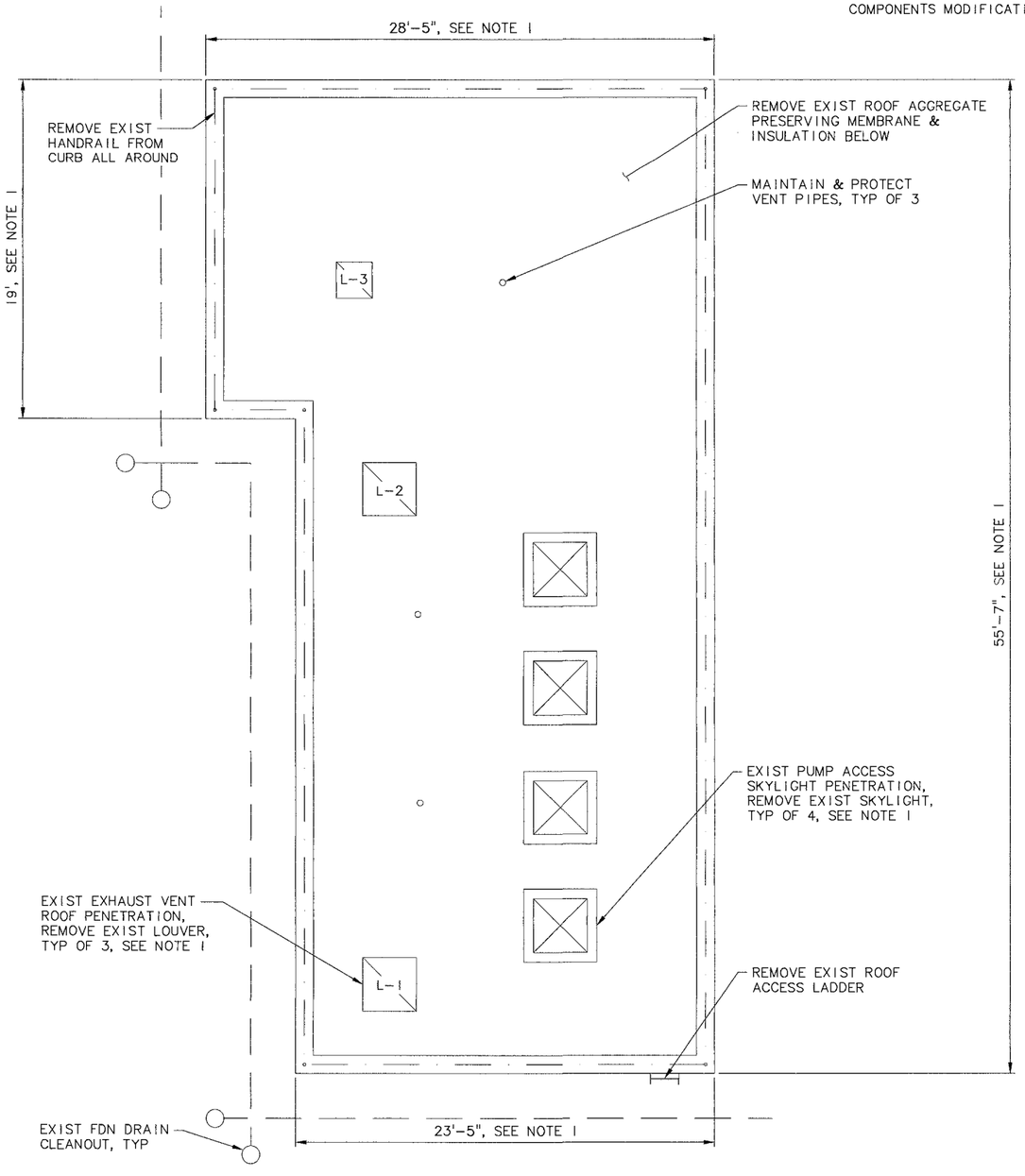
SHEET TITLE: PLANTING DETAILS

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

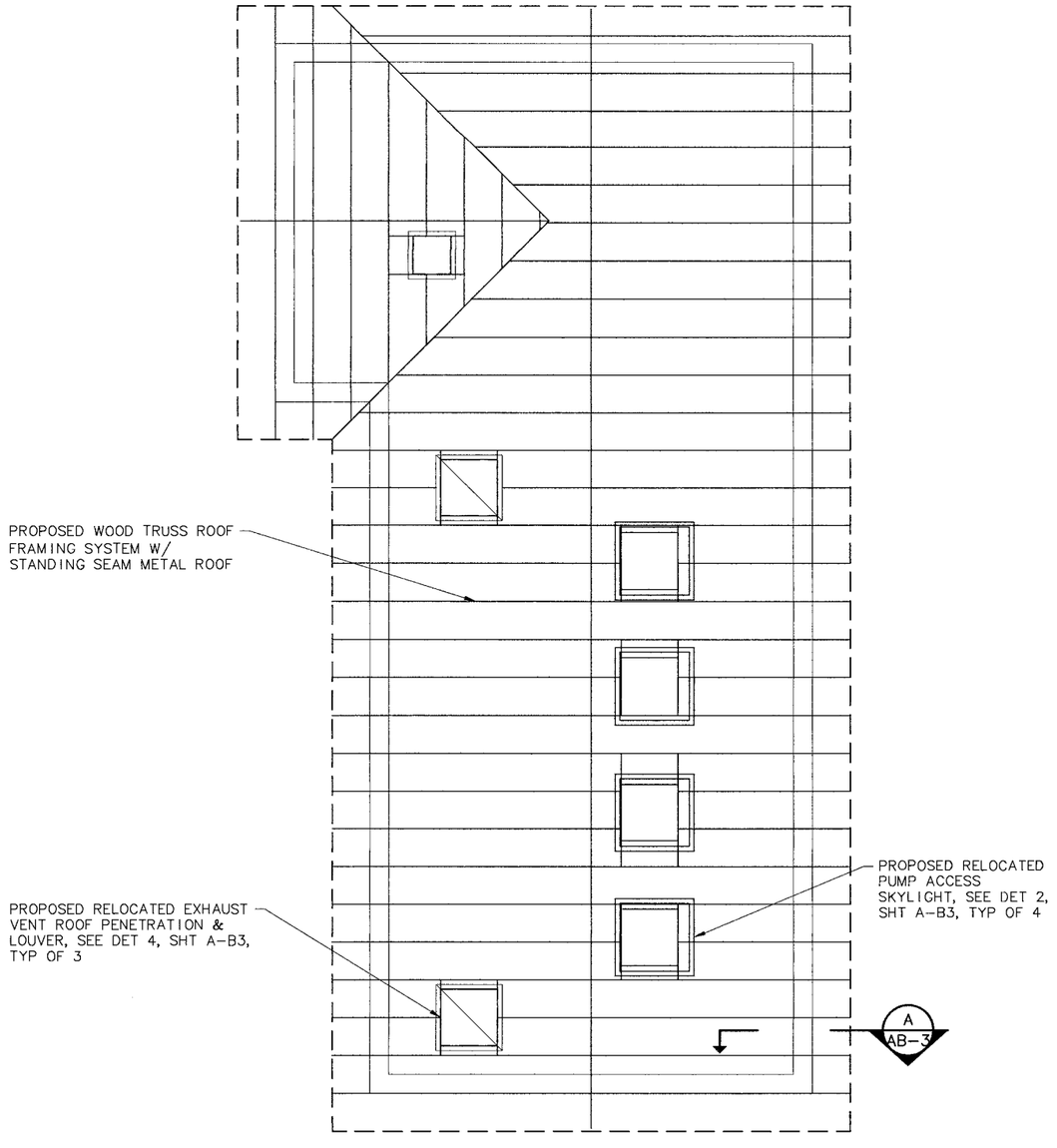
MSA PROJECT: 14-1558.06.01 DATE: SEPTEMBER 2015

NOTE;

1. FIELD VERIFY EXISTING DIMENSIONS AND LOCATIONS PRIOR TO MANUFACTURING TRUSSES AND ROOF COMPONENTS MODIFICATION.



EXISTING ROOF PLAN
SCALE: 1/4"= 1'-0"



PROPOSED ROOF PLAN
SCALE: 1/4"= 1'-0"

NO.	DATE	REVISION	BY

DESIGNED: AMB
DRAWN: DKH
CHECKED: JSJ
APPROVED: JSJ

SHEET A-B1
57 of 167

REGISTERED PROFESSIONAL ENGINEER 79401 OREGON JULY 11, 1975 ALEX M. BARNETT
RENEWS 12-31-15

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
EXISTING ROOF DEMO PLAN AND PROPOSED ROOF PLAN

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-226-1902

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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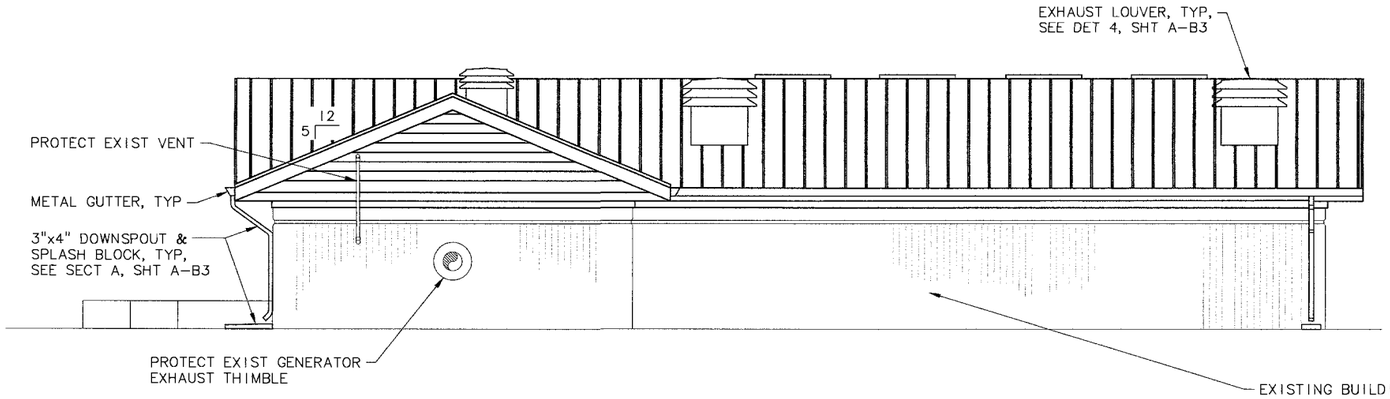
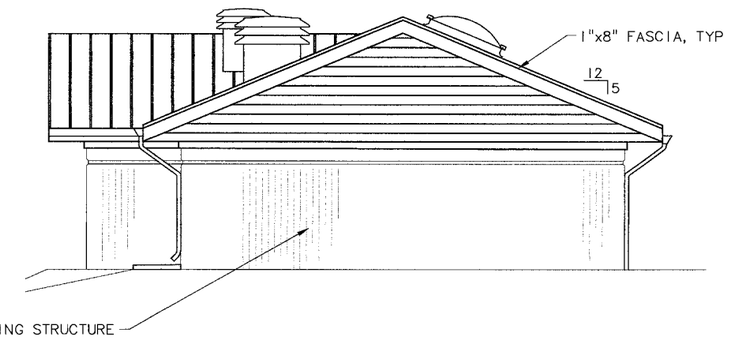
NOTES:

1. INSTALL NEW ROOF SYSTEM ON EXISTING BUILDING STRUCTURE, SEE STRUCTURAL SHEETS.

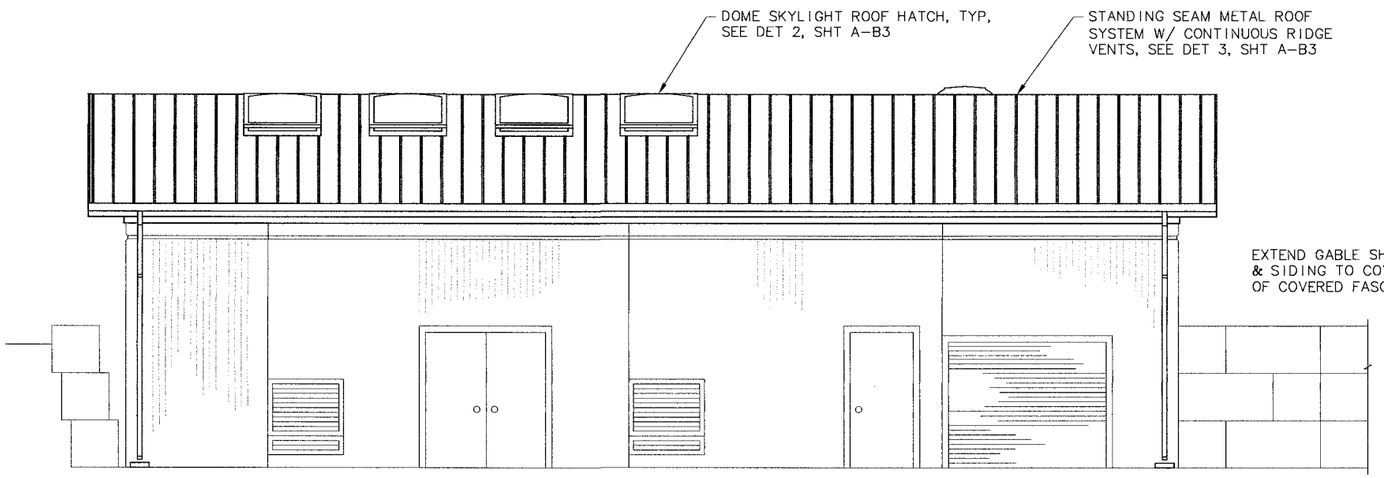
2. ATTIC ACCESS DOOR SHALL BE EQUIPPED WITH MORTISED/BUTT HINGES AND LOCKING DEAD-BOLT.



SOUTH ELEVATION
SCALE: 1/4"=1'-0"



EAST ELEVATION
SCALE: 1/4"=1'-0"



NORTH ELEVATION
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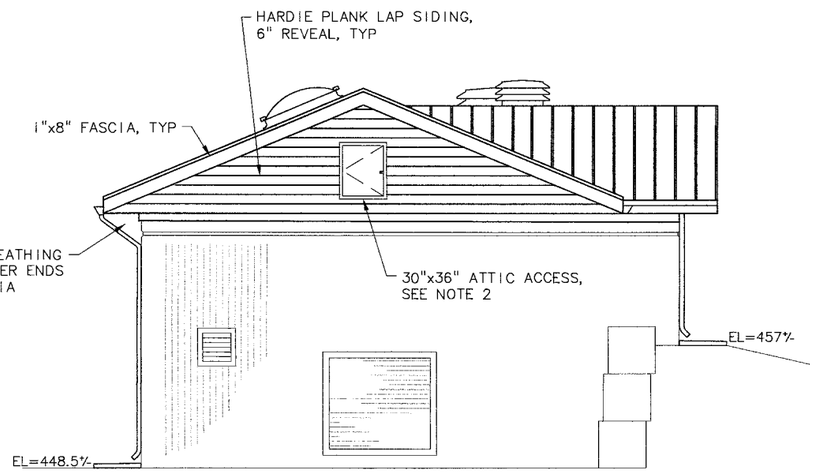

WEST ELEVATION
SCALE: 1/4"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: AMB
DRAWN: DKH
CHECKED: JSJ
APPROVED: JSJ

SHEET A-B2
58 of 167

REGISTERED PROFESSIONAL ENGINEER 79401 OREGON ALEX M. BARBEAU
RENEWS 12-31-15

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ARCHITECTURAL ELEVATIONS**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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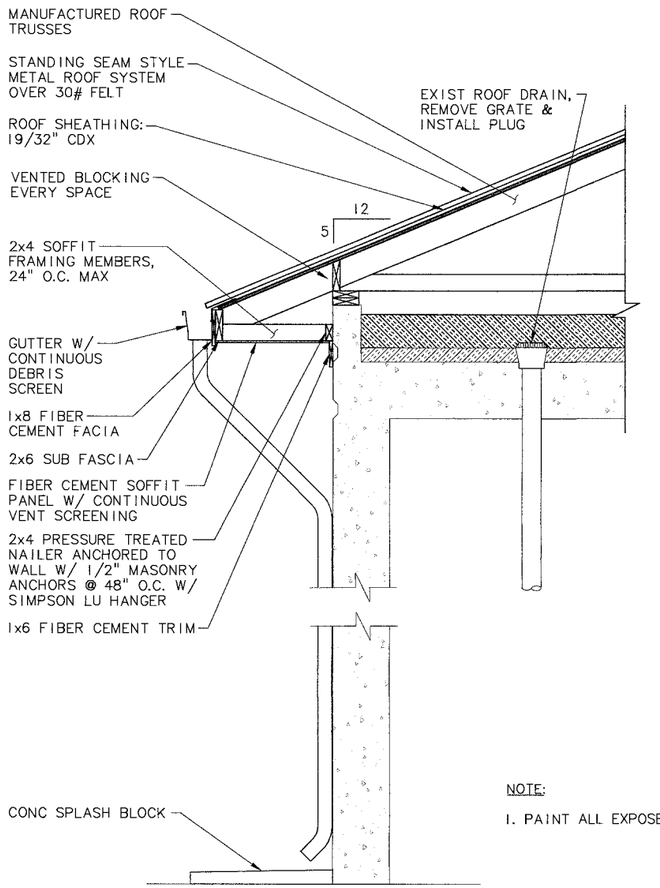
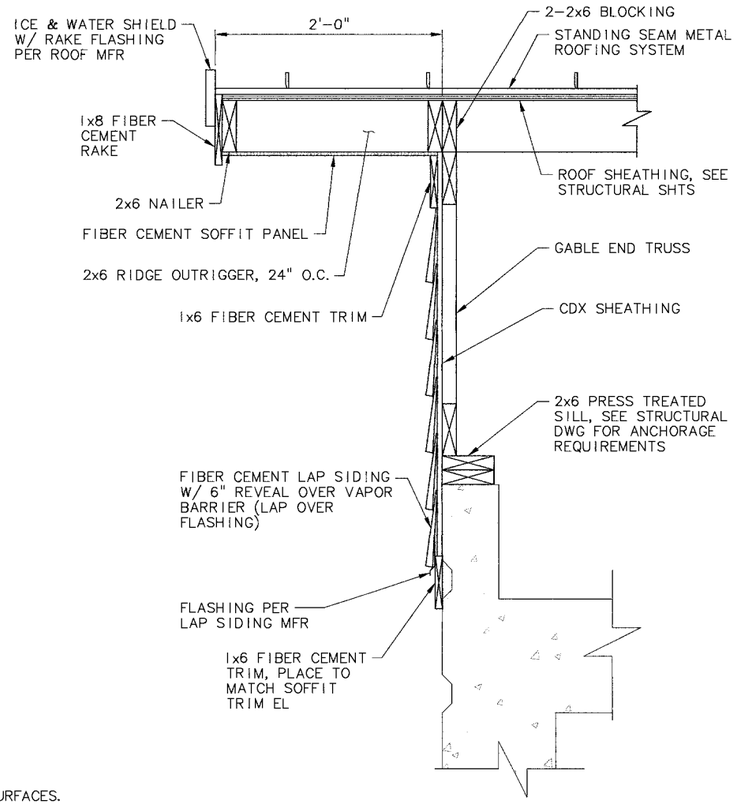


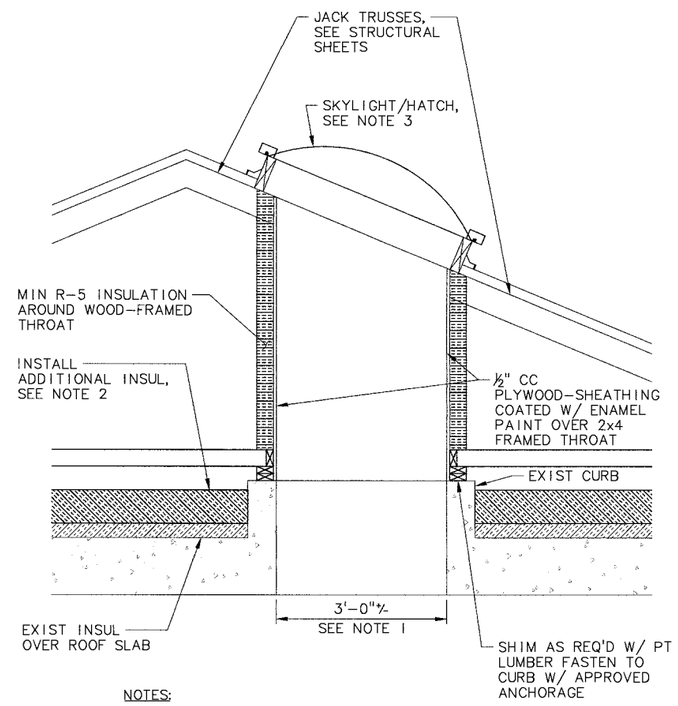
NOTE:

1. PAINT ALL EXPOSED SURFACES.

SECTION A / A-B2
SCALE: 3/4"=1'-0"



GABLE END DETAIL 1 / —
SCALE: 1 1/2"=1'-0"



NOTES:

1. VERIFY ALL EXISTING ROOF LAYOUT AND COMPONENTS DIMENSIONS.

2. LOOSE FILL CELLULOSE OR PERLITE INSULATION OVER EXISTING INSULATED ROOFING TO MEET CURRENT OEESC REQUIREMENTS.

3. PROVIDE AND INSTALL SKYLIGHT HATCH TO ALLOW CLEARANCE OF PUMP ASSEMBLY THROUGHOUT ENTIRE ACCESS OPENING.

PUMP ACCESS SKYLIGHT 2 / A-B1
SCALE: 3/4"=1'-0"

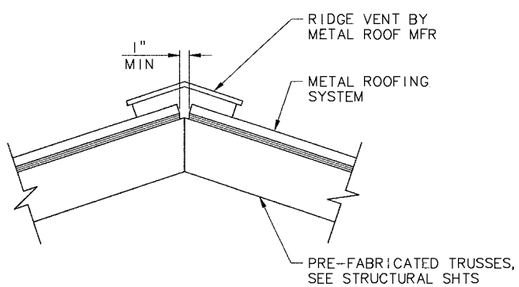
LOUVER SCHEDULE

TAG	TYPE	SIZE	CFM	MAKE & MODEL NO
L-1	PENTHOUSE, EXHAUST	36"X36"	4750	GREENHECK – WRH
L-2	PENTHOUSE, EXHAUST	36"X36"	4750	GREENHECK – WRH
L-3	PENTHOUSE, EXHAUST	18"X18"	1120	GREENHECK – WRH

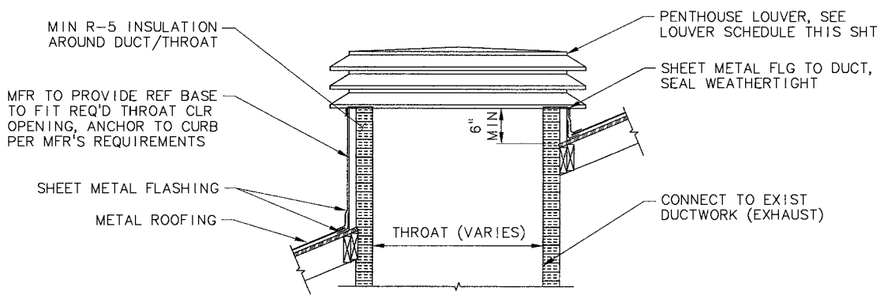
LOUVER SCHEDULE NOTES:

1. EQUIPMENT MANUFACTURERS AND MODEL NUMBERS PROVIDED AS BASIS OF DESIGN. APPROVED EQUAL MANUFACTURERS EQUIPMENT WILL BE CONSIDERED.

2. LOUVER SIZES GIVEN ARE FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED PRIOR TO ORDERING OR FABRICATION OF EQUIPMENT. HVAC CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO VERIFY SIZES AND LOCATIONS OF OPENINGS.



ROOF RIDGE 3 / A-B2
SCALE: 1 1/2"=1'-0"



PENTHOUSE LOUVER CURB DETAIL 4 / A-B1
SCALE: 3/4"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: AMB
DRAWN: DKH
CHECKED: JSJ
APPROVED: JSJ

SHEET A-B3
59 of 167

REGISTERED PROFESSIONAL ENGINEER 79401 OREGON ALEX M. BARGNESS
RENEWS 12-31-15

SCALE
VERT: AS SHOWN
HORIZ: AS SHOWN
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: ARCHITECTURAL DETAILS - 1

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

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PUMP STATION STRUCTURAL SHEETS:

S–B1 GENERAL STRUCTURAL NOTES
S–B2 BUILDING PLAN, SECTION AND DETAILS

PUMP STATION GENERAL STRUCTURAL NOTES:

1. THESE NOTES ARE GENERAL IN NATURE AND ARE INTENDED TO SET MINIMUM STANDARDS FOR CONSTRUCTION. THE CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH THE CONTRACT DOCUMENTS AND HAVE A COPY OF THEM ON SITE AT ALL TIMES.
2. ALL WORK SHALL BE IN STRICT CONFORMANCE WITH THE 2012 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC). ALL BUILDING ELEMENTS AND COMPONENTS NOT SPECIFICALLY DETAILED IN THESE STRUCTURAL CONSTRUCTION DOCUMENTS SHALL BE FABRICATED AND CONSTRUCTED IN ACCORDANCE WITH THE MINIMUM STANDARDS CONTAINED IN CHAPTER 2308 OF THE 2012 IBC AS AMENDED BY THE STATE OF OREGON.
3. FOR ANY PORTION OF THE CONSTRUCTION WHICH THE CONTRACTOR IS UNABLE TO ASCERTAIN THE REQUIRED CONSTRUCTION OR WHERE CONFLICTS EXIST, IT IS THE CONTRACTOR'S RESPONSIBILITY TO REQUEST ADDITIONAL INFORMATION (RFIs) AND/OR CLARIFICATIONS BEFORE CONSTRUCTION.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS BEFORE CONSTRUCTION. THE ARCHITECT AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
5. THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE. METHODS, PROCEDURES, AND SEQUENCE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
6. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LIVE LOAD FOR THE STRUCTURE. PROVIDE SHORING AND/OR BRACING WHERE LOADS EXCEED DESIGN CAPACITY AND WHERE STRUCTURES HAVE NOT ATTAINED DESIGN STRENGTH.
7. CLADDING, WATERPROOFING, AND ARCHITECTURAL FEATURES ARE BY ARCHITECT AND ARE OUTSIDE THE SCOPE OF THIS WORK. ANY DEPICTION OF SUCH FEATURES ON THE STRUCTURAL DRAWINGS ARE NOT INTENDED TO BE USED FOR CONSTRUCTION. REPRESENTATION OF SUCH FEATURES ON THESE DRAWINGS MAY OR MAY NOT BE ACCURATE. REFER TO ARCHITECTURAL DRAWINGS AND/OR SPECIFICATIONS.

DESIGN LOADS: PER 2012 IBC & 2014 OSSC

1603.1.2 – ROOF LOADS:
- DEAD LOAD ..... 15 PSF (SHEATHING, TRUSSES, SUPER IMPOSED DL)
- LIVE LOAD ..... 20 PSF (REDUCIBLE)

1603.1.3 – SNOW LOADS:
- GROUND SNOW LOAD, Pg ..... 20 PSF
- SNOW EXPOSURE FACTOR, Ce 1.0
- SNOW LOAD IMPORTANCE FACTOR, Is ..... 1.2, CATEGORY IV
- THERMAL FACTOR, Ct 1.2
- FLAT ROOF SNOW LOAD, Pf ..... 25 PSF MINIMUM

1603.1.4 – WIND DESIGN CRITERIA:
- ULTIMATE DESIGN WIND SPEED, Vult ..... 130 MPH
- NOMINAL DESIGN WIND SPEED, Vasd ..... 100 MPH
- RISK CATEGORY IV
- WIND EXPOSURE ..... EXPOSURE C
- INTERNAL PRESSURE COEFFICIENT ..... ±0.18 (DIRECTIONAL PROCEDURE, ASCE 7–10 CH. 27)

1603.1.5 – EARTHQUAKE DESIGN CRITERIA:
- RISK CATERGORY IV
- SEISMIC IMPORTANCE FACTOR, Ie 1.5
- MAPPED SPECTRAL RESPONSE FACTORS
  - Ss 0.948g
  - S1 ..... 0.408g
- SITE CLASS ..... D
- DESIGN SPECTRAL RESPONSE FACTORS
  - Sds 0.708g
  - Sd1 ..... 0.433g
- SEISMIC DESIGN CATERGORY ..... D
- ANALYSIS PROCEDURE ..... NON–STRUCTURAL COMPONENTS (ASCE 7–10 CH. 13)
- ARCHITECTURAL COMPONENT TYPE ..... HIGH DEFORMABILITY, FLEXIBLE COMPONENTS
- COMPONENT AMPLIFICATION FACTOR, ap 2.5
- COMPONENT RESPONSE MODIFICATION FACTOR, Rp 3.5
- SEISMIC RESPONSE COEFFICIENT, Fp 0.910Wp

MANUFACTURED ROOF TRUSSES:

1. MANUFACTURED ROOF TRUSSES SHALL BE AT 24" MAX. CENTERS AND SHALL HAVE A MINIMUM OF A 2x6 TOP CHORDS FOR WOOD TRUSSES.
2. TRUSSES SHALL BE DESIGNED FOR SPECIFIED ROOF LOADS. STRUCTURAL CALCULATIONS SHALL BE SEALED BY AN OREGON LICENSED PROFESSIONAL ENGINEER AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
3. MANUFACTURER SHALL PROVIDE BRACING, BLOCKING, HOLDOWNS, AND ALL ACCESSORIES REQUIRED FOR PROPER INSTALLATION.
4. SHOP DRAWINGS SHALL PROVIDE PLACING AND ERECTION DIRECTION TO INSTALLER. CALCULATIONS AND SHOP DRAWINGS SHALL USE COMMON IDENTIFYING MARKS TO FACILITATE SHOP DRAWING REVIEW.

PREMANUFACTURED CONNECTION HARDWARE:

1. CONNECTION HARDWARE IS BY THE SIMPSON COMPANY OF SAN LEANDRO, CA. ALL STEEL CONNECTORS SHALL BE GALVANIZED OR BY SOME METHOD MADE CORROSION RESISTANT, UNLESS OTHERWISE INDICATED.
2. PROVIDE BOLTED OR NAILED CONNECTIONS FOR THE MAXIMUM CAPACITY UNLESS NOTED OTHERWISE.
3. CONNECTORS IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE EITHER POST HOT–DIP GALVANIZED OR STAINLESS STEEL. FASTENERS SHALL BE OF THE SAME MATERIAL OR PROTECTIVE COATING AS THE CONNECTORS, DO NOT MIX DIFFERING METALS IN THE SAME CONNECTION.

SHEATHING:

1. WOOD STRUCTURAL PANELS SHALL BE APA RATED EXPOSURE 1 PLYWOOD AND MEET STANDARDS SET FORTH IN VOLUNTARY PRODUCT STANDARDS PS 1 AND PS 2, UNLESS NOTED OTHERWISE.
2. MINIMUM PANEL THICKNESS SHALL BE 15/32", OR AS INDICATED IN THESE PLANS. PARTICLEBOARD IS NOT PERMITTED.
3. MINIMUM NAILING IS 8d@6" AT PANEL EDGES AND 8d@12" IN THE FIELD. ALL NAILS SHALL BE COMMON OR GALVANIZED BOX NAILS. BLOCKING IS REQUIRED WHERE NOTED ON THE PLANS.

SOLID SAWN LUMBER:

1. STRUCTURAL LUMBER SHALL BE DOUGLAS FIR CONFORMING TO WWPA GRADING RULES.
2. MINIMUM GRADES, UNLESS NOTED OTHERWISE:

   STRUCTURAL JOISTS & PLANKS – #2
   BEAMS & STRINGERS – #2
   POSTS & TIMBERS – #2

3. NOTCHING IS NOT PERMITTED IN JOISTS, RAFTERS, BEAMS, LINTELS, COLUMNS, TRUSSES, AND BRACING MEMBERS.
4. PRESSURE TREATED LUMBER SHALL CONFORM TO THE AWPA AND SHALL BEAR THE QUALITY MARK OF AN ACCREDITED ALSC INSPECTION AGENCY. MINIMUM TREATING STANDARDS (RETENTION LBS./CU. FT) SHALL BE AS FOLLOWS:

APPLICATION	ACQ/ACZA	CA–B
ABOVE GROUND	0.25	0.10
GROUND CONTACT	0.40	0.21
FRESH WATER IMMERSION	0.40	0.21
IN GROUND (STRUCTURAL)	0.60	0.31
SILL PLATES	0.25	0.10

5. ALL LUMBER IN CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED WITH ACZA TO A MINIMUM RETENTION OF 0.25 POUNDS PER CUBIC FOOT BY ASSAY.
6. NAILING SHALL BE IN CONFORMANCE WITH THE 2012 IBC UNLESS NOTED OTHERWISE. FASTENERS FOR PRESERVATIVE–TREATED WOOD SHALL BE OF HOT–DIPPED ZINC–COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATING WEIGHTS FOR ZINC–COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A–153. 5/8–INCH DIAMETER STEEL ANCHOR BOLTS & LARGER NEED NOT BE GALVANIZED, UNLESS NOTED OTHERWISE.
7. PROVIDE STANDARD 3"x3"x¼" PLATE WASHERS UNDER ALL INTERMEDIATE ANCHOR BOLT HEADS AND NUTS AT THE SILL PLATE. USE STANDARD WASHERS FOR ALL OTHER BOLT HEADS AND NUTS IN CONTACT WITH WOOD.

SUBMITTALS:

THE CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL SUBMITTALS FOR APPROVAL, PRIOR TO CONSTRUCTION, FOR THE FOLLOWING ITEMS:

1. MANUFACTURED TRUSS SHOP DRAWINGS AND CALCULATIONS
2. SEISMIC ANCHORAGE AND BRACING REQUIREMENTS FOR ELECTRICAL/MECHANICAL EQUIPMENT AND PIPING

STRUCTURAL OBSERVATION REQUIREMENTS:

THE OWNER SHALL EMPLOY THE ENGINEER OF RECORD OR AN ALTERNATE OREGON LICENSED PROFESSIONAL ENGINEER, APPROVED BY THE ENGINEER OF RECORD, TO PERFORM STRUCTURAL OBSERVATIONS IN ACCORDANCE WITH SECTION 1704.5 OF THE INTERNATIONAL BUILDING CODE.

STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM BY A REGISTERED DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR ANY OTHER INSPECTION CRITERIA, INCLUDING SPECIAL INSPECTION, AS REQUIRED BY THE BUILDING OFFICIAL OR AS INDICATED WITHIN THE INTERNATIONAL BUILDING CODE.

DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER AND THE BUILDING OFFICIAL (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION). AT THE CONCLUSION OF THE STRUCTURAL WORK INCLUDED WITHIN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL AND THE OWNER (AND THE ENGINEER OF RECORD IF AN ALTERNATE ENGINEER IS USED FOR STRUCTURAL OBSERVATION) A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

THE CONTRACTOR SHALL MAKE AVAILABLE ALL MEANS AND METHODS NECESSARY FOR THE STRUCTURAL OBSERVER TO PERFORM THE REQUIRED STRUCTURAL OBSERVATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND STRUCTURAL OBSERVER A MINIMUM OF 48 HOURS BEFORE THE TIME AT WHICH THE SPECIFIED STRUCTURAL OBSERVATIONS MAY BE PERFORMED. IN ADDITION THE CONTRACTOR SHALL UPDATE THE STRUCTURAL OBSERVER OF THE CONSTRUCTION PROGRESS.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED FOR THE FOLLOWING AREAS OF WORK:

1. FOLLOWING THE INSTALLATION OF ALL ROOF FRAMING AND CONNECTIONS, PRIOR TO SHEATHING INSTALLATION
2. FOLLOWING THE COMPLETION OF ALL STRUCTURAL ELEMENTS CONTAINED HEREIN.

SPECIAL INSPECTIONS:

AN INDEPENDENT TESTING LABORATORY CHOSEN BY THE OWNER SHALL PROVIDE SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE AS OUTLINED IN TABLE 2 FOR THE STRUCTURAL SYSTEMS OUTLINED HEREIN. ALL OTHER ELEMENTS SHALL COMPLY WITH THE SPECIAL INSPECTION & TESTING REQUIREMENTS OF CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE.

THE TESTING AGENCY SHALL PROVIDE THE ENGINEER OF RECORD, THE OWNER, AND THE BUILDING OFFICIAL COPIES OF ALL RELEVANT TEST REPORTS AND SPECIAL INSPECTIONS.

INSPECTION/TESTING COMPANIES SHALL BE SUBMITTED TO, AND APPROVED BY, THE ENGINEER PRIOR TO COMMENCEMENT OF TESTING.

TABLE 2
REQUIRED STRUCTURAL SPECIAL INSPECTIONS

SYSTEM or MATERIAL	INSPECTION: IBC CODE REFERENCE	INSPECTION: CODE or STANDARD REFERENCE[a]	FREQUENCY[c]: Continuous	FREQUENCY[c]: Periodic	REMARKS
POST INSTALLED CONCRETE ANCHORS					
INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS[b].	TABLE 1705.3 1909.1	ACI 318: 3.8.6 ACI 318: 8.1.3 ACI 318: 21.1.8		X	SPECIAL INSPECTIONS APPLY TO ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, ADHESIVE EXPIRATION DATE, ANCHOR/ADHESIVE INSTALLATION, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE

POST–INSTALLED ADHESIVE CONCRETE ANCHORS:

1. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND WITH STRICT ADHERENCE TO THE PROVISIONS WITHIN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. AT THE TIME OF ANCHOR INSTALLATION, IN ACCORDANCE WITH ACI 318–11 SECTION D.2.2, ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS.

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(503) 292–1635 9/02/15

NO. | DATE | REVISION | BY
DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S–B1
60 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON NOV. 9, 2007 TRAVIS GREGORY
EXPIRES: 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE:
PUMP STATION GENERAL STRUCTURAL NOTES

Murray, Smith & Associates, Inc.
Engineers/Planners
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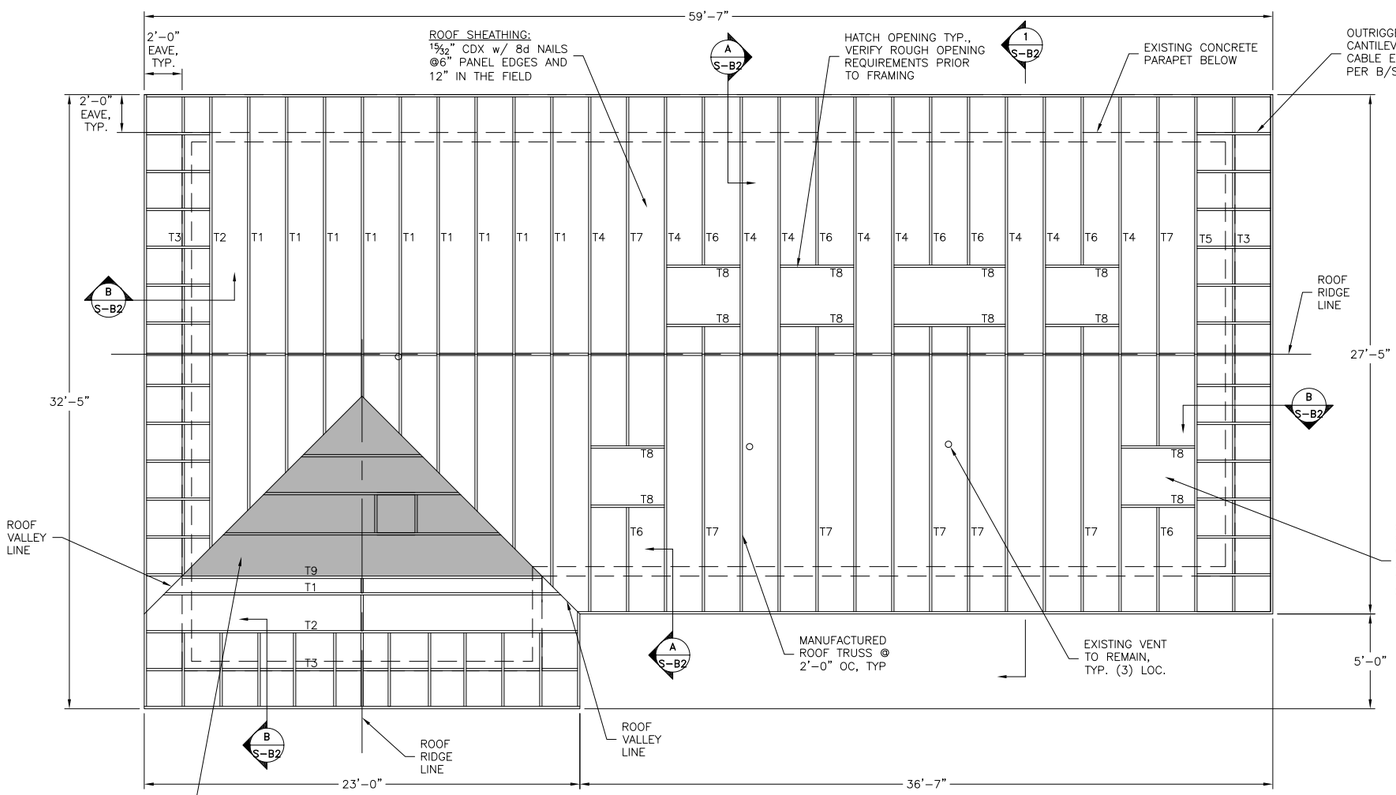
PHONE 503–225–9010
FAX 503–225–9022

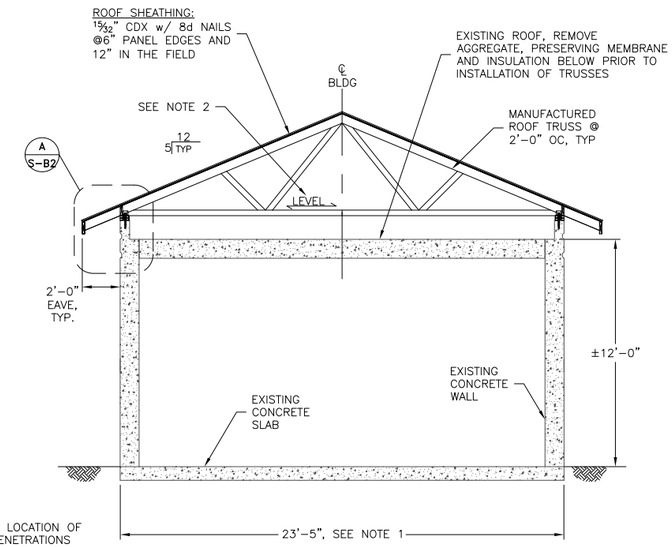
DATE: SEPTEMBER 2015

MSA PROJECT: 14–1586



ROOF FRAMING PLAN

1/4" = 1'-0"



TYPICAL SECTION

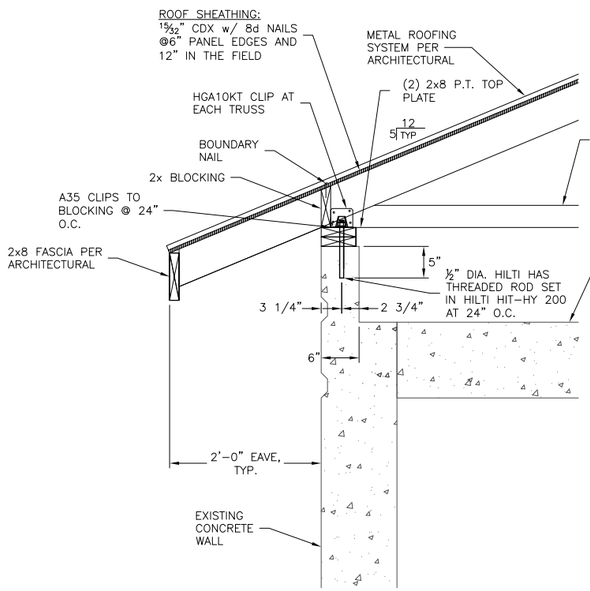
1/4" = 1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING DIMENSIONS PRIOR TO MANUFACTURING TRUSSES AND ROOF COMPONENT MODIFICATION.
2. ADD SHIMS AS REQUIRED TO ENSURE LEVEL INSTALLATION OF TRUSS.
3. SHIMS SHALL BE FULL WIDTH OF TOP PLATE AND EXTEND 3" PAST EDGE OF TRUSSES AND CAPABLE OF SUPPORTING TRUSS LOADS WITHOUT CRUSHING. SUBMIT PROPOSED SHIMS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

TRUSS SCHEDULE	
MARK	DESCRIPTION
T1	STANDARD TRUSS
T2	STANDARD TRUSS (MODIFIED)
T3	GABLE END TRUSS
T4	GIRDER TRUSS
T5	GIRDER TRUSS (MODIFIED)
T6	MONO TRUSS
T7	JACK TRUSS
T8	FLAT TRUSS
T9	GIRDER TRUSS

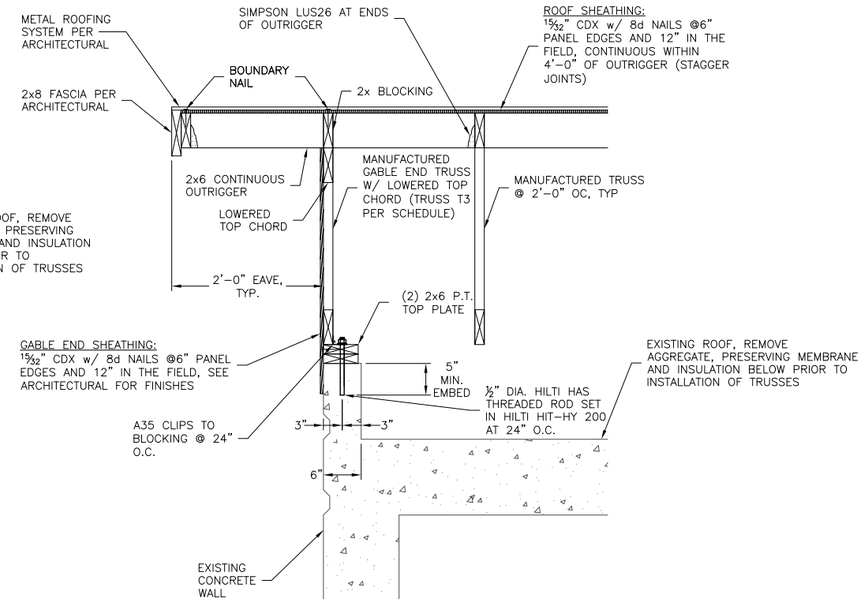
*SEE GENERAL NOTES ON SHEET S-B1 FOR MIN. TRUSS REQUIREMENTS



TYPICAL SIDEWALL DETAIL

A S-B2

1" = 1'-0"



GABLE END DETAIL

B S-B2

1" = 1'-0"

PSE
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NO.	DATE	REVISION	BY

DESIGNED: EWBP
DRAWN: EWBP
CHECKED: TGM
APPROVED: TGM

SHEET S-B2
61 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON NOV. 9, 2007 TRAVIS GREGORY
EXPIRES 12/31/16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

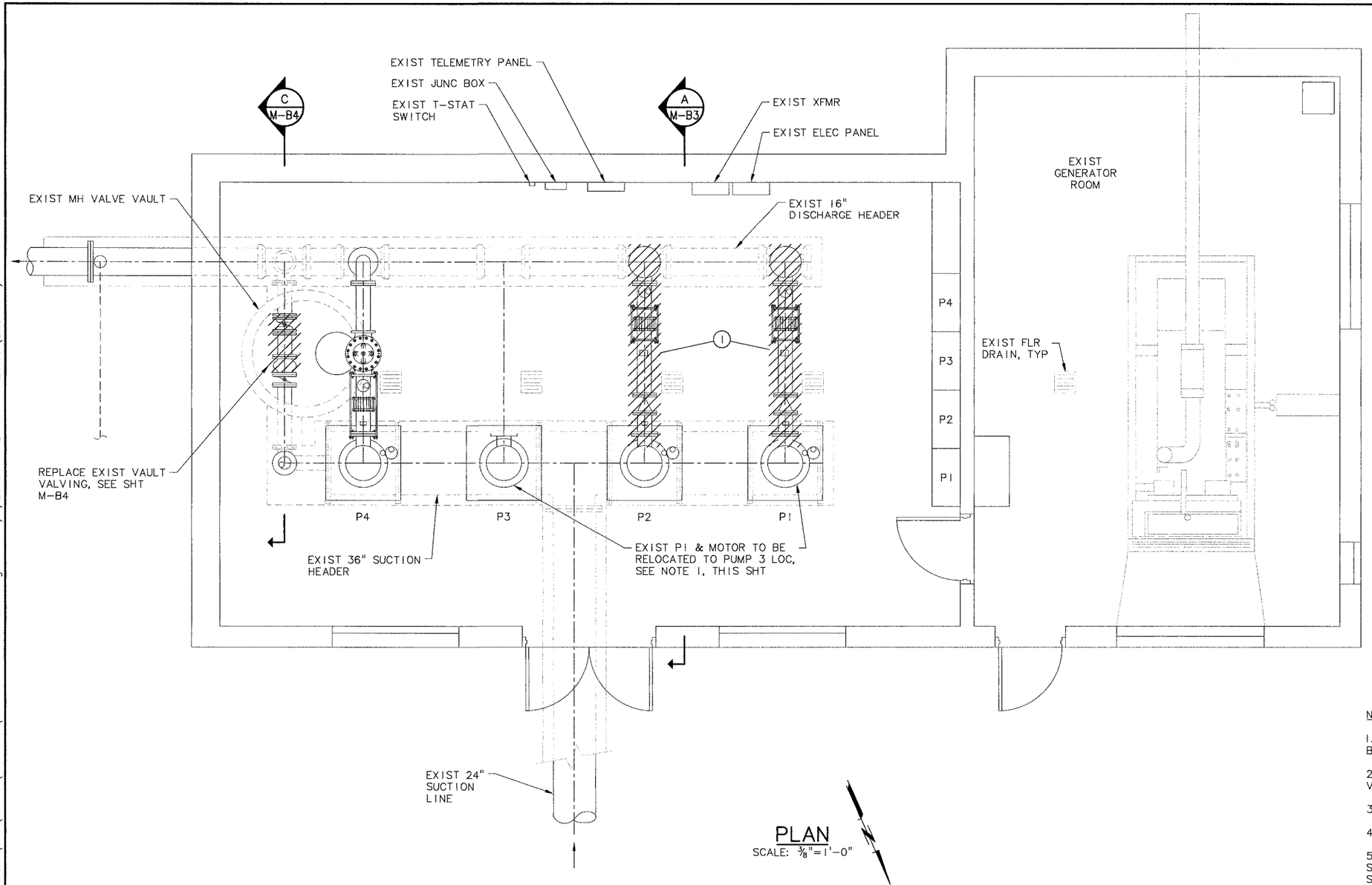
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
PUMP STATION BUILDING PLAN, SECTION AND DETAILS

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586



PLAN
SCALE: 3/8"=1'-0"

NOTES:

1. EXISTING 200 HP PUMP P1 AND MOTOR TO BE RELOCATED TO EMPTY P3 BARREL.

2. NEW 100 HP PUMP, MOTOR, PIPING, AND VALVES INSTALLED IN P1 LOCATION.

3. PUMPS P2 AND P4 TO REMAIN AS-IS.

4. P4 PIPING AND VALVES TO REMAIN AS-IS.

5. SEE SECTION 01015 OF THE TECHNICAL SPECIFICATIONS FOR PUMP STATION WORK SEQUENCE AND CONSTRAINTS.

KEY NOTES

(1) REMOVE AND DISPOSE EXIST DISCHARGE VALVES, PIPES, AND FITTINGS, INCLUDING ANGLE CONTROL VALVES

LEGEND

REMOVE ALL HATCHED FEATURES AS REQUIRED FOR PUMP AND PIPING IMPROVEMENTS

BY | REVISION | NO. | DATE

SHEET M-B1 62 of 167

DESIGNED: DAM
DRAWN: DKH
CHECKED: JSJ
APPROVED: JSJ

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 10, 1987 JEFFREY S. SONES
RENEWS 6-30-17

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
EXISTING PUMP STATION DEMOLITION PLAN

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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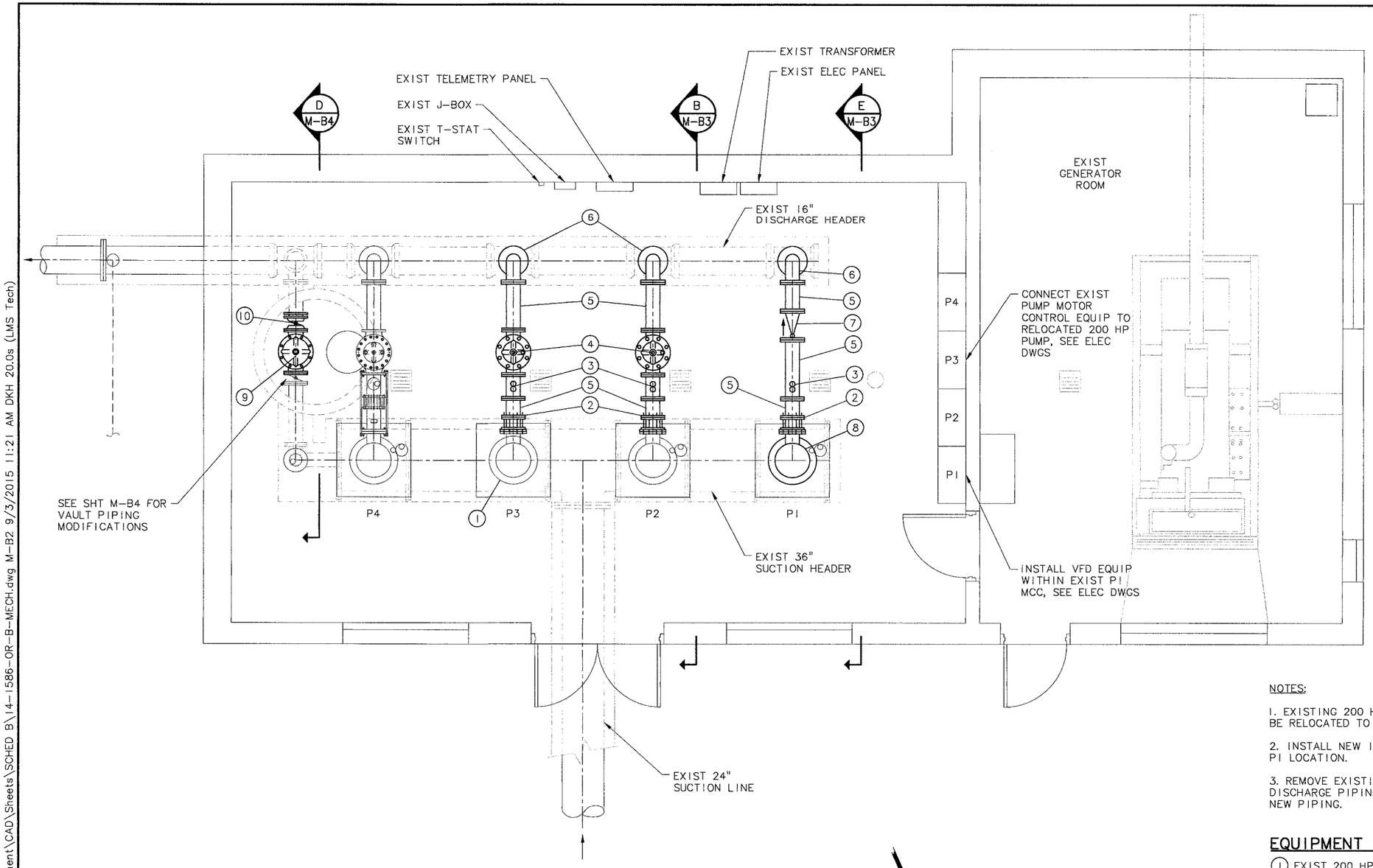

PLAN
SCALE: 3/8"=1'-0"

NOTES:

1. EXISTING 200 HP PUMP P1 AND MOTOR TO BE RELOCATED TO EMPTY P3.

2. INSTALL NEW 100 HP PUMP AND MOTOR TO P1 LOCATION.

3. REMOVE EXISTING BLIND FLG ON P3 DISCHARGE PIPING PRIOR TO INSTALLING NEW PIPING.

EQUIPMENT SCHEDULE

1. EXIST 200 HP PUMP & MOTOR, RELOCATED FROM P1 LOCATION
2. 8" DISMANTLING JOINT
3. AIR RELEASE VALVE
4. 8" PUMP CONTROL VALVE
5. 8" SPL, FLG, LENGTH AS REQ'D
6. 8" 90° BEND, FLG
7. 8" SILENT CHKV, FLG
8. PROPOSED PUMP & 100 HP MOTOR W/ 90° TURNING VANE, SEE SPECS
9. 8" RED PORT SURGE ANTICIPATOR VALVE
10. 8" BFV, MJxFLG

BY | REVISION | NO. | DATE

DESIGNED: D.A.M
DRAWN: D.K.T
CHECKED: J.S.J
APPROVED: J.S.J

SHEET M-B2
63 of 167

REGISTERED PROFESSIONAL ENGINEER 18547 OREGON JEFFREY S. JONES
RENEWS 6-30-17

SCALE | VERT: AS SHOWN | HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **PROPOSED PUMP STATION PLAN**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-0022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

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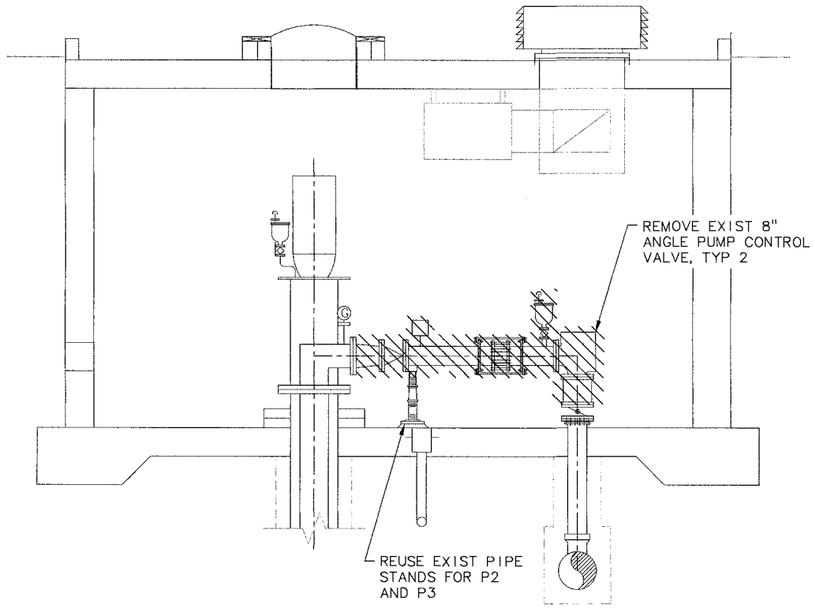


EXISTING SECTION – PUMPS P1 AND P2 (A / M-B1)
SCALE: 3/8"=1'-0"

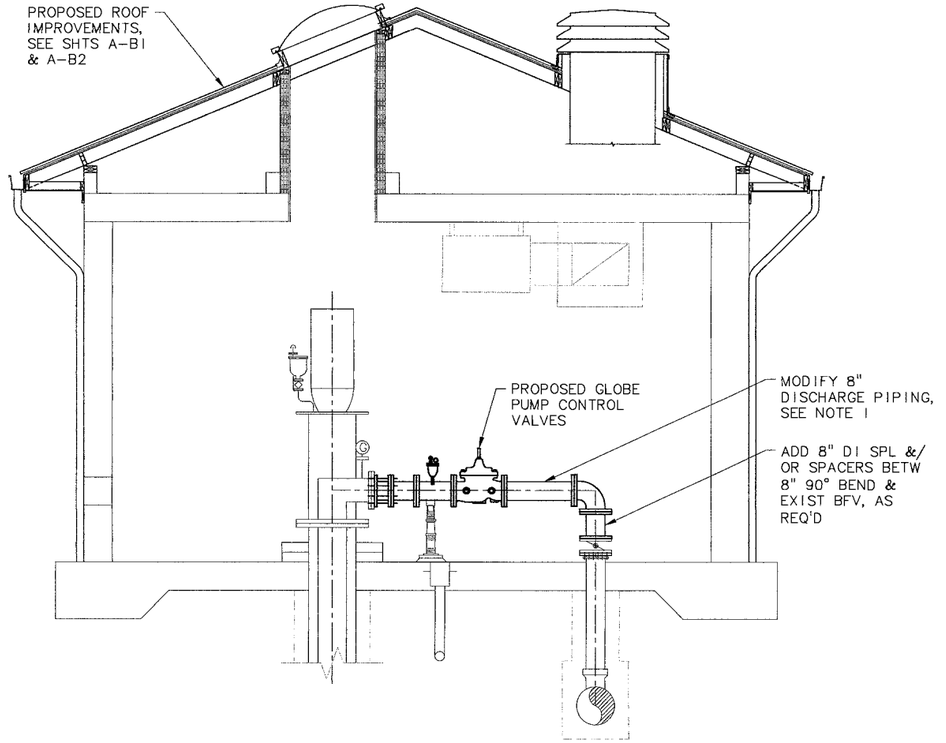
LEGEND

REMOVE ALL HATCHED FEATURES AS REQUIRED FOR PUMP AND PIPING IMPROVEMENTS

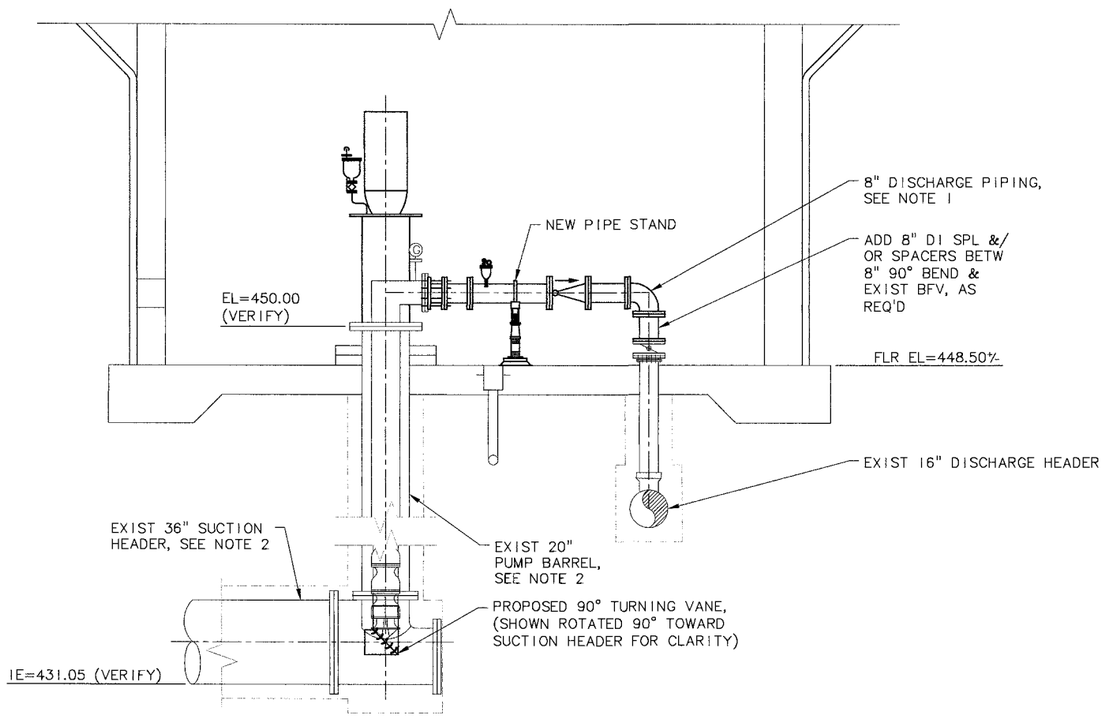
SHEET NOTES:

1. SEE SHEET M-B2 FOR DISCHARGE PIPING EQUIPMENT SCHEDULE.

2. DURING EXISTING PUMP 1 RELOCATION TO PUMP 3 SHUTDOWN, CONTRACTOR SHALL CONFIRM VERTICAL DIMENSIONS WITHIN PUMP 1 PUMP BARREL, SEE SPECIFICATIONS FOR PUMP WORK STAGING.



PROPOSED SECTION – PUMPS P2 AND P3 (B / M-B2)
SCALE: 3/8"=1'-0"



PROPOSED SECTION – PUMP 1 (E / M-B2)
SCALE: 3/8"=1'-0"

NO.	DATE	REVISION	BY

DESIGNED: DAM
DRAWN: DKT
CHECKED: JSJ
APPROVED: JSJ

SHEET M-B3 64 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JEFFREY S. JOHNSON 10542 RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **EXISTING & PROPOSED PUMP STATION SECTION VIEWS - 1**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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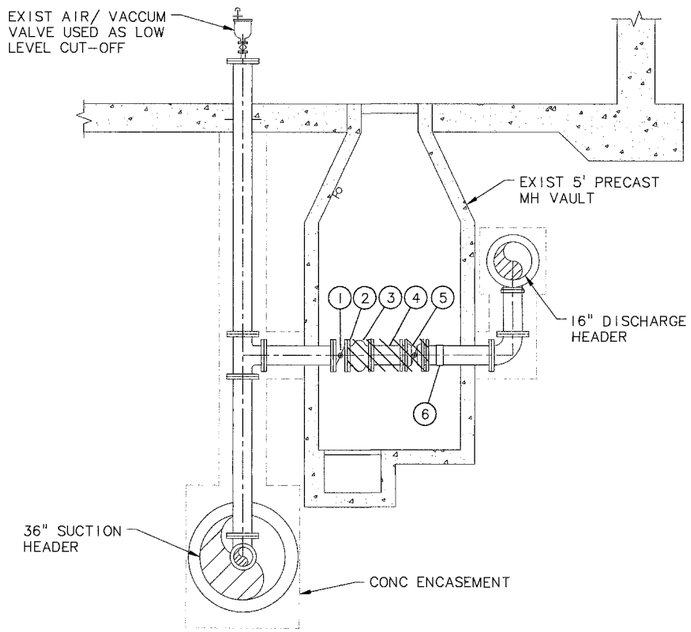


MATERIAL LIST

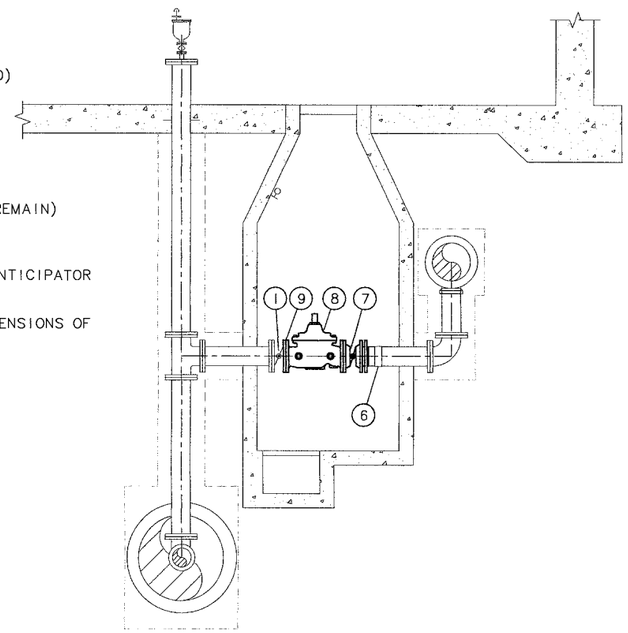
1. EXIST 8" BFV, FLG (TO REMAIN)
2. EXIST 1" SPACER (TO BE RE-USED AS REQ'D)
3. EXIST 8" CHKV (TO BE REMOVED)
4. EXIST 8" DI SPL, FLGxPE (TO BE REMOVED)
5. EXIST 8" BFV, MJxMJ (TO BE REMOVED)
6. EXIST PRESS TRANSMITTER & SADDLE (TO REMAIN)
7. 8" BFV, MJxFLG
8. 8" REDCED-PORT, PRESS RELIEF & SURGE ANTICIPATOR VALVE, CLA-VAL MODEL 652-03
9. SPACERS AS NEEDED TO MAKE OVERALL DIMENSIONS OF NEW VALVES FIT, SEE NOTE 1

LEGEND

REMOVE ALL HATCHED FEATURES AS REQUIRED FOR PUMP AND PIPING IMPROVEMENTS

NOTES:

1. VERIFY DISTANCE BETWEEN EXISTING 8" BUTTERFLY VALVE (FLANGE) AND EXISTING 8" PLAIN END SPOOL. INSTALL SPACERS AS REQUIRED BETWEEN BUTTERFLY VALVE AND CLA-VAL TO MAKE NEW VALVING LAYOUT FIT WITHIN AVAILABLE DIMENSIONS.

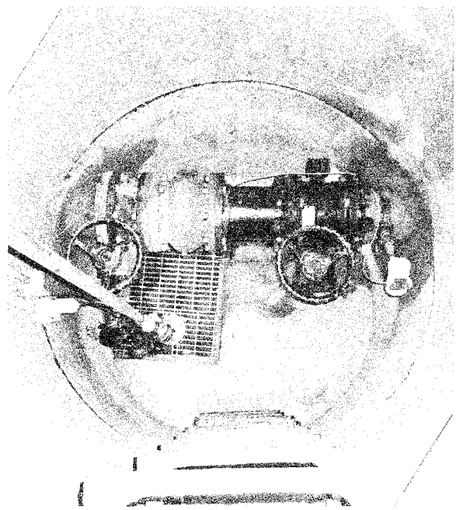


EXISTING SECTION (C / M-B1)

SCALE: 3/8"=1'-0"

PROPOSED SECTION (D / M-B2)

SCALE: 3/8"=1'-0"



PLAN VIEW – EXISTING MANHOLE

NO.	DATE	REVISION	BY

DESIGNED: DAM
DRAWN: DKH
CHECKED: JSJ
APPROVED: JSJ

SHEET M-B4
65 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JEFFREY S. JONES 1982 RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
EXISTING & PROPOSED PUMP STATION SECTION VIEWS - 2

Murray, Smith & Associates, Inc.
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PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

ELECTRICAL LEGEND

- WALL MOUNTED LUMINAIRE
- SURFACE MOUNTED FLUORESCENT LUMINAIRE
- WALL SWITCH
- KEY OPERATED SWITCH
- TIMER SWITCH
- OUTLET – DATA
- SECURITY CAMERA
- DUPLEX RECEPTACLE–NORMAL, GROUND FAULT INTERRUPTING
- CONNECTION TO SPECIAL EQUIPMENT OR OUTLET AS SHOWN
- MOTOR OUTLET, HORSEPOWER INDICATED.
- DISCONNECT SWITCH, RATING SHOWN
- ELECTRICAL EQUIPMENT
- JUNCTION BOX
- HOME RUN, ELECTRICAL PANEL DESTINATION SHOWN.
- CONDUIT CONCEALED UNDERFLOOR OR UNDERGROUND.*
- CONDUIT CONCEALED IN WALL OR ABOVE CEILING IN FINISHED AREAS, EXPOSED IN PROCESS AND EQUIPMENT AREAS.*

*NOTES:

1. RUNS MARKED WITH CROSS–HATCHES INDICATE NUMBER OF NO. 12 WIRE. LARGER GAUGES ARE SHOWN OR NOTED ELSEWHERE. LONG CROSS HATCH INDICATES NEUTRAL, REVERSE SLANT INDICATES GREEN GROUND WIRE.
2. FOR UNMARKED CONDUIT RUNS, CONTRACTOR SHALL INSTALL REQUIRED NUMBER OF WIRES FOR POWER AND/OR CONTROL OF ELEMENTS IN CIRCUIT(S) SHOWN. SIZE OF WIRE SHALL BE NO. 12, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
4. ALL LIGHTING SWITCH RUN CONDUIT SHALL BE CALCULATED FOR A FUTURE NEUTRAL CONDUCTOR

- THERMAL MAGNETIC CIRCUIT BREAKER
- MAGNETIC ONLY CIRCUIT BREAKER (MOTOR CIRCUITS ONLY) CONTINUOUS CURRENT RATING AND TRIP SETTINGS SHOWN
- FUSE
- ETHERNET DATA CONNECTION (DUPLEX RJ45)
- DRAWING NOTE
- ELECTRICAL CIRCUIT IDENTIFICATION – SEE SHEETS E–8, AND E–9
- MULTIPLE ELECTRICAL CIRCUITS, SEPARATE CONDUITS
- MULTIPLE ELECTRICAL CIRCUITS, COMMON CONDUIT (SIZE SHOWN)

- CURRENT TRANSFORMER
- TRANSFORMER
- GROUND CONNECTION PER NEC ARTICLE 250
- LINE OR LOAD REACTOR. % IMPEDANCE SHOWN.
- PUSH–TO–TEST PILOT LIGHT, COLOR INDICATED
- CONTROL RELAY OR CONTACTOR, DIODE SHOWN AT RIGHT
- RELAY CONTACTS
- SELECTOR SWITCH, 3 POS. SHOWN.
- PUSHBUTTON, OR SELECTOR SWITCH CONTACTS
- TEMPERATURE SWITCH OR T–STAT CONTACTS
- LIMIT SWITCH CONTACTS
- LEVEL SWITCH CONTACTS
- ELAPSED TIME METER
- POTENTIOMETER
- MOTION SENSOR OR PHOTOCELL
- SOLENOID VALVE

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
AFF	ABOVE FINISHED FLOOR
A.G.	ABOVE GRADE
ATS	AUTOMATIC TRANSFER SWITCH
BBTP	BLOWER BUILDING TELEMETRY PANEL
B.G.	BELOW GRADE
BLDG	BUILDING
BLU	BLUE
CAD	CAPTIVE AIR DEVICE
CB	CIRCUIT BREAKER
CGD	COMBUSTIBLE GAS DETECTOR
CHH	CONTROL HANDHOLE
CKT	CIRCUIT
CO	CONDUIT ONLY
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
E	EMERGENCY
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ETM	ELAPSED TIME METER
EXT	EXTERIOR
F, FU	FUSE
FLUOR	FLUORESCENT
FM	FLOW METER
FVNR	FULL VOLTAGE NON–REVERSING
G, GND	GROUND
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL CONDUIT
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND–OFF–AUTOMATIC
HP	HORSEPOWER
IC	INTERRUPTING CAPACITY, ISOLATION CONTACTOR
INT	INTERIOR
ISB	INTRINSICALLY SAFE BARRIER
J, JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY
KVA	KILO VOLT–AMP
KW	KILOWATT
LC	LIGHTING CONTACTOR
LCP	LIGHTING CONTROL PANEL
LB	LOAD BANK
LEL	LOWER EXPLOSIVE LIMIT
LOS	LOCK–OUT–STOP
LP	LIGHTING PANEL
MB	METER BASE
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MD	MAIN DISCONNECT
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTS	MANUAL TRANSFER SWITCH
N, NEUT	NEUTRAL
NEC	NATIONAL ELECTRIC CODE
NO	NUMBER
OC	OPERATION COUNTER
OL	OVERLOAD RELAY
ORN	ORANGE
PC	PHOTOCELL
PDP	PUMP DISCONNECT PANEL
PFR	PHASE FAIL RELAY
PH, ø	PHASE
PHH	POWER HANDHOLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PVC–RGS	PVC COATED RGS
RCPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RTM	RUN TIME METER
SF	SUPPLY FAN
SIM	SIMILAR
SPD	SURGE PROTECTOR DEVICE
SS	STAINLESS STEEL
SSPC	SMALL STATION PUMP CONTROLLER
SSRV	SOLIDE STATE REDUCED VOLTAGE STARTER
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
USLC	ULTRASONIC LEVEL CONTROLLER
V	VOLT
VA	VOLT–AMP
VFD	VARIABLE FREQUENCY DRIVE
VP	VAPOR PROOF
W	WATT, WIRE
WH	WATER HEATER
WP	WEATHERPROOF
XDCR	TRANSDUCER
XFMR	TRANSFORMER
XMTR	TRANSMITTER

NOTE: NOT ALL ABBREVIATIONS OR SYMBOLS USED.

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
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E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E–B1 66 of 167

REGISTERED PROFESSIONAL ENGINEER 13792 OREGON JULY 16, 1982 GREGG H. SCHOLZ EXPIRES: 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:47 PM

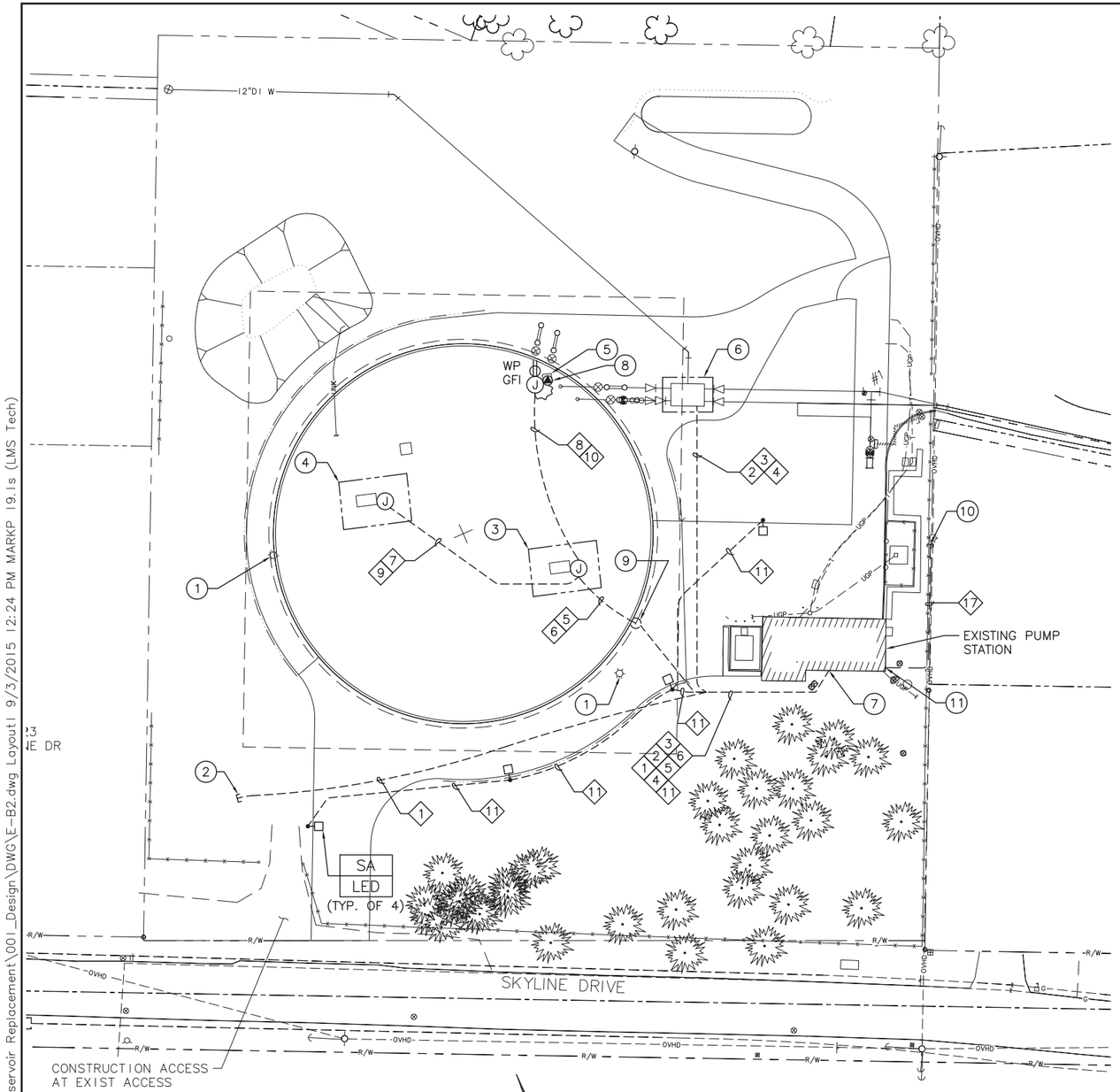
SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE: **ELECTRICAL LEGEND AND ABBREVIATIONS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

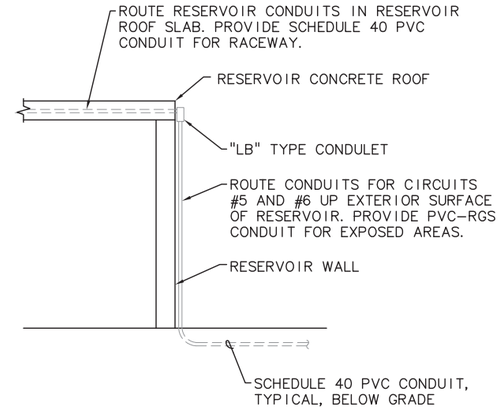
MSA PROJECT: 14–1586. DATE: SEPTEMBER 2015



PLAN
SCALE: 1"=30'

KEY NOTES

1. CONTRACTOR SHALL DEMOLISH AND DISPOSE OF EXISTING LIGHT AND LIGHT POLE.
2. CAP AND BURY CONDUIT WITH TRACER CABLE FOR FUTURE LOCATE.
3. PRIMARY RESERVOIR HATCH, SEE DETAIL 1/E-B3.
4. SECONDARY RESERVOIR HATCH, SEE DETAIL 2/E-B3.
5. OVERFLOW RESERVOIR HATCH.
6. VALVE VAULT, SEE DETAIL 3/E-B3.
7. STUB-UP CONDUITS ALONG EXTERIOR SOUTH WALL OF EXISTING PUMP STATION TO LB CONDULET FOR CONTINUATION INTO BUILDING. FIELD COORDINATE SPECIFIC STUB-UP LOCATION FOR POWER AND SIGNAL CONDUITS.
8. HATCH SECURITY INTRUSION SWITCH.
9. STUB RESERVOIR CONDUITS THRU SIDE WALL OF RESERVOIR NEAR RESERVOIR ROOF. ROUTE RESERVOIR CONDUITS ALONG INTERIOR CEILING OF RESERVOIR.
10. STUB-UP CONDUIT AT EXISTING POLE (CENTURYLINK #6035) FOR RELOCATION OF EXISTING PHONE LINE SERVICE. CONTRACTOR SHALL FIELD COORDINATE ALL CENTURYLINK REQUIREMENTS WITH CENTURYLINK REPRESENTATIVE PRIOR TO PERFORMING RELOCATION WORK.
11. TRANSITION CONDUIT INTO THE EXISTING PUMP HOUSE BUILDING AND CONTINUE TO THE TELEMETRY PANEL FOR TERMINATION. COORDINATE ALL TERMINATION REQUIREMENTS WITH TELEPHONE COMPANY AND I&C INTEGRATOR.



RESERVOIR CONDUIT DETAIL
NOT TO SCALE

LUMINAIRE SCHEDULE

FIXTURE TYPE	DESCRIPTION	LAMP TYPE	DRIVER	MANUFACTURER AND AND MODEL NUMBER	INPUT WATTS
'SA'	POLE MOUNTED LED LUMINAIRE, 40 LED LIGHT ENGINE, 700ma, 4000K, TYPE 3 DISTRIBUTION, FULL CUT OFF, ACRYLIC LENS, MULTI-VOLT DRIVER, DIE CAST ALUMINUM HOUSING. FINISH DARK BRONZE TO MATCH POLE,	LED 9268 LUMENS	ELECTRONIC DRIVER	LITHONIA LIGHTING: KAD LED SERIES	94W
POLES	20' SQUARE NON TAPERED ALUMINUM POLE. POLE TO WITHSTAND 100 MILE PER HOUR WINDS WITH 1.3 GUST FACTOR. DARK BRONZE FINISH			LITHONIA LIGHTING : SSA	
'A'	SURFACE MOUNTED LINEAR LED LUMINAIRE IN FIBERGLASS HOUSING WITH CLOSED CELL GASKET, STAINLESS STEAL LATCHES AND POLYCARBONATE LENSE. 120VAC, 3000 LUMEN, 2700K TEMPERATURE, UL LISTED FOR WET LOCATIONS.	LED 3000 LUMENS	ELECTRONIC DRIVER	LITHONIA LIGHTING : FEM4-3L LED	39W

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E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E-B2
67 of 167

REGISTERED PROFESSIONAL ENGINEER
13740
OREGON
JULY 16, 1981
GREGG H. SCHOLZ
EXPIRES 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:48 PM

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NOTICE
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PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

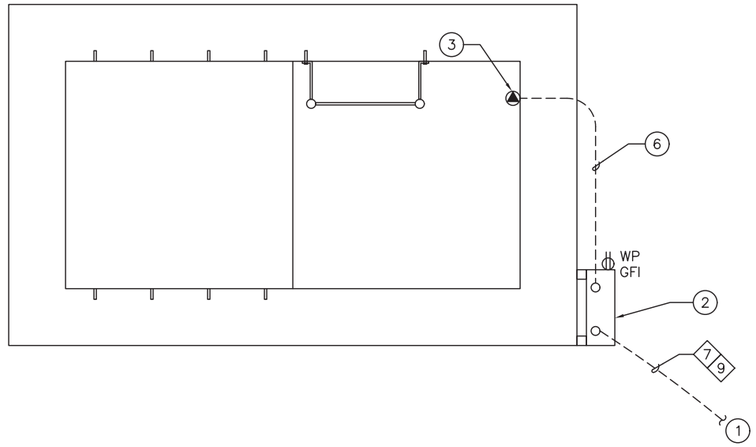
SHEET TITLE: **ELECTRICAL SITE PLAN**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586.

W:\WF\483_Murray Smith Assoc\086_Bolton Reservoir Replacement\001_Design\DWG\E-B2.dwg Layout! 9/3/2015 12:24 PM MARKP 19.ls (LMS Tech)



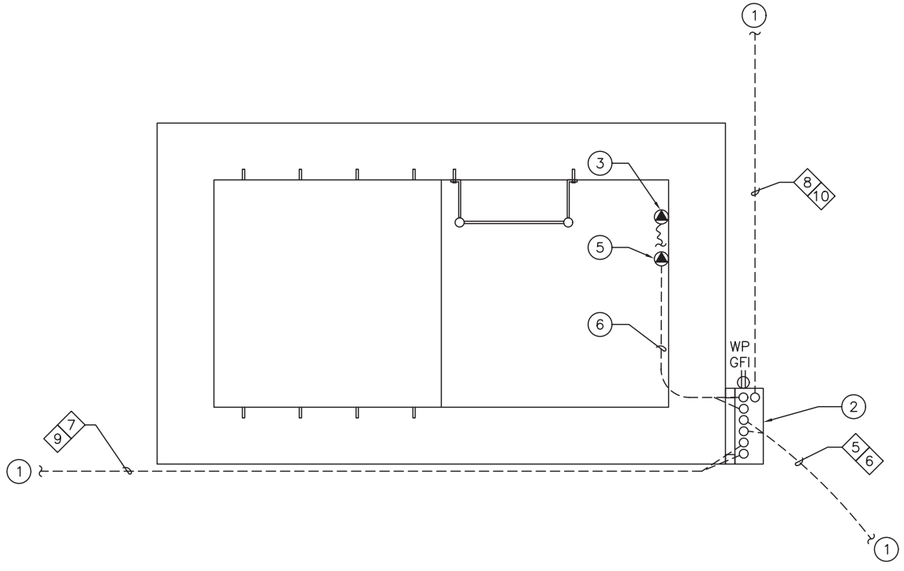
SECONDARY ROOF HATCH ELECTRICAL DETAIL (2 / E-B3)
NOT TO SCALE

KEY NOTES

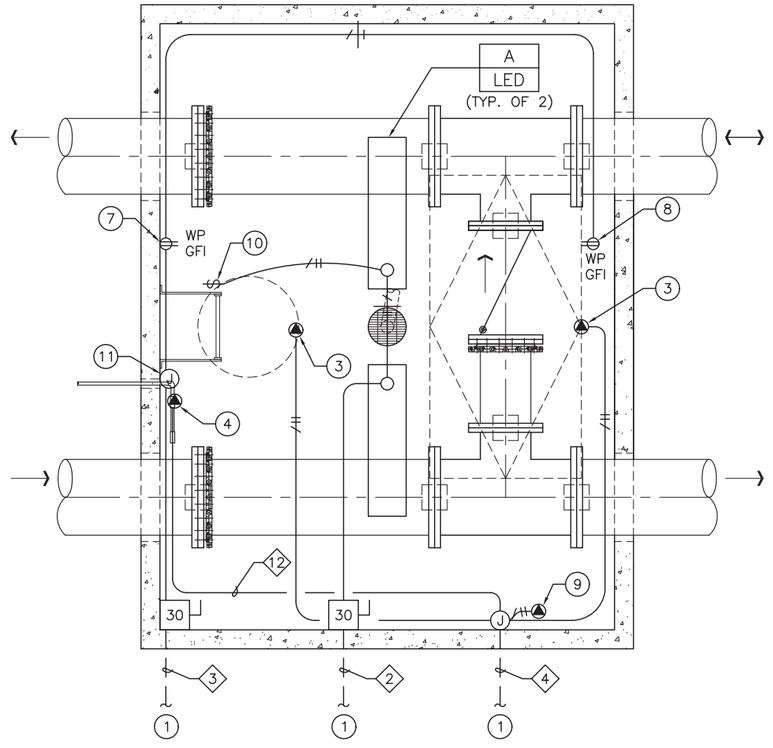
1. SEE CIRCUIT CONTINUATION ON SHEET E-B2.
2. NEMA 4 JUNCTION BOX MOUNTED ON GALVANIZED CHANNEL STRUT, 16"HX16"WX6"D, MINIMUM.
3. HATCH SECURITY INTRUSION SWITCH, TYPICAL.
4. RESERVOIR LEVEL TRANSDUCER.
5. RESERVOIR LEVEL FLOAT SWITCH.
6. PROVIDE 1" CONDUIT FROM RESERVOIR HATCH J-BOX TO APPROXIMATE LOCATION OF SENSOR DEVICES. PROVIDE CGB FITTING FOR CABLE PROTECTION.
7. MOUNT RECEPTACLE AT 18" AFF.
8. MOUNT RECEPTACLE TO CEILING OF VAULT, FLUSH WITH HATCH OPENING FOR DIRECT ACCESS TO RECEPTACLE FROM GROUND LEVEL.
9. VAULT FLOOD SWITCH.
10. MOUNT SWITCH AT CEILING OF VAULT NEAR MANHOLE ACCESS LADDER FOR DIRECT ACCESS TO SWITCH FROM GROUND LEVEL.
11. PROVIDE J-BOX WITH RECEPTACLE CIRCUIT ROUTED THROUGH IT FOR POWER CONNECTION OF HEAT TAPE. PROVIDE SELF REGULATED HEAT TAPE CABLE FOR PRESSURE SENSING WATER LINE FREEZE PREVENTION. INSTALL PER MANUFACTURER REQUIREMENTS. PROVIDE THERMON BSX-3, OR EQUAL.

GENERAL NOTES

A. SEE LUMINAIRE SCHEDULE ON SHEET E-B2 FOR TYPE 'A' LUMINAIRE DESCRIPTION.



PRIMARY ROOF HATCH ELECTRICAL DETAIL (1 / E-B3)
NOT TO SCALE



VALVE VAULT ELECTRICAL DETAIL (3 / E-B3)
NOT TO SCALE

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
9615 S.W. Allen Boulevard
Suite 107
Beaverton, Oregon 97005
Phone: (503) 726-3331
Fax: (503) 726-3326
E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E-B3 68 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 16, 1987 GREGG H. SCHOLZ
EXPIRES: 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:49 PM

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ELECTRICAL DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586. DATE: SEPTEMBER 2015

W:\WF\483_Murray Smith Assoc\086_Bolton Reservoir Replacement\001_Design\DWG\E-B3.dwg Layout1 9/3/2015 12:25 PM MARKP 19.ls (LMS Tech)

PANEL: EXISTING PBD-1 BUS: 225 A VOLTAGE: 120/240V, 1PH, 3 WIRE

FEEDER: SEE POWER RISER MAIN BRKR: 100A MCB MOUNTING: SURFACE

CKT NO.	CIRCUIT DESCRIPTION	CKT BREAKER POLES/AMPS	LOAD Type	Volt-Amps	PHASE	LOAD Volt-Amps	Type	CKT BREAKER POLES/AMPS	CIRCUIT DESCRIPTION	CKT NO.
1	INTERIOR LIGHTING PUMP RM	1-20	L		A			1-20	INTERIOR LIGHITNG GEN RM	2
3	INTERIOR LIGHTING PUMP RM	1-20	L		B			1-20	INTERIOR LIGHITNG GEN RM	4
5	RECEPTACLE PUMP RM	1-20	R		A			1-20	RECEPTACLES GEN RM	6
7	OUTDOOR LIGHTING	1-20	L	376	B			1-20	DAY TANK & REMOTE PUMPS	8
9	L-3, L-5 GEN RM	1-20	L		A			1-20	DAY TANK CHARGER IS 480V	10
11	L-1, L-2 PUMP RM	1-20	L		B			1-20	DIESEL SUPPLY TANK	12
13	SPARE	1-20			A			1-20	SPARE	14
15	SUMP PUMP P-5	1-20	M		B			1-20	SURGE SUPPRESSOR	16
17	SUMP PUMP P-6	1-20			A			1-20	SURGE SUPPRESSOR	18
19	TELEM CABINET RECEPTACLE	1-20			B			1-20	SPARE	20
21	RESERVOIR HATCH RCPTS	1-20	R	540	A			1-20	SPARE	22
23	VALVE VAULT LIGHTS	1-20	L	78	B			1-20	SPARE	24
25	VALVE VAULT RCPTS	1-20	R	360	A			1-20	SPARE	26
27	SPACE				B					28
29	SPACE				A					30
31	SPACE				B					32
33	SPACE				A					34
35	SPACE				B					36
37	SPACE				A					38
39	SPACE				B					40
41	SPACE				A					42

	CONNECTED LOAD		TOTAL LOAD
LOAD PER PHASE (VA)	A=	900	A=947
	B=	454	B=501
LOAD PER PHASE (AMPS)	A=	7.50	A=7.89
	B=	3.78	B=4.18
TOTAL LOAD (KVA)		1.35	1.45
SPARE CAPACITY	7.00%	0.09	DATE02-Sep-15

.....NOTES.....

1. NEW CIRCUITS AND LOADS ARE SHOWN IN BOLD.
2.
3.
4.
5.

CITY OF WEST LINN - BOLTON RESERVOIR REPLACEMENT
ELECTRICAL CIRCUIT SCHEDULE

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE DIAMOND SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
1	PUMP STATION (EXISTING PBD-1)	FUTURE STORAGE BLDG.	---	2"	PROVIDE PULL CORD FOR FUTURE USE.
2	PUMP STATION (EXISTING PBD-1)	VALVE VAULT (LIGHTING)	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1"	
3	PUMP STATION (EXISTING PBD-1)	VALVE VAULT (RCPT. POWER)	(1) #10 AWG, P (1) #10 AWG, N (1) #10 AWG, G	1"	
4	PUMP STATION (TELEMETRY PANEL)	VALVE VAULT (SIGNAL)	(1) #16 AWG, TSP (4) #14 AWG, C (1) #12 AWG, G	1" (2) 2", SP	PROVIDE (2) SPARE 2"C WITH PULL CORD FOR FUTURE INTEGRATION OF BFV.
5	PUMP STATION (EXISTING PBD-1)	PRIMARY HATCH J-BOX (RCPT. POWER)	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1"	CONTINUE CKT. IN CKT'S 9 & 10.
6	PUMP STATION (TELEMETRY PANEL)	PRIMARY HATCH J-BOX (SIGNAL)	(8) #14 AWG, C (1) #12 AWG, G	2" 2", SP	PROVIDE SPARE 2"C WITH PULL CORD FOR FUTURE USE. (4) #14 CONDUCTORS CONTINUE IN CKT'S 9 AND 10.
7	PRIMARY HATCH J-BOX (RCPT. POWER)	SECONDARY HATCH J-BOX (RCPT. POWER)	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1"	
8	PRIMARY HATCH J-BOX (RCPT. POWER)	OVERFLOW HATCH J-BOX (RCPT. POWER)	(1) #12 AWG, P (1) #12 AWG, N (1) #12 AWG, G	1"	
9	PRIMARY HATCH J-BOX (SIGNAL)	SECONDARY HATCH J-BOX (SIGNAL)	(2) #14 AWG, C (1) #12 AWG, G	1"	CONTINUED FROM PRIMARY HATCH J-BOX AND CKT #6.
10	PRIMARY HATCH J-BOX (SIGNAL)	OVERFLOW HATCH J-BOX (SIGNAL)	(2) #14 AWG, C (1) #12 AWG, G	1"	CONTINUED FROM PRIMARY HATCH J-BOX AND CKT #6.
11	PUMP STATION (EXISTING PBD-1)	SITE LIGHTING POLE LIGHTS	(1) #10 AWG, P (1) #10 AWG, N (1) #10 AWG, G	1"	
12	VALVE VAULT J-BOX	RESERVOIR PRESSURE TRANSDUCER	(1) #16 AWG, TSP (1) #12 AWG, G	3/4"	CONTINUED FROM CKT #4.
13	MCC (PUMP NO.1)	PUMP STATION (TELEMETRY PANEL)	(1) PROFINET CABLE (2) #14 AWG, C (1) #12 AWG, G	1"	
14	MCC (PUMP NO.1)	NEW PUMP NO.1	(1) #2/0 VFD CABLE (2) #14 AWG, C	---	REUSE EXISTING 3" CONDUIT. PROVIDE 3" LIQUID TIGHT METAL FLEX AS NECESSARY FOR CIRCUIT COMPLETION. PROVIDE BELDEN VFD CABLE, PART NO.29530 OR EQUIVALENT.
15	MCC (PUMP NO.3)	PUMP NO.3	(3) #350 KCMIL, P (2) #14 AWG, C (1) #4 AWG, G	---	REUSE EXISTING 3" CONDUIT. PROVIDE 3" LIQUID TIGHT METAL FLEX AS NECESSARY FOR CIRCUIT COMPLETION.
16	MCC (PUMP NO.3)	PUMP NO.3 FLOW CONTROL VALVE	(8) #14 AWG, C (1) #12 AWG, G	3/4"	REUSE EXISTING 3/4" CONDUIT. PROVIDE 3/4" LIQUID TIGHT METAL FLEX AS NECESSARY FOR CIRCUIT COMPLETION.
17	EXISTING POLE	TELEMETRY PANEL	---	2"	COORDINATE ALL REQUIREMENTS WITH TELCO REPRESENTATIVE PRIOR TO INSTALLATION. PROVIDE PULL CORD.
18	PUMP STATION (TELEMETRY PANEL)	INTRUSION SWITCH J-BOX	(6) #14 AWG, C (1) #12 AWG, G	1/2"	
19	INTRUSION SWITCH J-BOX	GENERATOR ROOM DOOR INTRUSION SWITCH	(2) #14 AWG, C (1) #12 AWG, G	1/2"	

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
9615 S.W. Allen Boulevard
Suite 107
Beaverton, Oregon 97005
Phone: (503) 726-3331
Fax: (503) 726-3326
E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO. | DATE | REVISION | BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E-B4 69 of 167

REGISTERED PROFESSIONAL ENGINEER 13747 OREGON JULY 16, 1982 GREGG H. SCHOLZ EXPIRES 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:49 PM

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ELECTRICAL CIRCUIT AND PANEL SCHEDULES**

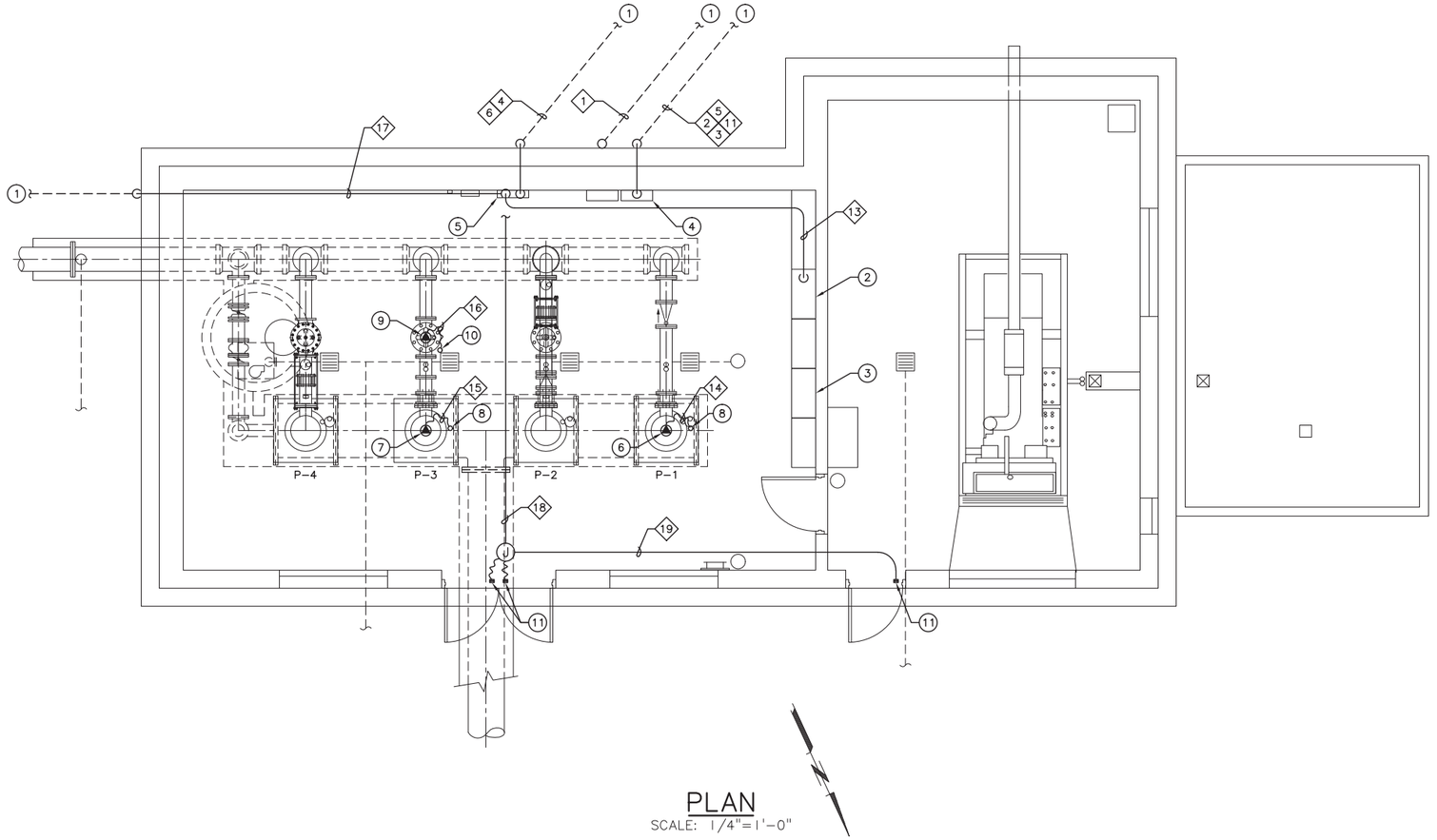
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586.

W:\WF\483_Murray Smith Assoc\086_Bolton Reservoir Replacement\001_Design\DWG\E-B4.dwg Layout1 9/3/2015 12:26 PM MARKP 19.1s (LMS Tech)

BOLTON RESERVOIR



PLAN
SCALE: 1/4"=1'-0"

KEY NOTES

1. SEE CIRCUIT CONTINUATION ON SHEET E-B2.
2. EXISTING PUMP NO. 1 MCC SECTION. REMOVE SECTION BACK PANEL INCLUDING ALL CONTROL AND STARTER COMPONENTS. SALVAGE ALL MATERIALS BACK TO OWNER. INSTALL NEW PUMP NO. 1 VFD AND CONTROL BACK PANEL.
3. EXISTING PUMP NO. 3 MOTOR STARTER AND CONTROLS. CONTRACTOR SHALL SALVAGE RELAYS FROM DEMOLISHED PUMP NO. 1 COMPONENTS TO REPLACE MISSING RELAYS FOR PUMP NO. 3 CONTROLS. FIELD VERIFY ALL REQUIRED COMPONENTS FOR PUMP NO. 3 NECESSARY FOR FUNCTIONAL OPERATION.
4. EXISTING 120/240V PANELBOARD PBD-1.
5. NEW TELEMETRY PANEL. CONTRACTOR SHALL REPLACE EXISTING TELEMETRY PANEL WITH NEW TELEMETRY PANEL AND RECONNECT ALL EXISTING WIRING PER THE NEW PANEL SCHEMATICS.
6. NEW PUMP NO. 1.
7. EXISTING PUMP NO. 1 RELOCATED TO THE PUMP NO. 3 POSITION.
8. EXISTING 3" CONDUIT. RE-USE EXISTING CONDUIT FOR NEW PUMP CONDUCTORS BETWEEN MCC AND PUMP. PROVIDE METAL FLEX CONDUIT AS NEEDED FOR CONNECTION TO MOTOR JUNCTION BOX.
9. NEW FLOW CONTROL VALVE.
10. EXISTING 3/4" CONDUIT. RE-USE EXISTING CONDUIT FOR NEW VALVE CONDUCTORS BETWEEN MCC AND VALVE. PROVIDE LIQUID TIGHT METAL FLEX CONDUIT AS NEEDED FOR EQUIPMENT CONNECTION.
11. INTRUSION SECURITY SWITCH.

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E-B5 70 of 167

REGISTERED PROFESSIONAL ENGINEER
13792
OREGON
JULY 16, 1982
GREGG H. SCHOLZ
EXPIRES: 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:50 PM

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

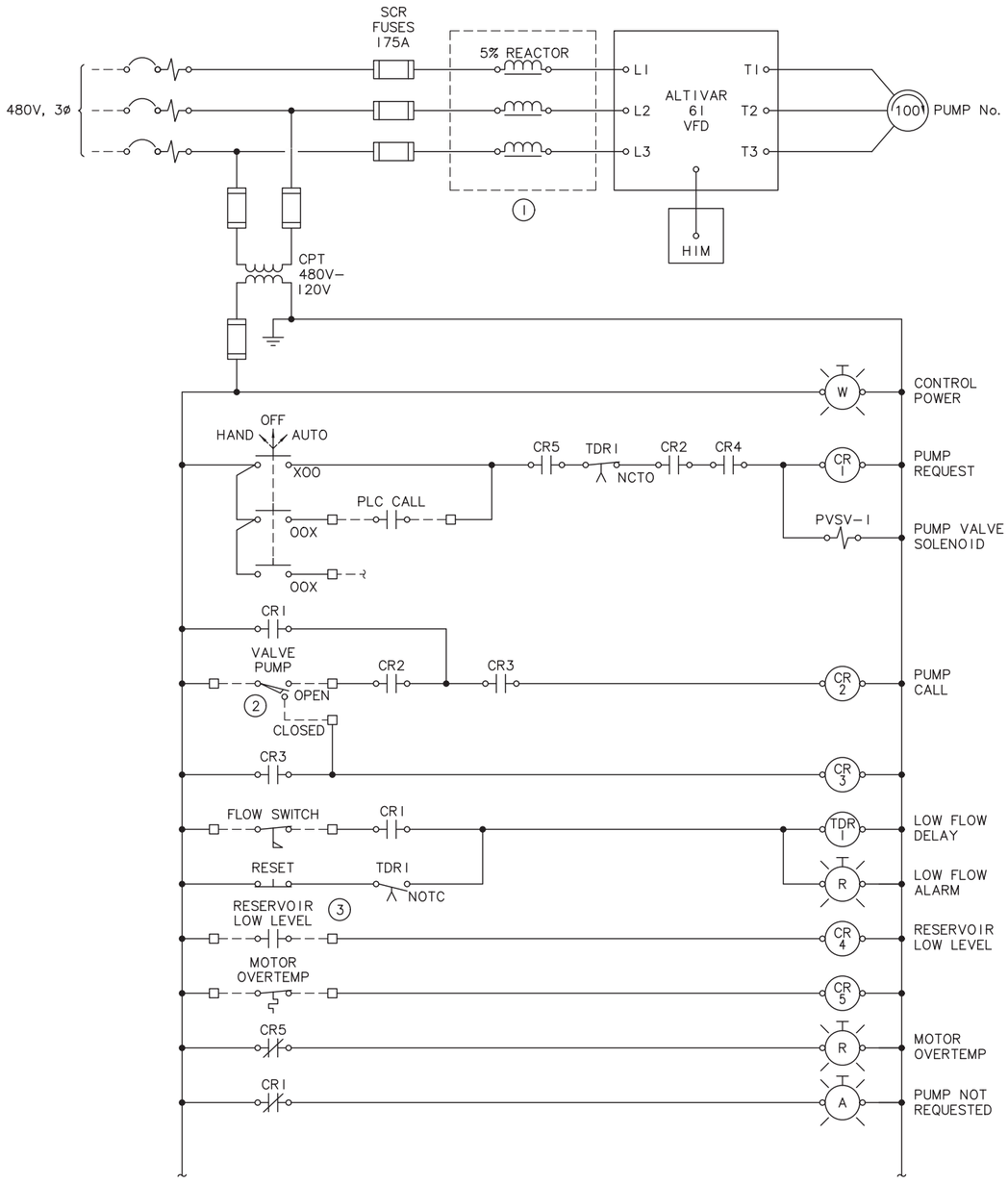
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
ELECTRICAL PLAN PUMP STATION

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
9615 S.W. Allen Boulevard
Suite 107
Beaverton, Oregon 97005
Phone: (503) 726-3331
Fax: (503) 726-3326
E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

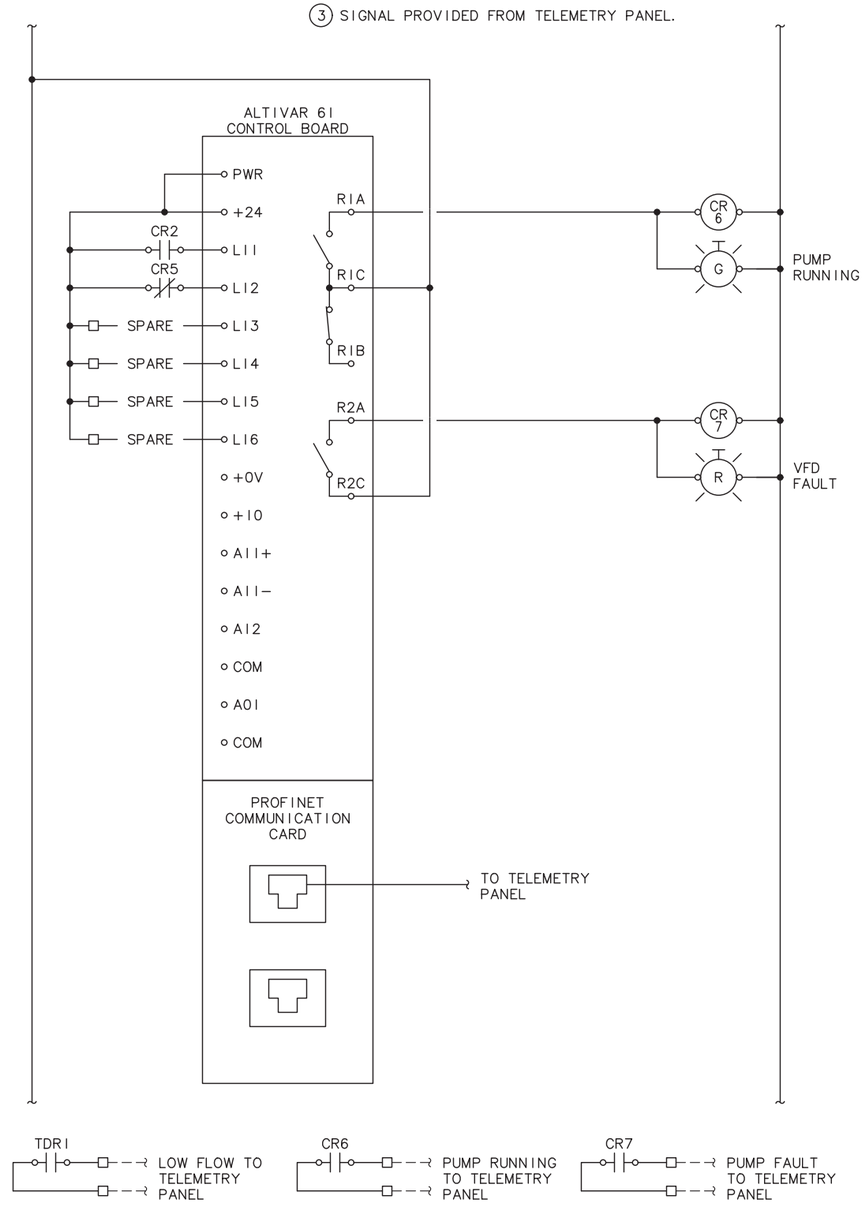
MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586. DATE: SEPTEMBER 2015



KEY NOTES

1. PROVIDE LINE REACTOR IN SEPARATE ENCLOSURE SUITABLE FOR MOUNTING ATOP THE EXISTING PUMP No. 1 MCC SECTION.
2. CONFIGURE VALVE LIMIT SWITCH ACTUATION SO THAT THE CLOSED POSITION ACTUATES WHEN THE VALVE IS FULLY SHUT AND THE OPEN POSITION ACTUATES AT APPROXIMATELY 25% OPEN. FIELD COORDINATE ALL SETTINGS WITH SYSTEMS INTEGRATOR AND CITY OPERATOR.
3. SIGNAL PROVIDED FROM TELEMETRY PANEL.



R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9615 S.W. Allen Boulevard
Suite 107
Beaverton, Oregon 97005
Phone: (503) 726-3331
Fax: (503) 726-3326
E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E–B6 71 of 167

REGISTERED PROFESSIONAL ENGINEER 13792 OREGON JULY 16, 1987 GREGG H. SCHOLZ EXPIRES 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:51 PM

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

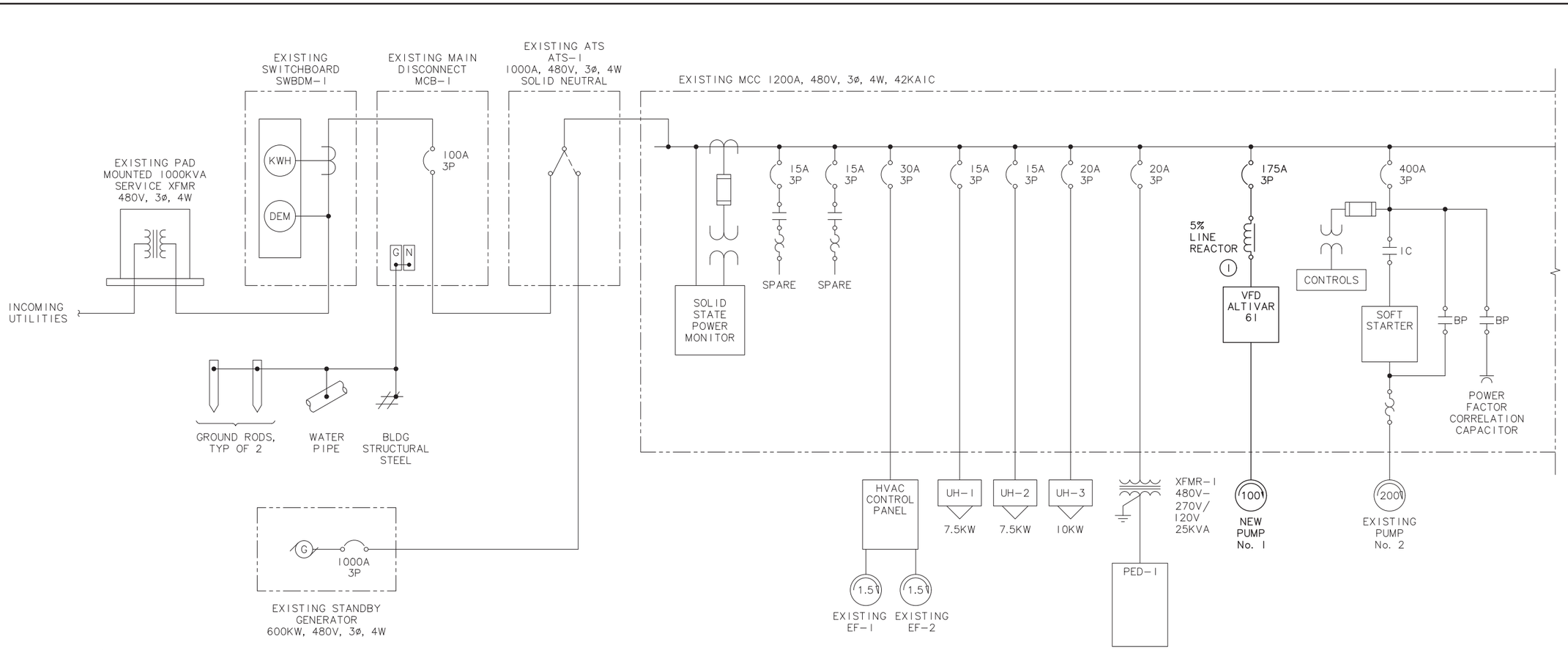
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

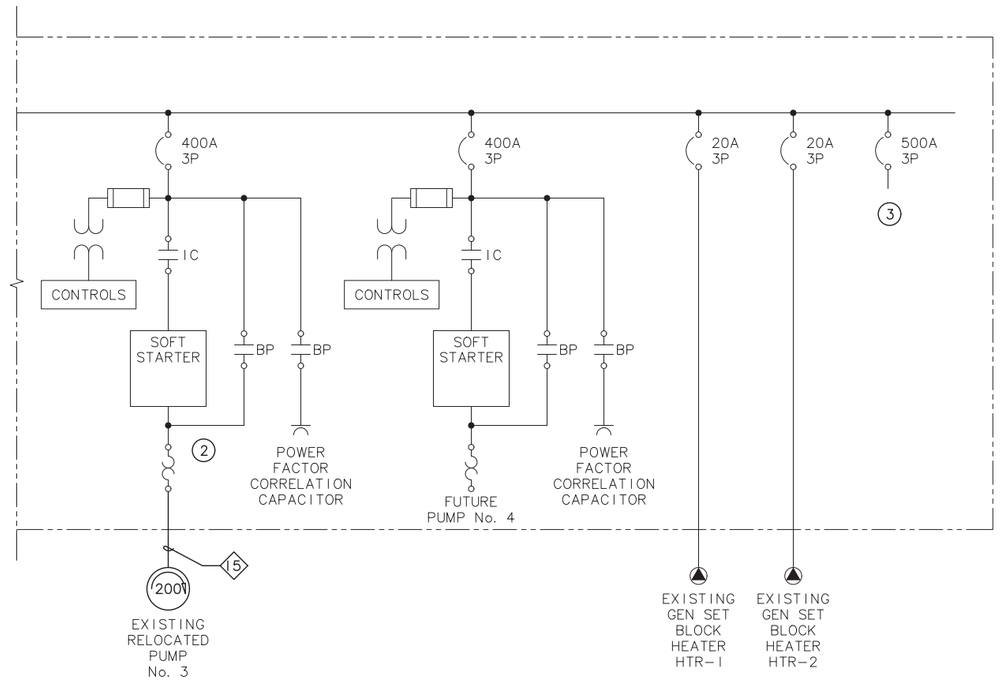
SHEET TITLE:
PUMP No. 1 SCHEMATIC

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503–225–9010
FAX 503–225–9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14–1586.





LOAD SUMMARY

BOLTON RESERVOIR LOAD SUMMARY — VOLTAGE: 480.0 3-PH — PROJECT NO. 483.086.001

	ITEM	HP	AMPS	KVA CONNECTED	DEMAND FACTOR	NEC KVA DEMAND
1	**P-1**	**100**	**124**	**103.1**	**1.00**	**103.1**
2	P-2	200	240	199.5	1.25	249.4
3	P-3	200	240	199.5	1.00	199.5
4	P-4 (FUTURE)	200	240	199.5	1.00	199.5
5	XFMR-1 (25KVA)	–	52	43.2	1.25	54.0
6	UH-1 (7.5KW)	–	9	7.5	1.00	7.5
7	UH-2 (7.5KW)	–	9	7.5	1.00	7.5
8	UH-3 (10KW)	–	12	10.0	1.00	10.0
9	EF-1	1.5	3	2.5	1.00	2.5
10	EF-2	1.5	3	2.5	1.00	2.5
11	GEN.BLK HEATER-1 (4KW)	–	4.8	4.0	1.00	4.0
12	GEN.BLK HEATER-2 (4KW)	–	4.8	4.0	1.00	4.0
13						
14						
15						
	TOTAL LOAD:			**782.8**		**843.5**
	NEC DEMAND AMPS:			**941.6**		

***NEW LOADS ARE SHOWN IN BOLD**

KEY NOTES

1. PROVIDE LINE REACTOR IN SEPARATE ENCLOSURE SUITABLE FOR MOUNTING ATOP THE EXISTING PUMP No. 1 MCC SECTION.
2. REPLACE PREVIOUSLY REMOVED RELAYS WITH EXISTING STARTER BUCKET RELAYS FROM EXISTING PUMP No. 1 CONTROLS. FIELD VERIFY ALL BUCKET CONTROLS AND COMPONENT REPLACEMENTS REQUIRED.
3. DISCONNECT AND REMOVE EXISTING FEEDERS TO EXISTING NORTH PUMP HOUSE BUILDING. ABANDON CONDUIT IN PLACE.

R&W ENGINEERING, INC. "Engineering Integrated Solutions"
9615 S.W. Allen Boulevard Suite 107 Beaverton, Oregon 97005
Phone: (503) 726-3331 Fax: (503) 726-3326 E-mail: rweng@rweng.com
Project No.: 483.086.001 Contact: SAM RUSSUM

NO.	DATE	REVISION	BY

DESIGNED: SMR
DRAWN: DPR
CHECKED: GHS
APPROVED:

SHEET E-B7 72 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 16, 1982 — GREGG H. SCHOLZ — EXPIRES: 6/30/2016

Gregg H. Scholz P.E.
Sep 3 2015 3:52 PM

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0 — 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ONE-LINE DIAGRAM**

Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586.

W:\WF\483_Murray Smith Assoc\086_Bolton Reservoir Replacement\001_Design\DWG\E-B7.dwg Layout1 9/3/2015 12:27 PM MARKP 19.ls (LMS Tech)

PLC BASED CONTROL SYSTEM

PLC/RTU

S&B MODEL 6000-P71 CONTROLLER / RTU

120 VAC SUPPLY

2A

15A

DUPLEX OUTLET

24 VDC POWER SUPPLY

BATTERY

BATTERY

POWER SUPPLY

CPU

POWER FAIL

I

BATTERY VOLTAGE

24 VDC

PIW

OPERATOR INTERFACE MODULE

MODBUS

MODEM

LPU

MCC

VFD-1

P1

RVSS-2

P2

RVSS-3

P3

RVSS-4

P4

5-PORT NETWORK SWITCH

PROFINET COMMUNICATION

Q

INLET VAULT J-BOX

RESERVOIR LEVEL XMTR LIT-022

4-20 mADC = 0-20 PSI (46.2') RESERVOIR LEVEL PIW

LSH-011

VAULT HIGH WATER I

ZS-010

INLET HATCH AJAR I

SPARE CABLE PIW

(E) FIT-038

57' CABLE

1000 GAL/PULSE FLOW TOTAL I

4-20 mADC FLOW RATE PIW

0-6000 GPM

MAGMETER FE-038 (E)

120 VAC

SUBMERSIBLE SUCTION PRESSURE XMTR PIT-030

30' factory cable, watertight cord grip required, pressurized pipe (replaces existing 5psi unit for use during reservoir construction)

4-20 mADC = 0-20 PSI SUCTION PRESSURE PIW

LSH-039

PUMP ROOM FLOOD I

(E) HEADQUARTERS SYSTEM AT CITY SHOPS

EXISTING SERVICE

LPU

MODEM

PLC I/O

COMM MODULE

CPU

Cat 5e

GRAPHIC OPERATOR INTERFACE COMPUTER & SOFTWARE (TYP OF 2)

NOTES:

(F) PROVISIONS FOR FUTURE CONNECTION

(B) EQUIPMENT NOT INCLUDED IN SECTION 17000 SCOPE

(E) EXISTING EQUIPMENT, REUSE

WIRE TYPE SPECIFICATIONS:

-// DENOTE 2 SINGLE CONDUCTORS MIN 14 GA

-@- DENOTES SHIELDED PAIR CABLE MIN 18 GA
BELDON 8760 OR EQUAL

REGISTERED PROFESSIONAL ENGINEER RANDALL T. STEAD

rstead

RENEWAL DATE: 6/30/14

PROJECT SHEET:
IC - B1

REV.	REVISION DESCRIPTION					APP	DATE
DRWN	RTS	8-27-15	ASMB		ENGR	RTS	9-2-15

SCALE NONE

S&B System Specialists
13200 S.E. 30th St.
Bellevue, Washington 98005
S&B inc. (425)644-1700 Fax: (425)746-9312

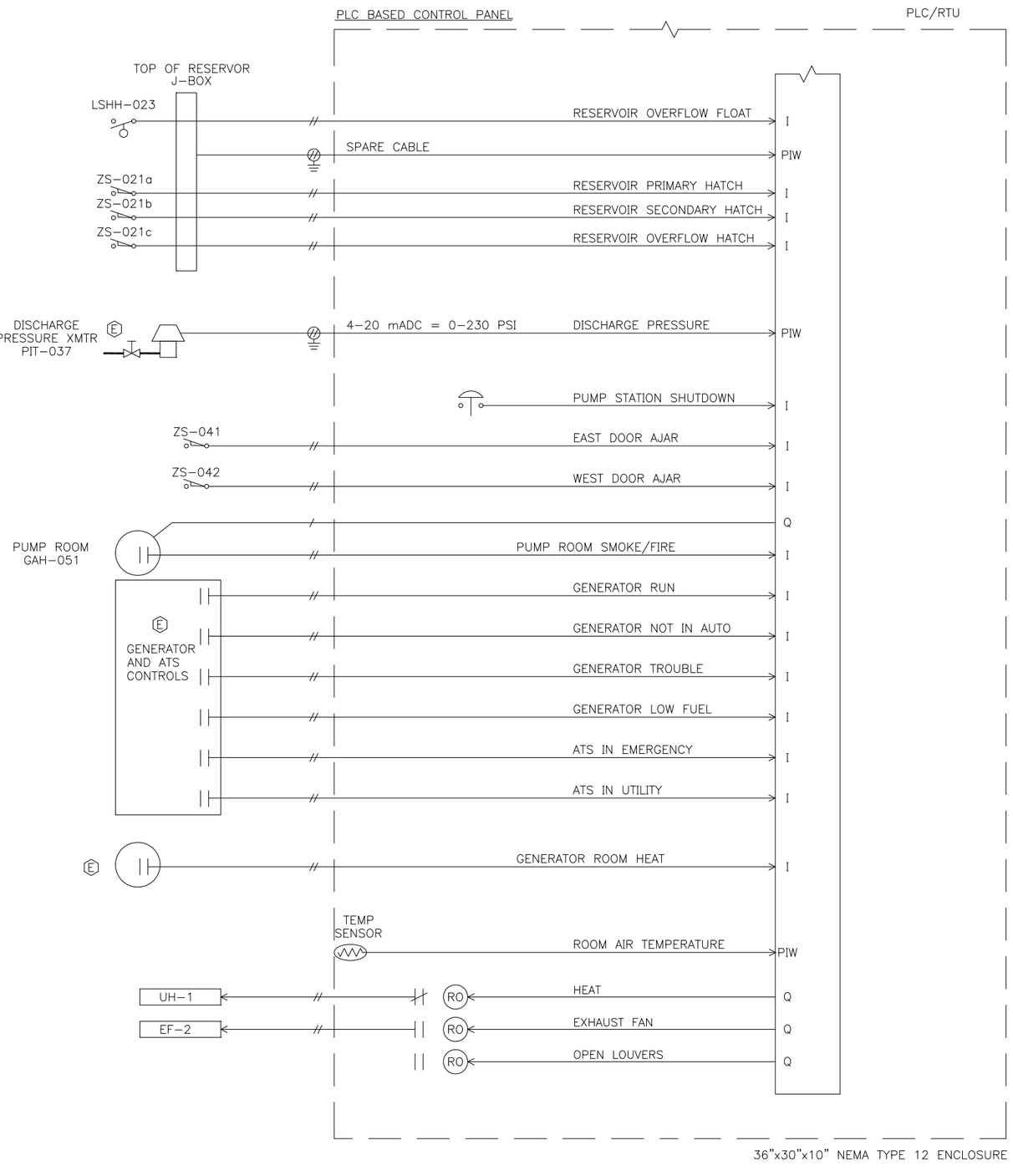
PROJECT
CITY OF WEST LINN, OR
BOLTON RESERVOIR & BOOSTER STATION

TITLE
BLOCK DIAGRAM
PUMPING SYSTEMS

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	014	1 OF 5	

FILE: 12023-014-01
LAST MODIFIED: 09/02/15 12:13 PM



OPERATIONAL FEATURES:

1. PUMP CONTROL AND MONITORING FEATURES: CONTROL PANEL DESIGNED FOR INTERFACE WITH NETWORK CONTROLLED OVERLOAD / MOTOR CONTROLLERS SUPPLIED FOR INSTALLATION BY ELECTRICAL CONTRACTOR IN EXISTING MOTOR CONTROL CUBICLES. ONE NEW VARIABLE FREQUENCY DRIVE MOTOR STARTER IS INSTALLED BY ELECTRICAL CONTRACTOR AND CONNECTS TO PLC SYSTEM VIA PROFINET COMMUNICATION CABLE. VFD CONFIGURED BY MANUFACTURER FOR PROFIDRIVE STANDARD INTERFACE ON PROFINET CABLE. WITH MOTOR CONTROL PANEL HOA SWITCH IN AUTO POSITION, RTU CONTROL PANEL WILL COMMAND START AND STOP OF MOTOR / PUMP OPERATION. FAIL LOGIC IN PLC UNIT MONITORS TIME FROM COMMAND TO RUN REPORTBACK CONFIRMATION AND PROVIDES OPERATOR ADJUSTABLE TIME ENTRIES FOR FAIL TO START, FAIL TO STOP AND TOO MANY STARTS. SMART MOTOR CONTROLLERS WILL INCLUDE TRENDS FOR AC POWER INFORMATION FROM THE SIMOCODE MOTOR OVERLOAD DEVICE, PUMP EFFICIENCY AND TRENDING. TRENDING WINDOW INCLUDES MOVING TWO MONTH WINDOW OF SAVED DATA WITH 5s RESOLUTION OF AC POWER DATA (kW, VOLTS, AMPS), PUMP DATA (FLOW, DISCHARGE, SUCTION), EFFICIENCY (TDH, FLOW, HP, EFF%). ALARMS ARE DISPLAYED ON OPERATOR INTERFACE MODULE ON PANEL FACE AND TRANSMITTER TO MASTER SCADA SYSTEM.
2. SCADA CONTROL FROM MTU LOCATION, ALLOWS FOR OPERATOR TO SELECT LEAD FIXED SPEED PUMP AND HAVE LEAD PUMP ALTERNATE EACH PUMP CYCLE. VFD PUMP IS INDEPENDENT OF ALTERNATION CYCLE.
3. VFD CONTROL INCLUDES CLOSED LOOP CONTROL SELECTION FOR CONSTANT DISCHARGE PRESSURE CONTROL AND CONSTANT FLOW CONTROL VIA SELECTION AT MTU OR LOCAL SCREEN.
4. 9" TOUCH PANEL INCLUDES SCREEN DEPICTION FOR STATION OVERVIEW, PUMP OPERATION, ALARM/EVENT, TRENDING WINDOW INCLUDES VALUES RECORDED ON 10 SEC INCREMENTS WITH ONE MONTH OF DATA STORED ONBOARD SD MEMORY CARD. RTU STATUS (VOLTS DC, TEMPERATURE) MONITORED AND TRENDED. FILTER CONTROL OVERVIEW, BACKWASH SUPERVISORY COMMAND AND ALARM STATUS FROM TREATMENT PANEL ARE SHOWN ON WELL ROOM TOUCH PANEL.
5. PRESSURES, FLOWS, AND DESTINATION RESERVOIR LEVEL ARE DISPLAYED AND TRENDED. HIGH AND LOW SETTINGS FOR LEVEL PROVIDE ALARM NOTIFICATION, HIGH-HIGH ALARM ON FLOW DISCHARGE OR LOW-LOW SUCTION INITIATES PUMP SHUTDOWN SEQUENCE. SMOKE AND STATION FLOOD STOP AUTOMATIC CONTROL OF PUMPS AND REQUIRE RESET PRIOR TO SUBSEQUENT OPERATION.
6. FLOW TOTAL IS ACCUMULATED AND ARCHIVED DAILY AT THE MASTER SCADA UNIT.
7. LEASED PHONE LINE FROM CENTURYLINK COMMUNICATIONS FOR DEDICATED SCADA UTILIZATION. CONTRACTOR TO MOVE DEMARC LOCATION FROM EXISTING RESERVOIR RTU TO NEW PUMP STATION. PROVIDE CONDUIT SIZE REQUIRED BY CENTURYLINK, (2" PVC MINIMUM WITH PULL STRING.)
8. RTU BASED ON SIEMENS ET200S FORM FACTOR PLC AND I/O EQUIPMENT. SPACE PROVIDED IN RACK FOR 20% EXPANSION.
9. FIELD SENSORS ARE INCLUDED IN THE SCOPE OF WORK UNLESS LABELED WITH A 'B' FOR "EQUIPMENT NOT INCLUDED IN SECTION 17000 SCOPE". EQUIPMENT MARKED FUTURE IS NOT INCLUDED IN SCOPE OF DELIVERY OR PRICING.
10. PUMPS START AND STOP BASED ON RESERVOIR LEVEL AND SPEED CONTROLLED TO MAINTAIN SUCTION AND DISCHARGE PRESSURES WITHIN OPERATOR SELECTED BANDWIDTH. CONTROL REVERTS TO PRESSURE CONTROL AT TIME OF LOSS OF COMMUNICATION WITH MASTER SCADA SYSTEM.
11. RTU SENSED AIR TEMPERATURE USED FOR OCCUPIED / UNOCCUPIED CONTROL OF HEATING UNITS. TEMPERATURE SETPOINTS FOR OCCUPIED / UNOCCUPIED ARE PROVIDED FOR OPERATOR ENTRY VIA TOUCH PANEL. UNOCCUPIED TEMPERATURE SETPOINT ADJUSTED FOR FREEZE PROTECTION, INITIALLY SET FOR 40degF. OCCUPIED TIME PERIOD DEFINED BY INTRUSION SYSTEM IN DISARMED STATUS. RTU LOGIC ALLOWS FOR OPERATOR TO REQUEST OCCUPIED TEMPERATURE SETPOINT FROM MASTER TELEMETRY UNIT TO BRING STATION UP TO TEMPERATURE PRIOR TO THE OPERATOR ARRIVING. RTU RETURNS TO UNOCCUPIED TEMPERATURE SETPOINT ONE HOUR AFTER RECEIVING COMMAND OR FOLLOWING TRANSITION COMMAND FROM INTRUSION STATUS. RTU PROVIDES HIGH AND LOW ROOM TEMPERATURE ALARMS TO MTU FOR OPERATOR RESPONSE.
12. STATION LOUVERS OPEN UPON RISING TEMPERATURE WHEN PUMP IS RUNNING. LOUVERS ALSO OPEN WHEN INTERIOR TEMPERATURE RISES ABOVE SETTING AND CLOSE WHEN TEMPERATURE BELOW CLOSE SETPOINT.
13. STATION EXHAUST FAN STARTS ON RISING TEMPERATURE AND STOPS ON LOW TEMPERATURE OR AFTER MINIMUM RUNTIME AFTER PUMP STOPS AND TEMPERATURE BELOW START SETPOINT. LOUVERS ARE OPEN WHEN EXHAUST FAN IS IN OPERATION. EXHAUST FAN CONTACTOR IN RTU IS RATED FOR 1/2HP LOAD.

REGISTERED PROFESSIONAL ENGINEER 14,157 rstead OREGON JULY 28, 2015 RANDALL T. STEAD

RENEWAL DATE: 6/30/14

PROJECT SHEET: IC – B2

FILE: 12023-014-02
LAST MODIFIED: 08/29/15 11:42 AM

REV.	REVISION DESCRIPTION				APP	DATE
DRWN	RTS	8-27-15	ASMB		ENGR	RTS	9-2-15	SCALE NONE

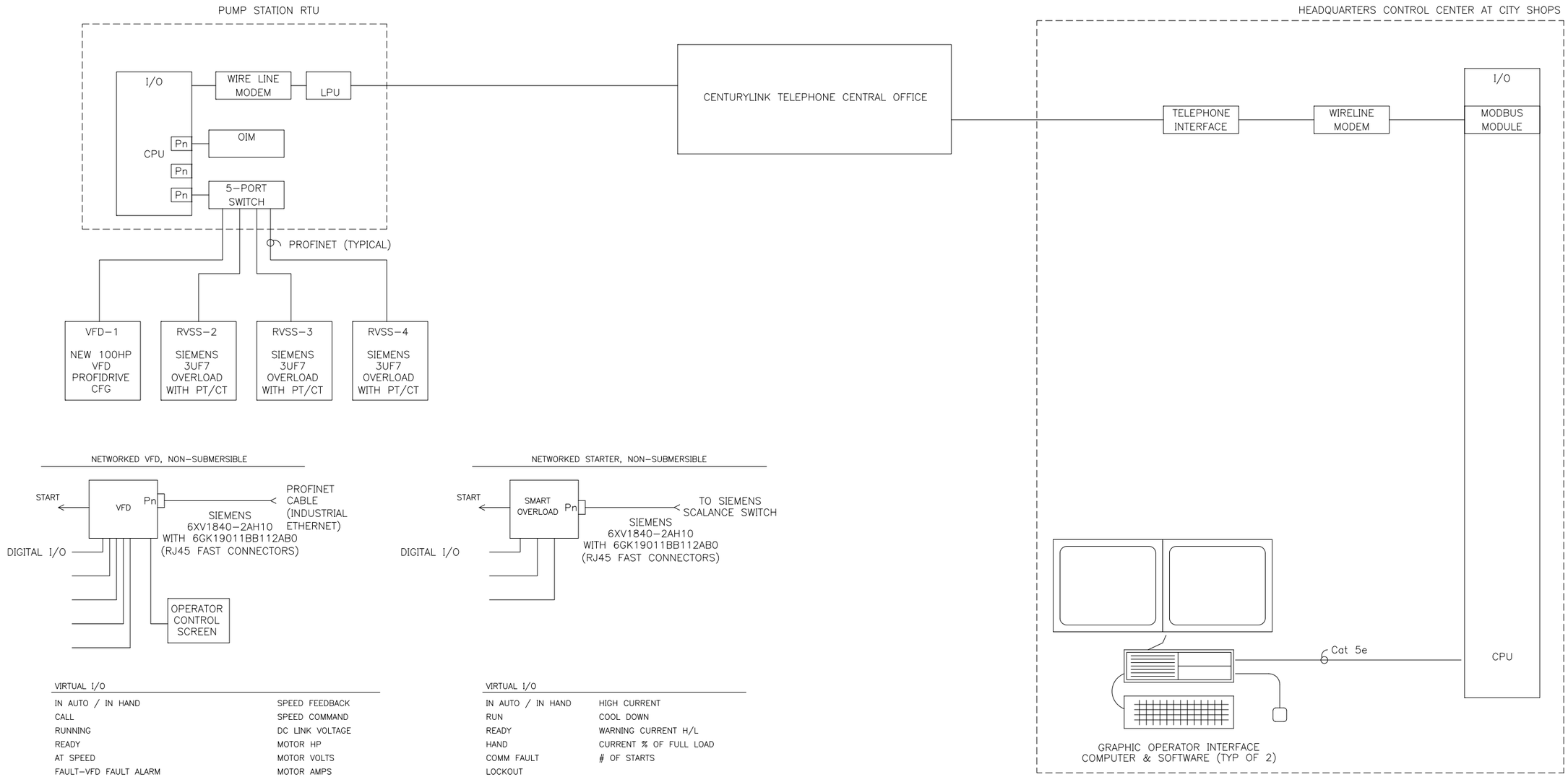
S&B System Specialists
S&B inc.
13200 S.E. 30th St.
Bellevue, Washington 98005
(425)644-1700 Fax: (425)746-9312

PROJECT
CITY OF WEST LINN, OR
BOLTON RESERVOIR & BOOSTER STATION

TITLE
BLOCK DIAGRAM
ANCILLARY SYSTEMS

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	014	2 OF 5	



VIRTUAL I/O

IN AUTO / IN HAND	SPEED FEEDBACK
CALL	SPEED COMMAND
RUNNING	DC LINK VOLTAGE
READY	MOTOR HP
AT SPEED	MOTOR VOLTS
FAULT-VFD FAULT ALARM	MOTOR AMPS
ALARM-VFD WARNING	MOTOR TORQUE
OVERLOAD-MOTOR OVERLOAD	LAST FAULT CODE
TEMPERATURE-VFD/MOTOR OVERTEMP	LAST ALARM CODE

APPLICATION: VARIABLE FREQUENCY DRIVE MOTOR STARTERS
PLC SYSTEM MONITORS MOTOR CONTROLLER VIA PROFIBUS NETWORK. VFD CONTROLLER PROVIDES ON BOARD LOGIC FOR LOCAL (HAND) AND REMOTE AUTO CONTROL, PROVIDES CONTROL (AS DEFINED BY P&ID), PROVIDES ALARM NOTIFICATION ON FAILURE TO COMMAND WITHIN ALLOTTED TIME, FOR A PROCESS LOGIC VIOLATION AND ALL ALARM CONDITIONS GENERATED BY THE VFD CONTROL UNIT. POWER INFORMATION IS MONITORED FOR OVER AND UNDER LOAD CONDITIONS AS EARLY WARNING INDICATION OF PROCESS ABNORMALITIES. SCADA PROVIDES VISUALIZATION OF MOTOR STATUS AND ALARM CONDITIONS, AUTO OPERATION SETTINGS, AND SUPERVISORY CONTROL OVERRIDES (HAND/OFF/AUTO). SCADA PROVIDES INDICATION OF ALL NETWORK DERIVED INFORMATION, ARCHIVES RUNTIME, SPEED, kW LOAD AND ALARM CONDITION.

VIRTUAL I/O

IN AUTO / IN HAND	HIGH CURRENT
RUN	COOL DOWN
READY	WARNING CURRENT H/L
HAND	CURRENT % OF FULL LOAD
COMM FAULT	# OF STARTS
LOCKOUT	

APPLICATION: FVNR/RVSS MOTOR STARTERS
PLC SYSTEM MONITORS MOTOR STARTER VIA PROFIBUS NETWORK. MOTOR STARTER OVERLOAD DEVICE PROVIDES ON BOARD LOGIC FOR LOCAL (HAND) AND REMOTE AUTO CONTROL, PROVIDES CONTROL (AS DEFINED BY P&ID), PROVIDES ALARM NOTIFICATION ON FAILURE TO COMMAND WITHIN ALLOTTED TIME, FOR A PROCESS LOGIC VIOLATION AND ALL ALARM CONDITIONS GENERATED BY MOTOR STARTER. POWER INFORMATION IS MONITORED FOR OVER AND UNDER LOAD CONDITIONS AS EARLY WARNING INDICATION OF PROCESS ABNORMALITIES. SCADA PROVIDES VISUALIZATION OF MOTOR STATUS AND ALARM CONDITIONS, AUTO OPERATION SETTINGS, AND SUPERVISORY CONTROL OVERRIDES. SCADA PROVIDES INDICATION OF ALL NETWORK DERIVED INFORMATION, ARCHIVES RUNTIME, kW LOAD AND ALARM CONDITION.

PROFINET NETWORK CABLING NOTES

GENERAL PLANT CABLING CAN CARRY HIGH VOLTAGES AND CURRENTS. RUNNING PROFIBUS CABLES PARALLEL TO SUCH CABLES CAN LEAD TO INTERFERENCE PICKUP AND DATA TRANSMISSION ERRORS. MINIMIZE RISK OF INTERFERENCE BY FOLLOWING "INSTALLATION GUIDELINE FOR CABLING AND ASSEMBLY" AVAILABLE ONLINE AT WWW.PROFIBUS.ORG.

USE CARE TO AVOID COMMON PROFIBUS INSTALLATION PROBLEMS INCLUDING: OVERSTRESSED PULL TENSION, FAILURE TO FOLLOW END OF LINE TERMINATION REQUIREMENTS, FAILURE TO FOLLOW POLARITY, TAP LENGTHS IN EXCESS OF 1 METER AND FAILURE TO FOLLOW GROUNDING SPECIFICATIONS.

PROFINET / INDUSTRIAL ETHERNET CABLING REQUIRES HOME RUN TO NETWORK SWITCH FOR EACH DEVICE AND USE OF INDUSTRIAL CABLING AND CONNECTOR ASSEMBLIES.

REGISTERED PROFESSIONAL ENGINEER 14,157 RANDALL T. STEAD
rstead
RENEWAL DATE: 6/30/14

PROJECT SHEET: IC – B3

FILE: 12023-014-03
LAST MODIFIED: 08/27/15 10:25 PM

REV.	REVISION DESCRIPTION							APP	DATE
DRWN	RTS	8-27-15	ASMB			ENGR		SCALE	NONE

S&B System Specialists
S&B inc.
13200 S.E. 30th St.
Bellevue, Washington 98005
(425)644-1700 Fax: (425)746-9312

PROJECT: CITY OF WEST LINN, OR
BOLTON RESERVOIR & BOOSTER STATION

TITLE: NETWORK DIAGRAM
LOCAL AND WIDE AREA
CONNECTIONS

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
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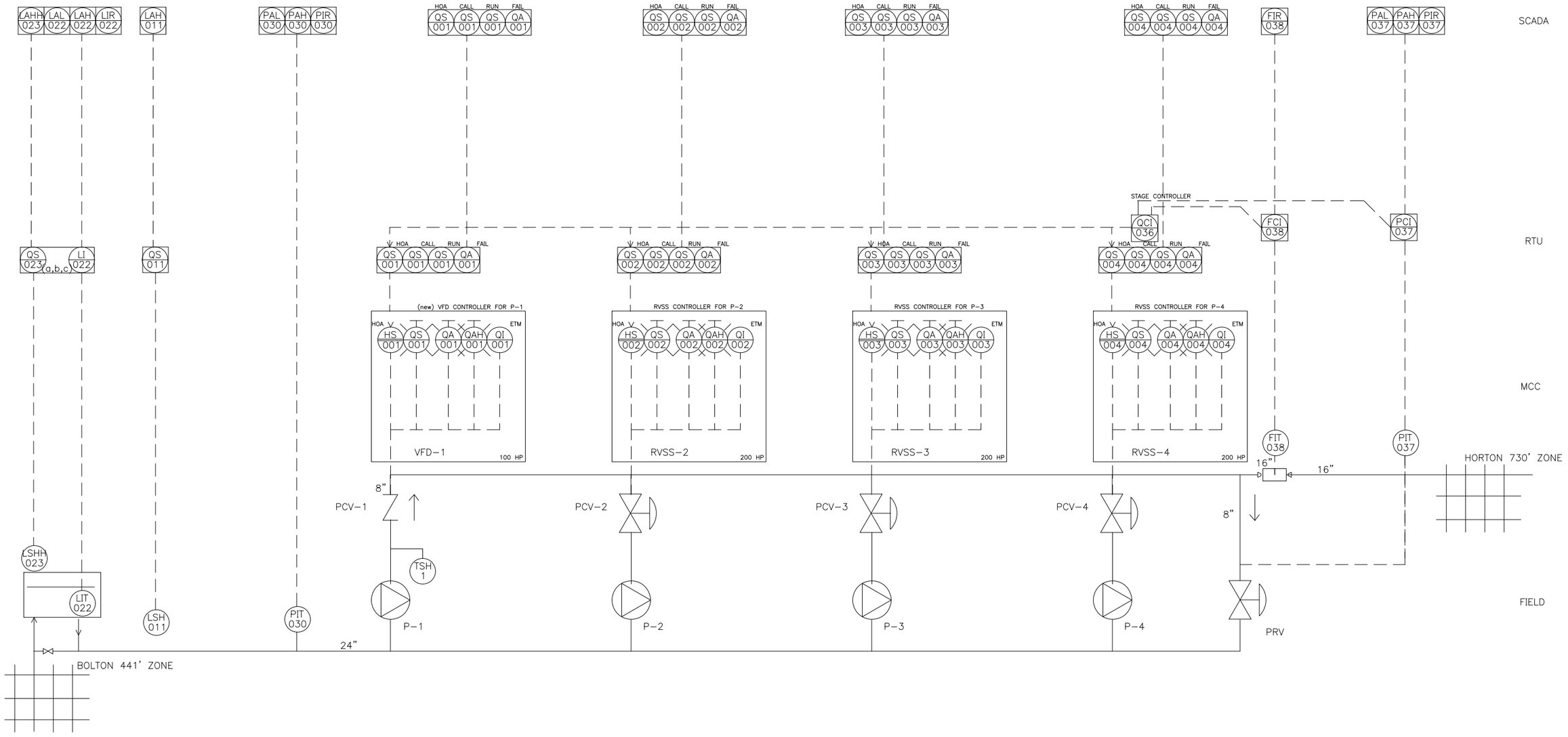


IN COMPUTER

AUXILLARY PANEL

LIGHT

FRONT OF PANEL

RENEWAL DATE: 6/30/14

PROJECT SHEET:
IC – B4

FILE: 12023-014-04
LAST MODIFIED: 09/02/15 3:13 PM

REV.	REVISION DESCRIPTION			APP	DATE
DRWN	RTS	8-27-15	ASMB	ENGR	RTS	9-2-15	SCALE NONE

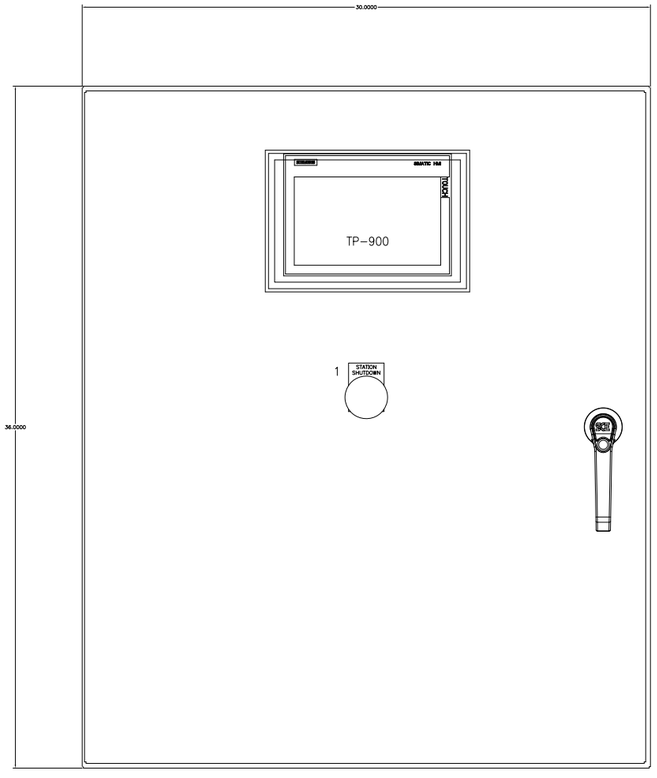
S&B inc.
S&B System Specialists
13200 S.E. 30th St.
Bellevue, Washington 98005
(425)644-1700 Fax: (425)746-9312

PROJECT
CITY OF WEST LINN, OR
BOLTON RESERVOIR & BOOSTER STATION

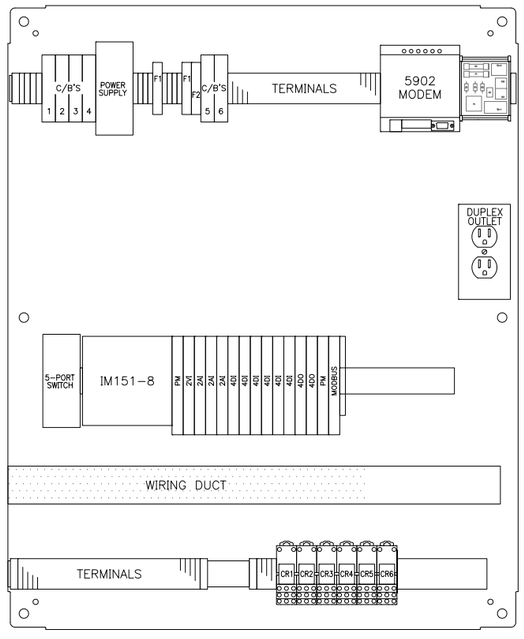
TITLE
P&ID
PROCESS CONTROLS

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	014	4 OF 5	



SAGINAW SBA3-36EL3010LP TYPE 12 ENCLOSURE
(INCLUDES 3 PT LATCH KIT AND HANDLE)
SAGINAW SCE-36P30 BACK PANEL



BACK PANEL LAYOUT

NAMEPLATE

1 STATION SHUTDOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 28, 1995
RANDALL T. STEAD
14,15
Digitally signed by rstead
DN: c=US, st=OR, l=Bend, o=S&B INC, ou=GHC, cn=rstead, e=rstead, email=rstead@sb-inc.com
Date: 2015.09.02 17:17:16
rstead
RENEWAL DATE: 6/30/14

PROJECT SHEET:
IC - B5

FILE: 12023-014-05
LAST MODIFIED: 08/27/15 10:01 PM

REV.	REVISION DESCRIPTION			APP	DATE
DRWN	RTS	8-27-15	ASMB		
ENGR	RTS	9-2-15	SCALE	NONE	

S&B System Specialists
13200 S.E. 30th St.
Bellevue, Washington 98005
(425)644-1700 Fax: (425)746-9312
S&B inc.

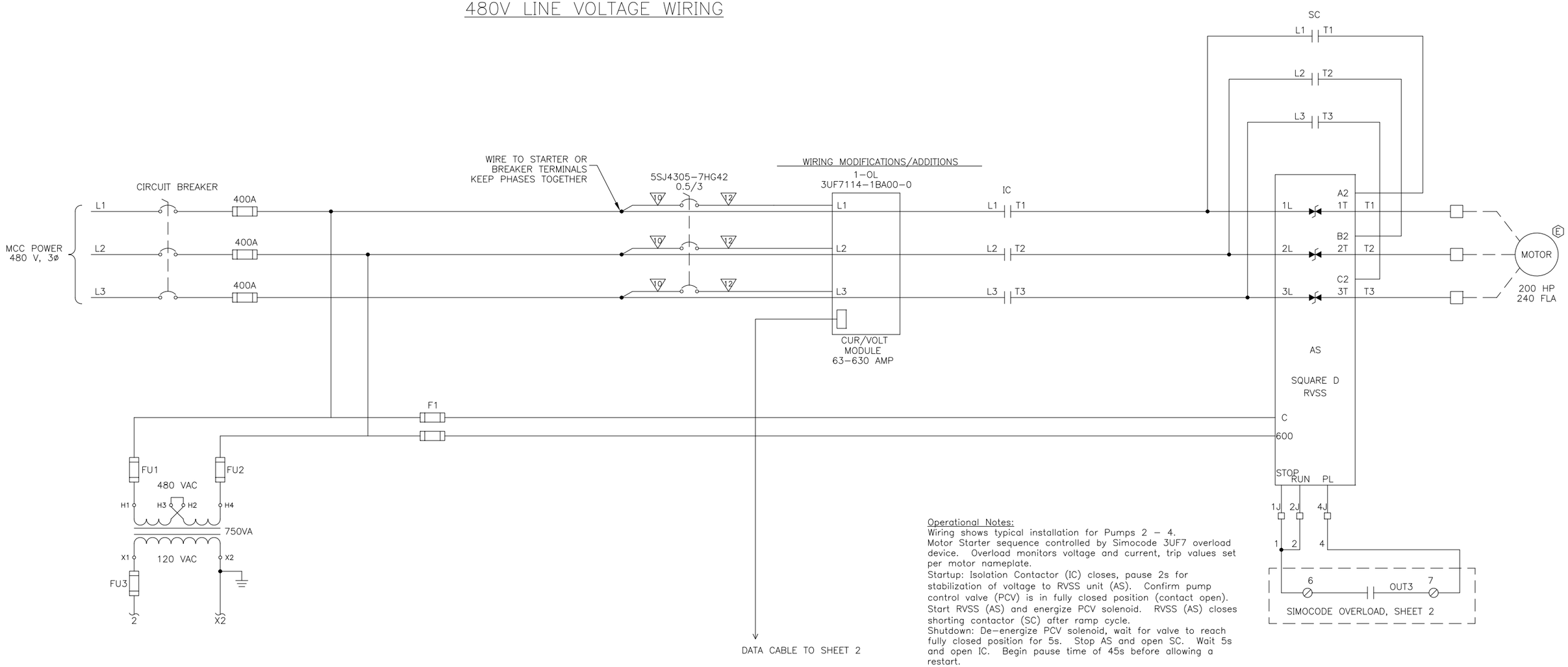
PROJECT
CITY OF WEST LINN, OR
BOLTON RESERVOIR & BOOSTER STATION

TITLE
PRESENTATION
REMOTE TELEMETRY UNIT

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	014	5 OF 5	

480V LINE VOLTAGE WIRING



Operational Notes:
Wiring shows typical installation for Pumps 2 – 4.
Motor Starter sequence controlled by Simocode 3UF7 overload device. Overload monitors voltage and current, trip values set per motor nameplate.
Startup: Isolation Contactor (IC) closes, pause 2s for stabilization of voltage to RVSS unit (AS). Confirm pump control valve (PCV) is in fully closed position (contact open). Start RVSS (AS) and energize PCV solenoid. RVSS (AS) closes shorting contactor (SC) after ramp cycle.
Shutdown: De–energize PCV solenoid, wait for valve to reach fully closed position for 5s. Stop AS and open SC. Wait 5s and open IC. Begin pause time of 45s before allowing a restart.

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 26, 1985
RANDALL T. STEAD

RENEWAL DATE: 6/30/16

PROJECT SHEET:
IC – B6

FILE: 12023–622–01
LAST MODIFIED: 08/27/15 10:16 PM

REV.	REVISION DESCRIPTION						APP	DATE
DRWN	JRB	8–27–15	ASMB			ENGR	RTS	9–2–15	SCALE	NONE

S&B System Specialists
13200 S.E. 30th St.
Bellevue, Washington 98005
S&B inc. (425)644–1700 Fax: (425)746–9312

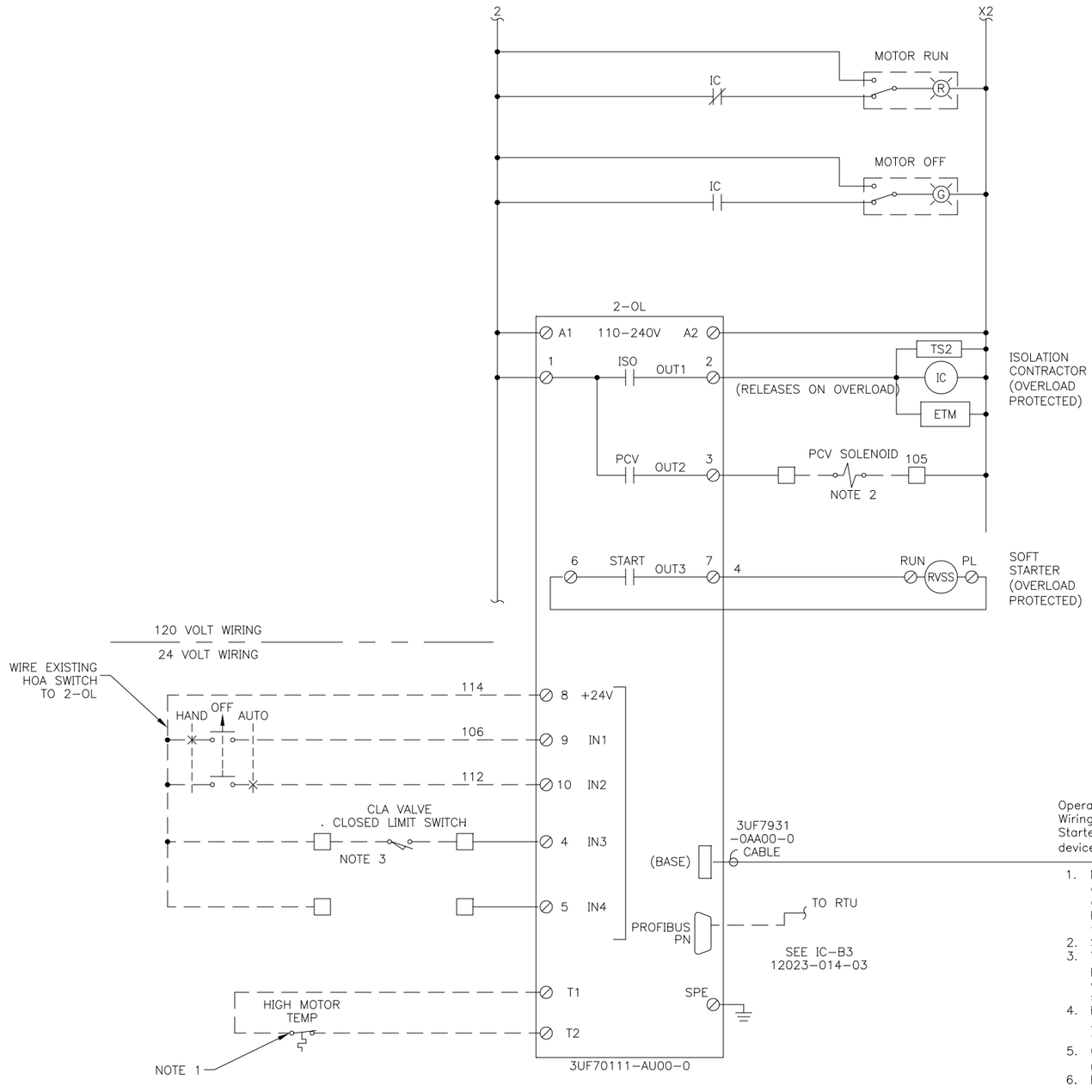
PROJECT
CITY OF WEST LINN, OR
BOLTON PUMP STATION

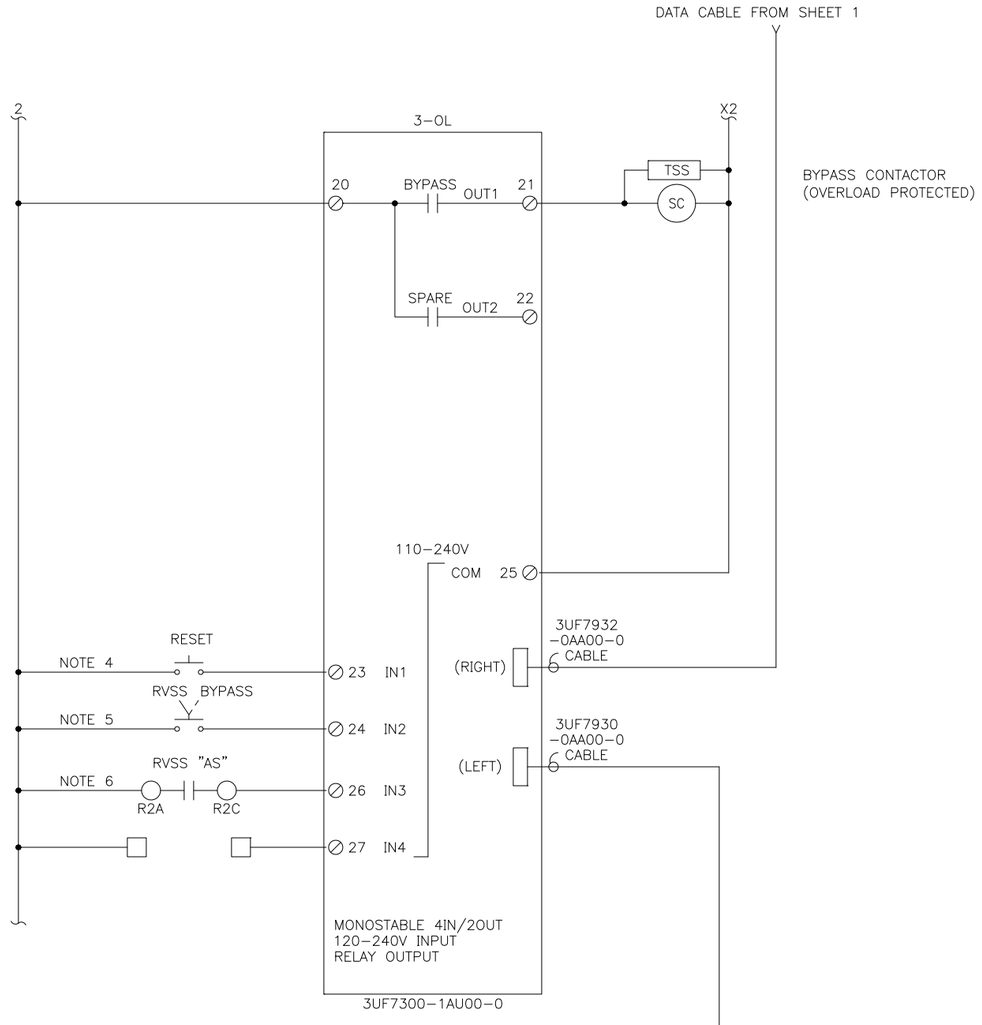
TITLE
MCC FIELD WIRING
3UF7 ADDITION

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	622	1 OF 2	

120V CONTROL VOLTAGE WIRING





Operational Notes:
Wiring shows typical installation for Pumps 1 – 4. Motor Starter sequence controlled by Simocode 3UF7 overload device. See sheet 1 for startup/shutdown sequence.

1. Motor Overtemperature configured for contact that opens on high temperature, causing immediate fault condition, stopping motor without stop sequence. If high temperature switch does not exist, jumper terminals.
2. Solenoid energizes to open PCV.
3. Valve limit switch opens as valve reaches fully closed position. Motor stops 5s after contact opens to allow valve to reach fully seated position before stopping motor.
4. Reset switch clears fault conditions within Simocode 3UF overload device. Cooldown periods still apply following an overload condition.
5. Contact closes for Bypass mode operation without use of RVSS. Normal operation is "RVSS"
6. End of Ramp contact from RVSS unit. Used to engage Bypass contactor when in RVSS mode.

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 26, 1985
RANDALL T. STEAD
RENEWAL DATE: 6/30/16

PROJECT SHEET:
IC – B7

FILE: 12023-622-02
LAST MODIFIED: 09/02/15 3:15 PM

REV.	REVISION DESCRIPTION					APP	DATE
DRWN	RTS	8-27-15	ASMB		ENGR	RTS	9-2-15
SCALE	NONE						

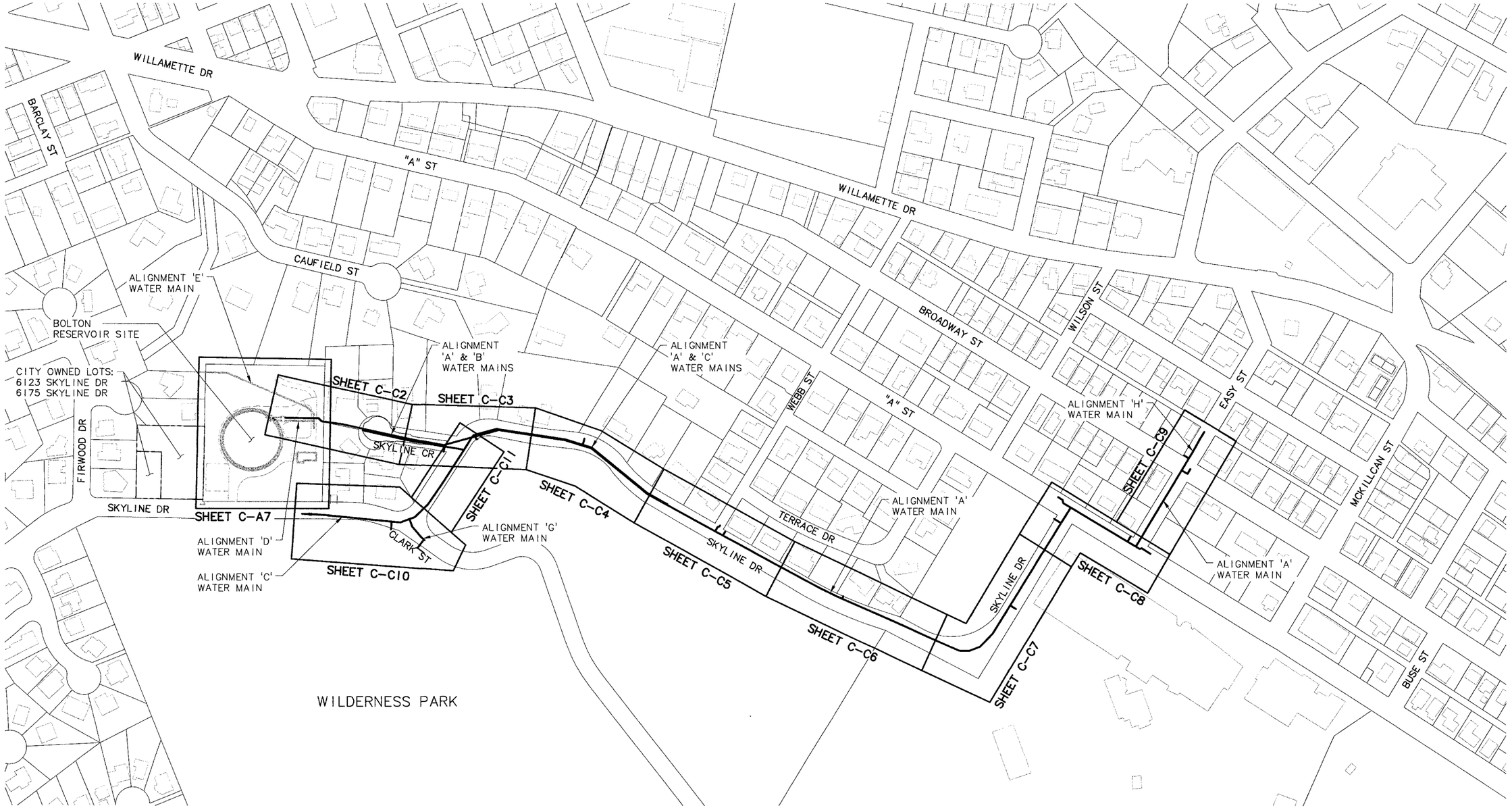
S&B System Specialists
13200 S.E. 30th St.
Bellevue, Washington 98005
(425)644-1700 Fax: (425)746-9312
S&B inc.

PROJECT
CITY OF WEST LINN, OR
BOLTON PUMP STATION

TITLE
MCC FIELD WIRING
3UF7 ADDITION

DRAWING NUMBER

SIZE	JOB NUMBER	KEY	SHEET	REV
D	12023	622	2 OF 2	



NOTE:

1. KEY MAP IS PROVIDED AS AN INDEX FOR THE PLAN SHEET LAYOUT ONLY AND DOES NOT IDENTIFY WORK OR MATERIALS REQUIRED FOR CONSTRUCTION.

PLAN
SCALE: 1"=150'

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — RENEWS 12-31-15

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

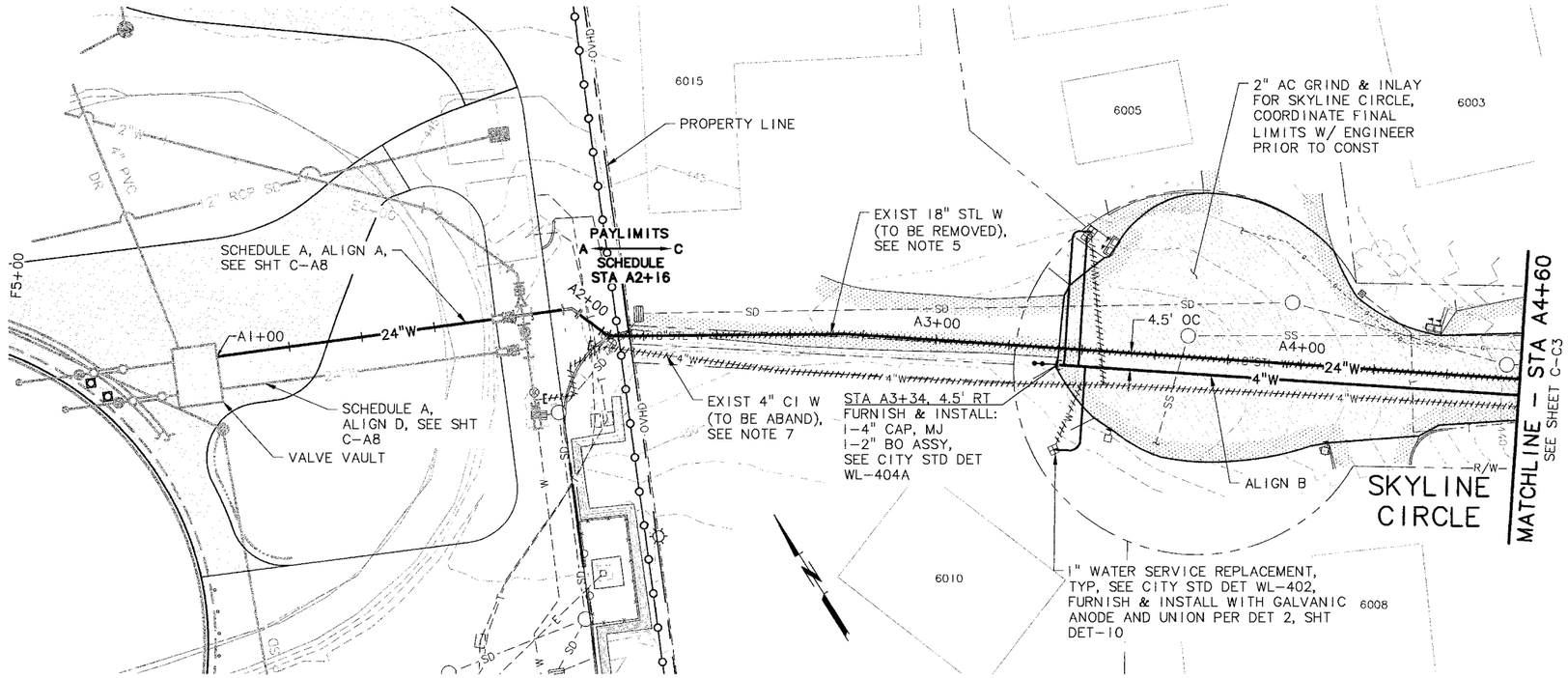
SHEET TITLE:
WATER MAIN REPLACEMENT
KEY MAP

SHEET C-C1
80 of 167

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

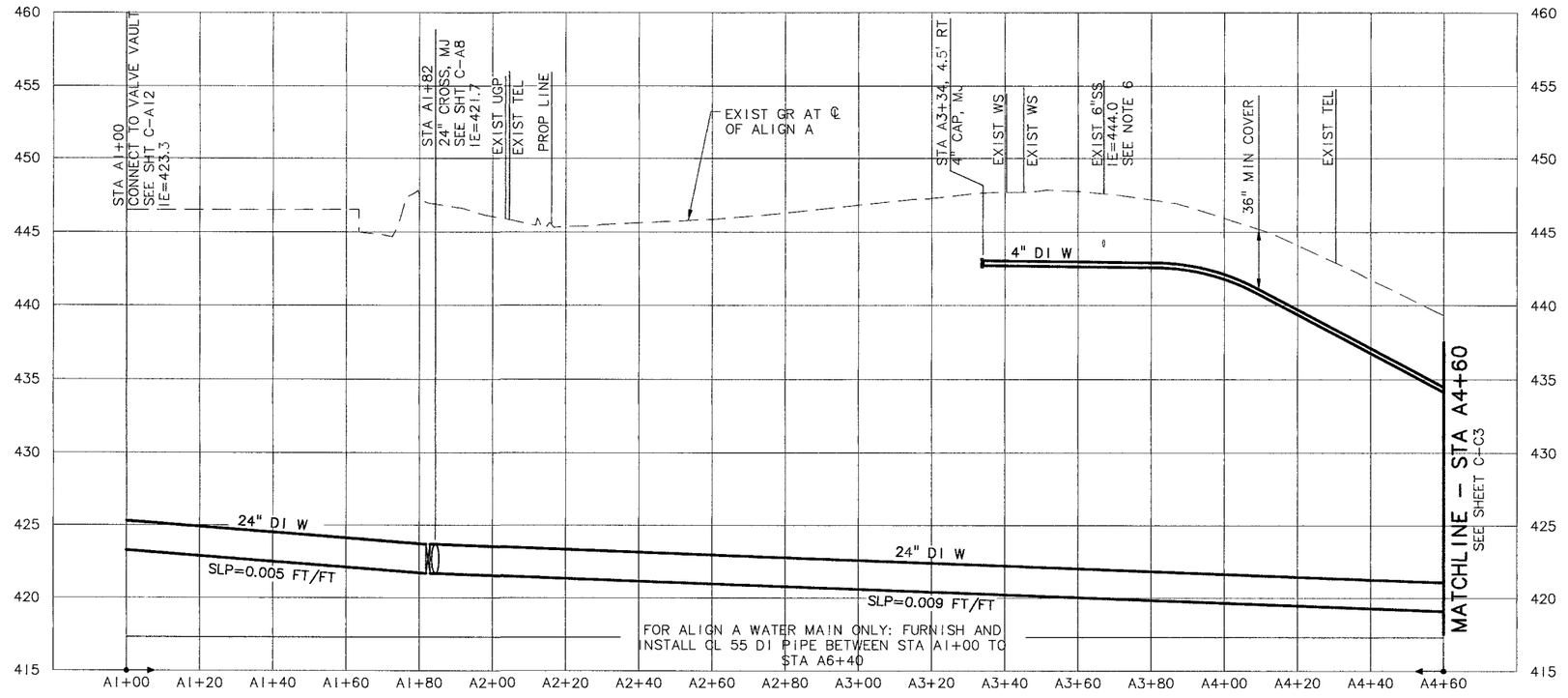
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED C\14-1586-OR-SCH-C-C1.dwg C-C1 9/3/2015 10:26 AM HCM 20.0s (LMS Tech)



PLAN — 'A' & 'B' LINE

SCALE: 1"=20'



PROFILE — 'A' & 'B' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. REMOVE AND DISPOSE OF EXISTING 18" STEEL WATER MAIN AND REPLACE WITH NEW 24" DUCTILE IRON WATER MAIN IN THE SAME TRENCH FROM APPROXIMATELY STA A2+10 TO STA A5+76. SEE SPECIFICATIONS FOR ABANDONING REMAINING PIPE IN PLACE.

6. REPLACE EXISTING SANITARY SEWER WITH NEW DUCTILE IRON SANITARY SEWER MAIN FOR 10 FEET ON EITHER SIDE OF CROSSING WITH NEW WATER MAIN. SEE CITY STANDARD DETAIL WL-409.

7. EXISTING 4" CAST IRON WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM
CHECKED: LLA
APPROVED: TPB

SHEET C-C2
81 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JANUARY 9, 1998 — LAEL I. ALDERMAN — RENEWS 12-31-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

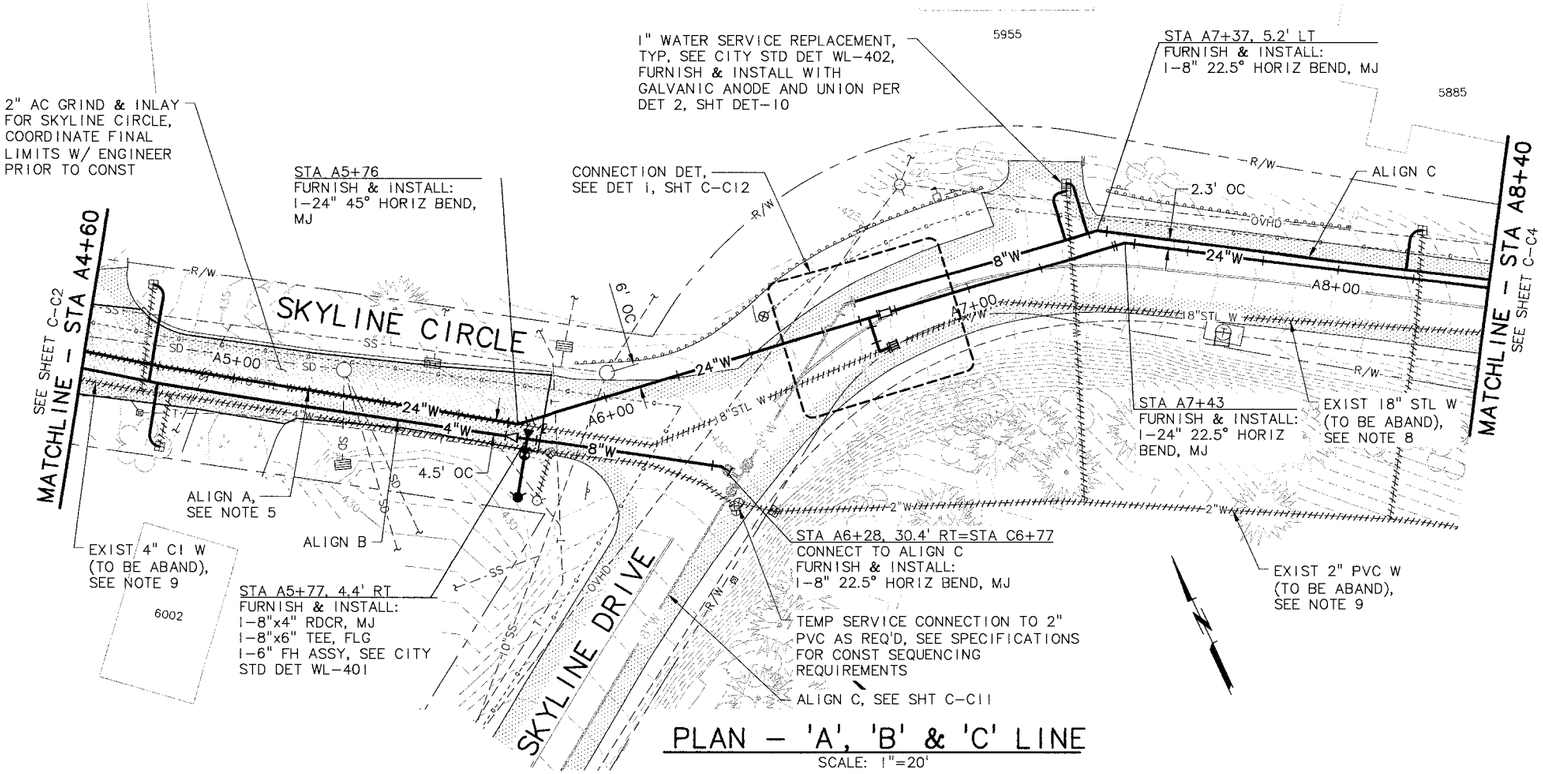
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT ALIGNMENT 'A' & 'B' PLAN AND PROFILE STA A1+00 TO STA A4+60**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

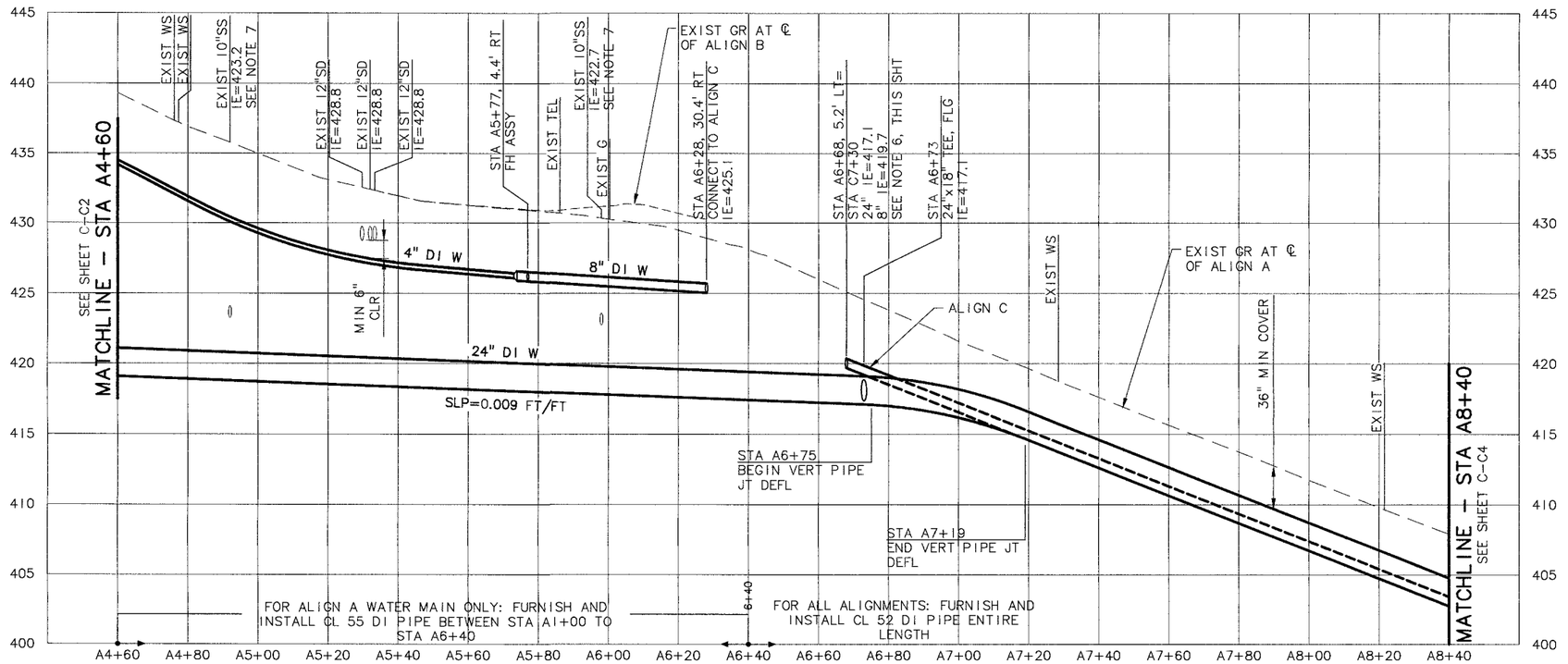
MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED C\14-1586-OR-SCH-C P-P.dwg C-C2 9/3/2015 3:44 PM DKT 20.0s (LMS Tech)



PLAN – 'A', 'B' & 'C' LINE

SCALE: 1"=20'



PROFILE – 'A' & 'B' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. REMOVE AND DISPOSE OF EXISTING 18" STEEL WATER MAIN AND REPLACE WITH NEW 24" DUCTILE IRON WATER MAIN IN THE SAME TRENCH FROM APPROXIMATELY STA A2+10 TO STA A5+76. SEE SPECIFICATIONS FOR ABANDONING REMAINING PIPE IN PLACE.

6. PROFILE SHOWN FOR ALIGNMENTS 'A' AND 'B' ONLY. ALIGNMENTS 'A' AND 'C' TO BE INSTALLED AT THE SAME INVERT ELEVATION STARTING AT STATION A6+60 UNLESS OTHERWISE SHOWN.

7. REPLACE EXISTING SANITARY SEWER WITH NEW DUCTILE IRON SANITARY SEWER MAIN FOR 10 FEET ON EITHER SIDE OF CROSSING WITH NEW WATER MAIN. SEE CITY STANDARD DETAIL WL-409.

8. EXISTING 18" STEEL WATER MAIN SHALL BE ABANDONED IN PLACE. FROM STATION A5+76, PIPE SHALL BE FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM), AND INSTALL A GROUT CAP FOR A MINIMUM OF 2 FEET ON EACH END. SEE SPECIFICATIONS, EXISTING PIPELINE ABANDONMENT.

9. EXISTING 2" PVC AND 4" CAST IRON WATERLINES SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPES BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C3
82 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 13, 2005 LAEL L. ALDERMAN
RENEWS 12-31-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

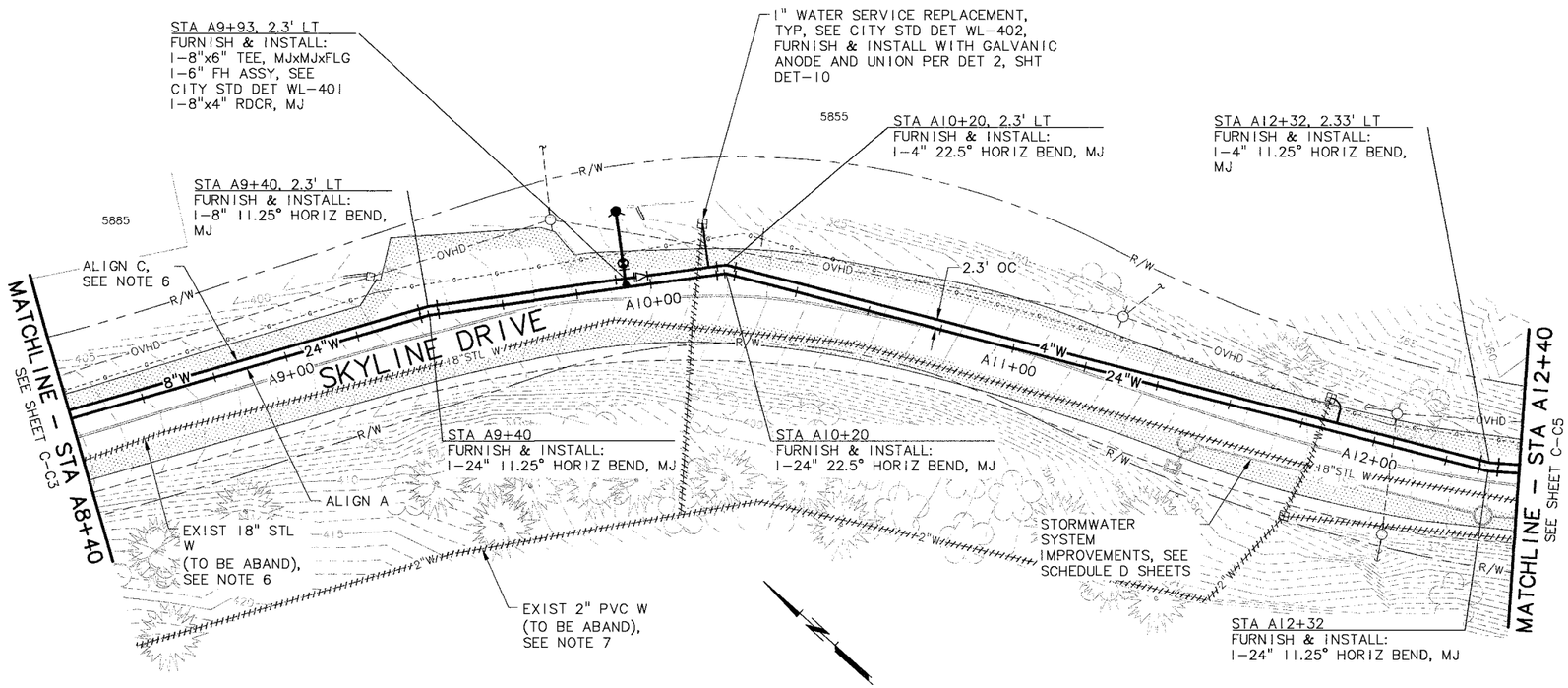
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT ALIGNMENT 'A', 'B' & 'C' PLAN AND PROFILE STA A4+60 TO STA A8+40**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015



PLAN - 'A' & 'C' LINE

SCALE: 1"=20'

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

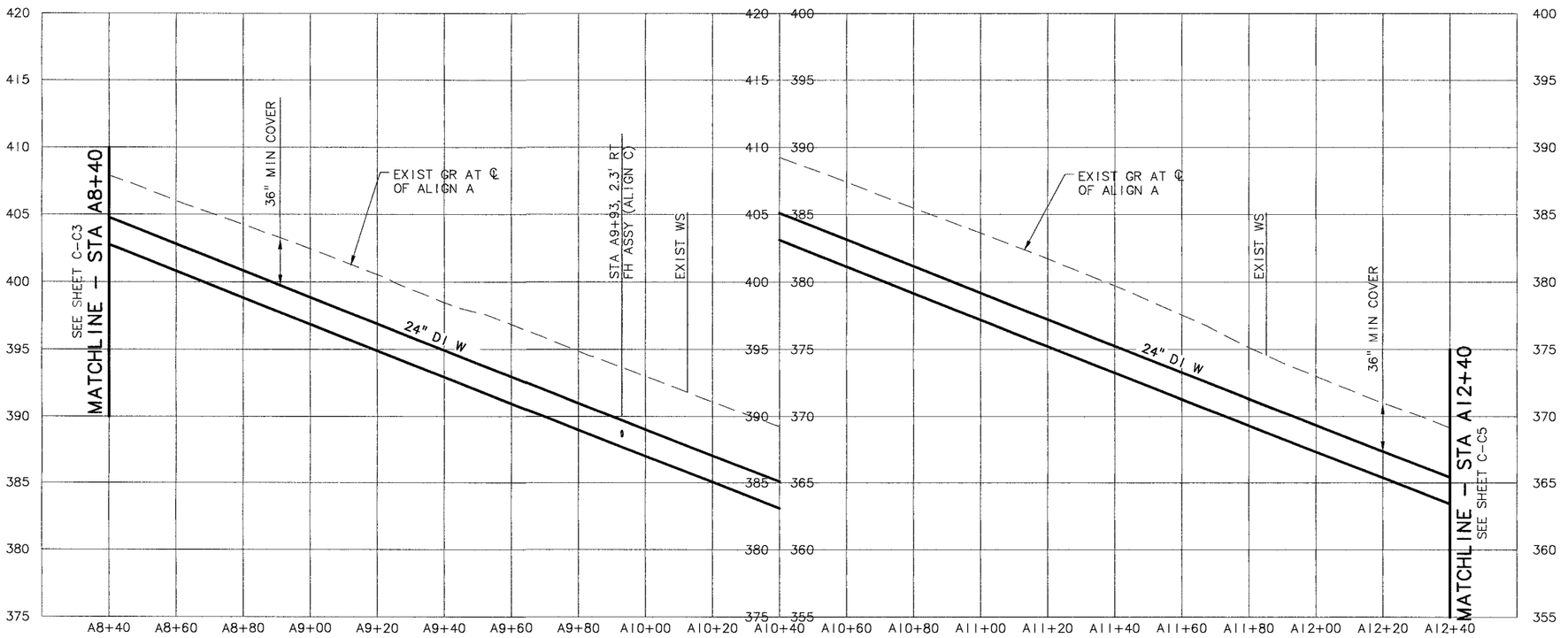
3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. PROFILE SHOWN FOR ALIGNMENTS 'A' AND 'B' ONLY. ALIGNMENTS 'A' AND 'C' TO BE INSTALLED AT THE SAME INVERT ELEVATION STARTING AT STATION A6+60 UNLESS OTHERWISE SHOWN.

6. EXISTING 18" STEEL WATER MAIN SHALL BE ABANDONED IN PLACE. FROM STATION A5+76, PIPE SHALL BE FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM), AND INSTALL A GROUT CAP FOR A MINIMUM OF 2 FEET ON EACH END. SEE SPECIFICATIONS, EXISTING PIPELINE ABANDONMENT.

7. EXISTING 2" PVC WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE - 'A' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — LAEL L. ALDERMAN — RENEWS 12-31-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

SHEET C-C4
83 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' & 'C' PLAN AND PROFILE
STA A8+40 TO STA A12+40

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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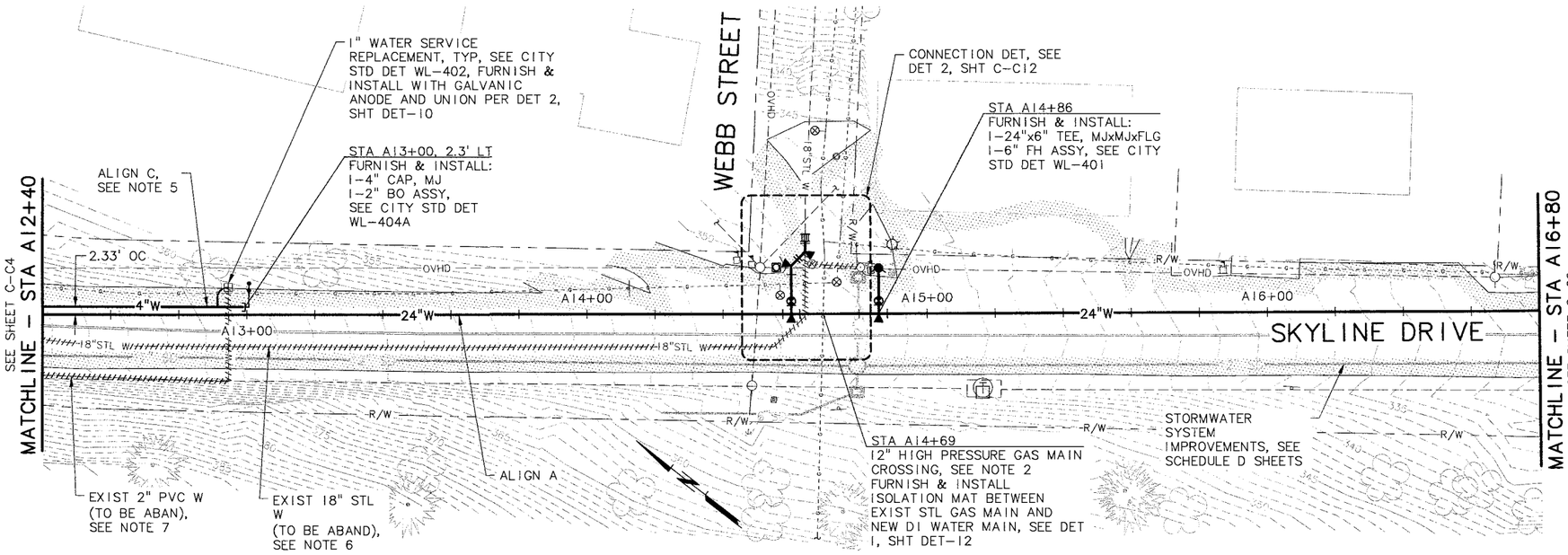


PLAN – 'A' & 'C' LINE

SCALE: 1"=20'

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

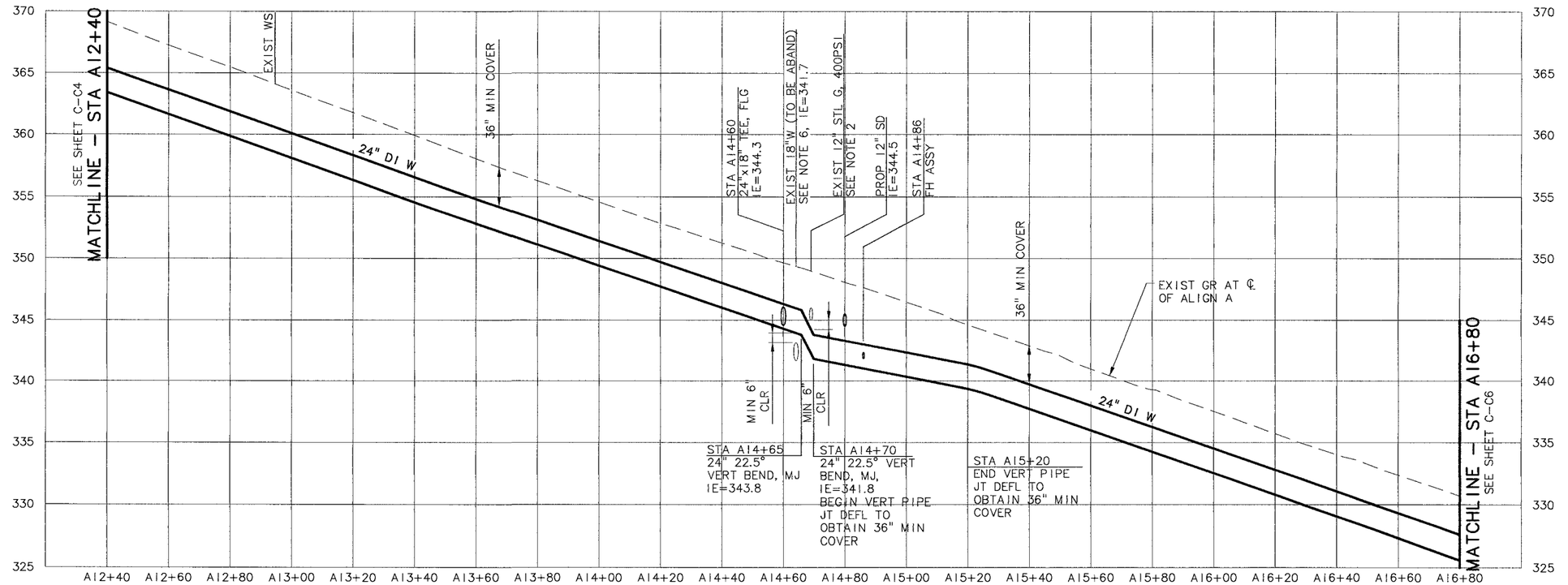
3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. PROFILE SHOWN FOR ALIGNMENTS 'A' AND 'B' ONLY. ALIGNMENTS 'A' AND 'C' TO BE INSTALLED AT THE SAME INVERT ELEVATION STARTING AT STATION A6+60 UNLESS OTHERWISE SHOWN.

6. EXISTING 18" STEEL WATER MAIN SHALL BE ABANDONED IN PLACE. FROM STATION A5+76, PIPE SHALL BE FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM), AND INSTALL A GROUT CAP FOR A MINIMUM OF 2 FEET ON EACH END. SEE SPECIFICATIONS, EXISTING PIPELINE ABANDONMENT.

7. EXISTING 2" PVC WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE – 'A' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C5 84 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 31, 1986 LAELI L. ALDERMAN RENEWS 12-31-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' & 'C' PLAN AND PROFILE
STA A12+40 TO STA A16+80

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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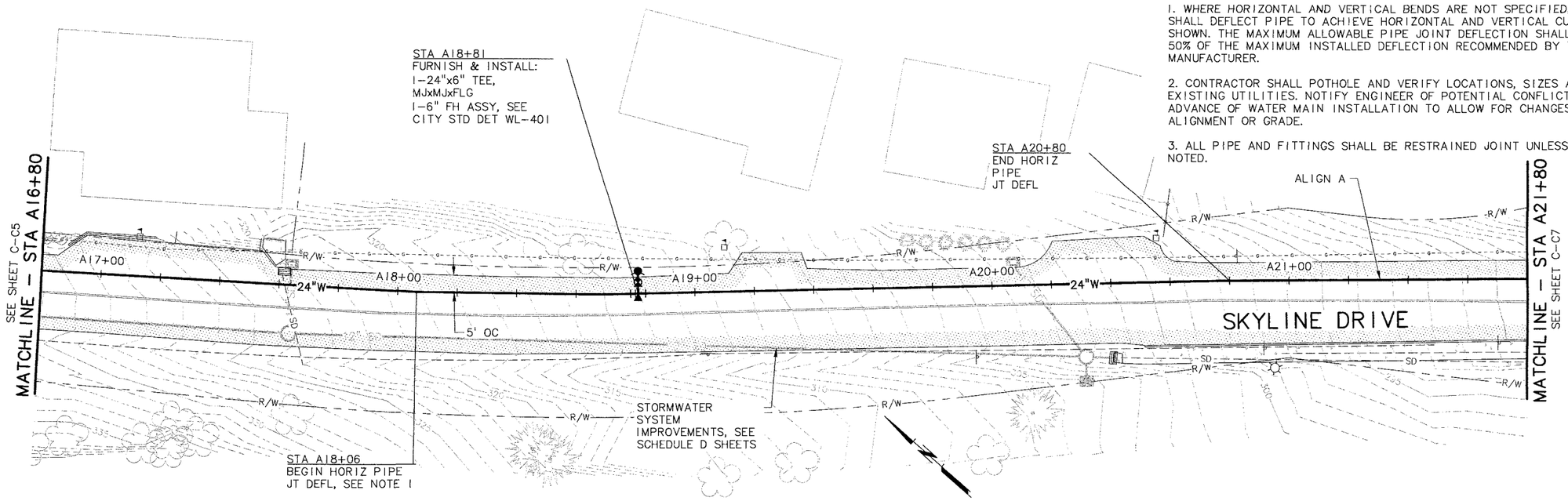
NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

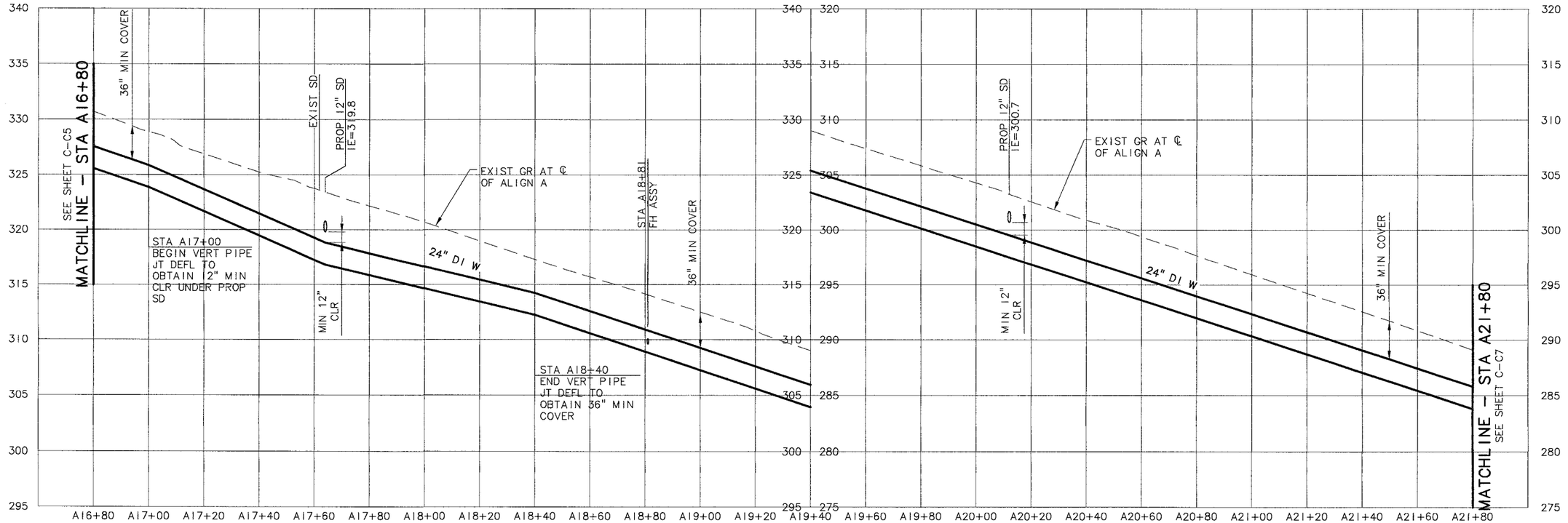
2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.



PLAN - 'A' LINE

SCALE: 1"=20'



PROFILE - 'A' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C6
85 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON LAFE I. ALDERMAN 78586 RENEWS 12-31-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' PLAN AND PROFILE
STA A16+80 TO STA A21+80

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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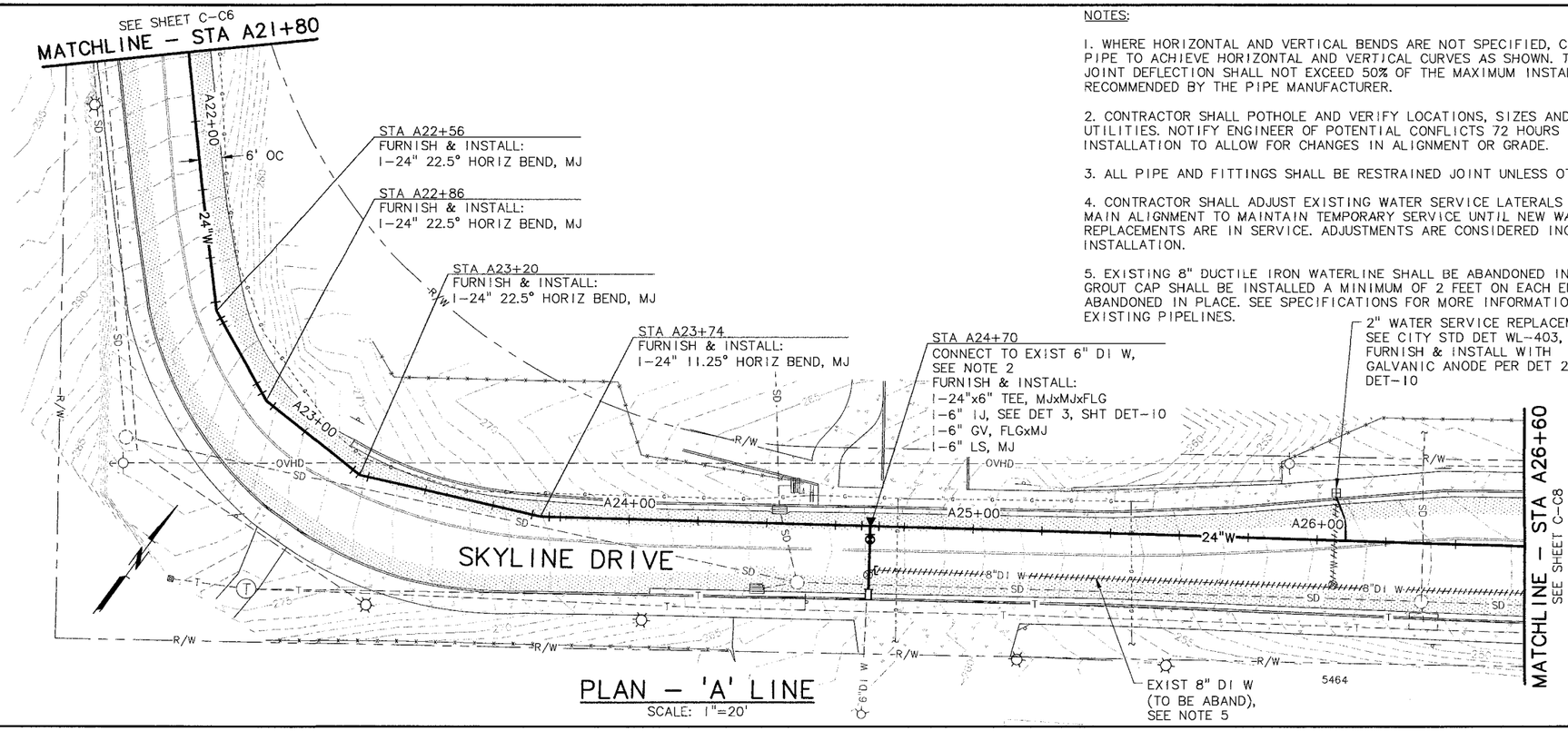


PLAN – 'A' LINE
SCALE: 1"=20'

NOTES:

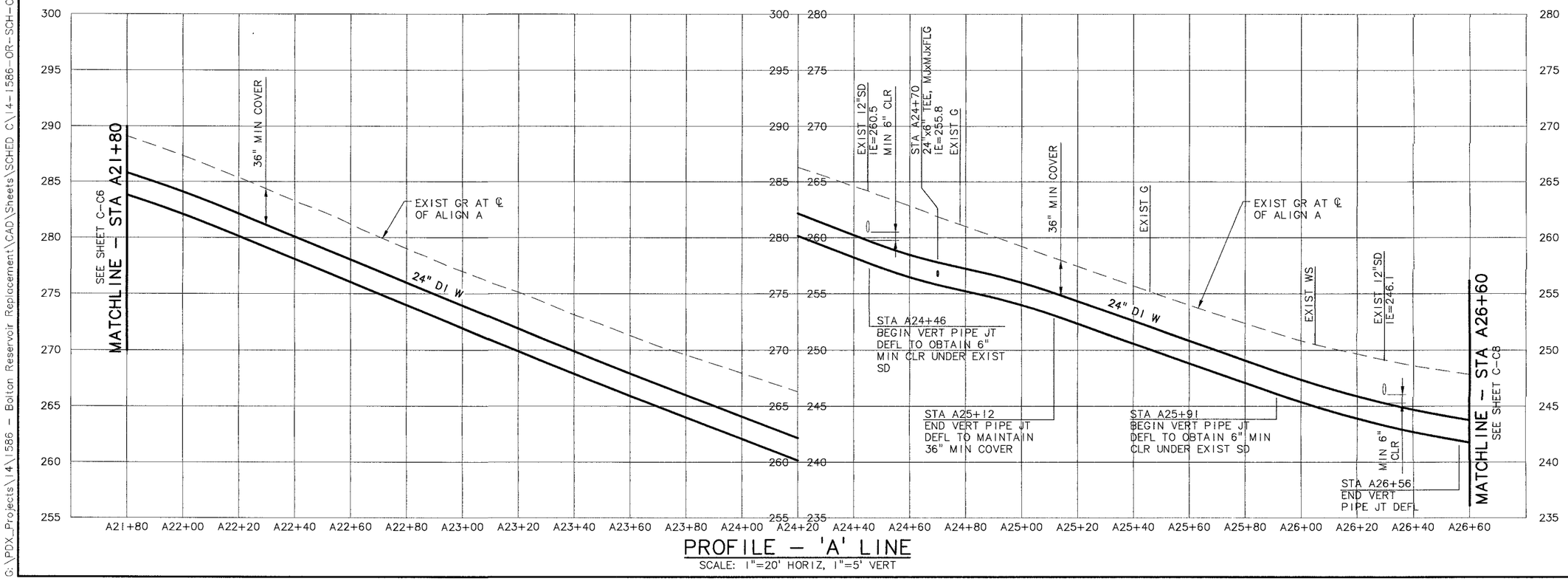
1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. EXISTING 8" DUCTILE IRON WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE – 'A' LINE
SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C7
86 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
DECEMBER 15, 1978
LAEL L. ALDERMAN
RENEWS 12-31-15

SCALE: VERT: 1"=5'
HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' PLAN AND PROFILE
STA A21+80 TO STA A26+60

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 1100 PHONE 503-224-9510
Portland, Oregon 97204 FAX 503-224-8022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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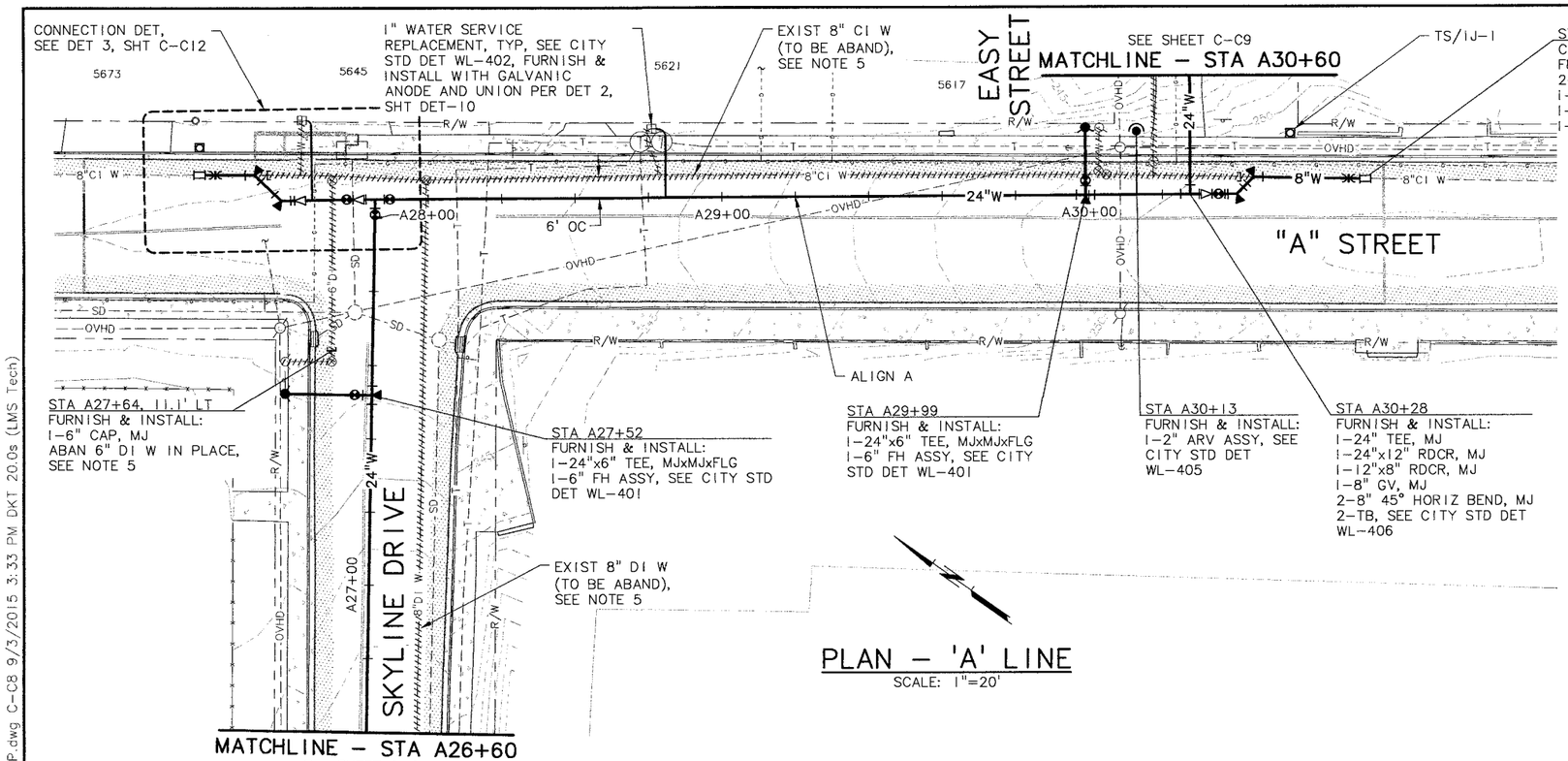


PLAN - 'A' LINE

SCALE: 1"=20'

NOTES:

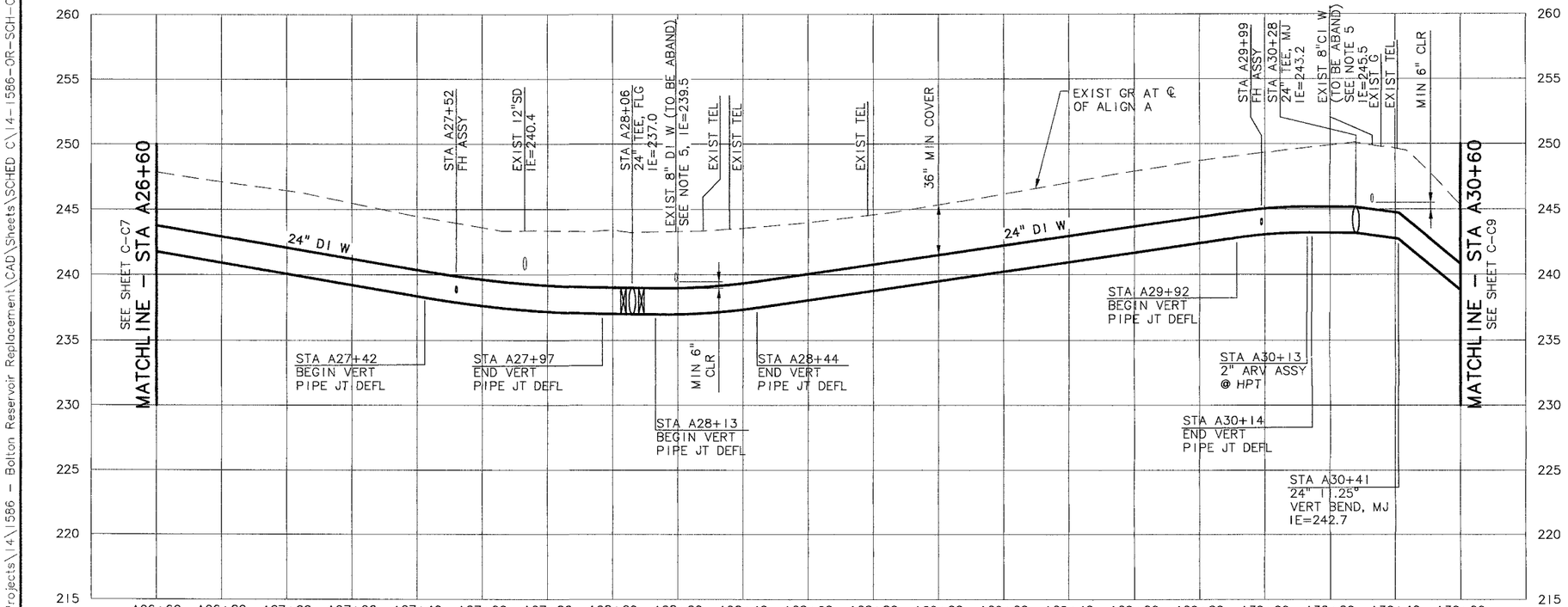
1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. EXISTING 6" DUCTILE IRON, 8" CAST IRON, AND 8" DUCTILE IRON WATERLINES SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE - 'A' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C8 87 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1989 LAEL L. ALDERMAN RENEWS 12-31-15

SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' PLAN AND PROFILE
STA A26+60 TO STA A30+60

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0852

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586

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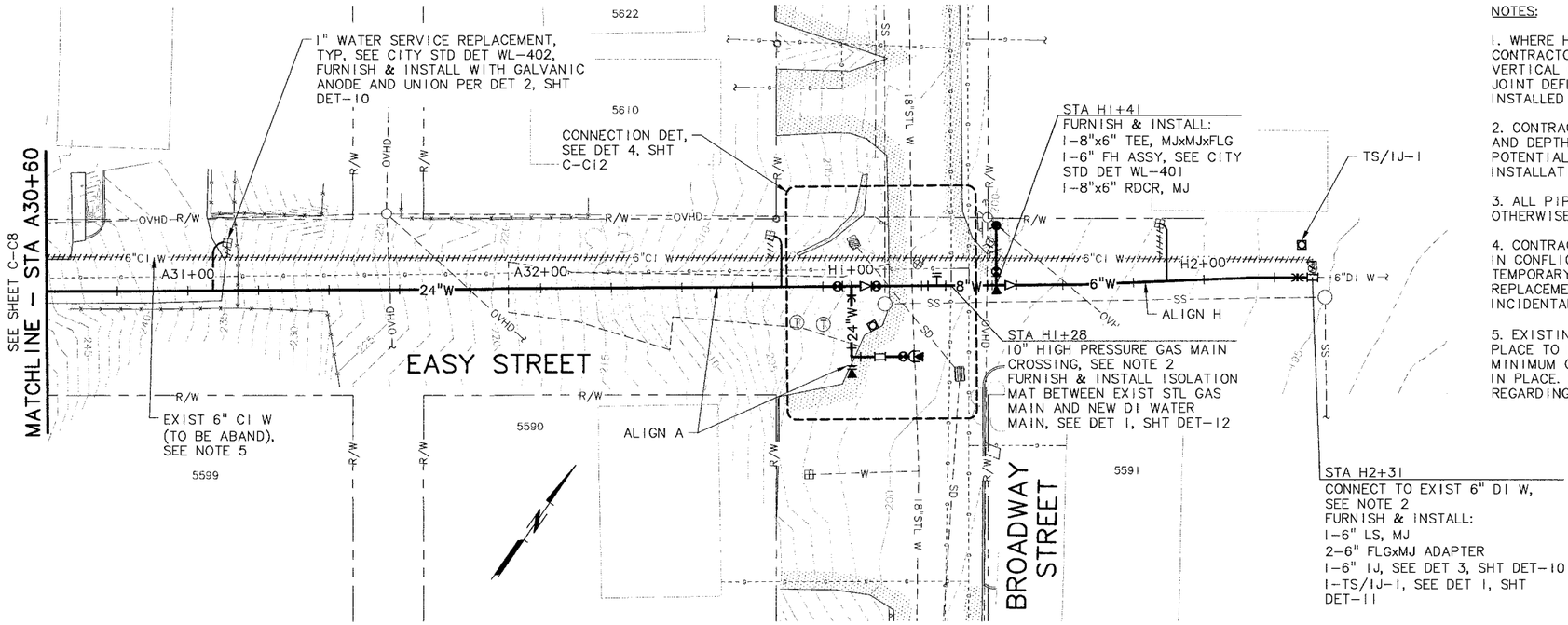


PLAN – 'A' LINE
SCALE: 1"=20'

NOTES:

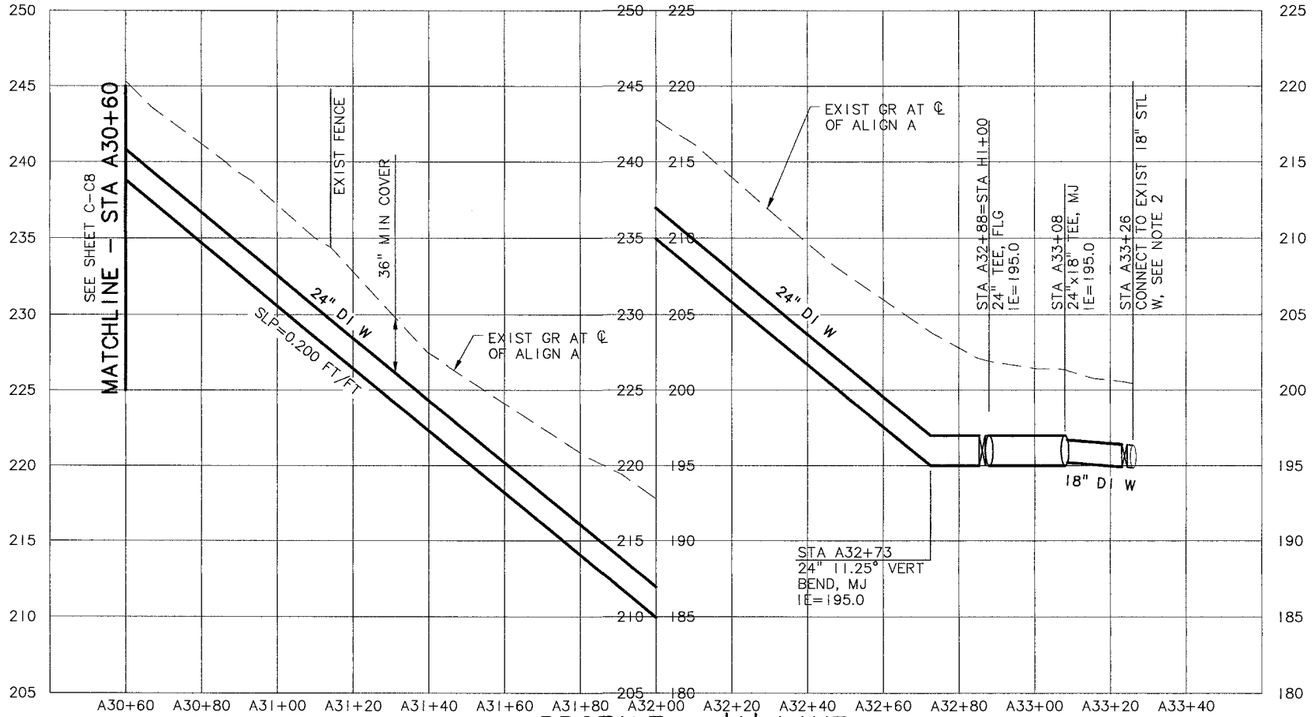
1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

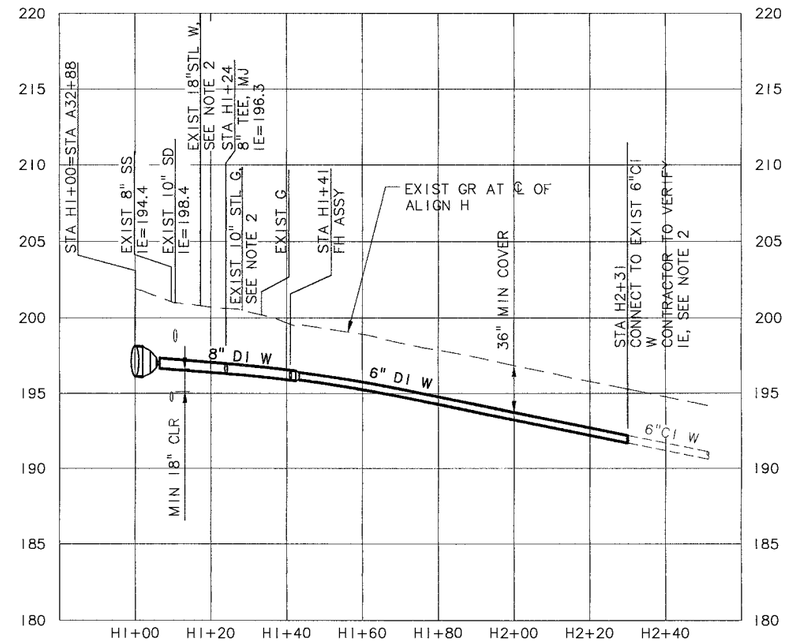
3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

5. EXISTING 6" CAST IRON WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE – 'A' LINE
SCALE: 1"=20' HORIZ, 1"=5' VERT



PROFILE – 'H' LINE
SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BKF
DRAWN: HCM/BAW
CHECKED: LLA
APPROVED: TPB

SHEET C-C9
88 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 2006 LAELI L. ALDERMAN
RENEWS 12-31-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

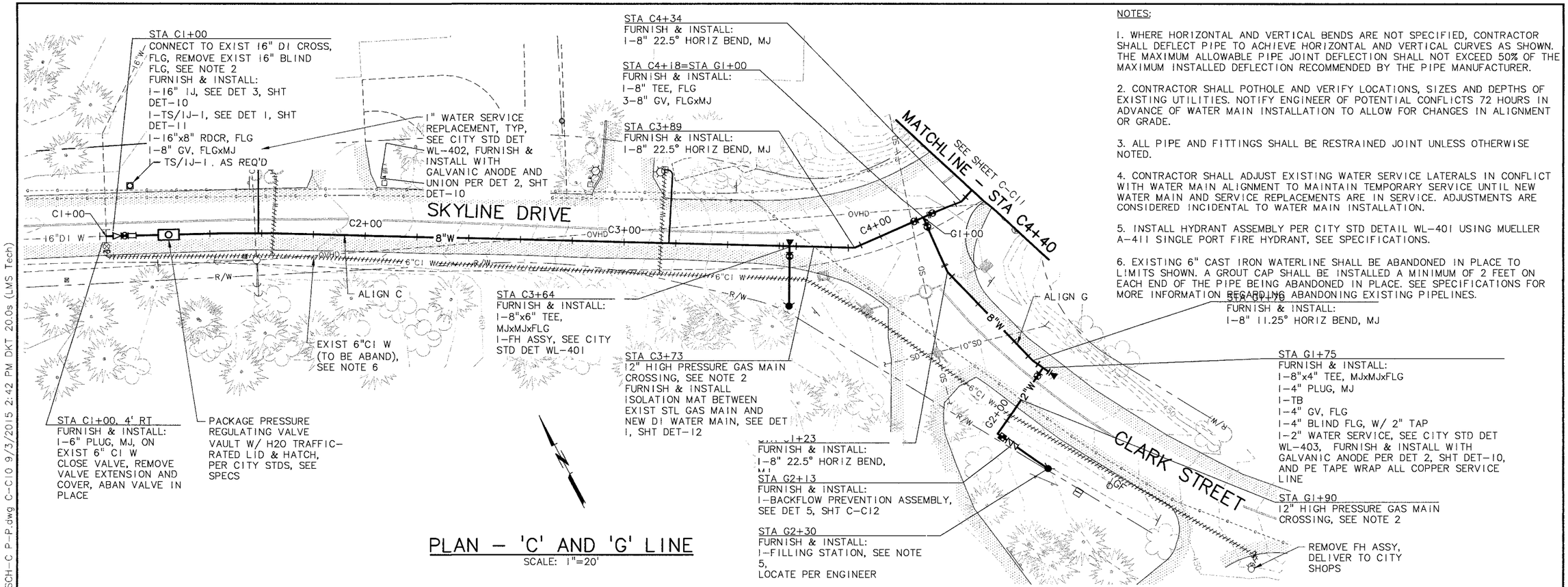
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'A' AND 'H' PLAN AND PROFILE
STA A30+60 TO STA A33+26 AND STA H1+00 TO STA H2+31

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN - 'C' AND 'G' LINE

SCALE: 1"=20'

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

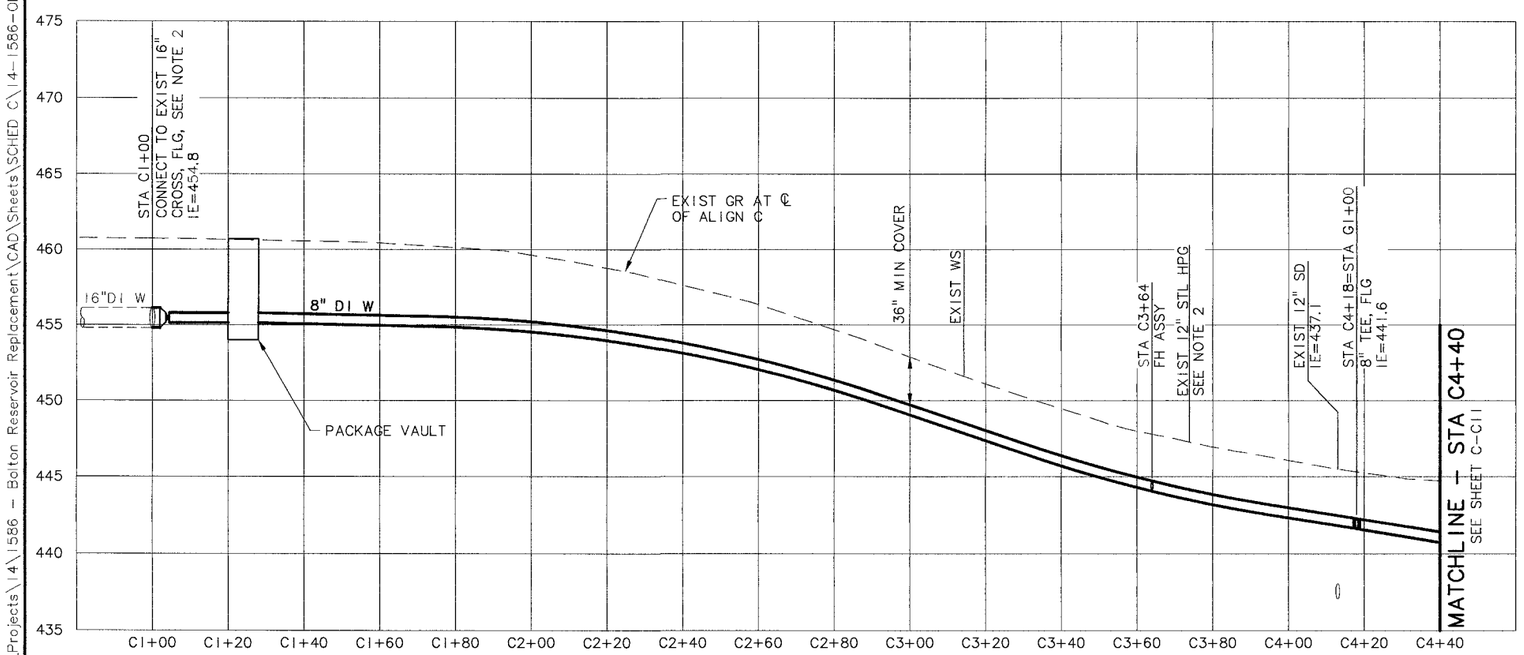
2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

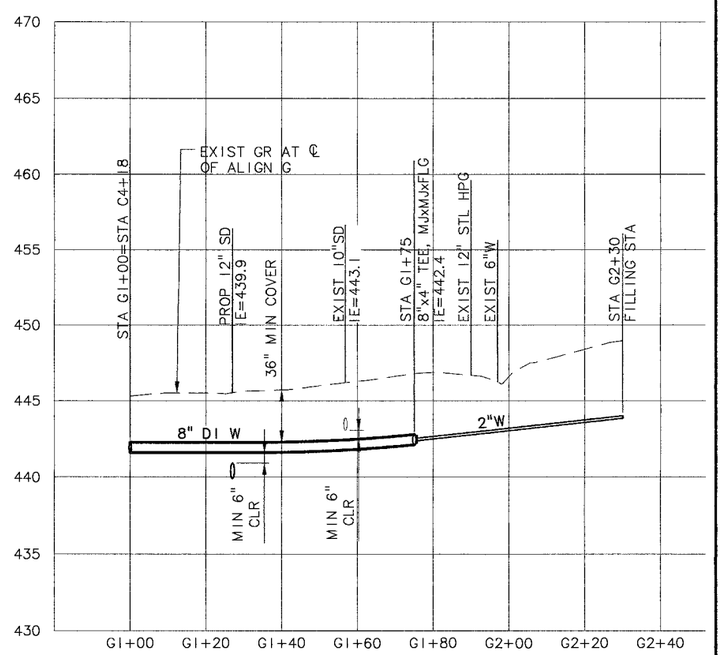
5. INSTALL HYDRANT ASSEMBLY PER CITY STD DETAIL WL-401 USING MUELLER A-411 SINGLE PORT FIRE HYDRANT, SEE SPECIFICATIONS.

6. EXISTING 6" CAST IRON WATERLINE SHALL BE ABANDONED IN PLACE TO LIMITS SHOWN. A GROUT CAP SHALL BE INSTALLED A MINIMUM OF 2 FEET ON EACH END OF THE PIPE BEING ABANDONED IN PLACE. SEE SPECIFICATIONS FOR MORE INFORMATION REGARDING ABANDONING EXISTING PIPELINES.



PROFILE - 'C' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT



PROFILE - 'G' LINE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW/RLF
CHECKED: LLA
APPROVED: TPB

SHEET C-C10 89 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 17, 1986 LAEL T. ALDERMAN RENEWS 12-31-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE 0 1

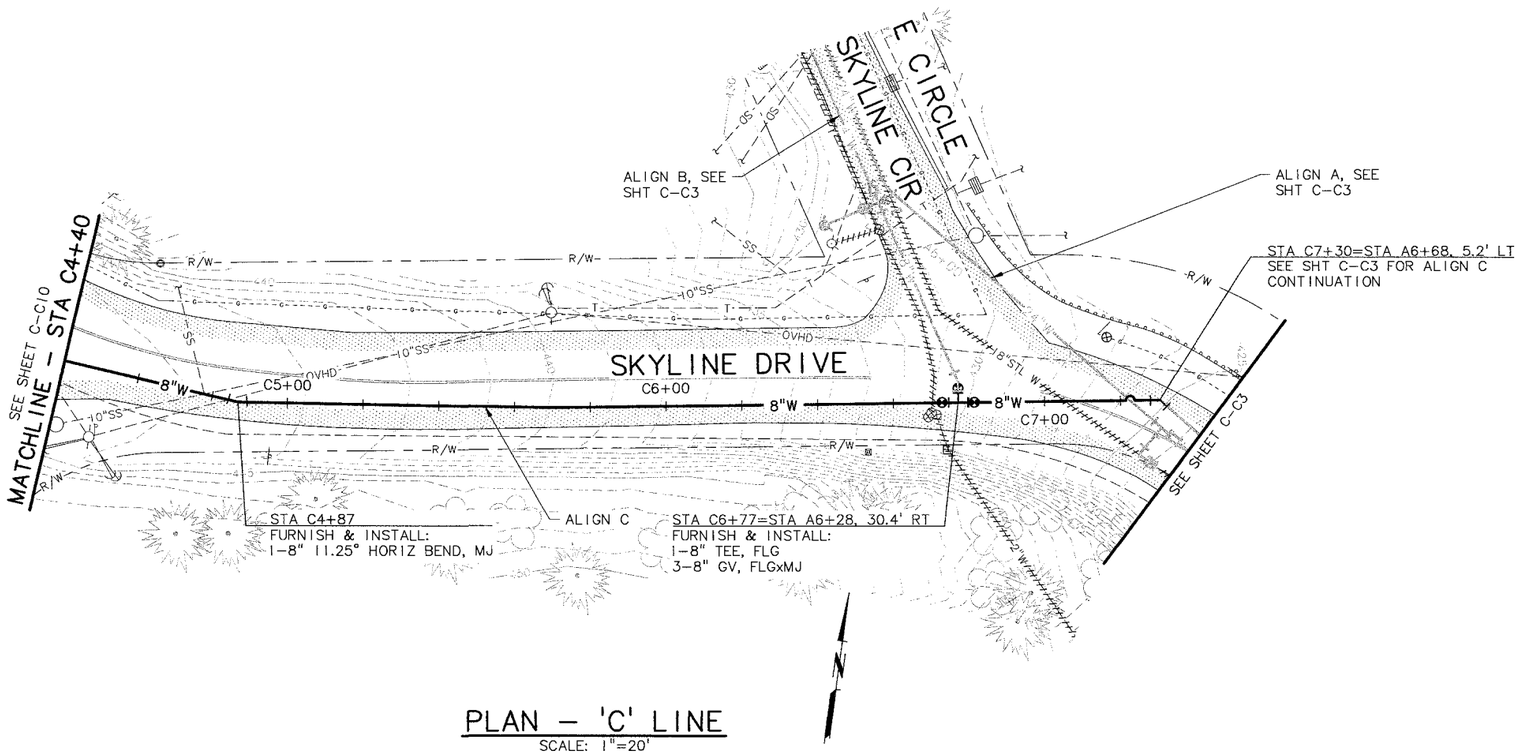
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGNMENT 'C' AND 'G' PLAN AND PROFILE
STA C1+00 TO STA C4+40 AND STA G1+00 TO STA G2+20

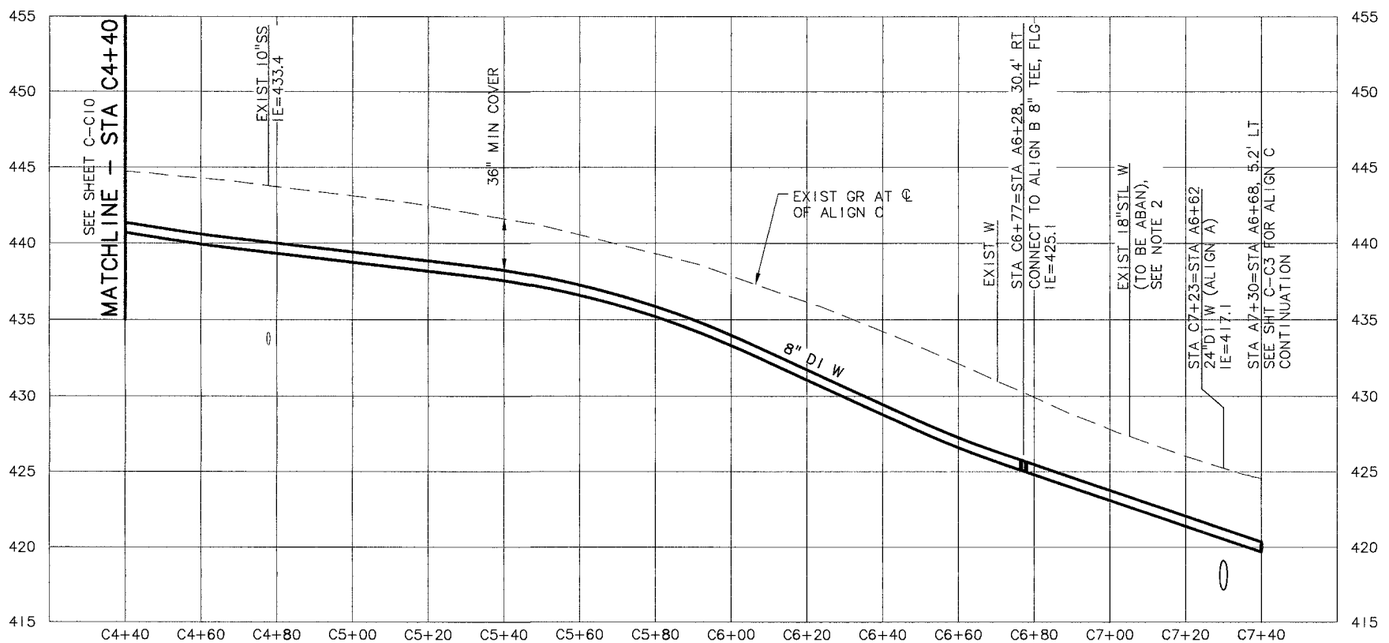
Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED C\14-1586-OR-SCH-C P-P.dwg C-C10 9/3/2015 2:42 PM DKT 20.0s (LMS Tech)



PLAN – 'C' LINE
SCALE: 1"=20'



PROFILE – 'C' LINE
SCALE: 1"=20' HORIZ, 1"=5' VERT

NOTES:

1. WHERE HORIZONTAL AND VERTICAL BENDS ARE NOT SPECIFIED, CONTRACTOR SHALL DEFLECT PIPE TO ACHIEVE HORIZONTAL AND VERTICAL CURVES AS SHOWN. THE MAXIMUM ALLOWABLE PIPE JOINT DEFLECTION SHALL NOT EXCEED 50% OF THE MAXIMUM INSTALLED DEFLECTION RECOMMENDED BY THE PIPE MANUFACTURER.

2. CONTRACTOR SHALL POTHOLE AND VERIFY LOCATIONS, SIZES AND DEPTHS OF EXISTING UTILITIES. NOTIFY ENGINEER OF POTENTIAL CONFLICTS 72 HOURS IN ADVANCE OF WATER MAIN INSTALLATION TO ALLOW FOR CHANGES IN ALIGNMENT OR GRADE.

3. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL ADJUST EXISTING WATER SERVICE LATERALS IN CONFLICT WITH WATER MAIN ALIGNMENT TO MAINTAIN TEMPORARY SERVICE UNTIL NEW WATER MAIN AND SERVICE REPLACEMENTS ARE IN SERVICE. ADJUSTMENTS ARE CONSIDERED INCIDENTAL TO WATER MAIN INSTALLATION.

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW/RLF
CHECKED: LLA
APPROVED: TPB

SHEET C-C11
90 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 15, 1978 LAEL I. ALDERMAN
RENEWS 12-31-15

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **WATER MAIN REPLACEMENT**
ALIGMENT 'C' PLAN AND PROFILE
STA 4+40 TO STA C7+40

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0852

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED C\14-1586-OR-SCH-C P-P.dwg C-C11 9/3/2015 2:42 PM DKT 20.0s (LMS Tech)

CONSTRUCTION SEQUENCING:

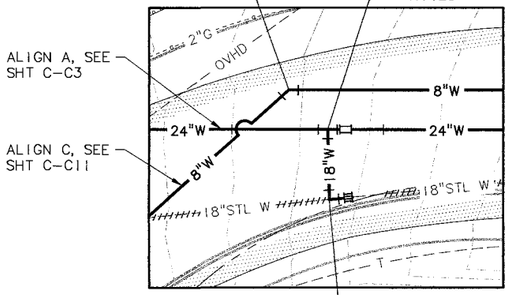
1. CONSTRUCT ALIGNMENT 'A' THROUGH TEE AT STA A6+73, INSTALLING TEMPORARY 24" PLUG ON EAST RUN OF TEE. PERFORM HYDROSTATIC TESTING, FLUSHING AND DISINFECTION FOR THIS SEGMENT. OBTAIN ACCEPTANCE OF SEGMENT FROM CITY, THEN PERFORM TIE-IN TO EXISTING SYSTEM.

2. CONSTRUCT TEMPORARY TIE-IN BETWEEN ALIGNMENT 'A' AND EXISTING 18" STEEL WATER MAIN AS SHOWN.

3. COMPLETE CONSTRUCTION OF ALIGNMENT 'A'. PERFORM HYDROSTATIC TESTING, FLUSHING AND DISINFECTION FOR THIS SEGMENT. OBTAIN ACCEPTANCE OF SEGMENT FROM CITY, THEN PERFORM TIE-IN TO EXISTING SYSTEM AS SHOWN ON DETAIL 2, THIS SHEET.

4. REMOVE TEMPORARY 24" PLUG IN TEE AT STA A6+73, AND CONNECT ALL 24" PIPING FOR ALIGNMENT 'A'.

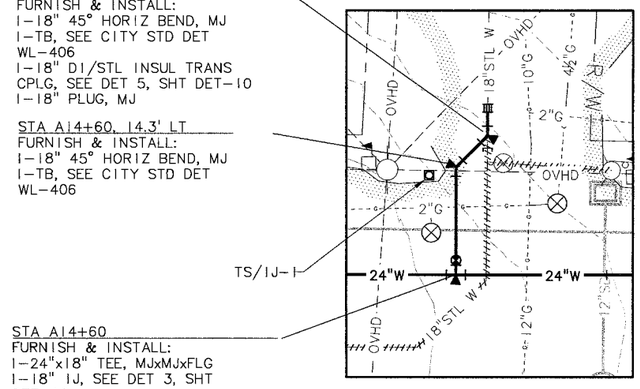
5. INSTALL PERMANENT 18" PLUG IN THE BRANCH OF THE TEE AT STA A6+73, AND ABANDON ALL 18" WATER MAIN IN PLACE.



PIPING CONNECTION DETAIL
INTERSECTION OF SKYLINE CIR & SKYLINE DR

SCALE: 1"=10'

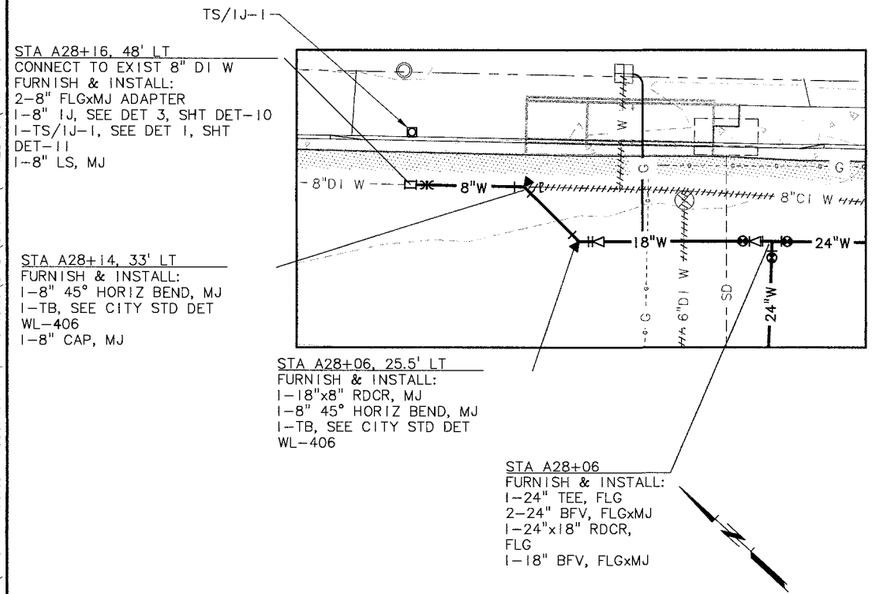
(1 / C-C3)



PIPING CONNECTION DETAIL
INTERSECTION OF SKYLINE DR & WEBB ST

SCALE: 1"=10'

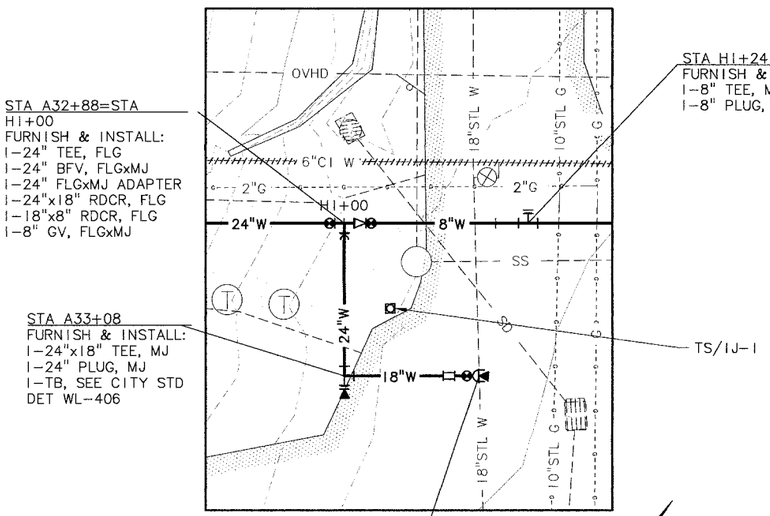
(2 / C-C5)



PIPING CONNECTION DETAIL
INTERSECTION OF SKYLINE DR & A ST

SCALE: 1"=10'

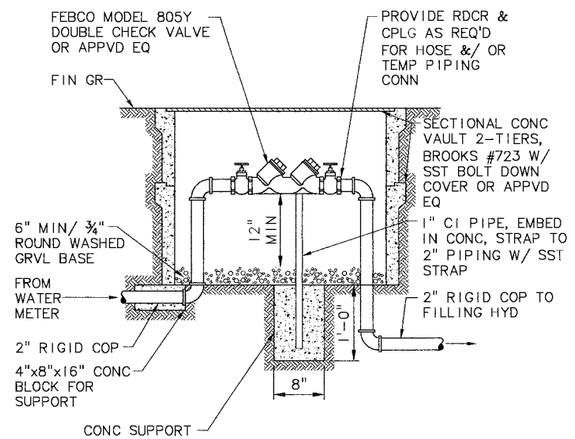
(3 / C-C8)



PIPING CONNECTION DETAIL
INTERSECTION OF EASY ST & BROADWAY ST

SCALE: 1"=10'

(4 / C-C9)



BACKFLOW PREVENTION ASSEMBLY

SCALE: NTS

(5 / C-C10)

NO.	DATE	REVISION	BY

DESIGNED: BRF
DRAWN: HCM/BAW/RLF
CHECKED: LLA
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — 79586 — LAEL I. ALBERTSON — RENEWS 12-31-15

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SHEET C-C12 91 of 167

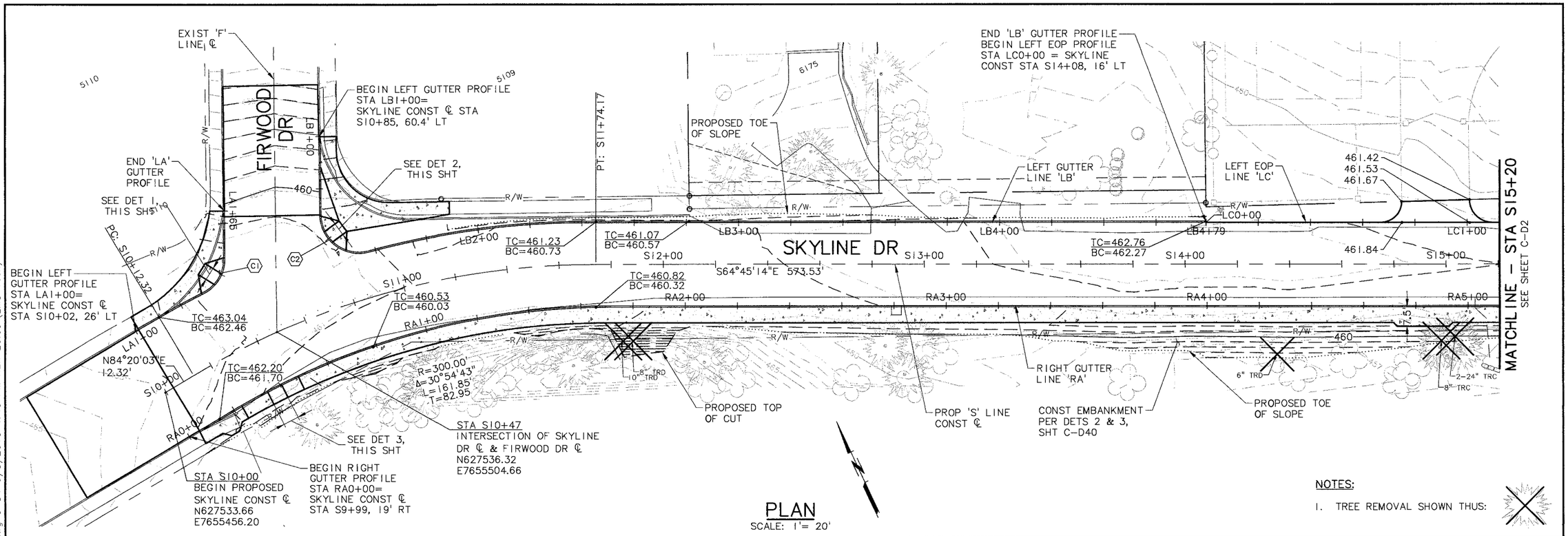
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **PIPING CONNECTION DETAILS**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED C\14-1586-OR-SCH-C P-P.dwg C-C12 9/3/2015 2:42 PM DKT 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'

NOTES:

1. TREE REMOVAL SHOWN THUS:

SKYLINE DR DETAIL (1)
SCALE: 1"=10'

SKYLINE DR DETAIL (2)
SCALE: 1"=10'

SKYLINE DR DETAIL (3)
SCALE: 1"=10'

TREE REMOVAL SUMMARY TABLE

LOCATION	APPROXIMATE DBH RANGE	APPROXIMATE QUANTITY (EA)
RIGHT SIDE OF SKYLINE DRIVE: FIRWOOD DR – CLARK ST	6"–24"	9
LEFT SIDE OF SKYLINE DRIVE: FIRWOOD DR – CLARK ST	8"–12"	0
RIGHT SIDE OF SKYLINE DRIVE: CLARK ST – A ST	8"–54"	53

CURB RETURN DATA

CURB	DESCRIPTION	CURB STATION	ELEV	CURVE DATA
C1	BCR: N627570.41 E7655498.78	LA1+29.8	461.93	R = 15' Δ = 63°48'52" L = 16.71'
	1/4 Δ	LA1+33.9	461.89	
	RAMP ℄ 1/2 Δ	LA1+38.1	461.85	
	3/4 Δ	LA1+42.3	461.80	
	ECR: N627561.65 E7655485.56	LA1+46.4	461.76	
C2	BCR: N627549.12 E7655549.86	LB1+30.0	460.78	R = 15' Δ = 104°35'22" L = 27.38'
	1/4 Δ	LB1+36.9	460.86	
	RAMP ℄ 1/2 Δ	LB1+43.7	460.95	
	3/4 Δ	LB1+50.6	461.18	
	ECR: N627570.14 E7655538.82	LB1+57.4	461.62	

NOTE: ELEVATIONS FOR CURB RETURNS ARE FOR THE GUTTER LINE.

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON JUNE 23, 1978 ANDREW HENRY RENEWS 6-30-17

SHEET C-D1 92 of 167

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: ALIGNMENT AND GRADING PLAN - 1

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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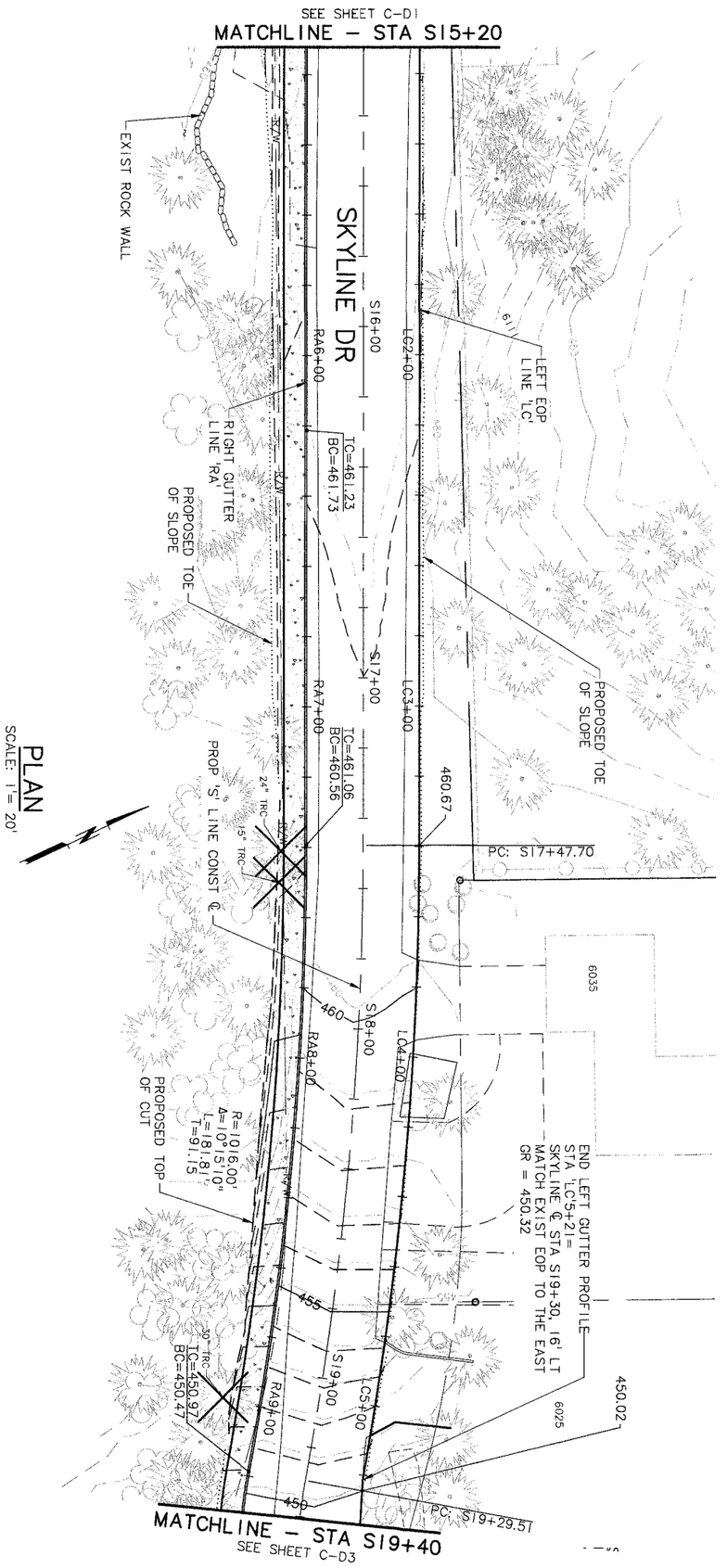


PLAN
SCALE: 1"= 20'

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
ALIGNMENT AND GRADING PLAN - 2

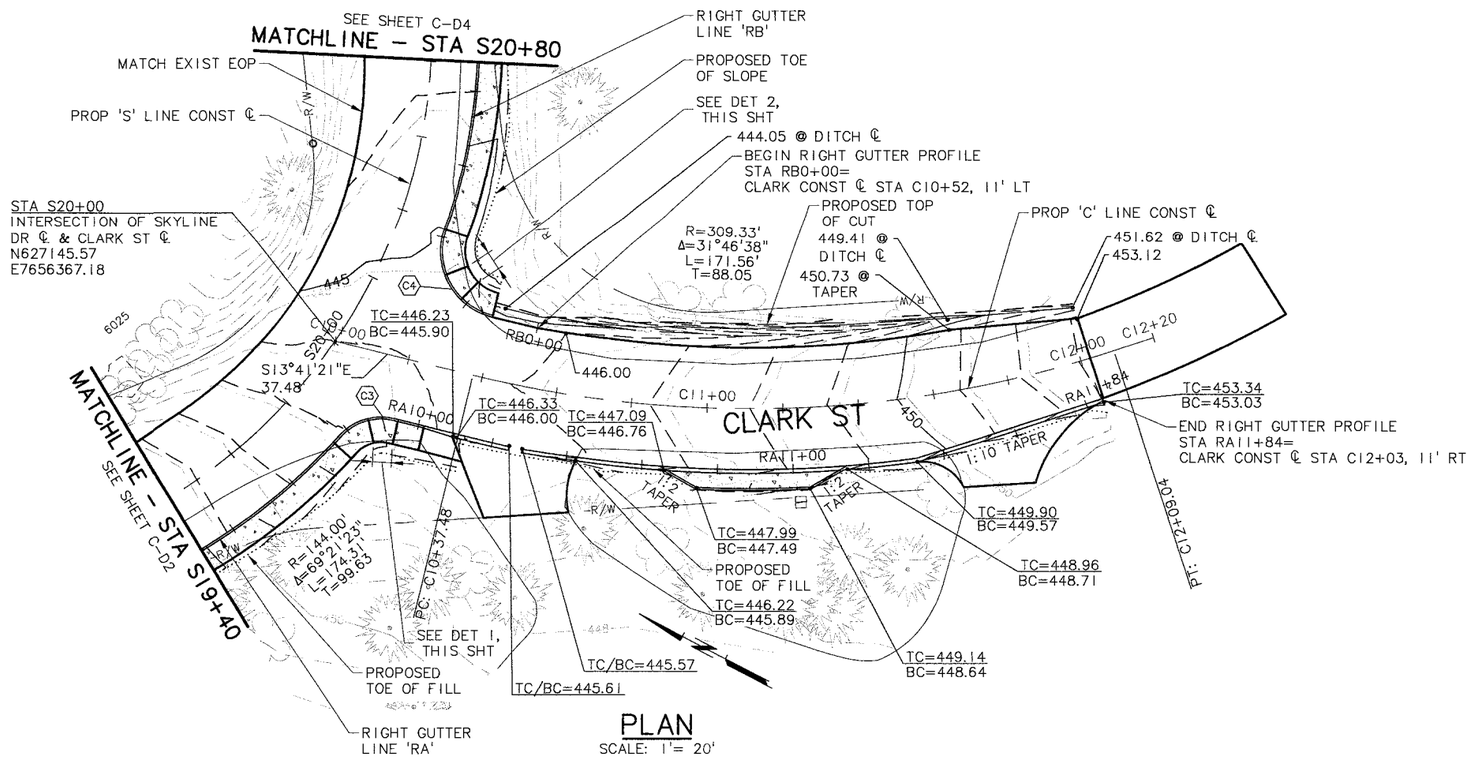
SCALE: VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER 76447 OREGON JUNE 2, 2011 ANDREW HENRY BIESY
RENEWS 6-30-17

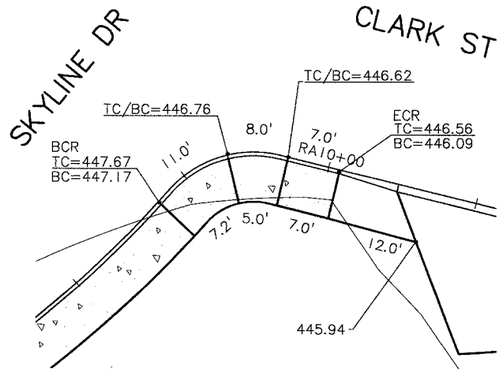
NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

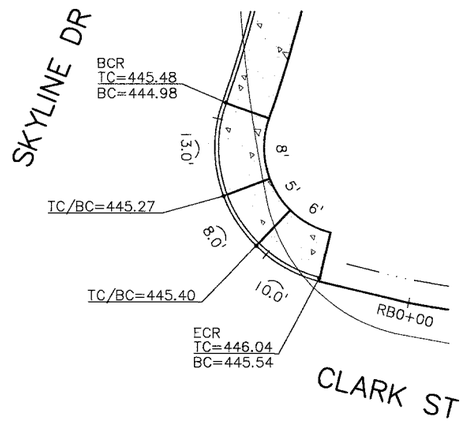
SHEET C-D2
93 of 167



PLAN
SCALE: 1"= 20'



SKYLINE DR DETAIL 1
SCALE: 1"=10'



SKYLINE DR DETAIL 2
SCALE: 1"=10'

CURB RETURN DATA

CURB	DESCRIPTION	CURB STATION	ELEV	CURVE DATA
C3	BCR: N627133.37 E7656345.60	RA9+77.3	447.10	R = 15' Δ = 61°34'57" L = 16.12'
	1/4 Δ	RA9+81.3	446.95	
	RAMP ℄ 1/2 Δ	RA9+85.4	446.73	
	3/4 Δ	RA9+89.5	446.52	
	ECR: N627122.43 E7656356.38	RA9+93.4	446.63	
C4	BCR: N627133.80 E7656407.00	RB0+12.2	444.98	R = 15' Δ = 95°59'15" L = 30.16'
	1/4 Δ	RB0+19.7	445.19	
	RAMP ℄ 1/2 Δ	RB0+27.2	445.32	
	3/4 Δ	RB0+34.8	445.43	
	ECR: N627111.68 E7656391.96	RB0+42.3	445.54	

NOTE: ELEVATIONS FOR CURB RETURNS ARE FOR THE GUTTER LINE.

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 23, 1987 — ANDREW HENRY 76447 — RENEWS 6-30-17

SHEET C-D3 94 of 167

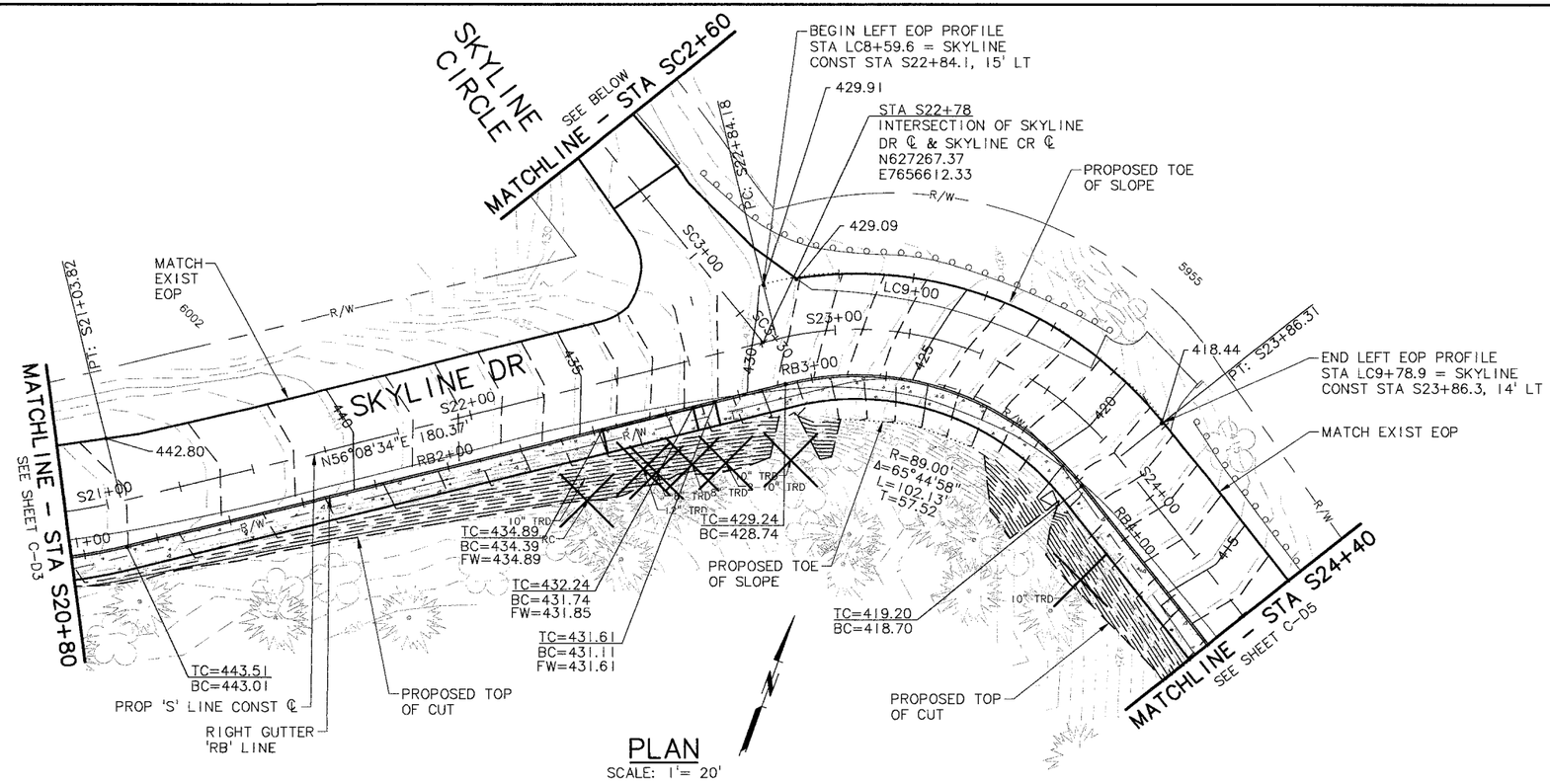
SCALE: VERT: 1"=5' HORIZ: 1"=20'
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE (0, 1)

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 3**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

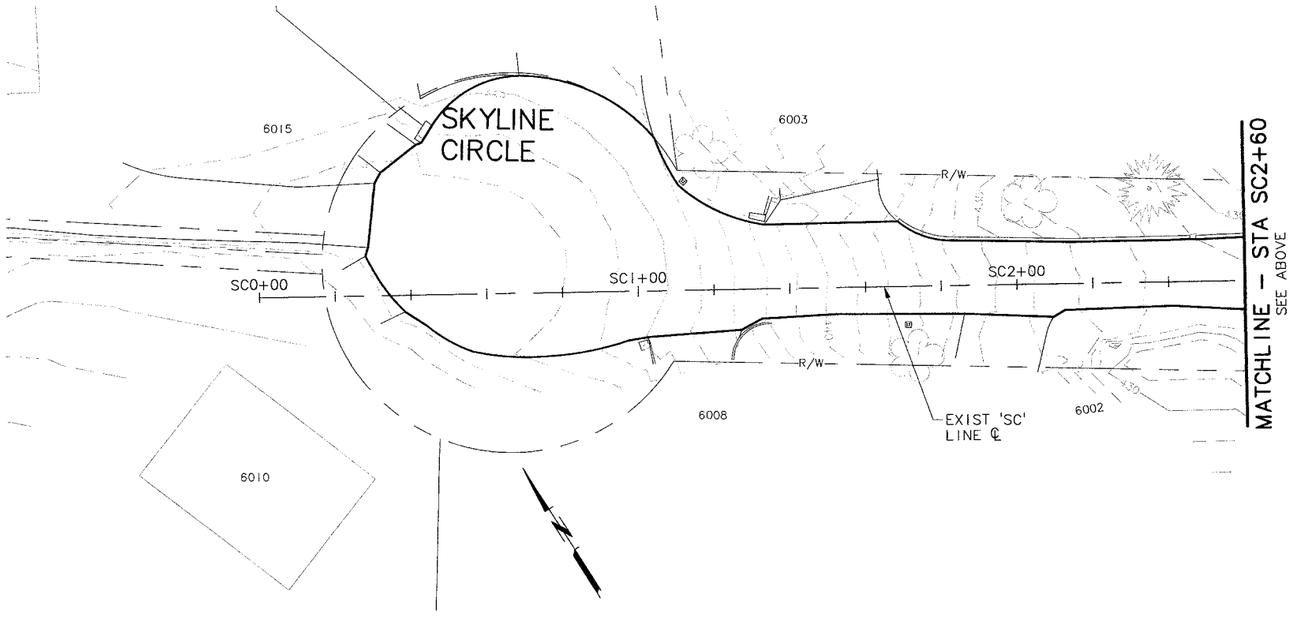
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

SUPERELEVATION DATA

'S' STATION	℄ 1/4 PTS	℄ ELEV	LT EOP ELEV	RT GUT ELEV
'S'22+84.18	PC	429.36	429.91	428.74
'S'23+09.71	¼	426.76	427.25	426.34
'S'23+35.25	½	424.08	424.56	423.76
'S'23+60.78	¾	421.43	421.62	421.13
'S'23+86.31	PT	418.80	418.44	418.70



PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D4
95 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
ANDREW HENRY
RENEWS 6-30-17

SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 4**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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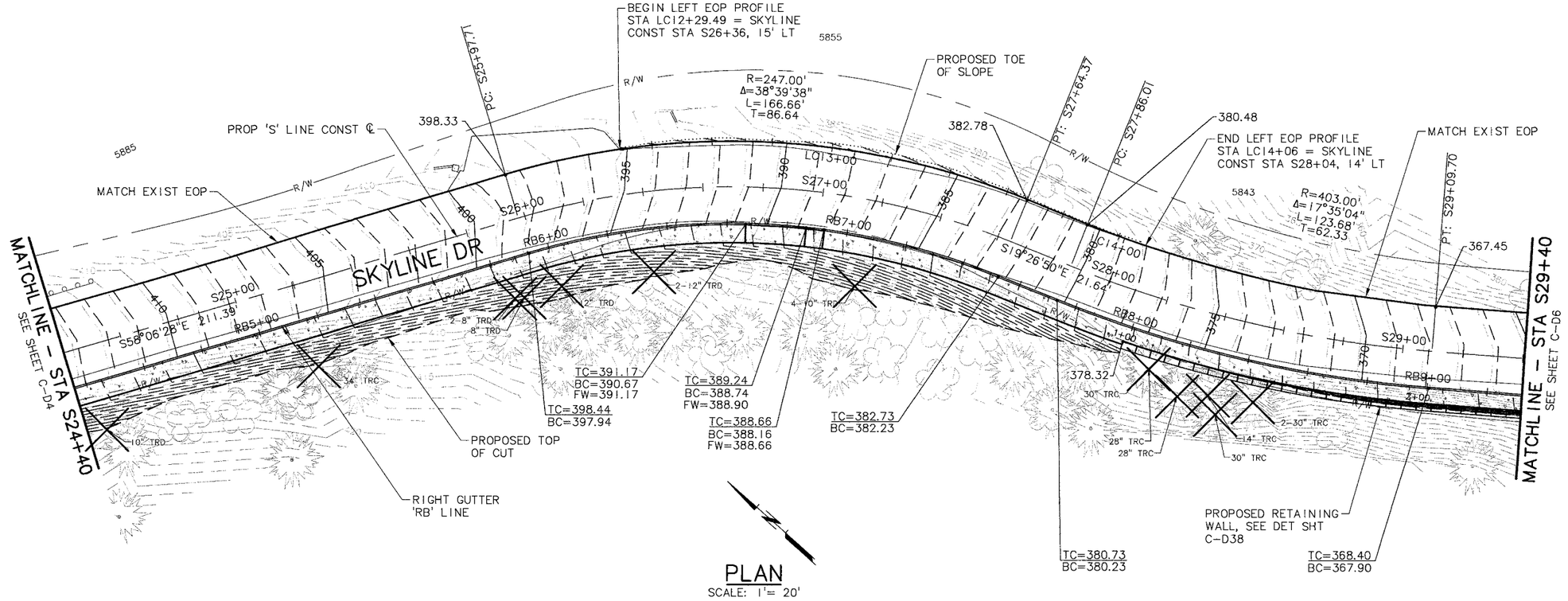


PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D5
96 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
ANDREW HENRY
RENEWS 6-30-17

SCALE VERT: 1"=5' HORIZ: 1"=20'

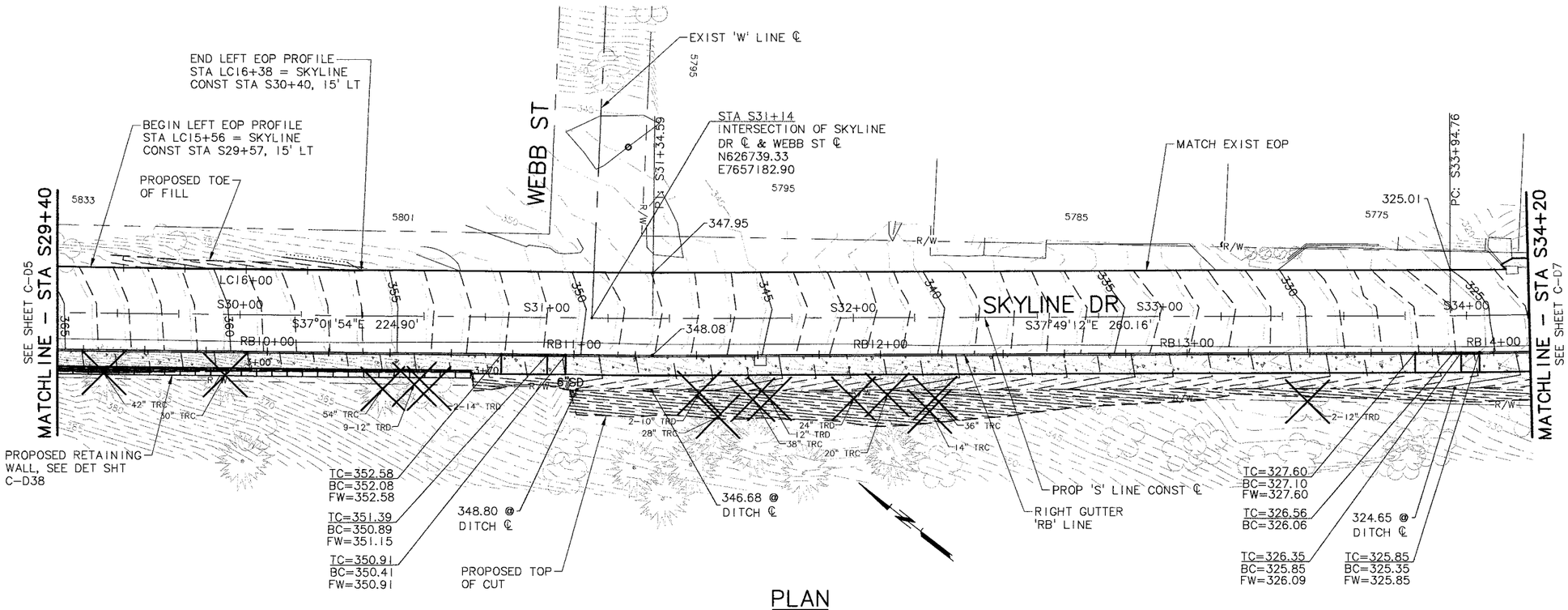
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 5**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D6
97 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2010
ANDREW H. GIBBS
RENEWS 6-30-17

SCALE VERT: 1"=5'
HORIZ: 1"=20'
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
ALIGNMENT AND GRADING PLAN - 6

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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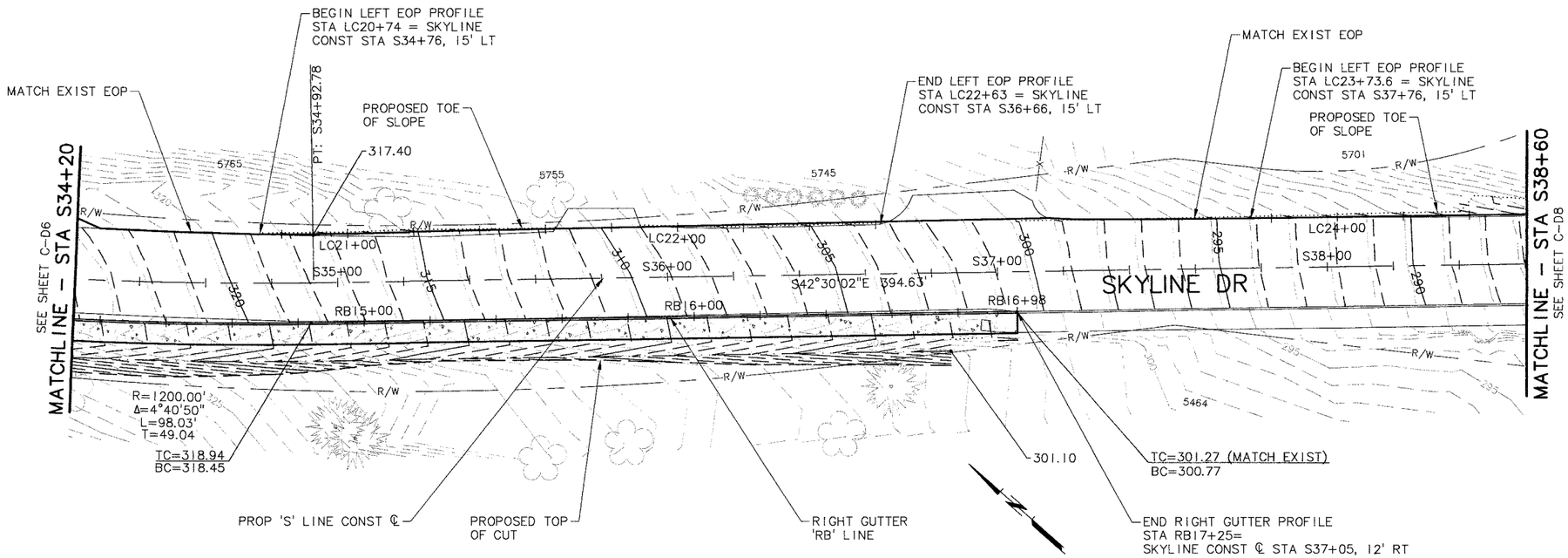

PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D7
98 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1978
ANDREW HENRY
77447
RENEWS 6-30-17

SCALE VERT: 1"=5'
HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 7**

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010
FAX 360-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

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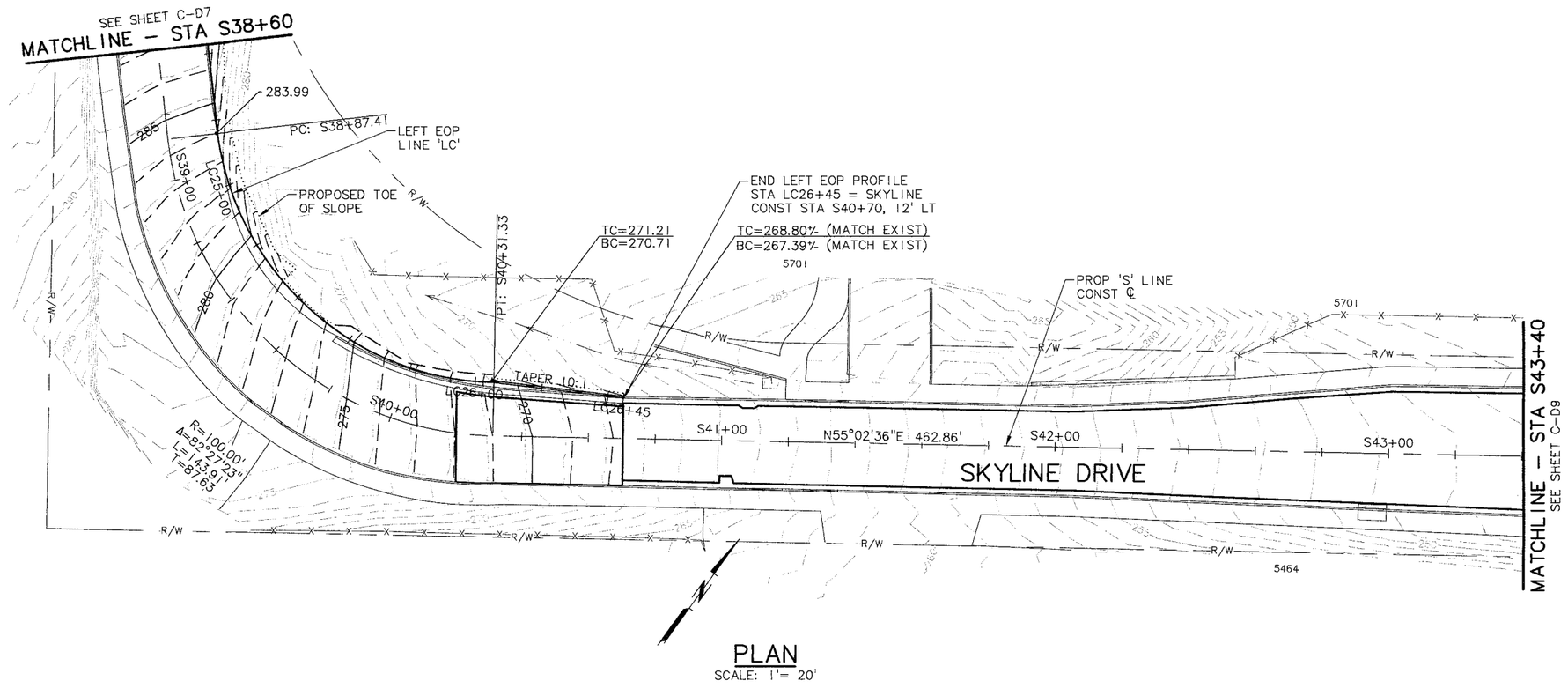

PLAN
SCALE: 1"= 20'

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NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D8
99 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 25, 1997
ANDREW HENRY
76447
RENEWS 6-30-17

SCALE
VERT: 1"=5'
HORIZ: 1"=20'

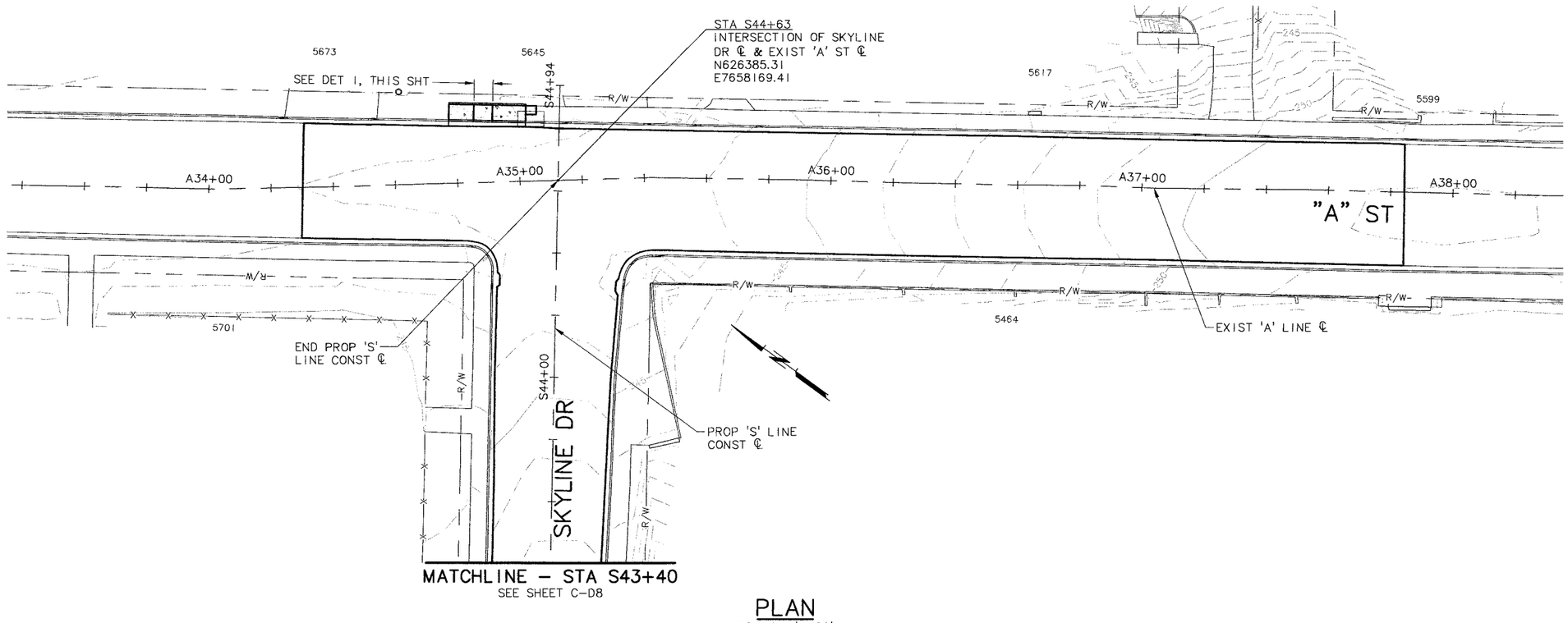
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

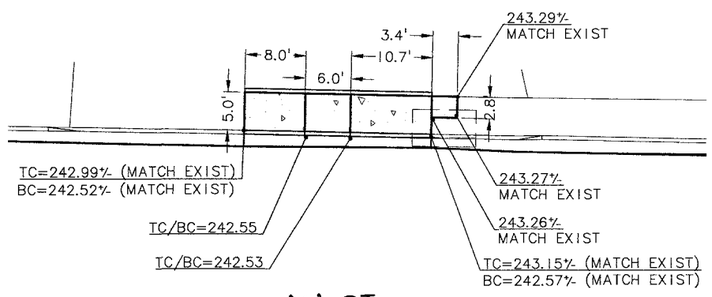
SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 8**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'



'A' ST

A ST DETAIL
SCALE: 1"=10'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D9
100 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 2, 1987
ANDREW HENRY
76447
RENEWS 6-30-17

SCALE | VERT: 1"=5' | HORIZ: 1"=20'
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **ALIGNMENT AND GRADING PLAN - 9**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

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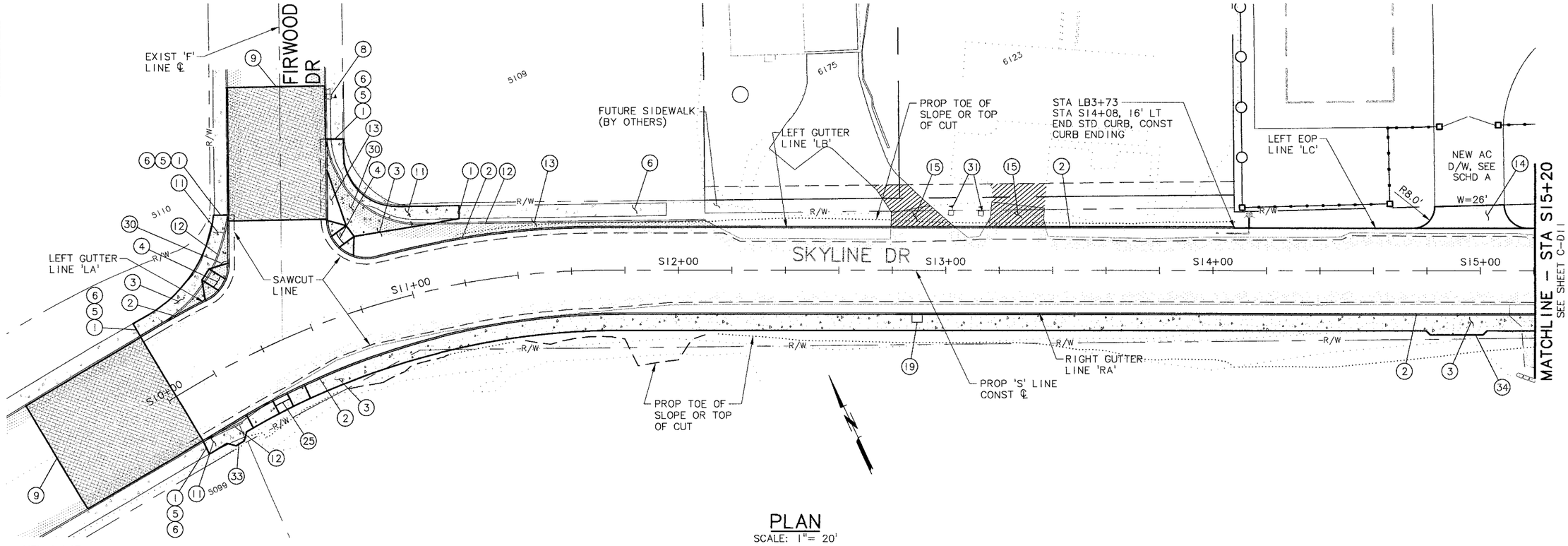

PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) MATCH EXIST S/W AND STD CURB AT EXIST JT

(2) CONST CONC STD CURB, SEE NOTE 1 (SEE ODOT DWG RD700)

(3) CONST CONC S/W (SEE ODOT DWG RD720)

(4) CONST PERPENDICULAR S/W CURB RAMP – OPTION D (SEE ODOT DWG RD756)

(5) MAINTAIN AND PROTECT EXIST STD CURB, TYP

(6) MAINTAIN AND PROTECT EXIST S/W, TYP

(8) MAINTAIN AND PROTECT EXIST MAILBOX

(9) AC PAVING LIMIT (SEE DETS 4 & 5, SHT C-D40)

(11) REMOVE EXIST S/W

(12) REMOVE EXIST STD CURB

(13) INSTALL BARK MULCH – 3" THK BTWN EXIST S/W AND BACK OF PROPOSED CURB (SEE LANDSCAPE PLANS)

(14) CONST NEW AC DWY APPROACH W/ LEVEL 2, 3/8" ACP MIX (PG 64-22) – 4" THK AGGREGATE BASE – 6" THK (SEE ODOT DWG NO RD715)

(15) REMOVE DWY APPROACH

(19) CURB FRAME & DOOR (SEE STORMWATER & UTILITIES SHEETS)

(25) CONST PARALLEL S/W CURB RAMP – OPTION K (SEE ODOT DWG RD757)

(30) REMOVE EXIST AC SURFACING

(31) REMOVE EXIST MB (BY COWL)

(33) CONST 7.1' WIDE S/W, MAINTAIN MIN 4.0' CLEAR WIDTH AROUND EXIST POLE

(34) CONST 7.3' WIDE S/W, MAINTAIN MIN 4.0' CLEAR WIDTH AROUND EXIST POLE

SHEET NOTES:

1. CURBS: SEE ODOT STANDARD DRAWING RD700, E=6".

2. REMOVE ALL EXISTING SIGNS AND SIGN POSTS FROM PROJECT IN CONFLICT WITH PROPOSED CONSTRUCTION AND INSTALL EXISTING SIGNS ON TEMPORARY SIGN SUPPORTS AS NECESSARY DURING CONSTRUCTION. MAINTAIN AND PROTECT ALL OTHER SIGNS AS REQUIRED PER SIGNING AND STRIPING PLAN. CITY OF WEST LINN WILL INSTALL ALL GROUND MOUNTED SIGNS. RETURN EXISTING SIGNS TO CITY OF WEST LINN (JEFF RANDAL, 503-880-9194).

3. PAVING LIMITS TO MATCH EXISTING EDGE OF PAVEMENT UNLESS OTHERWISE SHOWN OR DIRECTED.

0"–2" TAPER GRIND SHOWN THUS:

2" GRIND SHOWN THUS:

6" GRIND SHOWN THUS:

REMOVE EXIST SURFACING SHOWN THUS:

TO BE ACCOMPANIED BY ODOT STD DWGS: RD100, RD101, RD140, RD150, RD160, RD610, RD700, RD715, RD720, RD755, RD756, RD757, RD759, RD815

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 23, 1991 — ANDREW HENRY — RENEWS 6-30-17

SCALE: VERT: AS SHOWN; HORIZ: 1" = 20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 1

SHEET C-D10
101 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-226-1010
FAX 503-226-1022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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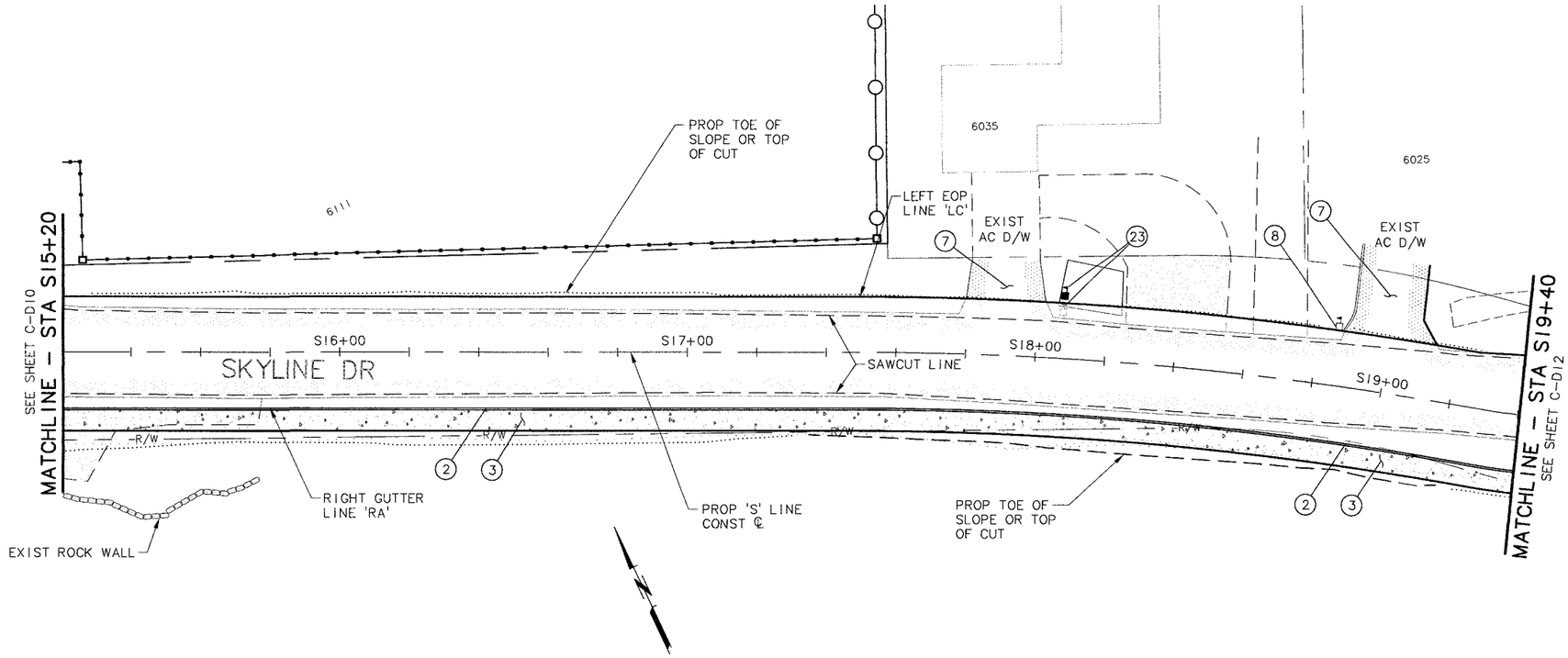


PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB

(3) CONST CONC S/W

(7) CONST AC DWY APPROACH (SEE DET 3, SHT C-D39)

(8) MAINTAIN AND PROTECT EXIST MAILBOX

(23) REMOVE EXIST MB
PROVIDE TEMP MB DURING CONST
INSTALL NEW SINGLE MB SUPPORT
(SEE ODOT DWG RD100 & RD101)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D11
102 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 21, 1977 — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: 1" = 20'

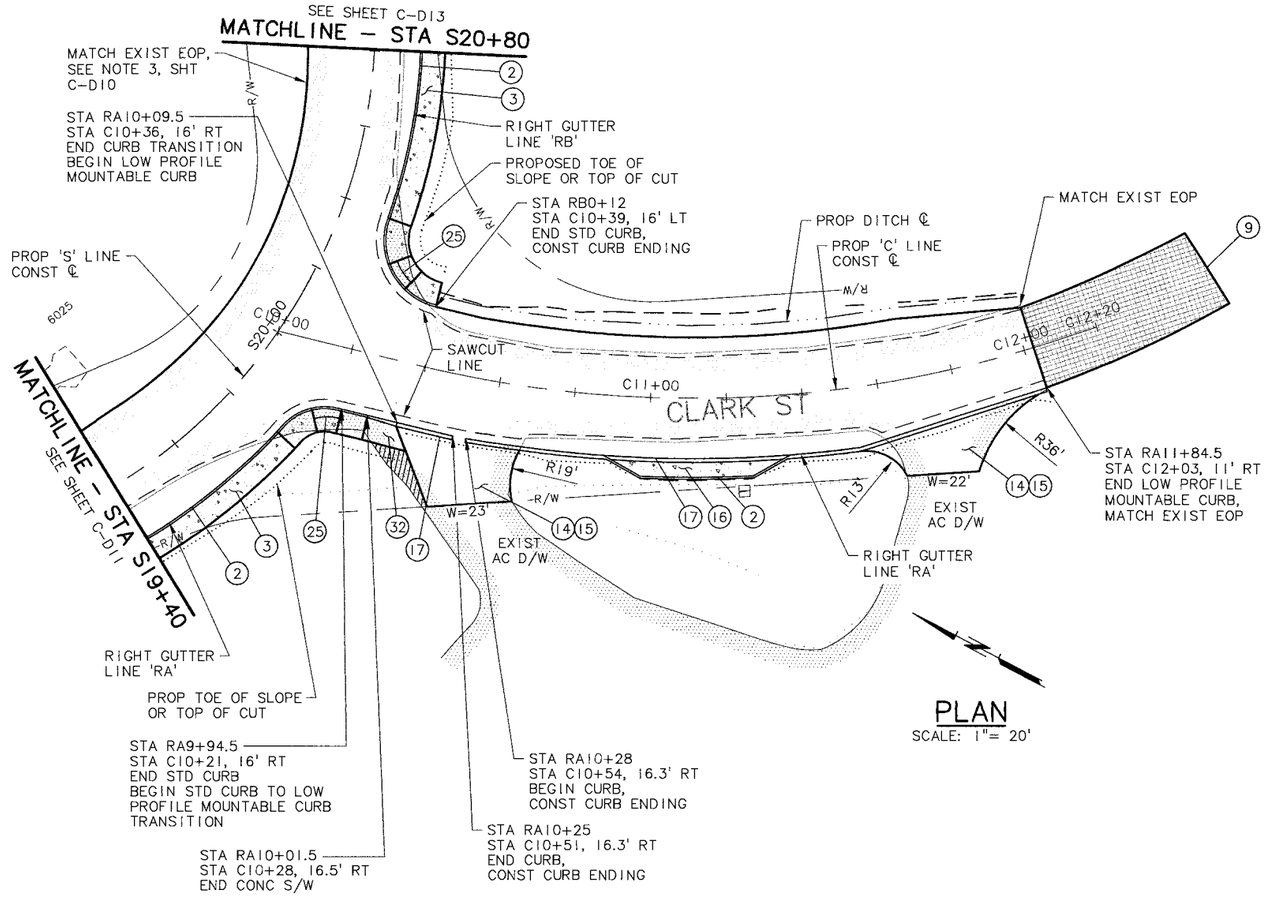
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 2

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB

(3) CONST CONC S/W

(9) AC PAVING LIMIT, (SEE DETS 4 & 5, SHT C-D40)

(14) CONST NEW AC DWY APPROACH, W/ LEVEL 2, 3/8" ACP MIX (PG 64-22) – 4" THK AGGREGATE BASE – 6" THK (SEE ODOT DWG NO RD715)

(15) REMOVE DWY APPROACH

(16) CONST 4' WIDE MAINTENANCE PAD (FILL STATION) (SEE DET 2, SHT C-D39)

(17) CONST LOW PROFILE MOUNTABLE CURB (SEE ODOT DWG RD700)

(25) CONST PARALLEL S/W CURB RAMP – OPTION K

(32) CONST ACP S/W RAMP – OPTION F AT S/W END (SEE ODOT DWG RD756)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D12
103 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 2, 2015 — ANDREW HENRY — 78447 — RENEWS 6-30-17

SCALE: VERT: AS SHOWN, HORIZ: 1" = 20'

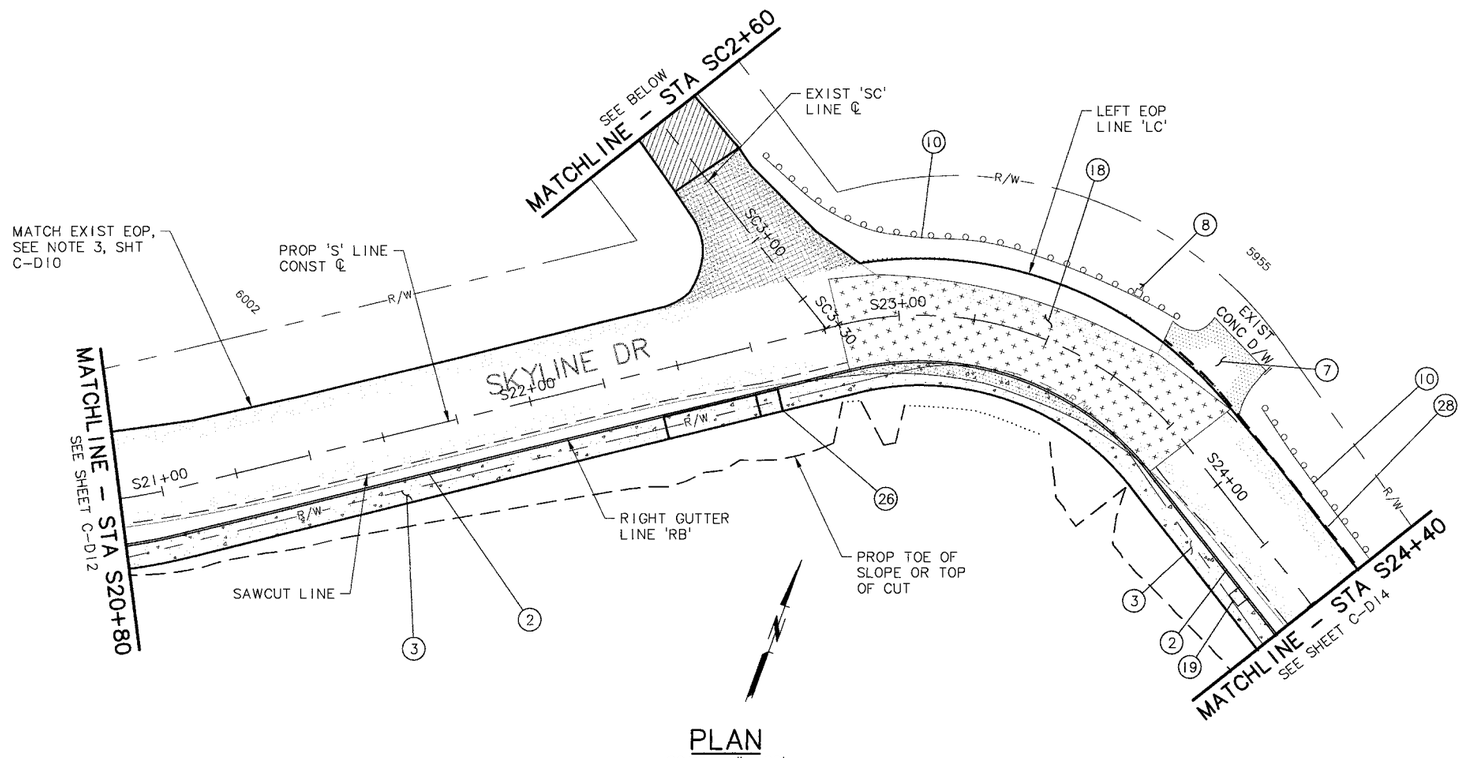
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

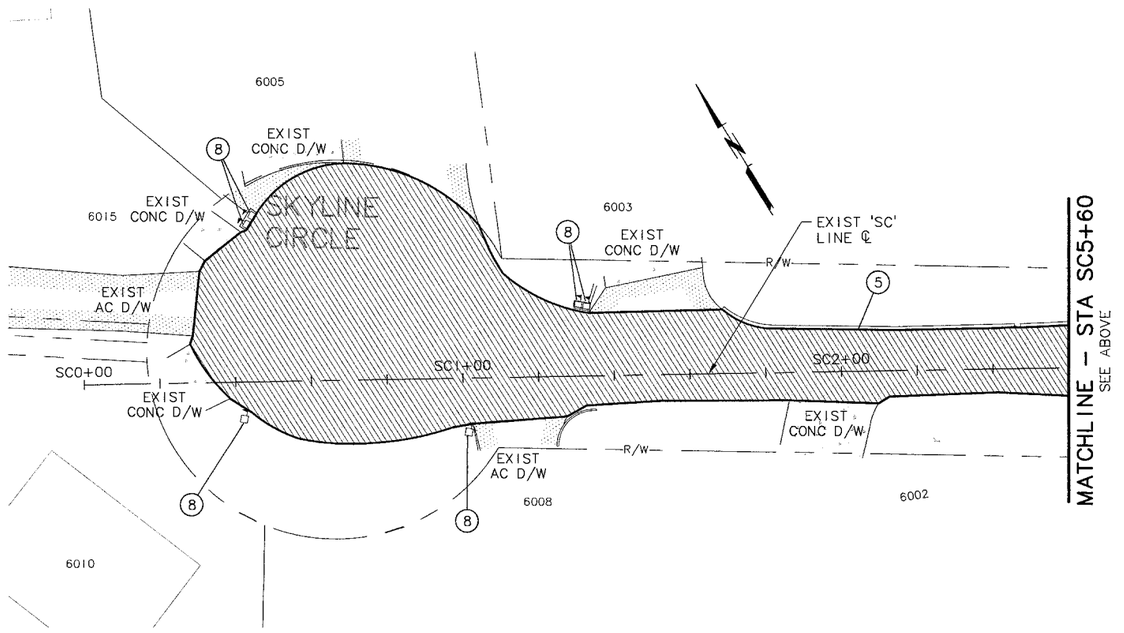
SHEET TITLE:
STREET IMPROVEMENTS PLAN - 3

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'



PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB
(3) CONST CONC S/W
(5) MAINTAIN AND PROTECT EXIST STD CURB, TYP
(7) CONST AC DWY APPROACH (SEE DET 3, SHT C-D39)
(8) MAINTAIN AND PROTECT EXIST MAILBOX
(9) AC PAVING LIMIT (SEE DETS 4 & 5, SHT C-D40)
(10) MAINTAIN AND PROTECT EXIST GUARDRAIL
(18) RECONSTRUCT ROADWAY HORIZONTAL CURVE. REGRADE ROADWAY CROSS SLOPE TO NEW SUPERELEVATION. (SEE TYPICAL SECTIONS AND CROSS SECTIONS)
(19) CURB FRAME & DOOR (SEE STORMWATER & UTILITIES SHEETS)
(26) CONST S/W LANDING (SEE DET 1, SHT C-D39)
(28) CONST AC BERM (SEE DET 4, SHT C-D39)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D13
104 of 167

REGISTERED PROFESSIONAL ENGINEER 76447 OREGON JULY 9, 2013 ANDREW HENRY RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: 1" = 20'

NOTICE 0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STREET IMPROVEMENTS PLAN - 4**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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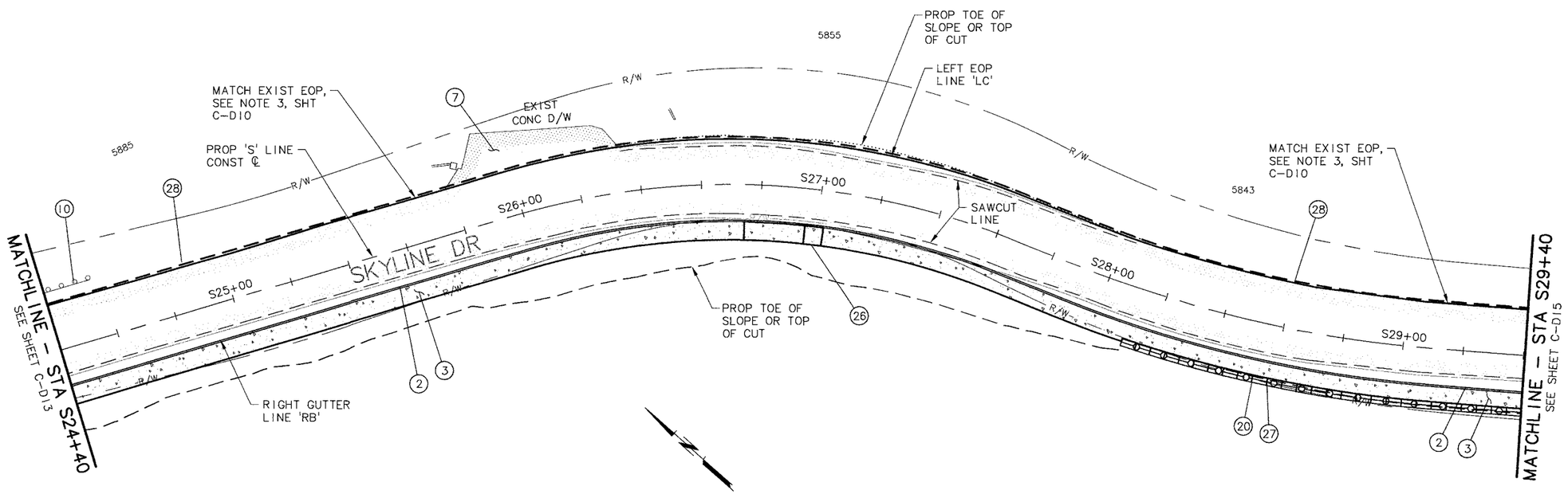

PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB

(3) CONST CONC S/W

(7) CONST AC DWY APPROACH (SEE DET 3, SHT C-D39)

(10) MAINTAIN AND PROTECT EXIST GUARDRAIL

(20) INSTALL PREFABRICATED MODULAR GRAVITY RETAINING WALL W/ QUARRIED STONE FACE (SEE SHT C-D38)

(26) CONST S/W LANDING (SEE DET 1, SHT C-D39)

(27) CONST CL-4 CHAINLINK FENCE W/ BLACK VINYL CLAD FABRIC, CAST FENCE POST FOOTINGS INTO WALL PER MANUFACTURER'S RECOMMENDATIONS

(28) CONST AC BERM (SEE DET 4, SHT C-D39)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D14
105 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JUNE 2, 2015 ANDREW HENRY 78447 RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: 1" = 20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 5

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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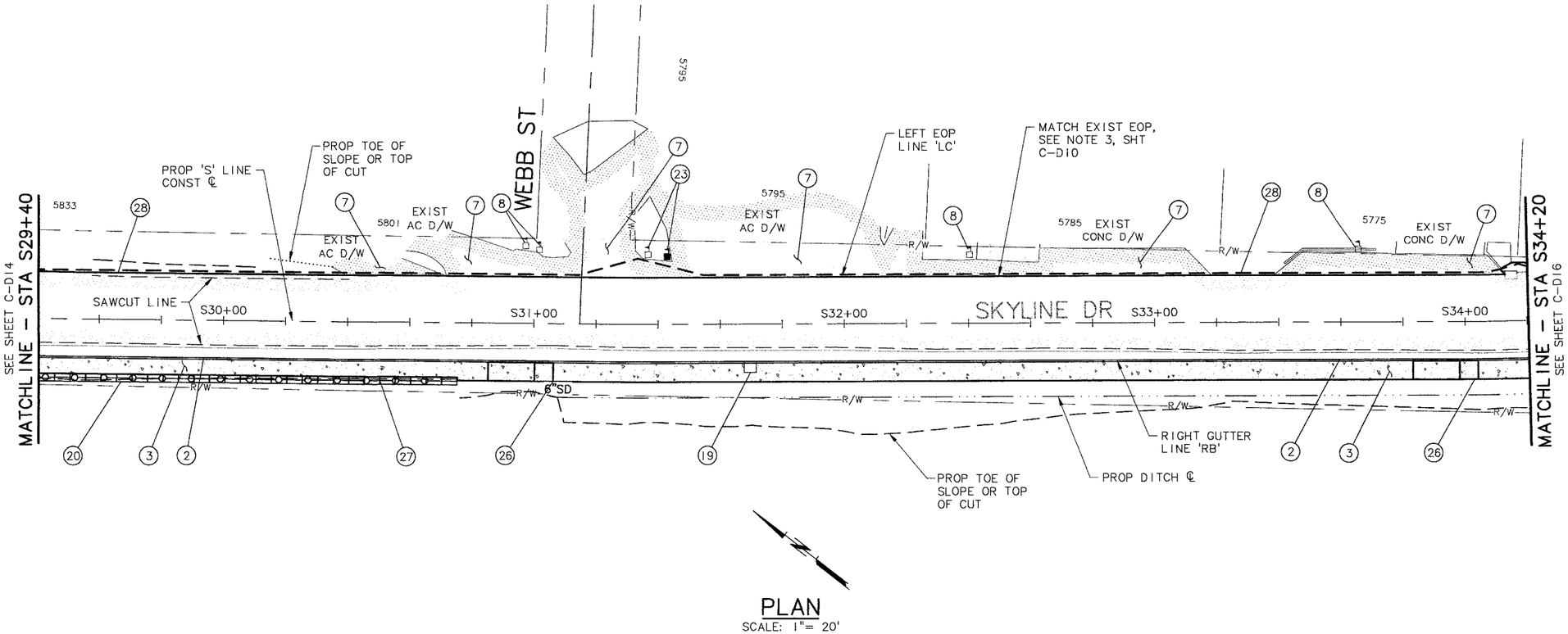

PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB

(3) CONST CONC S/W

(7) CONST AC DWY APPROACH (SEE DET 3, SHT C-D39)

(8) MAINTAIN AND PROTECT EXIST MAILBOX

(19) CURB FRAME & DOOR (SEE STORMWATER & UTILITIES SHEETS)

(20) INSTALL PREFABRICATED MODULAR GRAVITY RETAINING WALL W/ QUARRIED STONE FACE (SEE SHT C-D38)

(23) REMOVE EXIST MB PROVIDE TEMP MB DURING CONST INSTALL NEW SINGLE MB SUPPORT

(26) CONST S/W LANDING (SEE DET 1, SHT C-D39)

(27) CONST CL-4 CHAINLINK FENCE WITH BLACK VINYL CLAD FABRIC, CAST FENCE POST FOOTINGS INTO WALL PER MANUFACTURER'S RECOMMENDATIONS

(28) CONST AC BERM (SEE DET 4, SHT C-D39)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D15
106 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 27, 2010 ANDREW HENRY RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: 1" = 20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 6

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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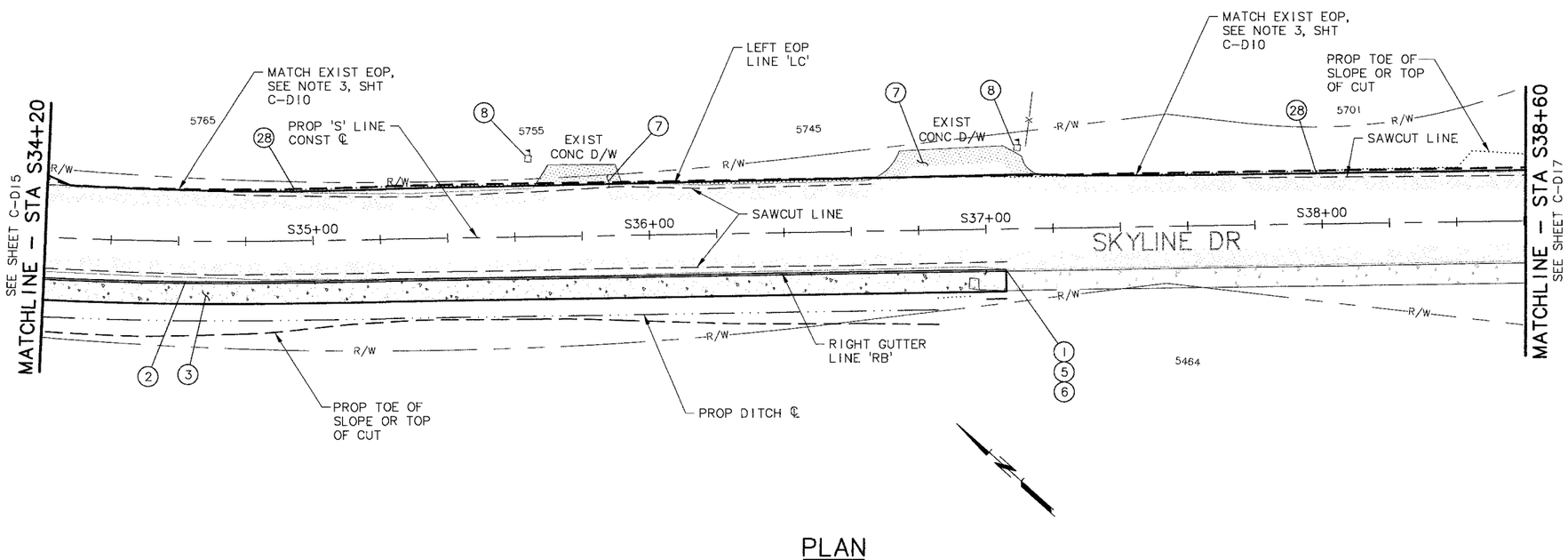


PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) MATCH EXIST S/W AND STD CURB AT EXIST JT
(2) CONST CONC STD CURB
(3) CONST CONC S/W
(5) MAINTAIN AND PROTECT EXIST STD CURB, TYP
(6) MAINTAIN AND PROTECT EXIST S/W, TYP
(7) CONST AC DWY APPROACH (SEE DET 3, SHT C-D39)
(8) MAINTAIN AND PROTECT EXIST MAILBOX
(28) CONST AC BERM (SEE DET 4, SHT C-D39)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D16
107 of 167

REGISTERED PROFESSIONAL ENGINEER 78447 OREGON JANUARY 14, 1977 ANDREW HENRY RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: 1" = 20'

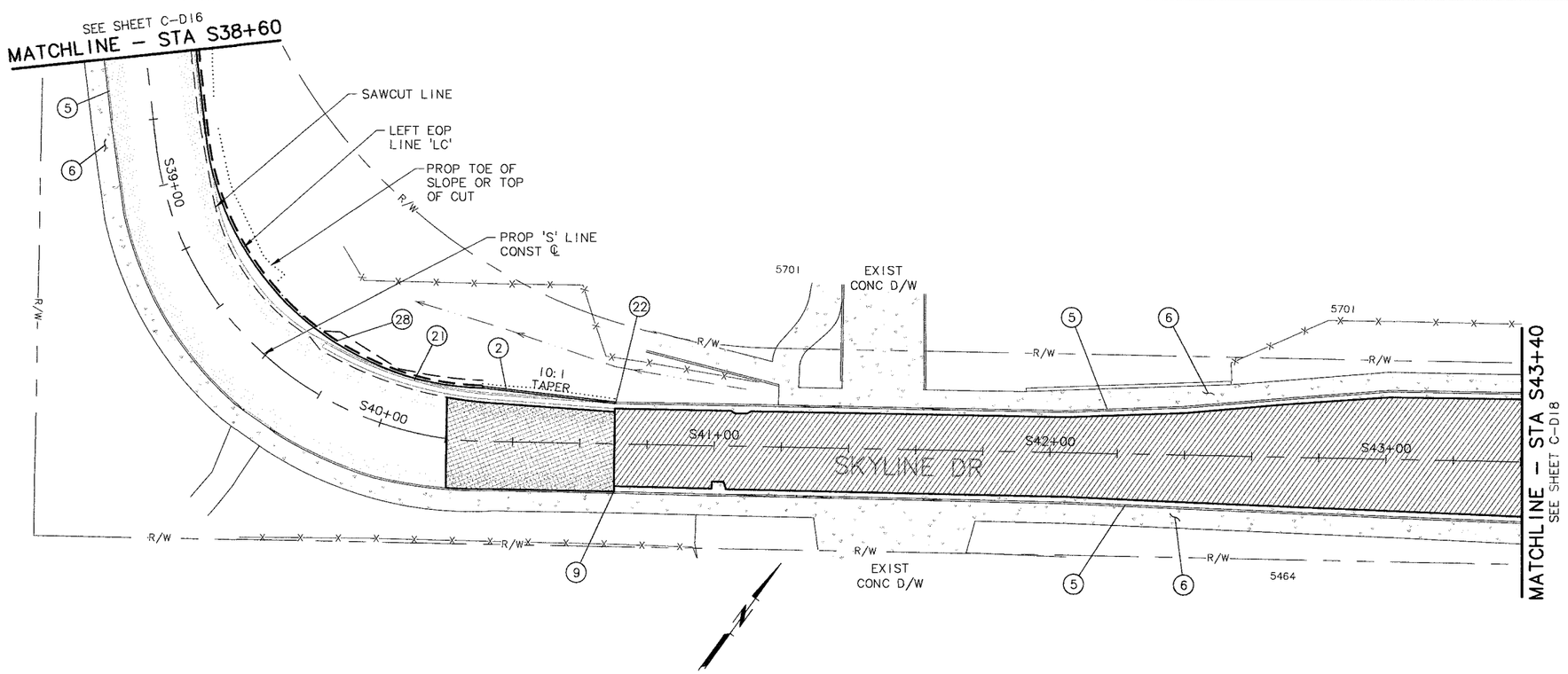
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 7

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(2) CONST CONC STD CURB

(5) MAINTAIN AND PROTECT EXIST STD CURB, TYP

(6) MAINTAIN AND PROTECT EXIST S/W, TYP

(9) AC PAVING LIMIT (SEE DETS 4 & 5, SHT C-D40)

(21) REMOVE EXIST CURB AND GUTTER

(22) MATCH EXIST CURB AND GUTTER

(28) CONST AC BERM (SEE DET 4, SHT C-D39)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D17
108 of 167

REGISTERED PROFESSIONAL ENGINEER 76447 OREGON JULY 21, 1978 ANDREW HENRY RENEWS 6-30-17

SCALE: VERT: AS SHOWN HORIZ: 1" = 20'

IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

0 NOTICE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STREET IMPROVEMENTS PLAN - 8**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-1922

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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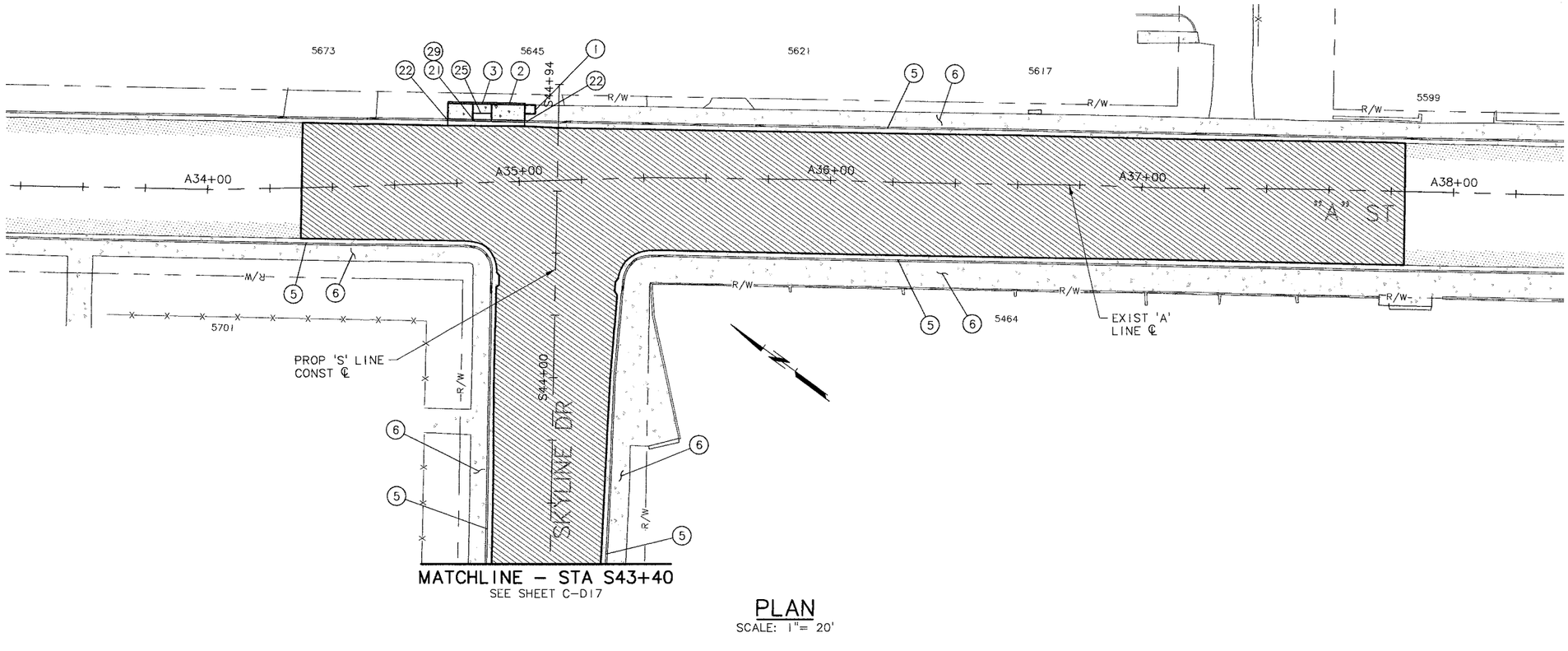

PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) MATCH EXIST S/W AND STD CURB AT EXIST JT
(2) CONST CONC STD CURB
(3) CONST CONC S/W
(5) MAINTAIN AND PROTECT EXIST STD CURB, TYP
(6) MAINTAIN AND PROTECT EXIST S/W, TYP
(21) REMOVE EXIST CURB AND GUTTER
(22) MATCH EXIST CURB AND GUTTER
(25) CONST PARALLEL S/W CURB RAMP -- OPTION K
(29) CONST CONC CURB & GUTTER (SEE ODOT DWG RD700)

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NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D18
109 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — ANDREW HENRY 75447 — RENEWS 6-30-17

SCALE: VERT: AS SHOWN; HORIZ: 1" = 20'

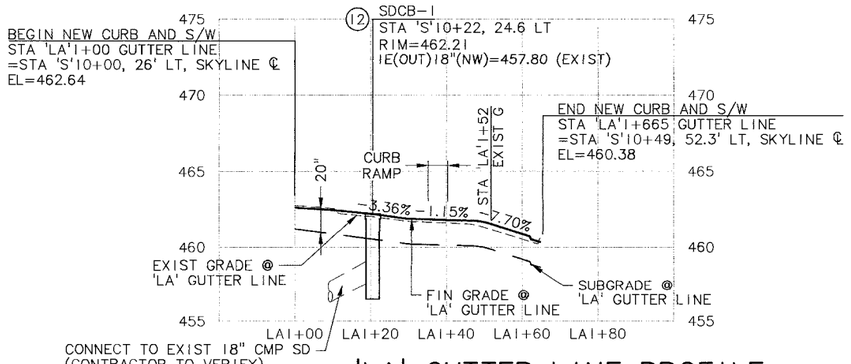
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PLAN - 9

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

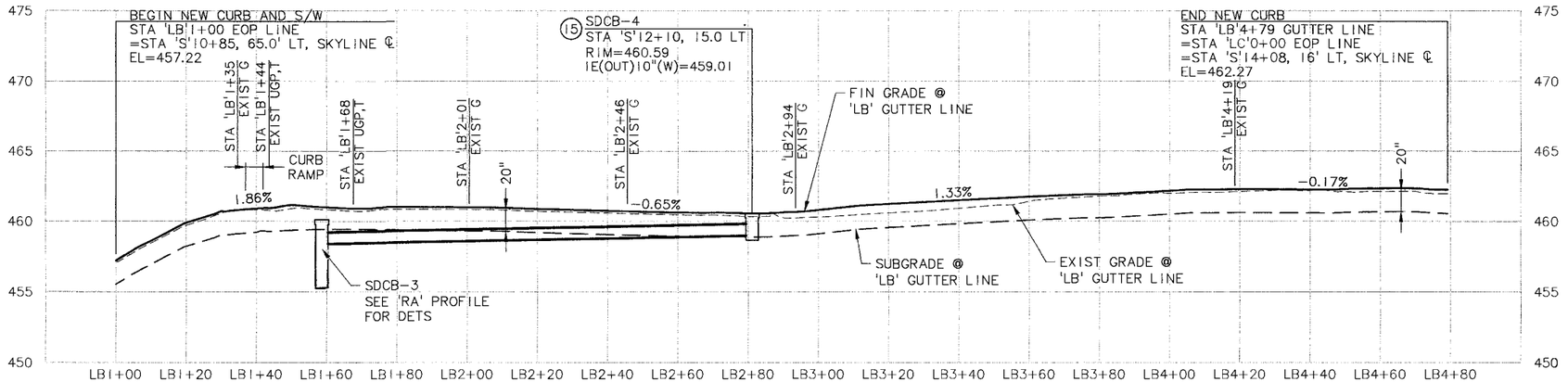
MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015



'LA' GUTTER LINE PROFILE
LEFT SIDE OF SKYLINE DRIVE, WEST OF FIRWOOD DR

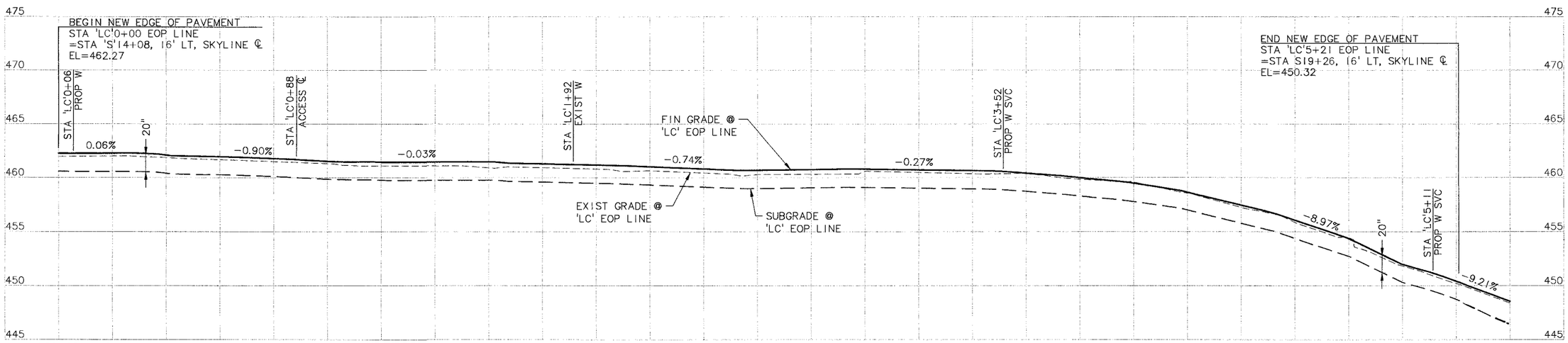
SCALE: 1"=20' HORIZ; 1"=5' VERT

NOTES:
EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAWCUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.



'LB' GUTTER LINE PROFILE
LEFT SIDE OF SKYLINE DRIVE, EAST OF FIRWOOD DR

SCALE: 1"=20' HORIZ; 1"=5' VERT



'LC' EOP LINE PROFILE
LEFT SIDE OF SKYLINE DRIVE, WEST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D19
110 of 167

REGISTERED PROFESSIONAL ENGINEER 77738 OREGON JULY 25, 1997 ROBERT EDWARD BOLTE
RENEWS 12-31-16

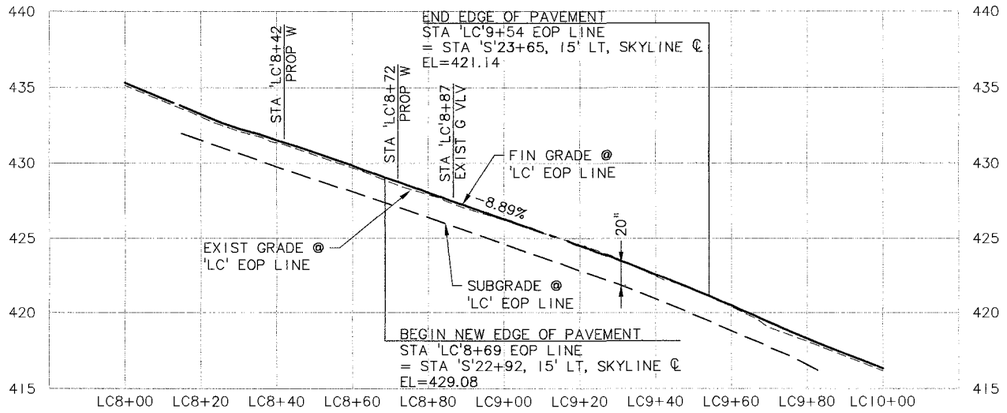
SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

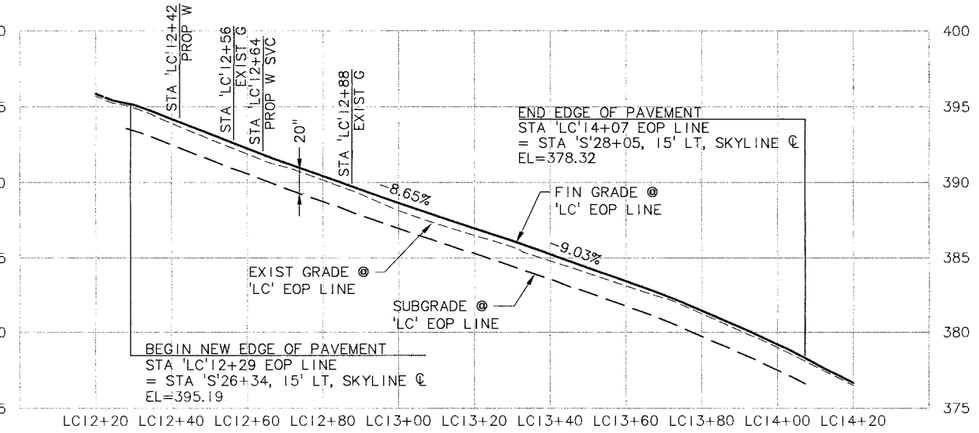
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

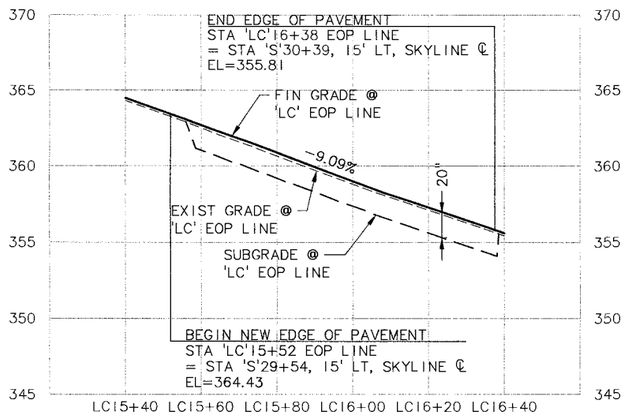
SHEET TITLE: **STREET IMPROVEMENTS PROFILES - 1**

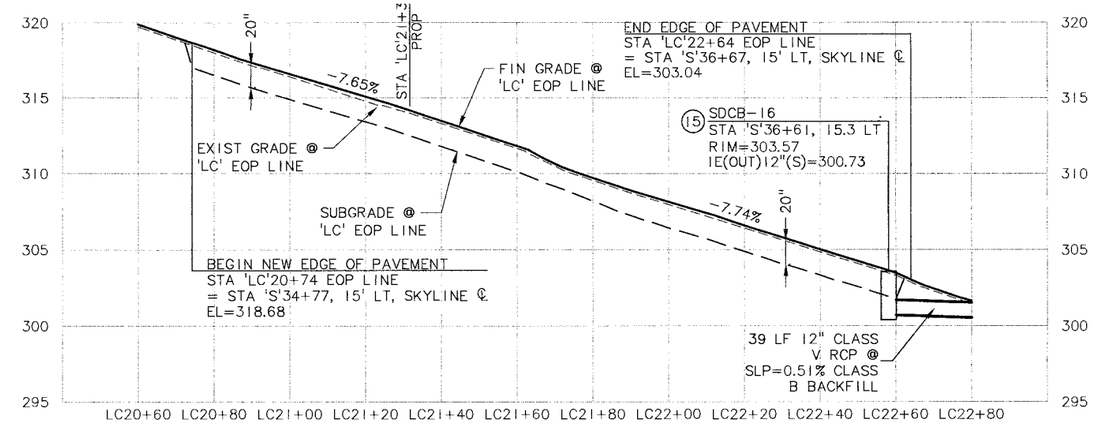
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

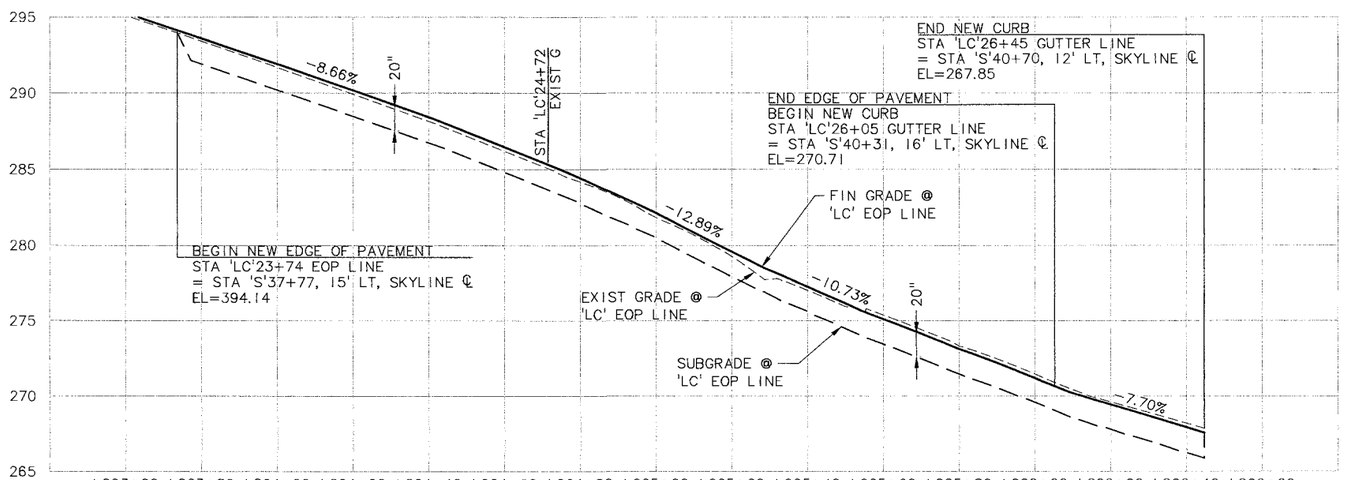
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015











NOTES:
EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAWCUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.

'LC' EOP LINE PROFILE
LEFT SIDE OF SKYLINE DRIVE, EAST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D20
11 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 2005 ROBERT EDWARD MURPHEE
RENEWS 12-31-16

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STREET IMPROVEMENTS PROFILES - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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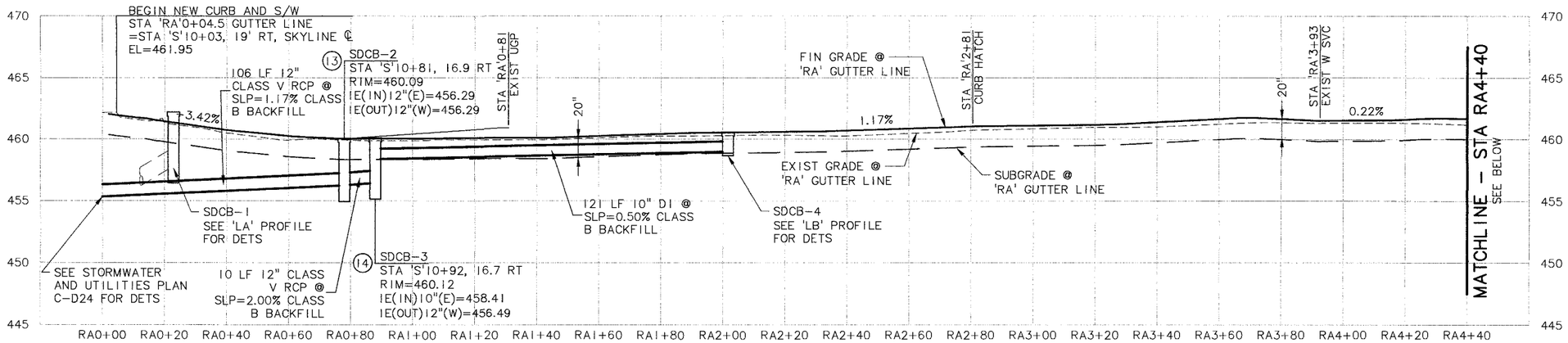
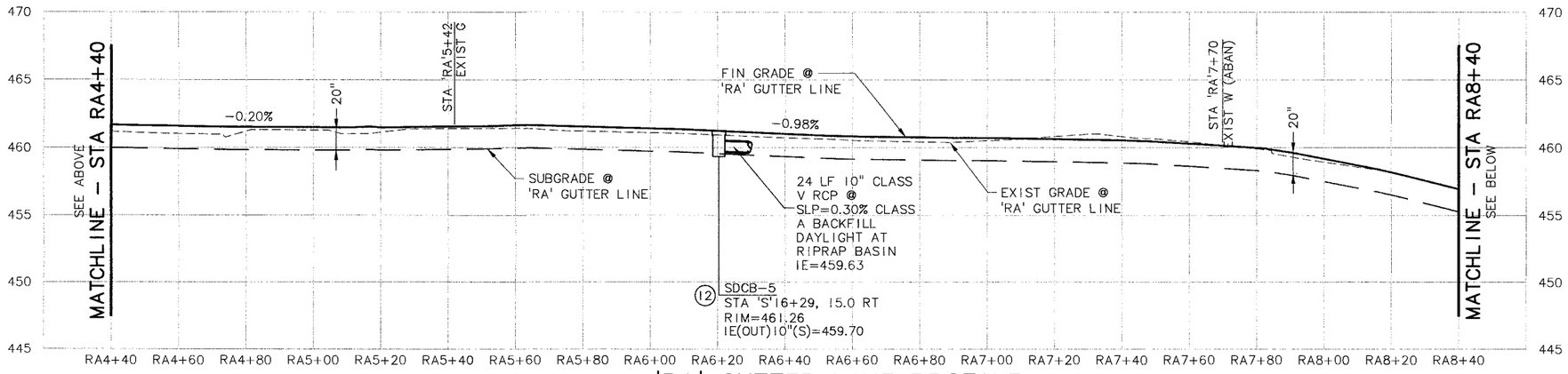


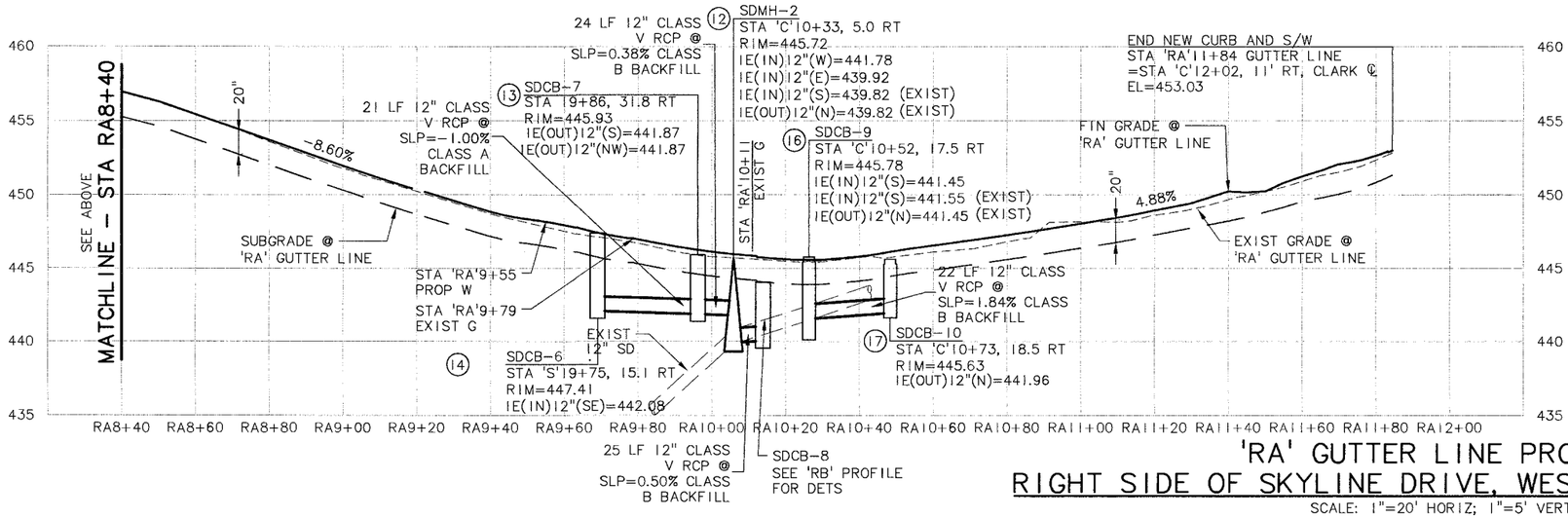
'RA' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, WEST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT



'RA' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, WEST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT



'RA' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, WEST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT

NOTES:
EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAWCUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON ROBERT EDWARD RICHTER
RENEWS 12-31-16

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STREET IMPROVEMENTS PROFILES - 3**

SHEET C-D21
112 of 167

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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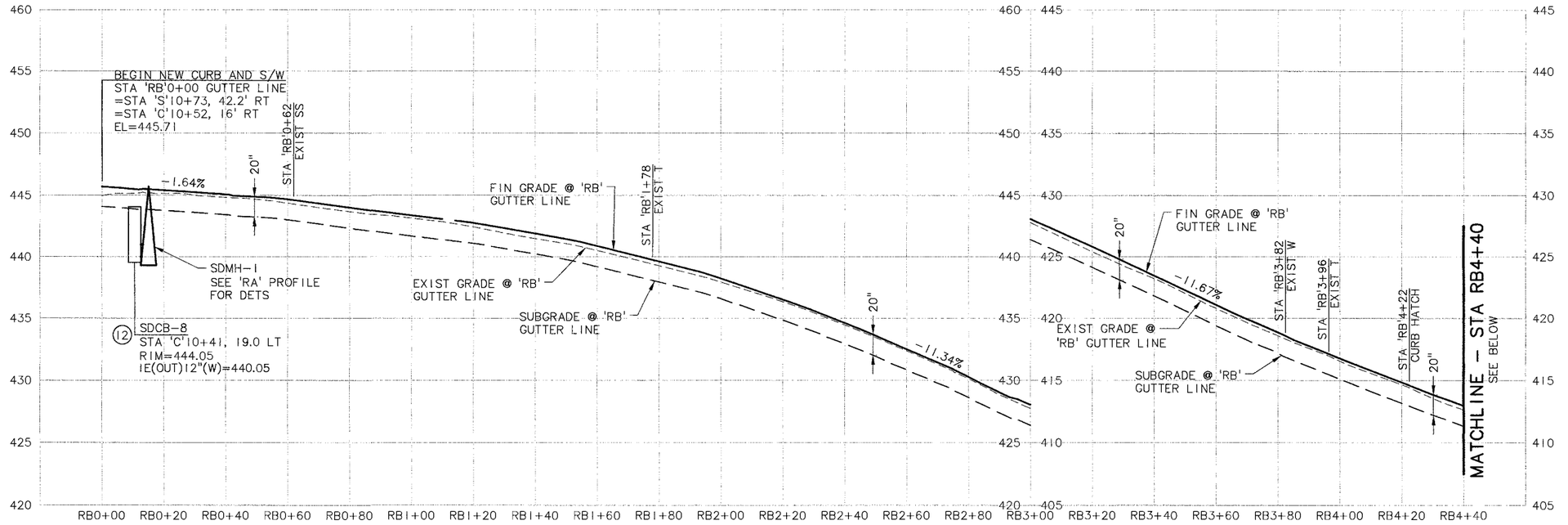
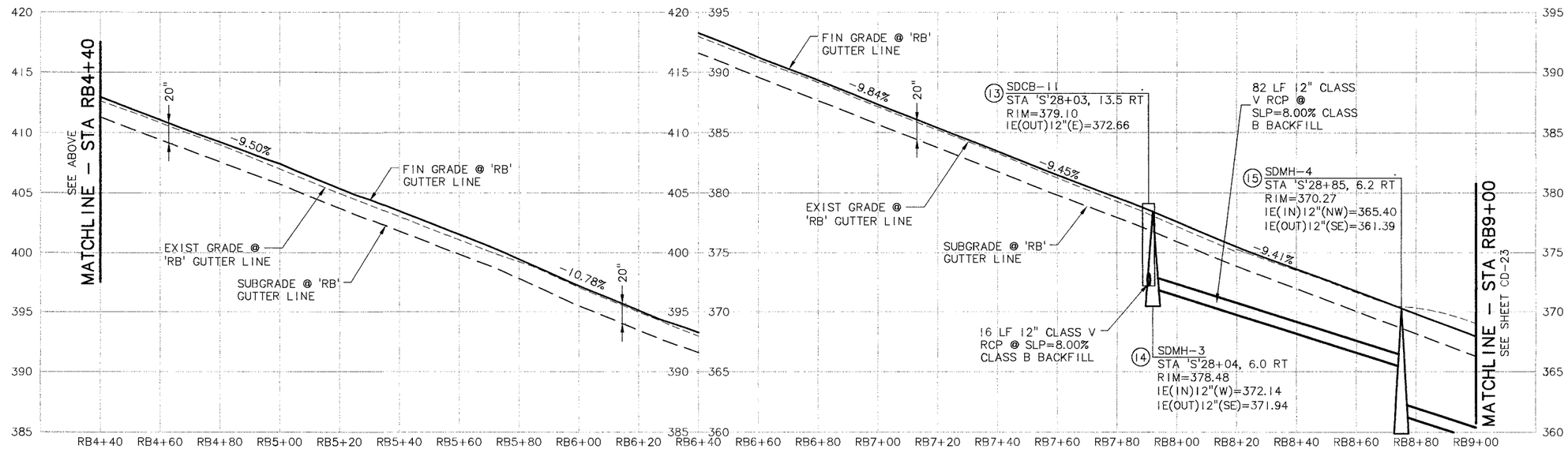


'RB' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, EAST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT



'RB' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, EAST OF CLARK STREET

SCALE: 1"=20' HORIZ; 1"=5' VERT

NOTES:
EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAWCUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON ROBERT EDWARD RUPERT 77739 RENEWS: 12-31-16

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SHEET C-D22
113 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STREET IMPROVEMENTS PROFILES - 4**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

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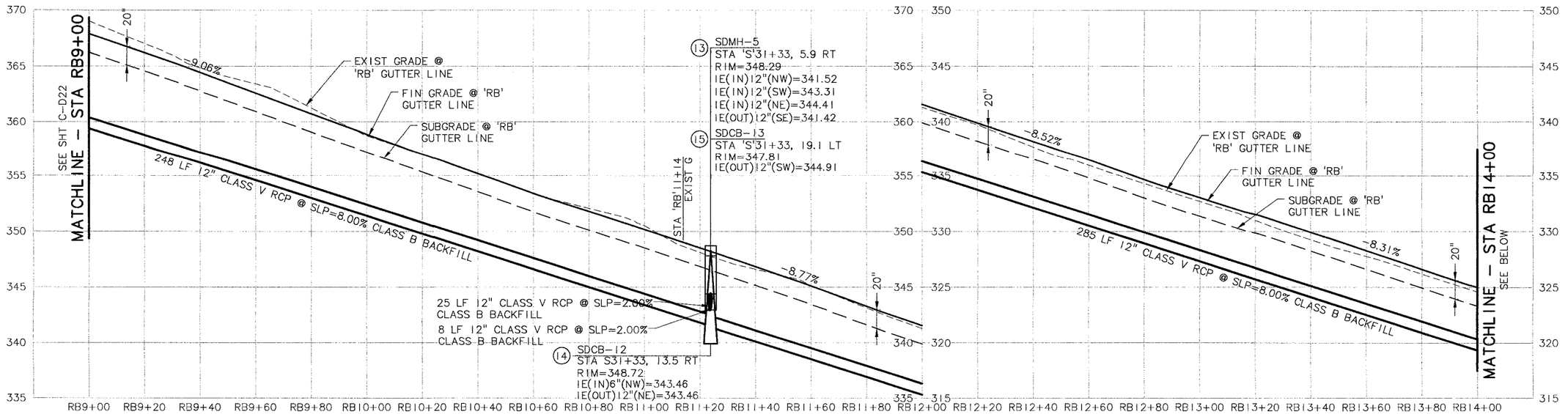
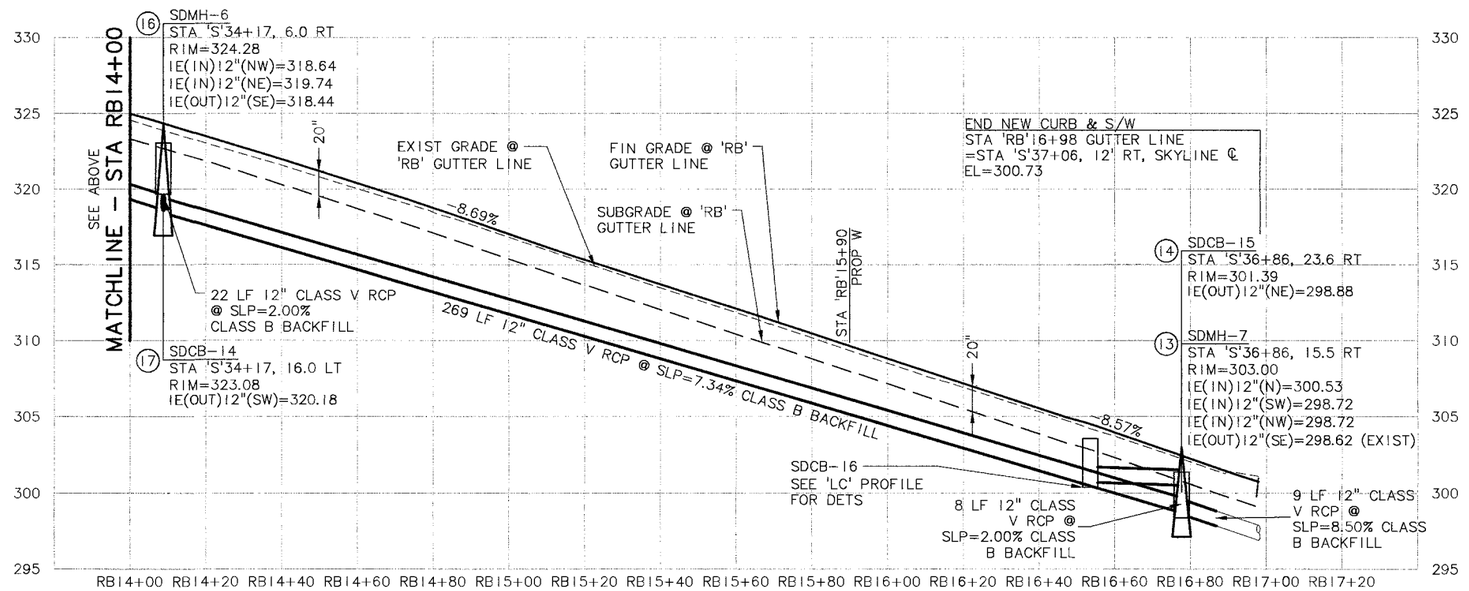


'RB' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, EAST OF CLARK STREET
SCALE: 1"=20' HORIZ; 1"=5' VERT



'RB' GUTTER LINE PROFILE
RIGHT SIDE OF SKYLINE DRIVE, EAST OF CLARK STREET
SCALE: 1"=20' HORIZ; 1"=5' VERT

NOTES:
EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAWCUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON ROBERT EDWARD RYAN RENEWS 12-31-16

SHEET C-D23
114 of 167

SCALE VERT: 1"=5' HORIZ: 1"=20'

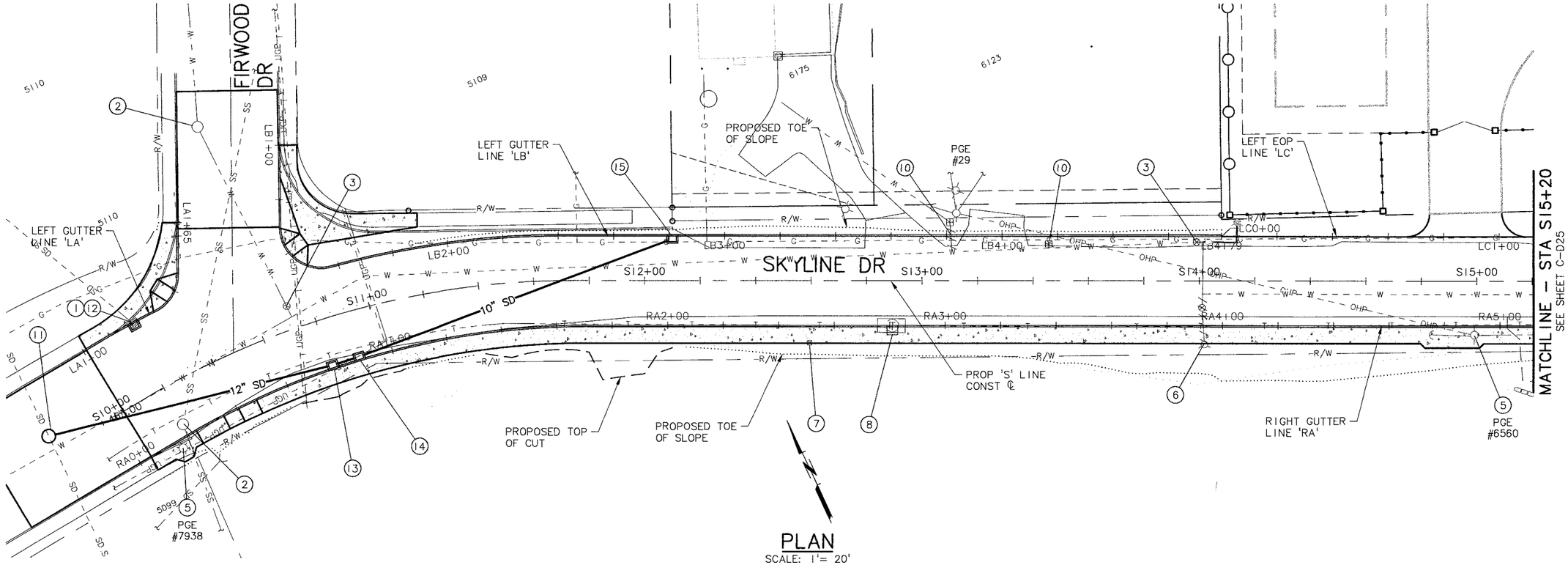
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STREET IMPROVEMENTS PROFILES - 5

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-0022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

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KEY NOTES:

(1) REMOVE EXIST INLET

(2) ADD OR REPLACE MANHOLE ADJUSTMENT RING
(SEE ODOT DWG RD356)

(3) ADJUST EXIST W VALVE BOX

(5) MAINTAIN & PROTECT EXIST UTILITY POLE, COORD W/ PGE AS REQ'D
PROVIDE MIN 4' S/W WIDTH BETW POLE & BW

(6) RELOCATE W FIRE HYDRANT
(SEE SCHEDULE A FOR DETS)

(7) RELOCATE EXIST T PEDESTAL (BY OTHERS), COORD W/ CTL AS REQ'D

(8) ADJUST EXIST T MH (BY OTHERS), COORD W/ CTL AS REQ'D
FURNISH CURB FRAME DOOR (BY OTHERS)
INSTALL CURB FRAME & DOOR
(SEE DET 1, SHT C-41)

(9) RELOCATE EXIST UTILITY POLE (BY OTHERS), COORD W/ PGE AS REQ'D

(10) RELOCATE OR ABAN EXIST W SVC (BY COWL PW)

(11) STA 'S'9+74.9, 3.6' LT
INSTALL 1-48" SDMH (SDMH-1) OVER EXIST SD
INSTALL 12" SD PIPE – 106'
RIM=463.83
IE(IN)12"(E)=455.05
IE(IN)24"(S)=454.95 (EXIST)
IE(OUT)24"(N)=454.95 (EXIST)
(SEE PROFILE SHEET CD-21)
(SEE ODOT DWG RD335, RD336, RD344, RD345, RD356)

(12) STA 'S'10+21.6, 24.6' LT = STA 'LA'1+20.5
INSTALL 1-G-2 INLET, (SDCB-1) W/ 12" SUMP
EXTEND EXIST 18" CMP SD PIPE W/ LIKE SIZE AND MATL
CONNECT TO EXIST 18" CMP SD PIPE
(SEE PROFILE SHEET CD-21)
(SEE ODOT DWG RD325, RD326, RD364, RD365, RD339)

(13) STA 'S'10+80.98, 16.9' RT = STA 'RA' 0+77.8
INSTALL 1-G-2 INLET, (SDCB-2) W/ 12" SUMP
INSTALL 12" SD PIPE – 10'
(SEE PROFILE SHEET CD-D21)

(14) STA 'S'10+91.58, 16.7' RT = STA 'RA' 0+87.8
INSTALL 1-G-2 INLET, (SDCB-3)
INSTALL 10" SD PIPE – 116'
(SEE PROFILE SHEET CD-D21)

(15) STA 'S'12+09.97, 15' LT = STA 'LB'2+80.2
INSTALL 1-G-2 INLET, CAST-IN-PLACE (SDCB-4) W/ 12" SUMP
(SEE PROFILE SHEET CD-D21)

TO BE ACCOMPANIED BY ODOT STD DWGS: RD300, RD302, RD306, RD312, RD317, RD318, RD325, RD326, RD335, RD336, RD380, RD339, RD344, RD345, RD356, RD364, RD365, RD370, RD371, RD373, RD386

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D24
115 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 6, 1977 ROBERT EDWARD RUMPFF
RENEWS: 12-31-16

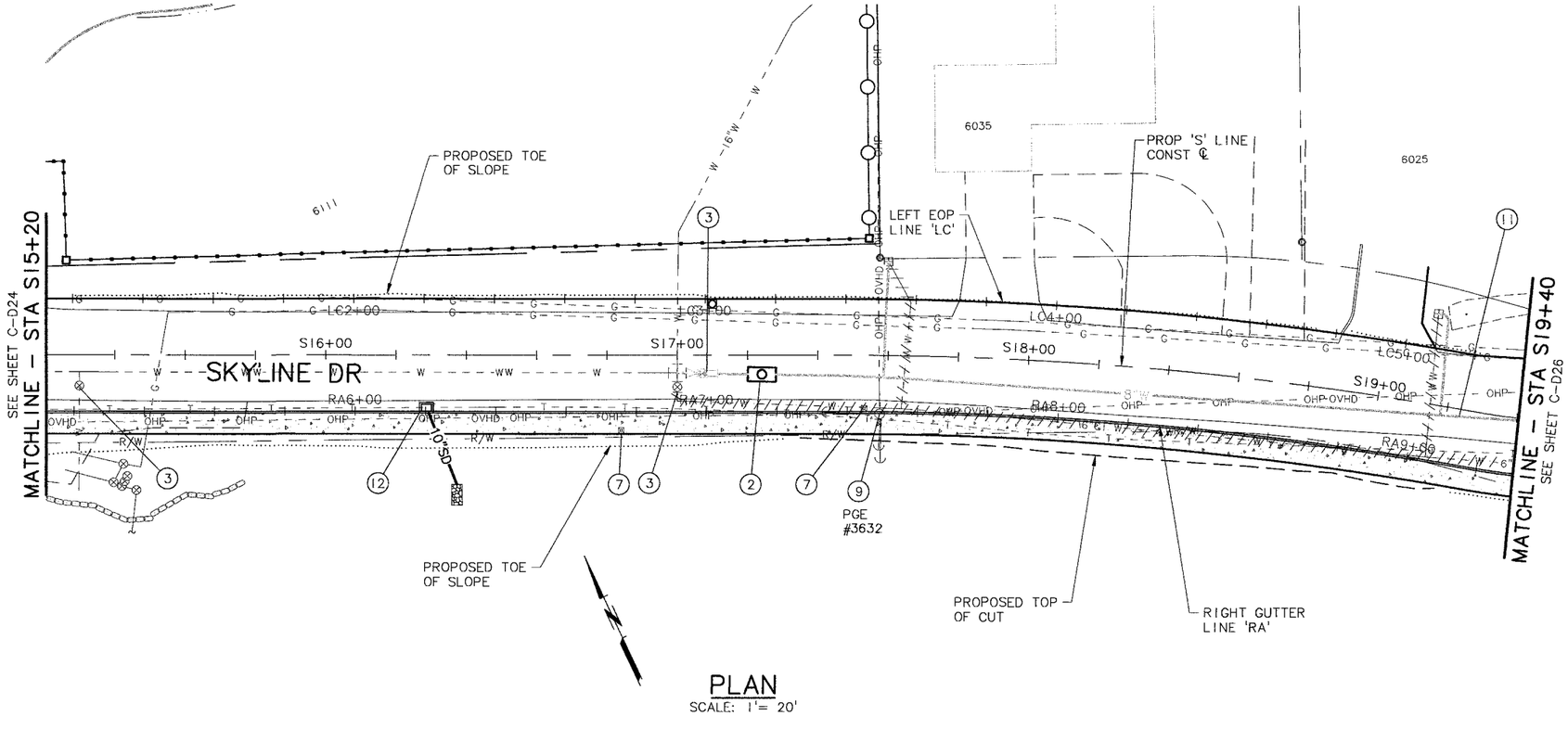
SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE 0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STORMWATER AND UTILITIES PLAN - 1**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(3) ADJUST EXIST W VALVE BOX

(2) ADD OR REPLACE MANHOLE ADJUSTMENT RING

(7) RELOCATE EXIST T PEDESTAL (BY OTHERS), COORD W/ CTL AS REQ'D

(8) ADJUST EXIST T MH (BY OTHERS), COORD W/ CTL AS REQ'D
FURNISH CURB FRAME DOOR (BY OTHERS)
INSTALL CURB FRAME & DOOR
(SEE DET 1, SHT C-41)

(9) RELOCATE EXIST UTILITY POLE (BY OTHERS), COORD W/ CTL AS REQ'D

(11) NEW 8" W
ABAN EXIST 6" W
(SEE SCHEDULE C FOR DETS)

(12) STA 'S'16+28.65, 15' RT = STA 'RA'6+20.3
INSTALL 1-G-2 INLET CAST-IN-PLACE (SDCB-5) W/ 12" SUMP
INSTALL 10" SD PIPE – 24'
CONST SLOPED END
CONST CULVERT EMBANKMENT PROTECTION
CONST RIPRAP BASIN
(SEE DET 6, SHT C-D40)
(SEE PROFILE SHEET C-D21)
(SEE ODOT DWG RD317 & RD318)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D25
116 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 2005 ROBERT EDWARD RUSSELL
RENEWS: 12-31-16

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **STORMWATER AND UTILITIES PLAN - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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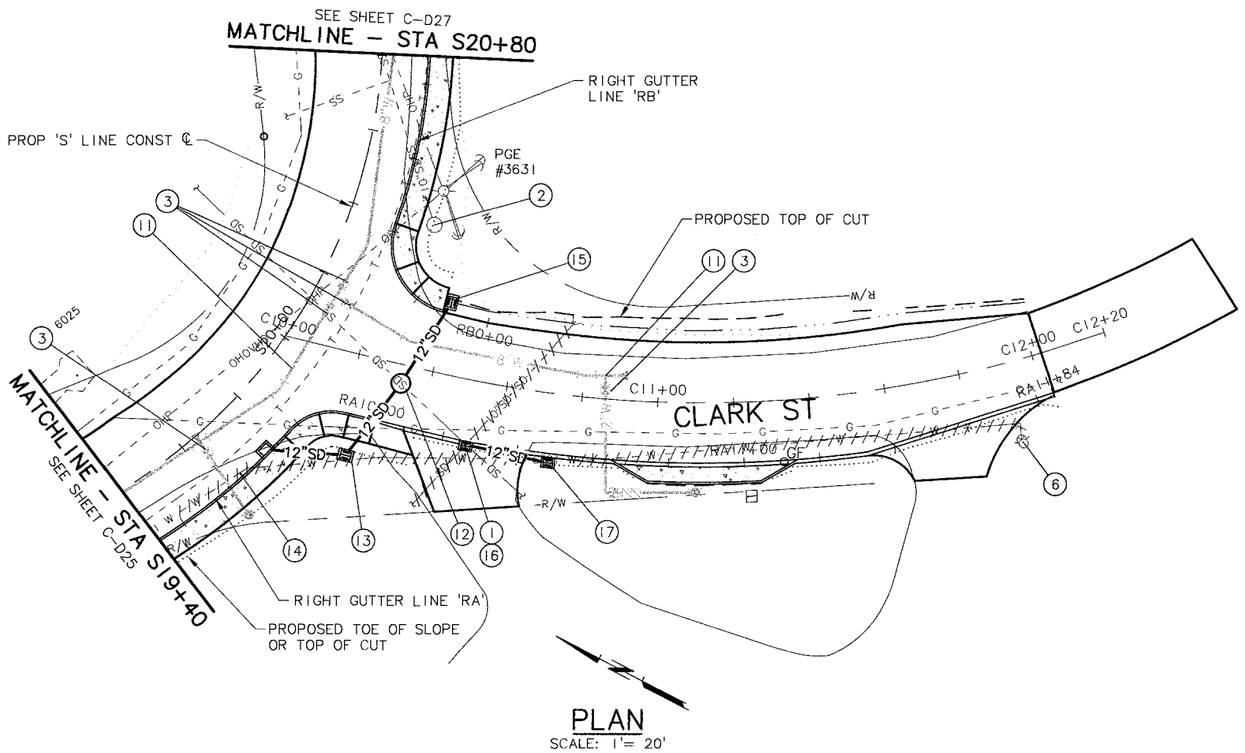


PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) REMOVE EXIST INLET

(2) ADD OR REPLACE MANHOLE ADJUSTMENT RING
(SEE ODOT DWG RD356)

(3) ADJUST EXIST W VALVE BOX

(6) RELOCATE W FIRE HYDRANT,
(SEE SCHEDULE C FOR DETS)

(11) NEW 8" W
ABAN EXIST 6" W
(SEE SCHEDULE C FOR DETS)

(12) STA 'C'10+32.5, 5' RT = STA 'RA'10+03.7, 7.4' LT
INSTALL 1–48" SDMH (SDMH–2) OVER EXIST SD
INSTALL 12" SD PIPE – 24'
INSTALL 12" SD PIPE – 25'
(SEE PROFILE SHEET CD–21)

(13) STA 'C'10+22.85, 27' RT = STA 'RA'9+98.6, 10.1' RT
INSTALL 1–TYPE D DITCH INLET, CAST–IN–PLACE (SDCB–7) W/ 12" SUMP
INSTALL 12" SD PIPE – 28'
GRADE AREA AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET CD–21)
(SEE ODOT DWG RD370)

(14) STA 'S'19+70.8, 12.8' RT = STA 'RA'9+69
INSTALL 1–G–2 INLET, CAST–IN–PLACE (SDCB–6)
(SEE PROFILE SHEET CD–21)

(15) STA 'C'10+40.67, 19' LT = STA 'RB'0+10.6, 1.1' RT
INSTALL 1–TYPE D DITCH INLET (SDCB–8) W/ 12" SUMP
GRADE AREA AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET CD–21)

(16) STA 'C'10+52.20, 17.5' RT = STA 'RA'10+26.2
INSTALL 1–G–2 INLET, CAST–IN–PLACE (SDCB–9) W/ 12" SUMP
INSTALL 12" SD PIPE – 22'
(SEE PROFILE SHEET CD–21)

(17) STA 'C'10+73.12, 18.5' RT = STA 'RA'10+48.4, 1.1' RT
INSTALL 1–TYPE D DITCH INLET, CAST–IN–PLACE (SDCB–10) W/ 12" SUMP
GRADE AREA AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET CD–21)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C–D26
117 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON ROBERT EDWARD BRYSON RENEWS: 12–31–16

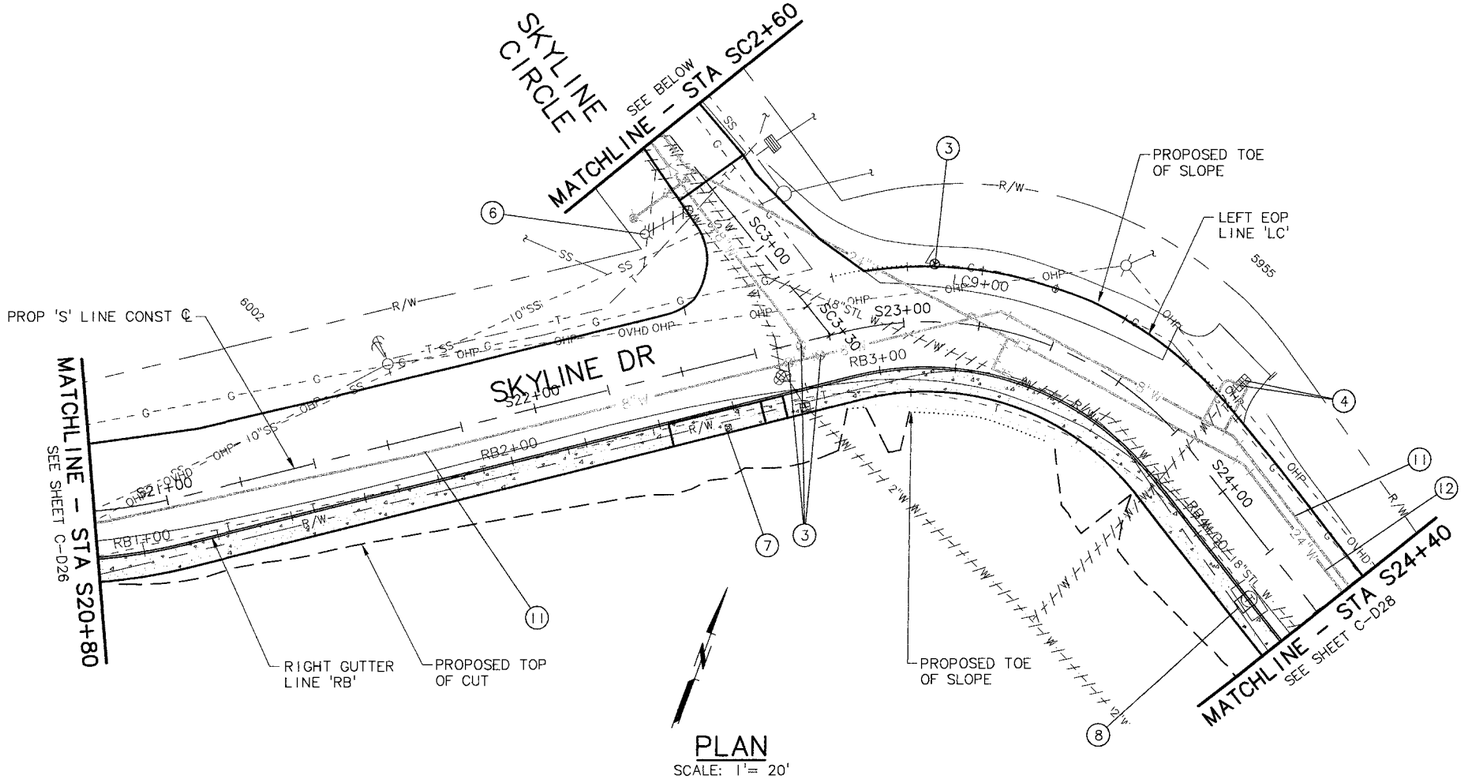
SCALE | VERT: 1"=5' | HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

SHEET TITLE:
STORMWATER AND UTILITIES
PLAN - 3

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14–1586 | DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(3) ADJUST EXIST W VALVE BOX

(4) ADJUST EXIST WM BOX

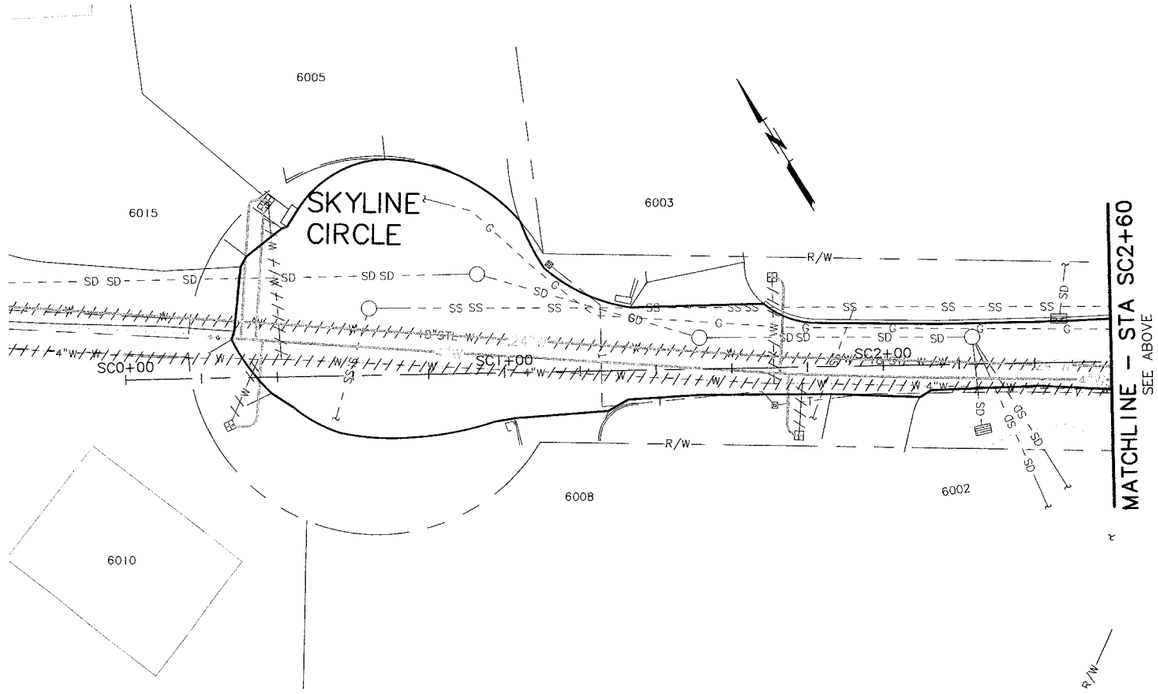
(6) RELOCATE W FIRE HYDRANT, (SEE SCHEDULE C FOR DETS)

(7) RELOCATE EXIST T PEDESTAL (BY OTHERS), COORD W/ CTL AS REQ'D

(8) ADJUST EXIST T MH (BY OTHERS), COORD W/ CTL AS REQ'D
FURNISH CURB FRAME DOOR (BY OTHERS)
INSTALL CURB FRAME & DOOR
(SEE DET 1, SHT C-41)

(11) NEW 8" W
ABAN EXIST 6" W
(SEE SCHEDULE C FOR DETS)

(12) NEW 24" W
ABAN EXIST 18" W
(SEE SCHEDULE C FOR DETS)



PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D27
118 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 31, 2016 ROBERT EDWARD RHYNE
RENEWS 12-31-16

SCALE VERT: 1"=5' HORIZ.: 1"=20'
NOTICE
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE.

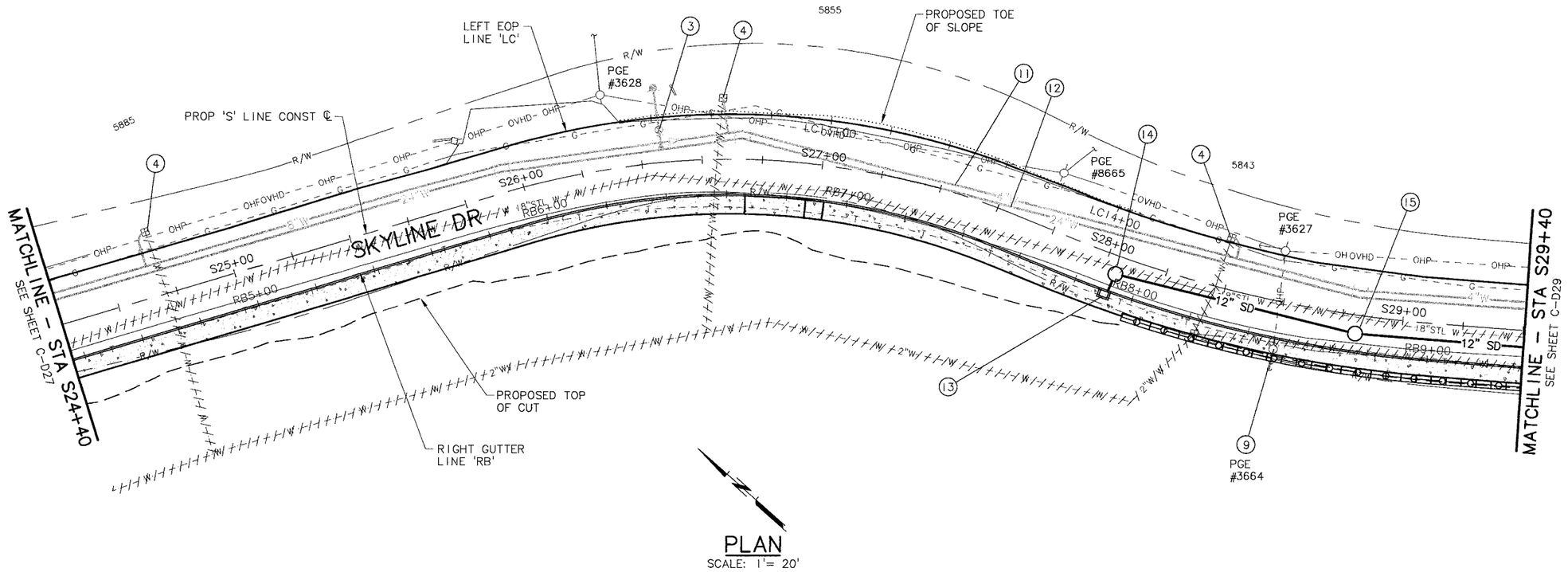
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: STORMWATER AND UTILITIES PLAN - 4

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-UTILS.dwg C-D27 9/3/2015 3:49 PM ZIS 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'

KEY NOTES:

(3) ADJUST EXIST W VALVE BOX

(4) ADJUST EXIST WM BOX

(9) RELOCATE EXIST UTILITY POLE (BY OTHERS), COORD W/ PGE AS REQ'D

(11) NEW 8' W
ABAN EXIST 6' W
(SEE SCHEDULE C FOR DETS)

(12) NEW 24' W
ABAN EXIST 18' W
(SEE SCHEDULE C FOR DETS)

(13) STA 'S28+02.75, 13.5' RT = STA 'RB'7+92.5
INSTALL 1-CG-3 INLET (SDCB-11) W/ OPTION 2 INLET TOP & 12" SUMP
(SEE PROFILE SHEET C-D22)
(SEE ODOT DWG RD371 & RD372)

(14) STA 'S'28+04.12, 6' RT = STA 'RB'7+92, 6' LT
INSTALL 1-48" SDMH (SDMH-2)
INSTALL 12" SD PIPE – 16'
(SEE PROFILE SHEET C-D22)

(15) STA 'S'28+84.82, 6.2' RT = STA 'RB'9+75.9, 6.5' LT
INSTALL 1-48" SDMH (SDMH-3)
INSTALL 12" SD PIPE – 82'
(SEE PROFILE SHEET C-D22)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D28
119 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON JULY 9, 1988
ROBERT EDWARD RIPPEE
RENEWS: 12-31-16

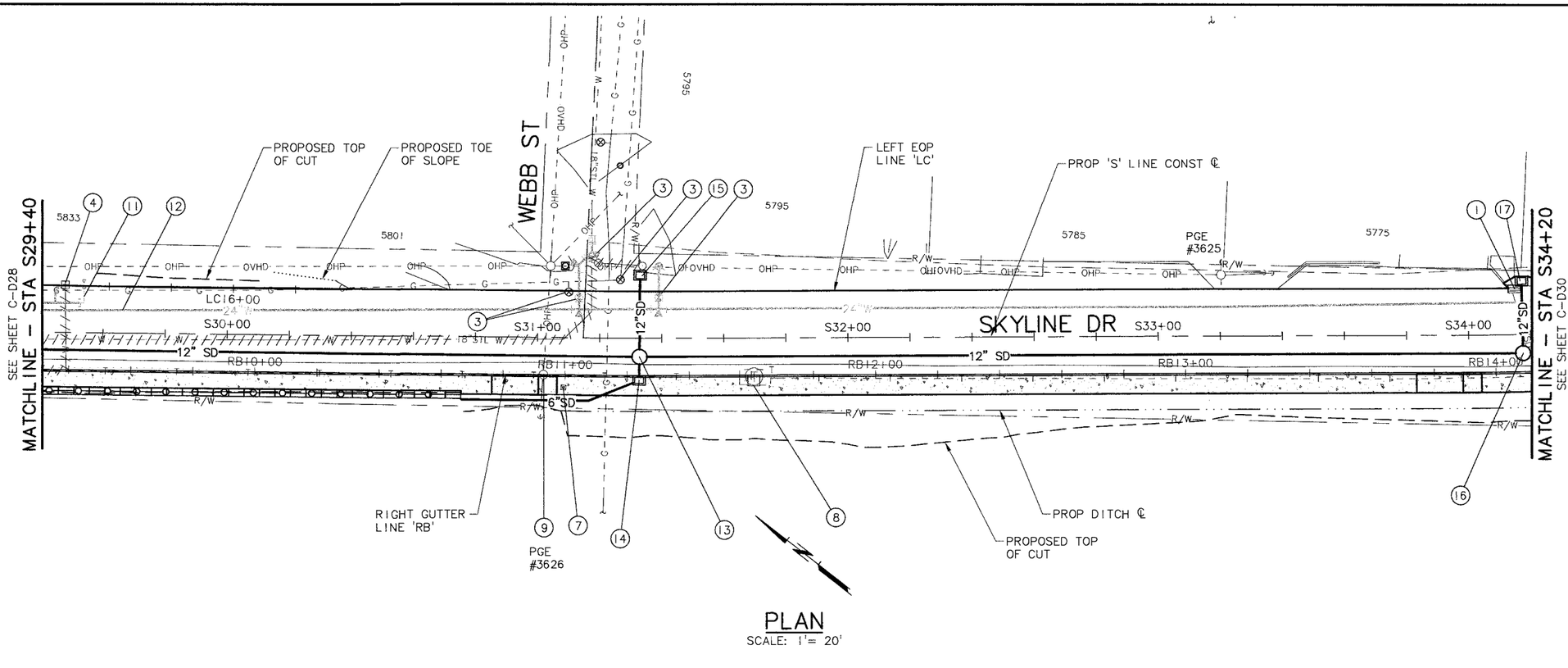
SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STORMWATER AND UTILITIES
PLAN - 5

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) REMOVE EXIST INLET

(3) ADJUST EXIST W VALVE BOX

(4) ADJUST EXIST WM BOX

(6) RELOCATE W FIRE HYDRANT
(SEE SCHEDULE C FOR DETS)

(7) RELOCATE EXIST T PEDESTAL (BY OTHERS), COORD W/ CTL AS REQ'D

(8) ADJUST EXIST T MH (BY OTHERS), COORD W/ CTL AS REQ'D
FURNISH CURB FRAME DOOR (BY OTHERS)
INSTALL CURB FRAME & DOOR
(SEE DET, SHT C-41)

(9) RELOCATE EXIST UTILITY POLE (BY OTHERS), COORD W/ PGE AS REQ'D

(11) NEW 8" W
ABAN EXIST W
(SEE SCHEDULE C FOR DETS)

(12) NEW 24" W
ABAN EXIST 18" W
(SEE SCHEDULE C FOR DETS)

(13) STA 'S'31+32.88, 6' RT = STA 'RA'11+23.9, 6.1' LT
INSTALL 1-48" SDMH (SDMH-4)
INSTALL 12" SD PIPE - 248'
INSTALL 12" SD PIPE - 8'
INSTALL 12" SD PIPE - 25'
(SEE PROFILE SHEET C-D23)

(14) STA 'S'31+32.88, 13.5' RT = STA 'RA'11+23.9
INSTALL 1-CG-3 INLET (SDCB-12) W/ OPTION 2 INLET TOP & 12" SUMP
6" SUBSURFACE PERF DR PIPE - LENGTH AS REQ'D
(SEE RETAINING WALL DET, SHT C-D38)
(SEE PROFILE SHEET C-D23)

(15) STA 'S'31+32.88, 19' LT
INSTALL 1-G-2 INLET (SDCB-11) W/ 12" SUMP
GRADE ACP AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET C-D23)

(16) STA 'S'34+17.45, 6' RT = STA 'RA'14+08.8, 6.1' LT
INSTALL 1-48" SDMH (SDMH-5)
INSTALL 12" SD PIPE - 285'
INSTALL 12" SD PIPE - 22'
(SEE PROFILE SHEET C-D23)

(17) STA 'S'34+17.45, 16' LT
INSTALL 1-G-2 INLET (SDCB-14) W/ 12" SUMP
GRADE ACP AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET C-D23)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D29
120 of 167

REGISTERED PROFESSIONAL ENGINEER 77729 OREGON JANUARY 15, 1982 ROBERT EDWARD RIPPEE
RENEWS 12-31-16

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STORMWATER AND UTILITIES
PLAN - 6

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-0852

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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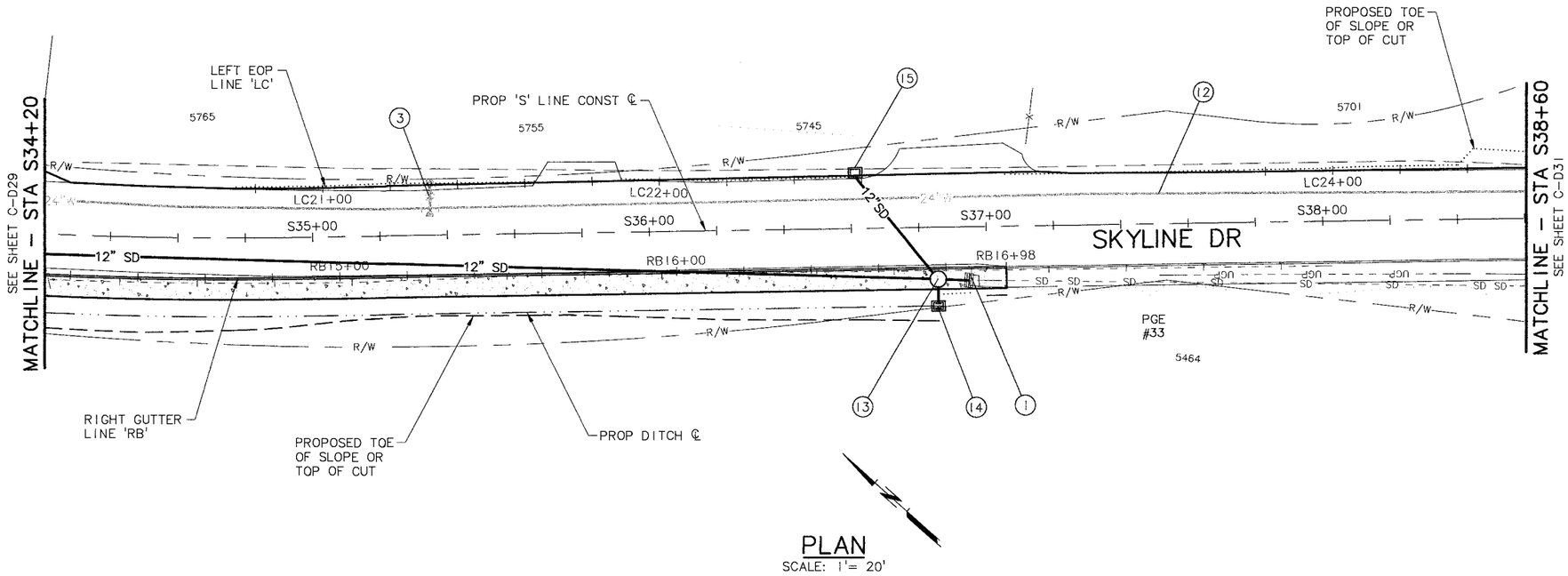


PLAN
SCALE: 1"= 20'

KEY NOTES:

(1) REMOVE EXIST INLET

(3) ADJUST EXIST W VALVE BOX

(12) NEW 24" W
ABAN EXIST 18" W
(SEE SCHEDULE C FOR DETS)

(13) STA 'S'36+85.53, 15.5' RT = STA 'RB'16+77.7, 2.3' LT
INSTALL 1-48" SDMH (SDMH-6)
INSTALL 12" SD PIPE – 271'
INSTALL 12" SD PIPE – 9'
INSTALL 12" SD PIPE – 8'
INSTALL 12" SD PIPE – 40'
EXTEND EXIST 12" RCP SD PIPE W/ LIKE SIZE & MTL
CONST CONC CLOSURE COLLAR
(SEE PROFILE SHEET C-D23)
(SEE ODOT DWG RD306)

(14) STA 'S'36+85.53, 23.6' RT
INSTALL 1-TYPE D DITCH INLET, CAST-IN-PLACE (SDCB-15) W/ 12" SUMP
GRADE AREA AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET C-D23)

(15) STA 'S'36+61.39, 15.5' LT = STA 'LC'22+58.3
INSTALL 1-G-2 INLET, CAST-IN-PLACE (SDCB-16) W/ 12" SUMP
GRADE ACP AROUND INLET AS NEEDED TO DRAIN
(SEE PROFILE SHEET C-D23)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D30
121 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
DECEMBER 9, 1975
ROBERT EDWARD RUPER
77738
RENEWS 12-31-16

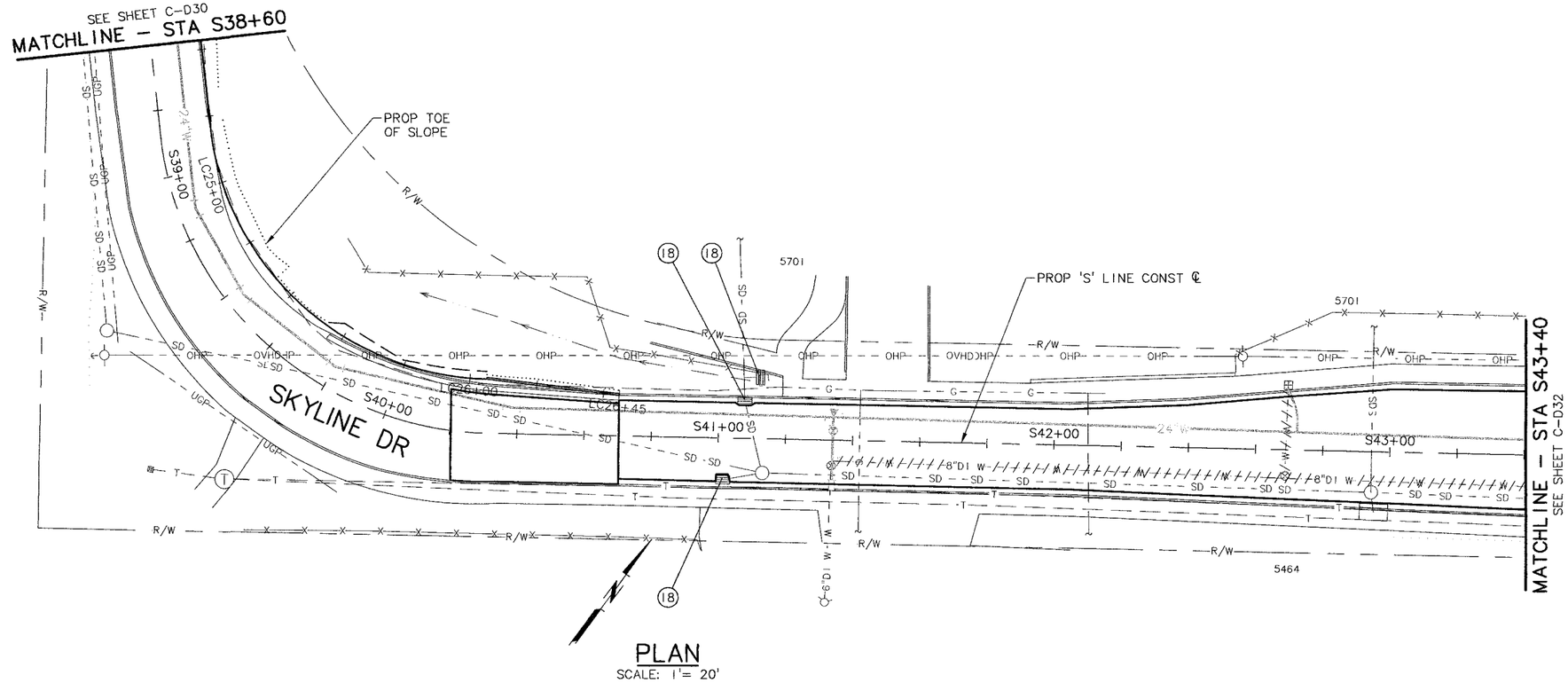
SCALE VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STORMWATER AND UTILITIES
PLAN - 7

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



PLAN
SCALE: 1"= 20'

KEY NOTES:

(18) MAINTAIN AND PROTECT EXIST INLET

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D31
122 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 2014 ROBERT ERWIN REIN
RENEWS 12-31-16

SCALE VERT: 1"=5' HORIZ: 1"=20'

NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STORMWATER AND UTILITIES PLAN - 8

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

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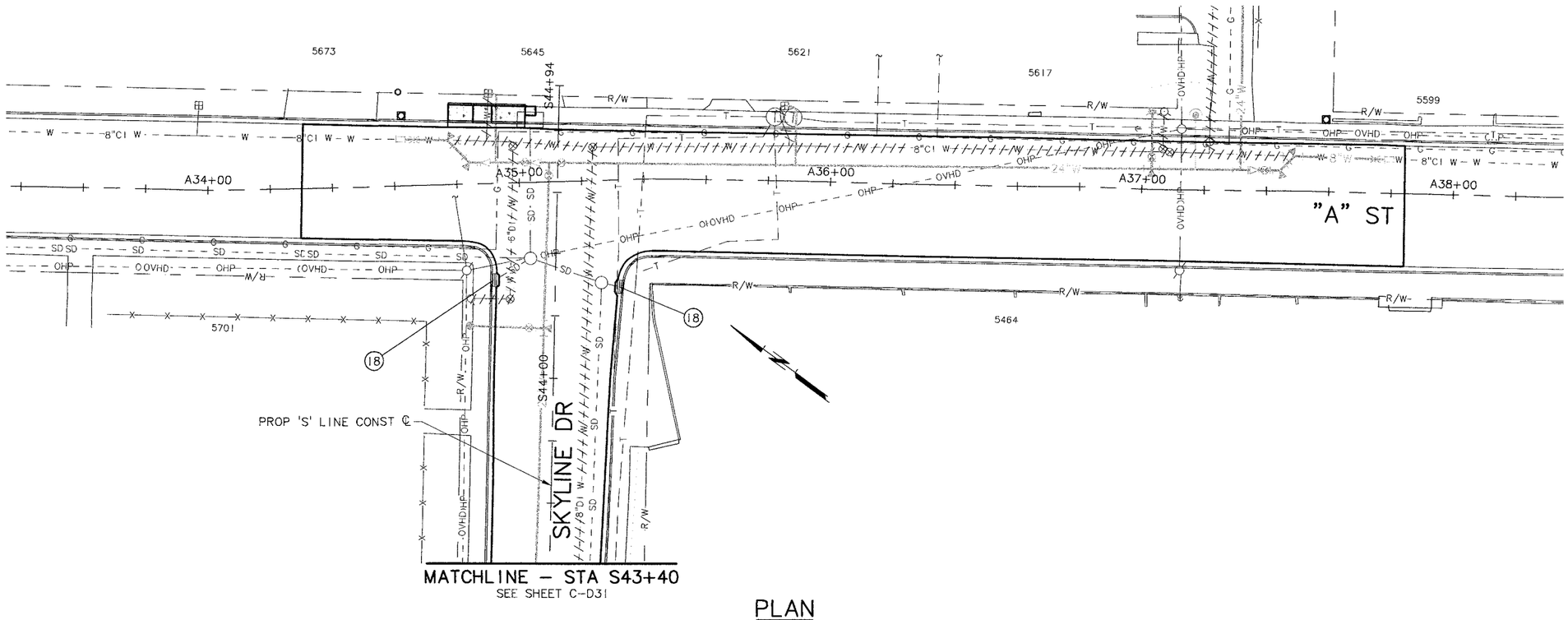


PLAN
SCALE: 1"= 20'

KEY NOTES:

(18) MAINTAIN AND PROTECT EXIST INLET

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED D\14-1586-OR-D-UTILS.dwg C-D32 9/3/2015 4:02 PM ZIS 20.0s (LWS Tech)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: BAW
CHECKED: GEC
APPROVED: TPB

SHEET C-D32
123 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 1980 ROBERT EDWARD RHYNER
RENEWS 12-31-16

SCALE VERT: 1"=5' HORIZ: 1"=20'

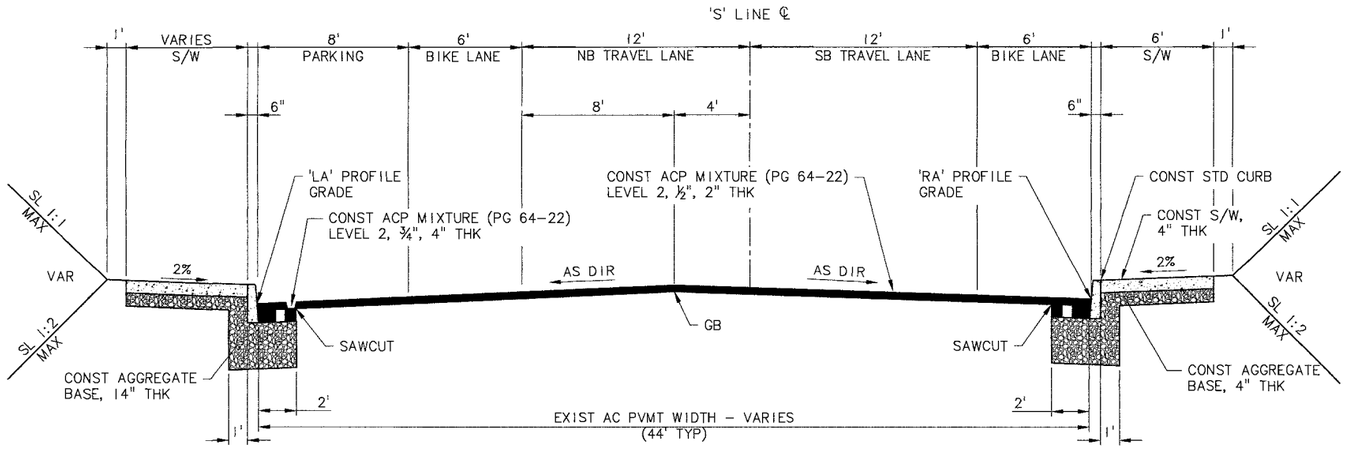
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
STORMWATER AND UTILITIES PLAN - 9

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

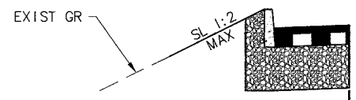
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



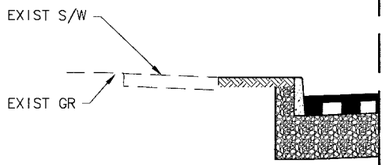
SKYLINE DRIVE
STA S10+00 TO STA S10+37
STA S10+37 TO STA S10+67 (TRANSITION SECTION)

SCALE: NTS

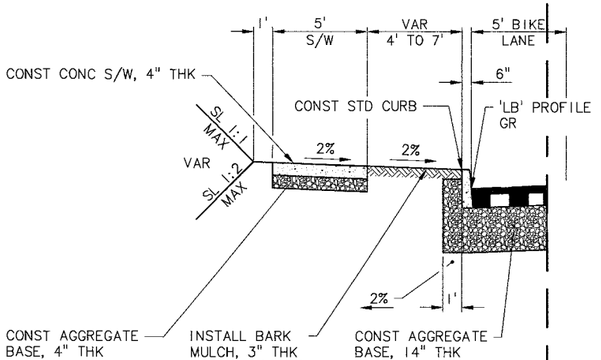
1
—



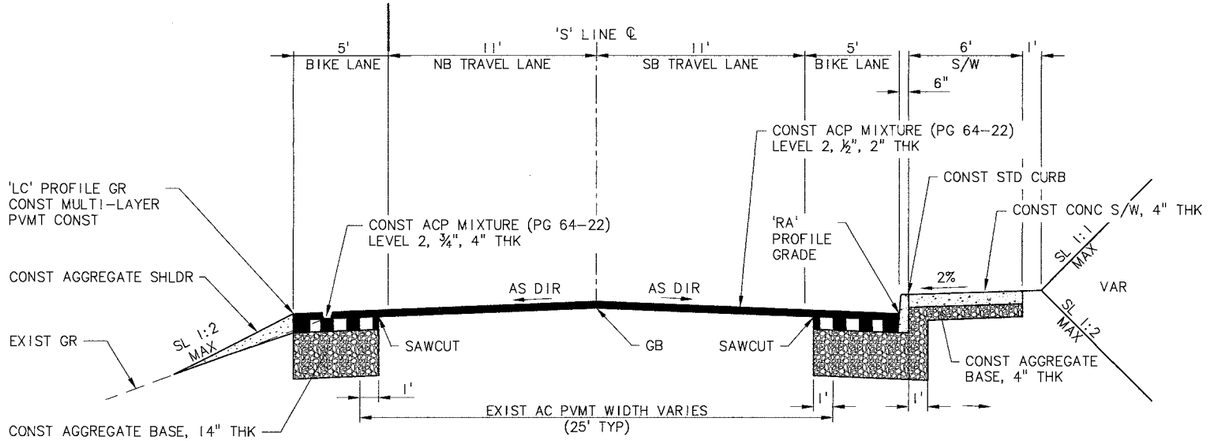
STA S11+95 TO STA S14+08



STA S11+17 TO STA S11+95



STA S10+67 TO STA S11+17



SKYLINE DRIVE
STA S10+67 TO STA S10+90 (TRANSITION SECTION)
STA S10+90 TO STA S17+47
STA S17+47 TO STA S19+30 (TRANSITION SECTION)

SCALE: NTS

2
—

SHEET NOTES:

1. STANDARD CURB: SEE ODOT STANDARD DRAWING RD700, E=6".
2. SIDEWALKS: SEE ODOT STANDARD DRAWING RD720.
3. SIDEWALK CURB RAMPS: SEE ODOT STANDARD DRAWING RD755, RD756, RD757 AND RD759.
4. SIDE-SLOPES ARE SHOWN AS VERTICAL TO HORIZONTAL.
5. FOR SUPERELEVATED SECTIONS, SEE ODOT STANDARD DRAWING RD140.
6. EXISTING CROSS SLOPE OF THE ROADWAY TO BE EXTENDED FROM THE PROPOSED SAW CUT LINE TO THE PROPOSED GUTTER OR EDGE OF PAVEMENT PROFILE GRADE.

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET C-D33
124 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 2, 2013 — ANDREW HENRY — 78447 — RENEWS 6-30-17

SCALE: VERT: AS SHOWN; HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

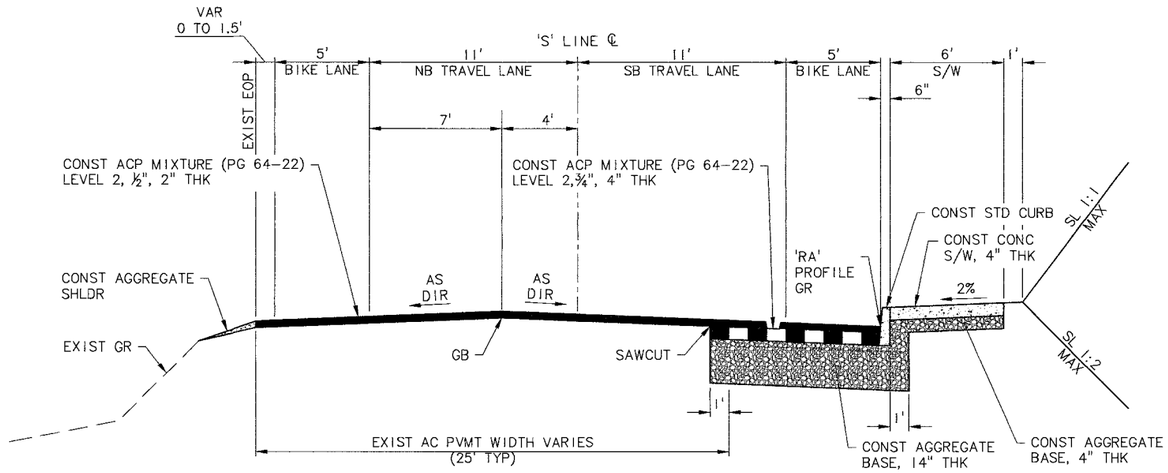
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: TYPICAL ROAD SECTIONS - 1

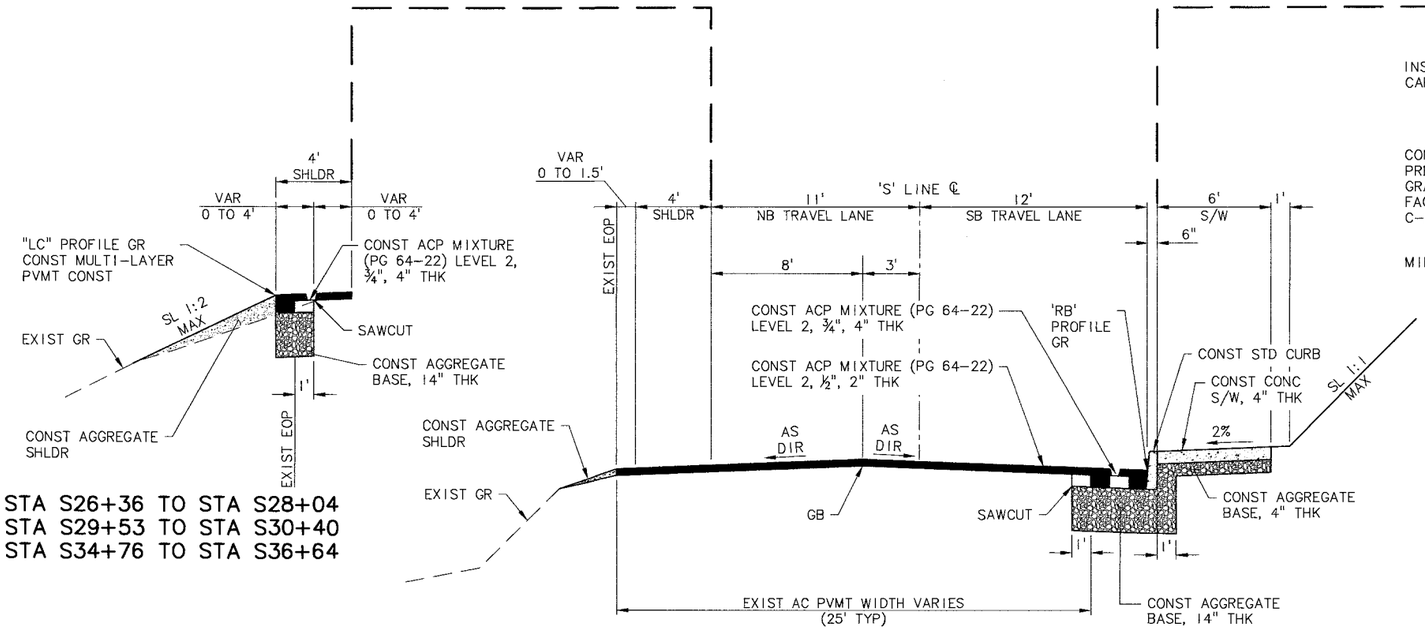
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

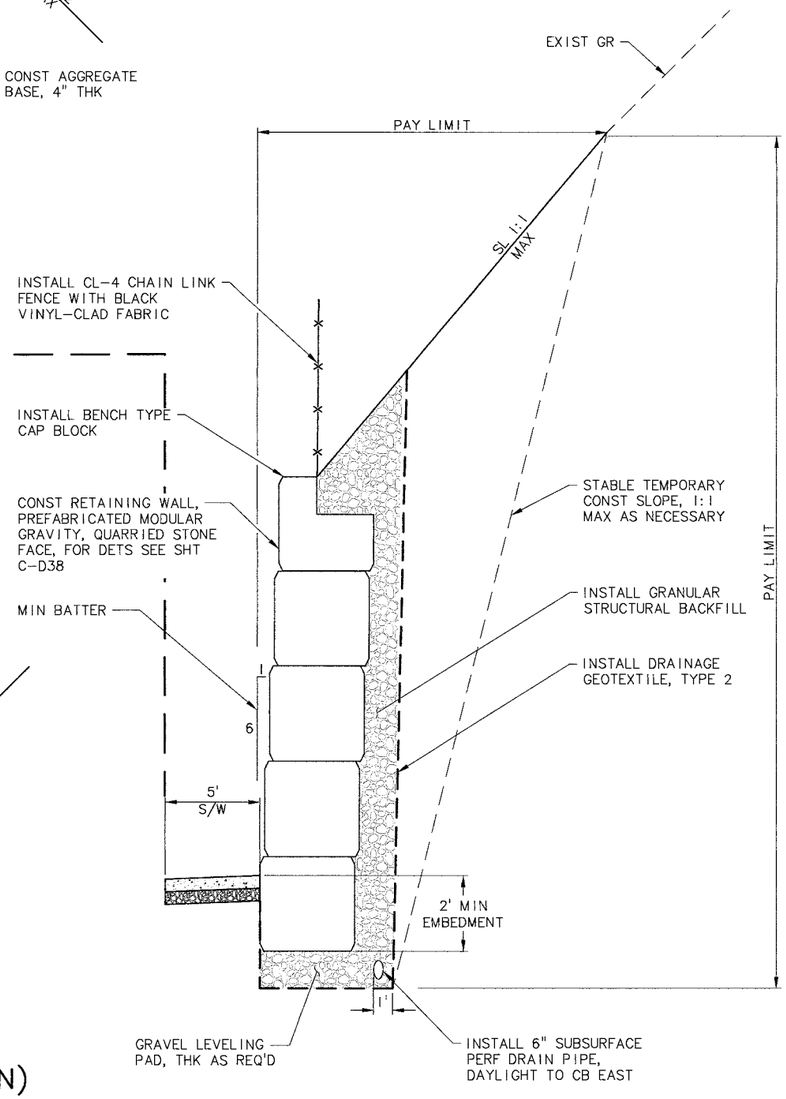


SKYLINE DRIVE
STA S19+30 TO STA S19+89 (1)
SCALE: NTS



STA S26+36 TO STA S28+04
STA S29+53 TO STA S30+40
STA S34+76 TO STA S36+64

SKYLINE DRIVE
STA S19+89 TO STA S20+11 (TRANSITION SECTION)
STA S20+11 TO STA S22+83
STA S23+86 TO STA S37+05 (2)
SCALE: NTS



STA S28+10 TO STA S30+75

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET C-D34
125 of 167

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 9, 1987
ANDREW HENRY
76447
RENEWS 6-30-17

SCALE
VERT: AS SHOWN
HORIZ: AS SHOWN

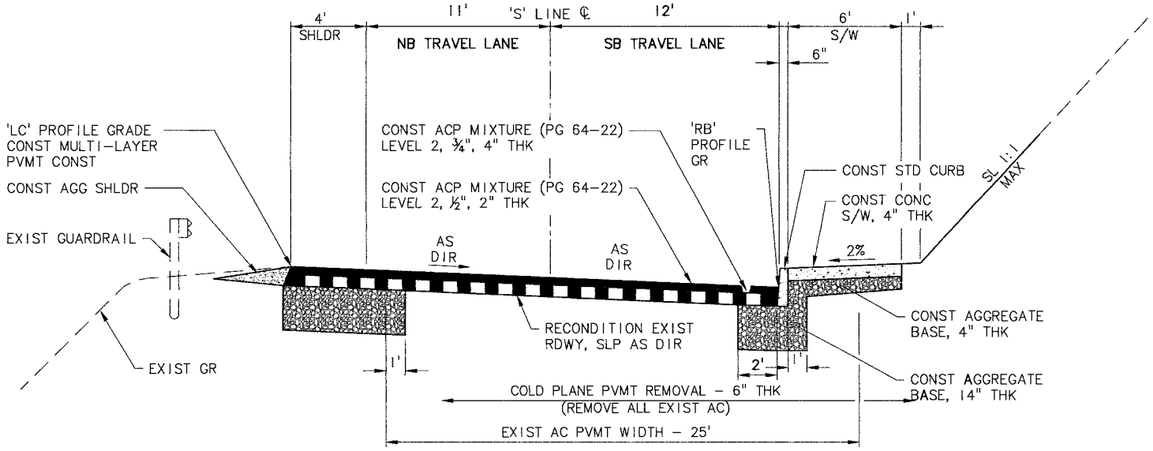
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

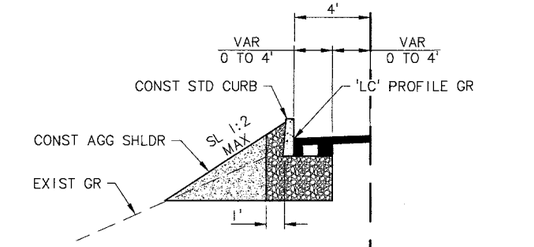
SHEET TITLE: **TYPICAL ROAD SECTIONS - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-8022

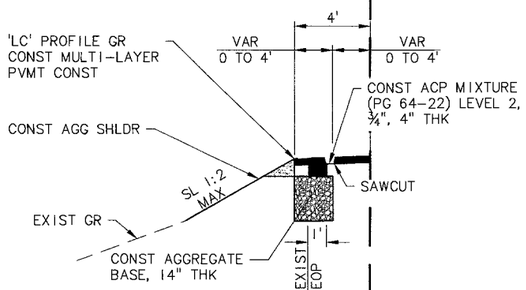
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



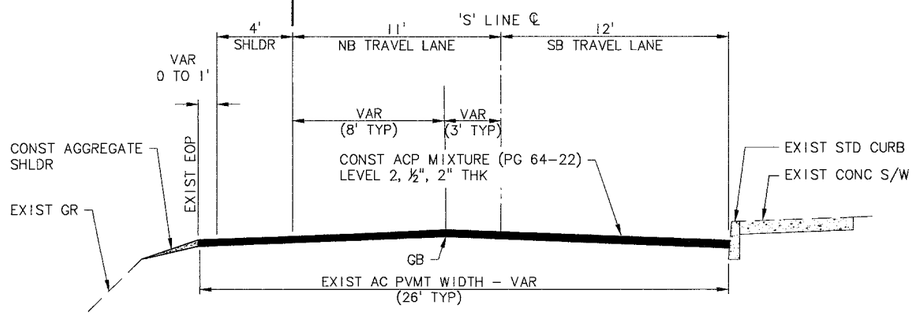
SKYLINE DRIVE
STA S22+83 TO STA S23+86 (1/—)
SCALE: NTS



STA S40+30 TO STA S40+70



STA S37+76 TO STA S40+30



SKYLINE DRIVE
STA S37+05 TO STA S40+70 (2/—)
SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET C-D35
126 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE — VERT: AS SHOWN — HORIZ: AS SHOWN

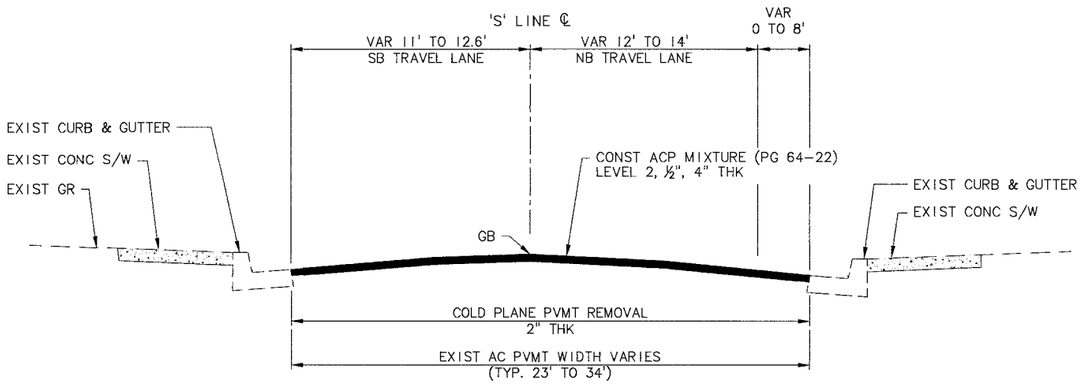
NOTICE
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
TYPICAL ROAD SECTIONS - 3

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

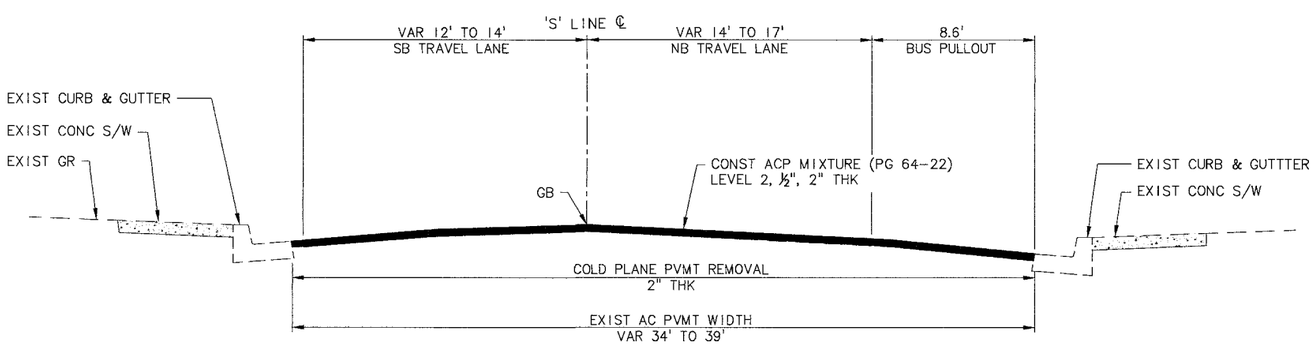
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



SKYLINE DRIVE
STA S40+70 TO STA S42+05
STA S42+05 TO STA S42+38 (TRANSITION SECTION)
STA S42+38 TO STA S43+04 (TRANSITION SECTION)

SCALE: NTS

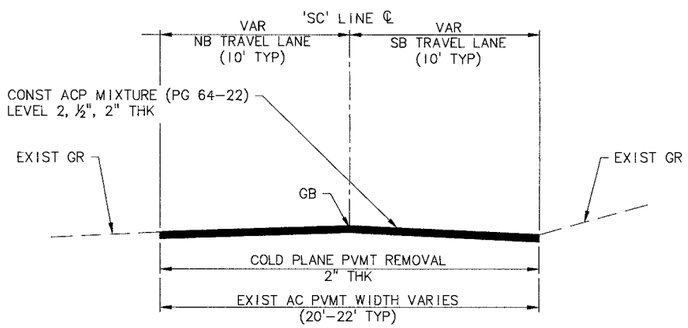
1 / –



SKYLINE DRIVE
STA S43+04 TO STA S44+40

SCALE: NTS

2 / –



SKYLINE CIRCLE
STA S0+28 TO STA S2+77

SCALE: NTS

3 / –

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET C-D36
127 of 167

REGISTERED PROFESSIONAL ENGINEER 78447 OREGON JUNE 2, 2015 ANDREW HENRY
RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

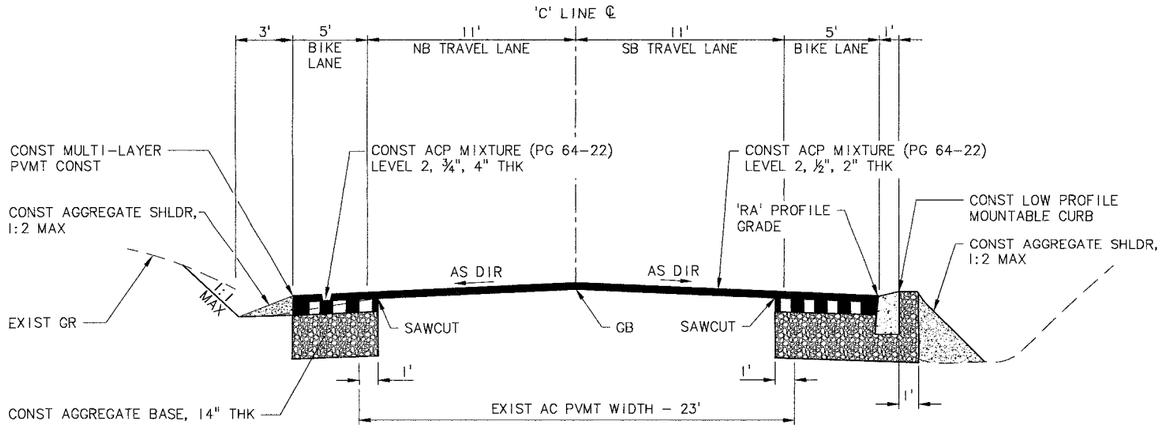
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

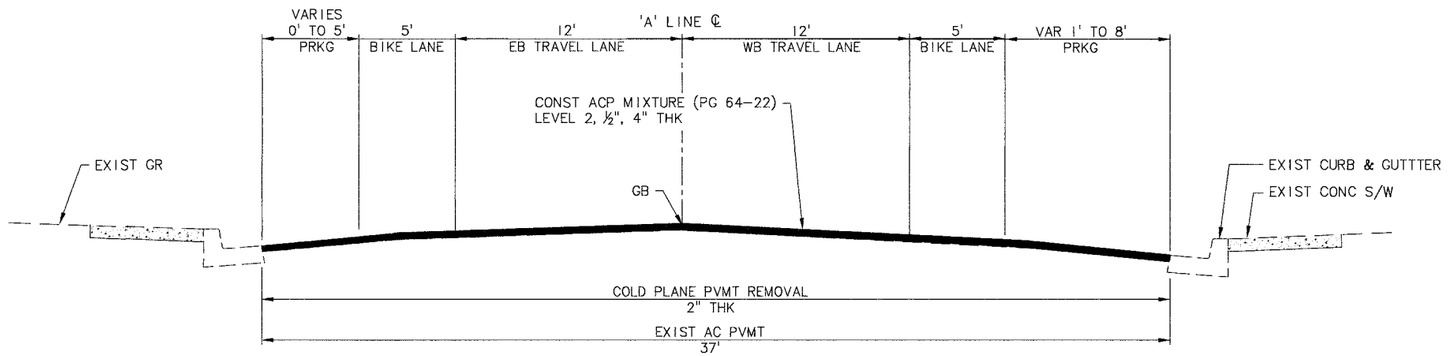
SHEET TITLE:
TYPICAL ROAD SECTIONS - 4

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015



CLARK STREET
STA C10+00 TO STA C12+03 (1/-)
SCALE: NTS



A STREET
STA A34+30 TO STA A37+84 (2/-)
SCALE: NTS

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-TYPS.dwg C-D37 9/3/2015 9:38 AM RLF 20.0s (LMS Tech)

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET C-D37
128 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JUNE 2, 2015 ANDREW HENRY 78447 RENEWS 6-30-17

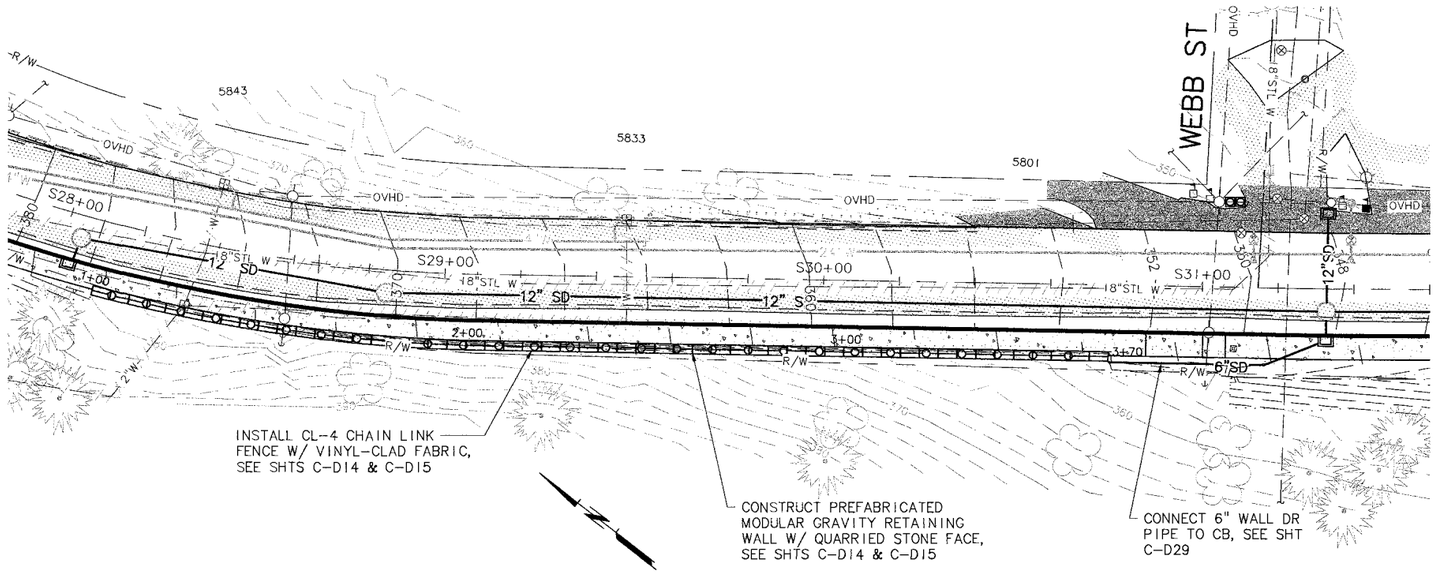
SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **TYPICAL ROAD SECTIONS - 5**

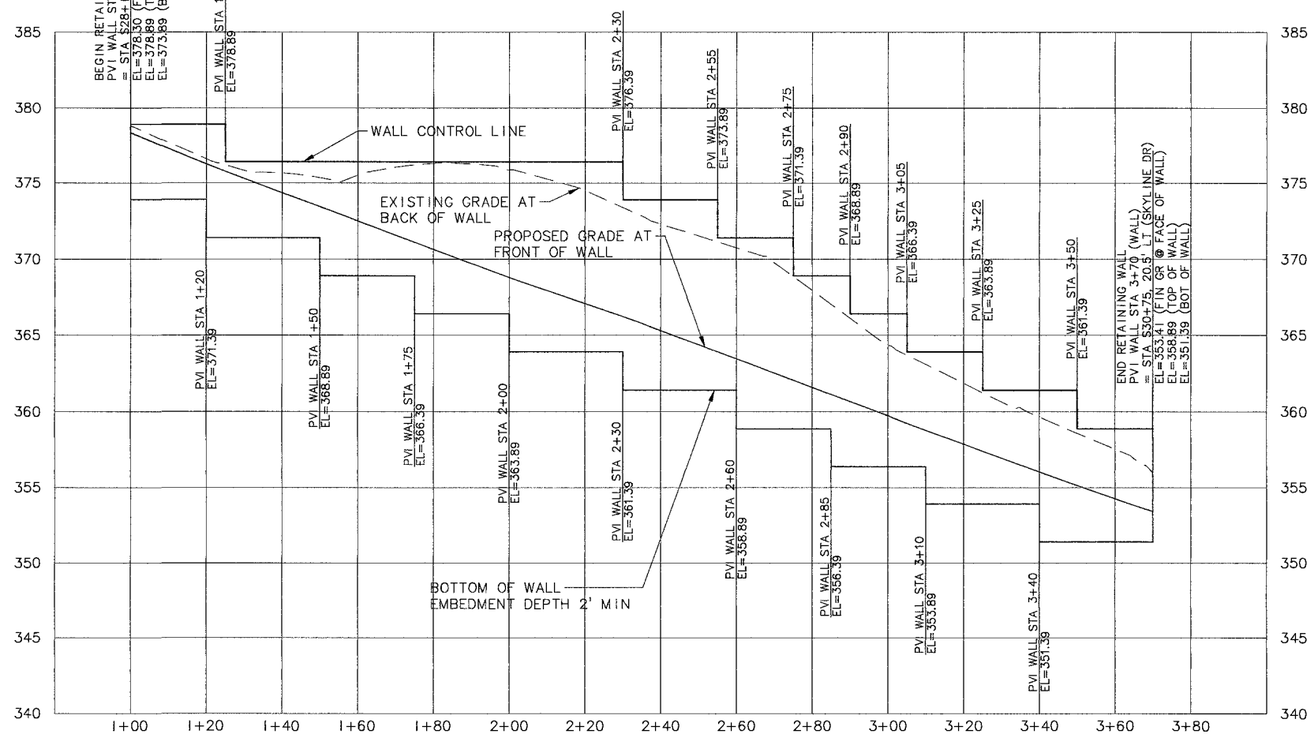
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



RETAINING WALL PLAN

SCALE: 1"=20'



RETAINING WALL PROFILE

SCALE: 1"=20' HORIZ, 1"=5' VERT

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: CEC
APPROVED: PB

SHEET C-D38
129 of 167

REGISTERED PROFESSIONAL ENGINEER 77738 OREGON DECEMBER 9, 1977 ROBERT EDWARD RUHEE
RENEWS 12-31-16

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

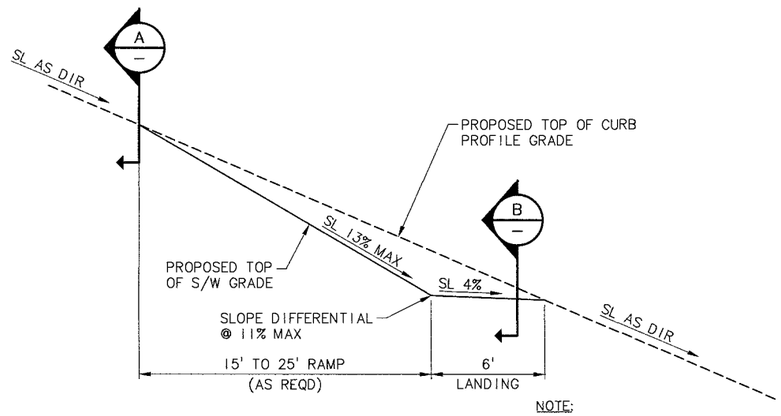
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CIVIL DETAILS - 1**
RETAINING WALL

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED D\14-1586-OR-D-DETS.dwg C-D38 9/3/2015 10:02 AM DKT 20.0s (LMS Tech)

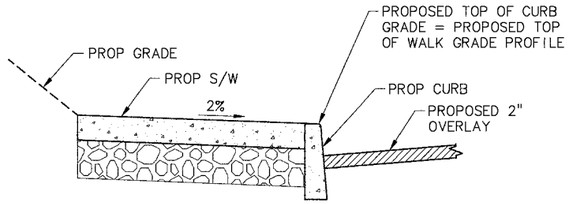


NOTE:

SIDEWALK LANDING LOCATED AT:
STA S 22+63, 12.5' RT = RB 2+73
STA S 27+02, 12.5' RT = RB 6+92
STA S 31+06, 12.5' RT = RB 10+97

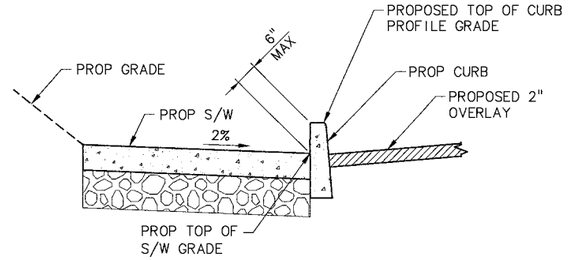
TYPICAL SIDEWALK LANDING PROFILE 1

SCALE: NTS



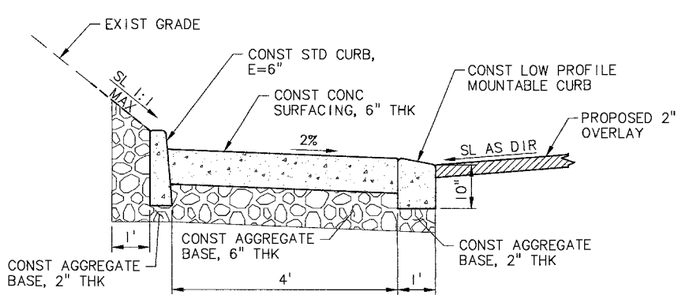
TYPICAL SIDEWALK SECTION A

SCALE: NTS



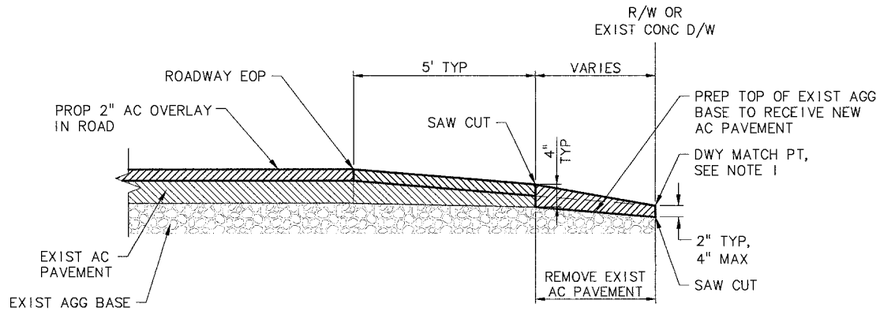
SIDEWALK TYPICAL LANDING SECTION B

SCALE: NTS



MAINTENANCE PAD (FILL STATION) 2

SCALE: NTS



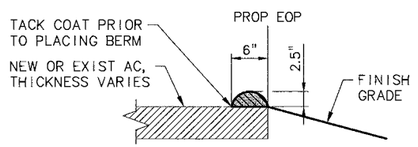
NOTE:

1. MATCH EXISTING CONCRETE DRIVEWAY OR EXTEND LIMITS 1-FOOT BEYOND RIGHT OF WAY.

2. ACP SHALL BE A LEVEL 2, 3/8" ACP MIXTURE (PG 64-22).

ASPHALT DRIVEWAY APPROACH 3

SCALE: NTS



NOTE:

1. ACP SHALL BE A LEVEL 2, 3/8" DENSE ACP MIXTURE (PG 64-22).

TYPICAL ASPHALT BERM 4

SCALE: NTS

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D39
130 of 167

REGISTERED PROFESSIONAL ENGINEER 75647 OREGON JUNE 2, 2015 ANDREW HENRY
RENEWS 6-30-17

SCALE
VERT: AS SHOWN
HORIZ: AS SHOWN
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THIS DRAWING IS NOT TO SCALE
0 1

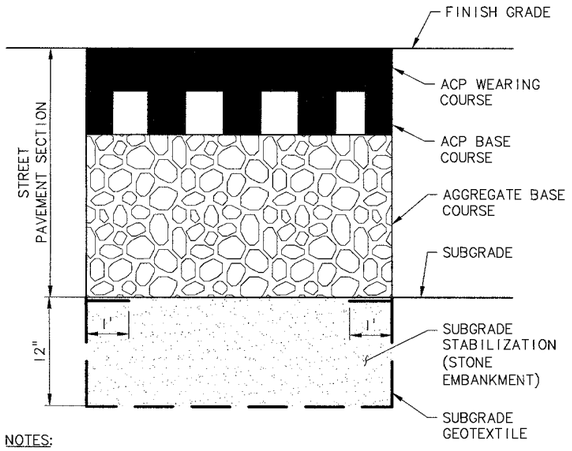
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CIVIL DETAILS - 2
MISCELLANEOUS DETAILS

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED D\14-1586-OR-D-DETS.dwg C-D39 9/3/2015 10:02 AM DKT 20.0s (LMS Tech)

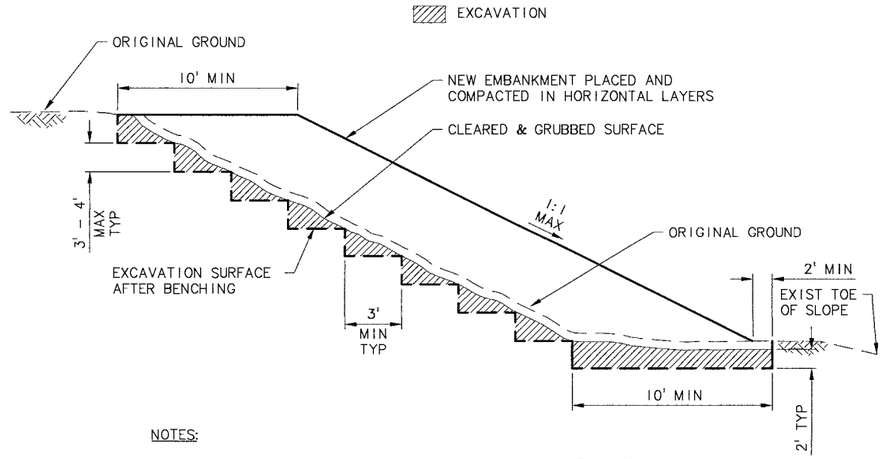


NOTES:

1. SUBGRADE STABILIZATION AREAS TO BE COMPLETED AS DIRECTED BY THE ENGINEER.

2. FOR PAVEMENT SECTION DEPTHS, SEE TYPICAL SECTIONS.

12" SUBGRADE STABILIZATION (1)
SCALE: NTS



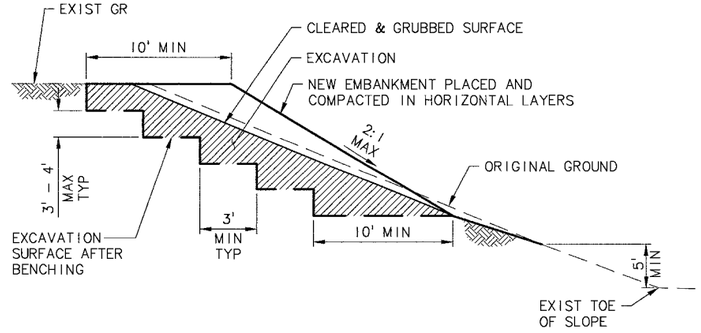
NOTES:

1. CONSTRUCT BENCHES ON SLOPES STEEPER THAN 1V:5H TO PROVIDE POSITIVE BOND WITH EXISTING GROUND.

2. BENCHING WORK IS INCIDENTAL TO EMBANKMENT CONSTRUCTION.

3. FOR EMBANKMENTS WHICH TOE OUT GREATER THAN 5' ABOVE THE EXISTING TOE OF SLOPE, SEE SLIVER FILL DETAIL.

STANDARD EMBANKMENT CONSTRUCTION (2)
SCALE: NTS



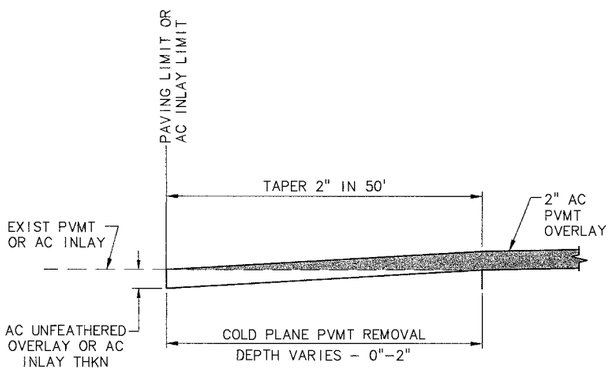
NOTES:

1. CONSTRUCT BENCHES ON SLOPES STEEPER THAN 1V:5H TO PROVIDE POSITIVE BOND WITH EXISTING GROUND.

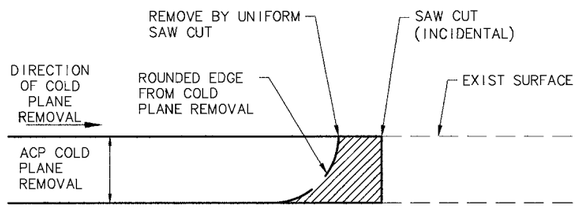
2. BENCHING WORK IS INCIDENTAL TO EMBANKMENT CONSTRUCTION.

3. FOR EMBANKMENTS WHICH TOE OUT AT A HEIGHT OF 5' OR LESS ABOVE THE EXISTING TOE OF SLOPE, SEE STANDARD EMBANKMENT DETAIL.

SLIVER FILL BENCHING (3)
SCCALE: NTS



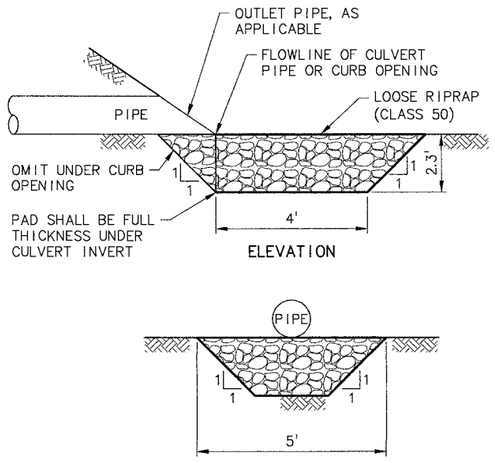
AC OVERLAY TRANSITION DETAIL (4)
SCALE: NTS



NOTE:

1. WHEN COLD PLANE REMOVAL PRODUCES A ROUNDED EDGE, A SAW CUT SHALL BE USED TO MANUFACTURE A PERPENDICULAR EDGE AS SHOWN. THE ENGINEER SHALL BE SOLE JUDGE CONCERNING THE USE OF THIS DETAIL.

ACP DETAIL AT BUTT JOINT (5)
SCALE: NTS



NOTES:

1. DO NOT EXCAVATE NON-ERODIBLE ROCK IN ORDER TO PLACE RIPRAP.

RIPRAP BASIN (6)
SCALE: NTS

NO.	DATE	REVISION	BY

SHEET C-D40 131 of 167

DESIGNED: AHG
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON JUNE 2, 2010 — ANDREW HENRY — RENEWS 6-30-17

SCALE: VERT: AS SHOWN HORIZ: AS SHOWN

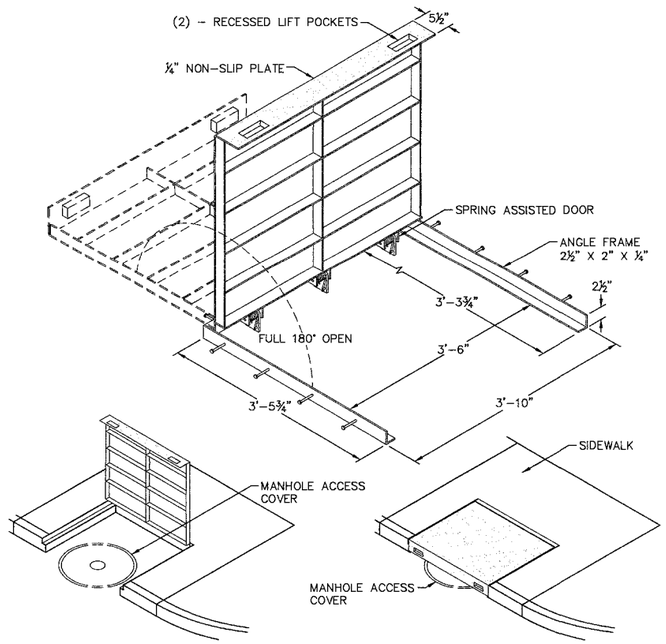
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CIVIL DETAILS - 3**
MISCELLANEOUS DETAILS

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



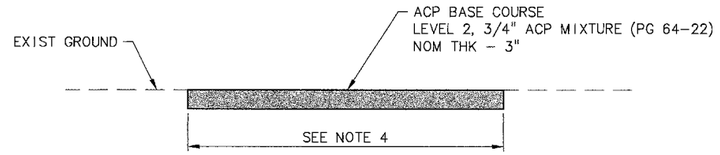
TYPICAL INSTALLATION
DOOR SHOWN 90° OPEN

TYPICAL INSTALLATION
DOOR SHOWN CLOSED

NOTES:
1. FRAME DESIGNED TO BE CAST IN CONCRETE.
2. DESIGNED FOR 300PSF, PEDESTRIAN RATED TRAFFIC ONLY.
3. FRAME AND COVER TO BE INSTALLED AS ONE UNIT (DO NOT DISASSEMBLE).
4. HOT–DIPPED GALVANIZED NON–SLIP FINISH.
5. CURB FRAME AND DOORS WILL BE FURNISHED BY UTILITY FACILITY OWNER. APPROVED CURB FRAME AND DOOR IS MODEL 4042, AS MANUFACTURED BY UTILITY VAULT.

CURB FRAME AND DOOR
SCALE: NTS

(1 / –)



NOTES:

1. PERFORM PAVEMENT REPAIRS PRIOR TO ACP OVERLAY.

2. LOCATION OF AC PAVEMENT REPAIR ARE AS DIRECTED BY ENGINEER.

3. PERFORM AC PAVEMENT REPAIRS AT EXIST AC COLD PATCH LOCATIONS.

4. AREA OF AC PAVEMENT REPAIR ASSUMES A 7–FOOT GRINDER WIDTH. LENGTH SHALL BE AS DIRECTED BY ENGINEER.

AC PAVEMENT REPAIR DETAIL
SCALE: NTS

(2 / –)

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C–D41 132 of 167

REGISTERED PROFESSIONAL ENGINEER 75447 OREGON JUNE 23, 1977 ANDREW HENRY RENEWS 6–30–17

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

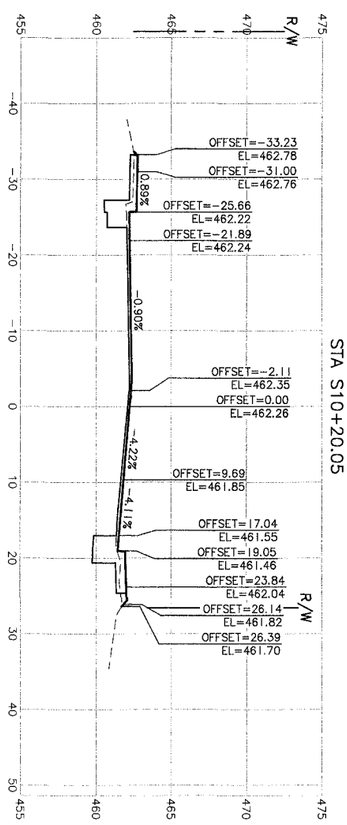
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

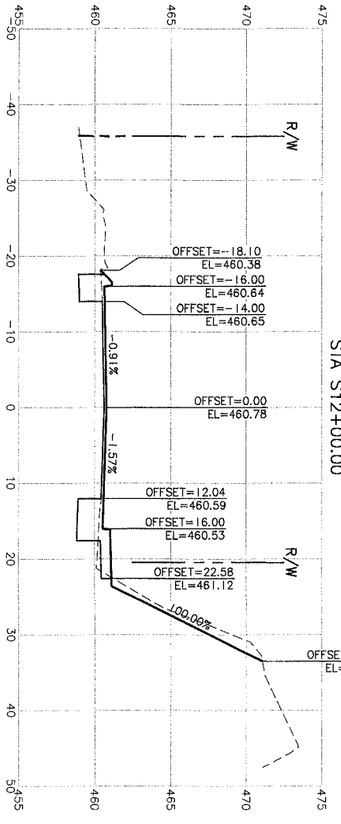
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14–06

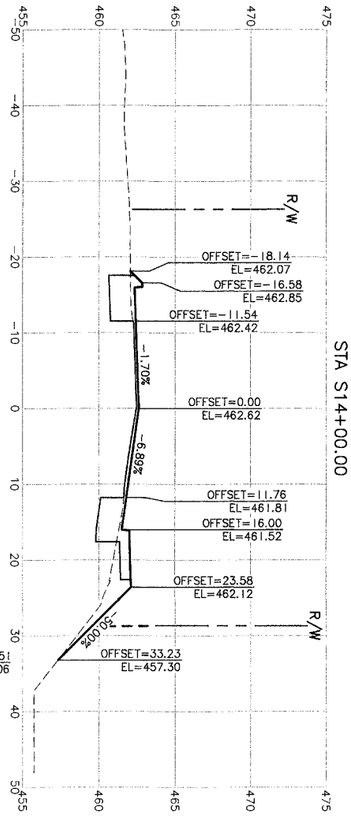
SHEET TITLE:
CIVIL DETAILS - 4
MISCELLANEOUS DETAILS

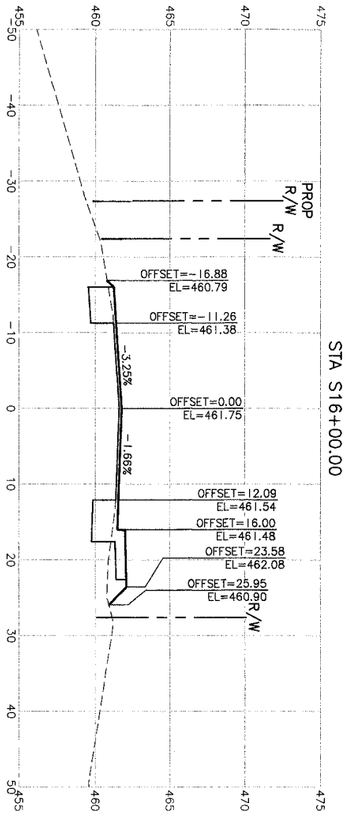
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503–225–9010
Portland, Oregon 97204 FAX 503–225–9022

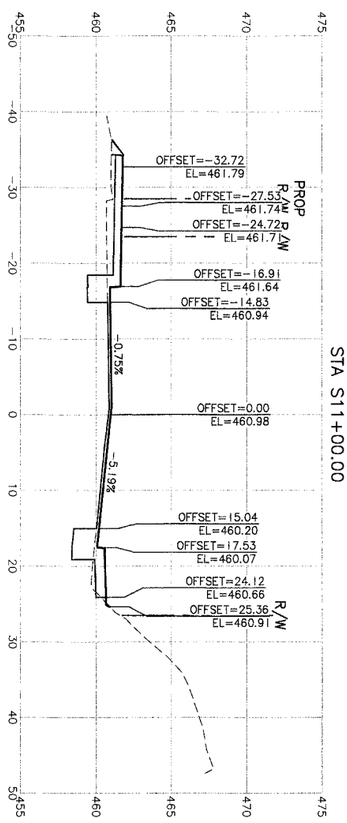
MSA PROJECT: 14–1586 DATE: SEPTEMBER 2015

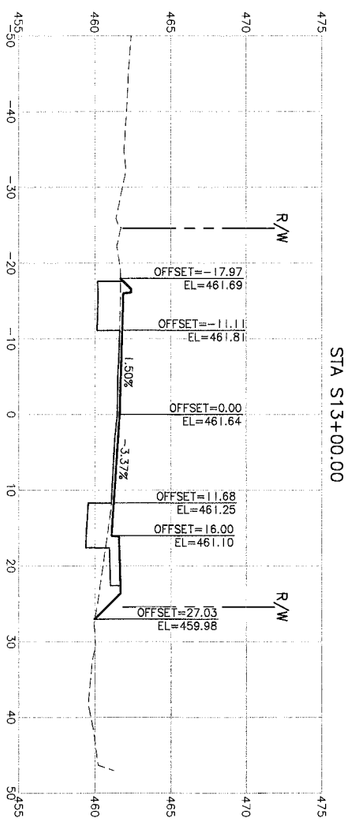


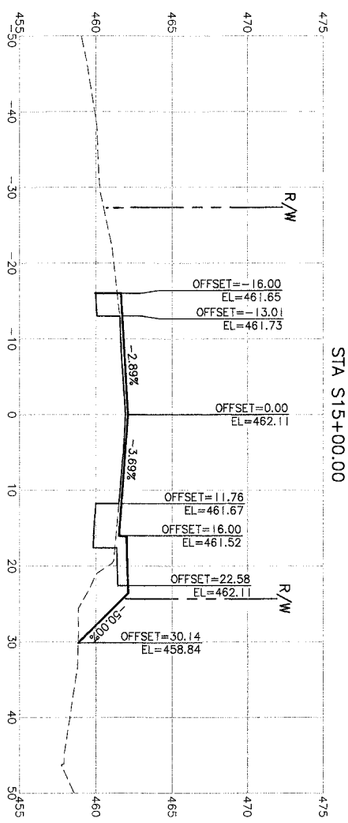


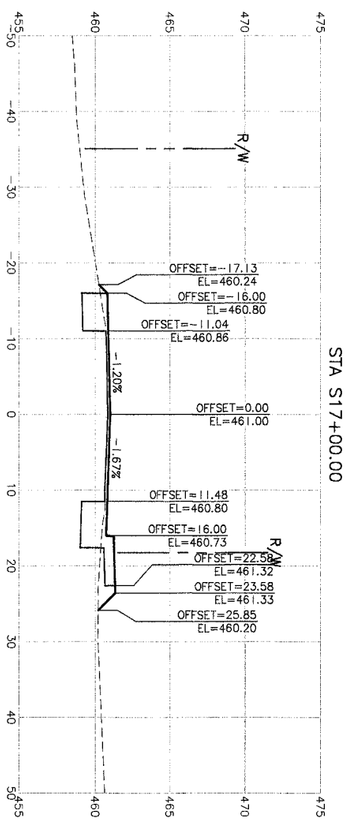










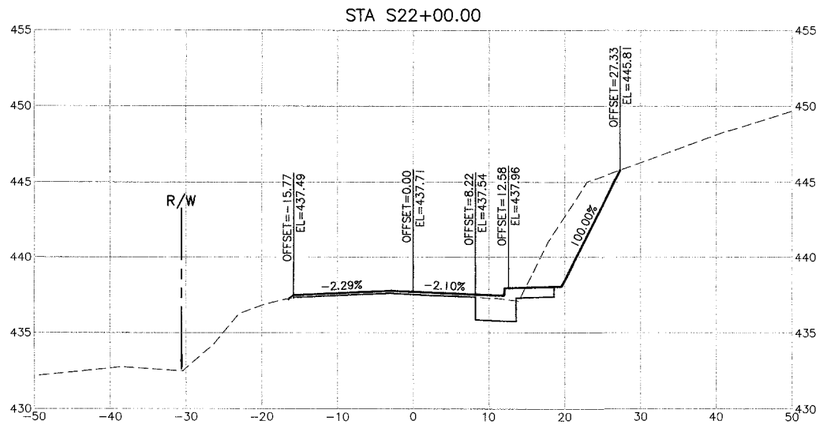


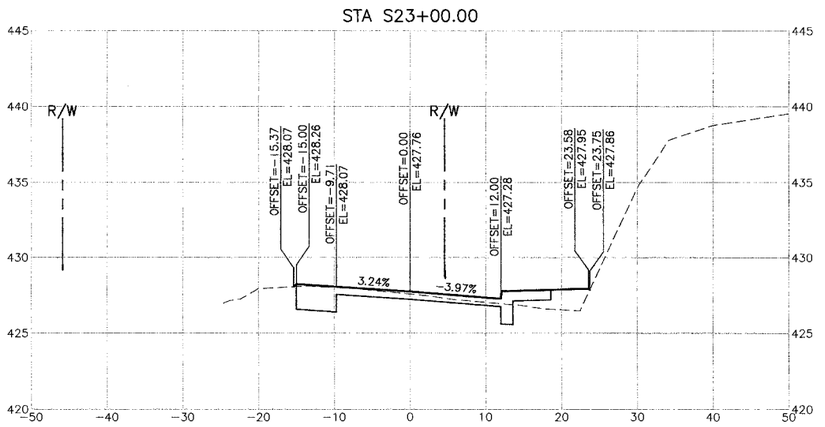
MSA Murray, Smith & Associates, Inc. Engineers/Planners 121 S.W. Salmon, Suite 900 Portland, Oregon 97204 PHONE 503-225-9010 FAX 503-225-9022	PROJECT NAME: CITY OF WEST LINN, OREGON BOLTON RESERVOIR REPLACEMENT PROJECT NO. PW 14-06	SCALE VERT: 1"=2' HORIZ: 1"=10' NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 1977 ROBERT EDWARD RIPPEE RENEWS 12-31-16
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015	SHEET TITLE: **CIVIL DETAILS - 5 CROSS SECTIONS**		

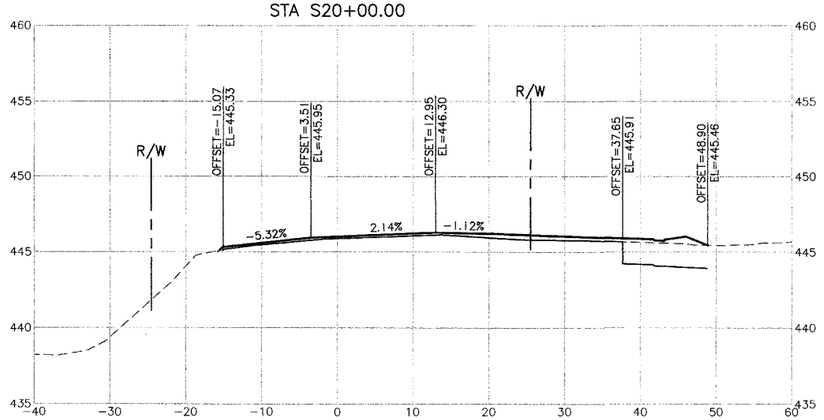
NO.	DATE	REVISION	BY

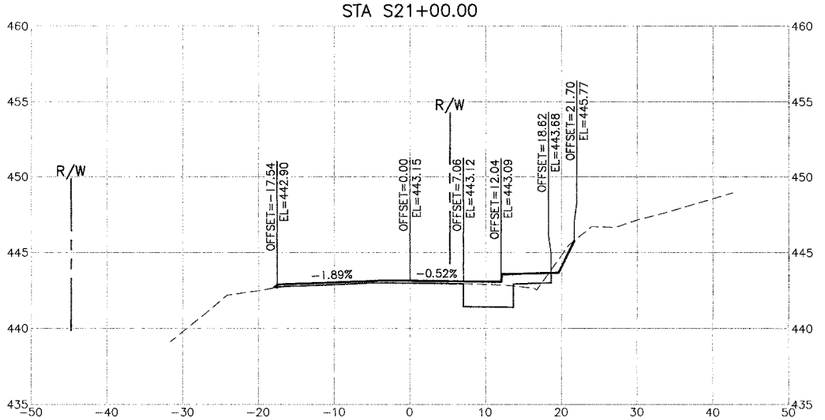
DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

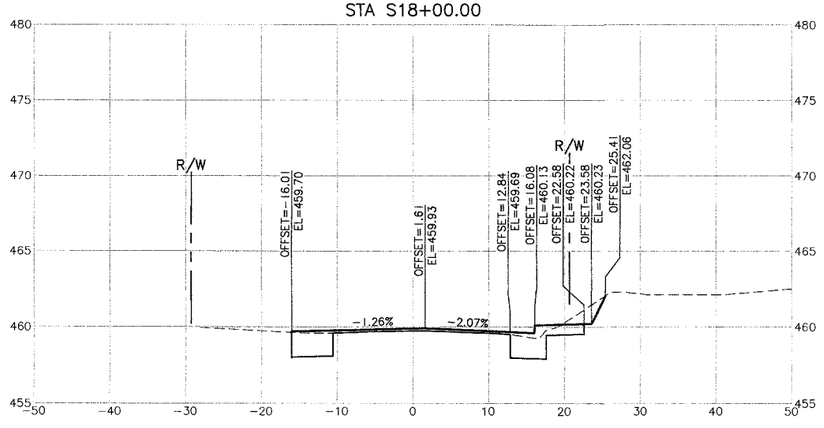
SHEET C-D42

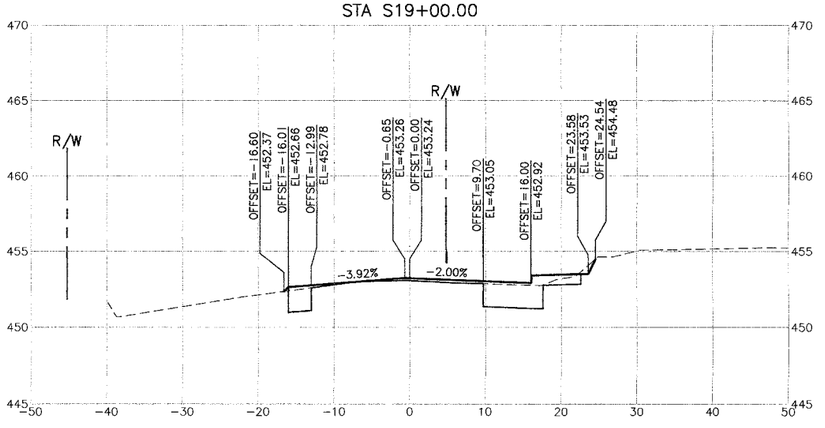












g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-XSEC.dwg C-D43 9/3/2015 9:41 AM HCM 20.0s (LMS Tech)

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D43 134 of 167

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON JANUARY 14, 2005 ROBERT EDWARD MURRAY
RENEWS: 12-31-16

SCALE VERT: 1"=2' HORIZ: 1"=10'

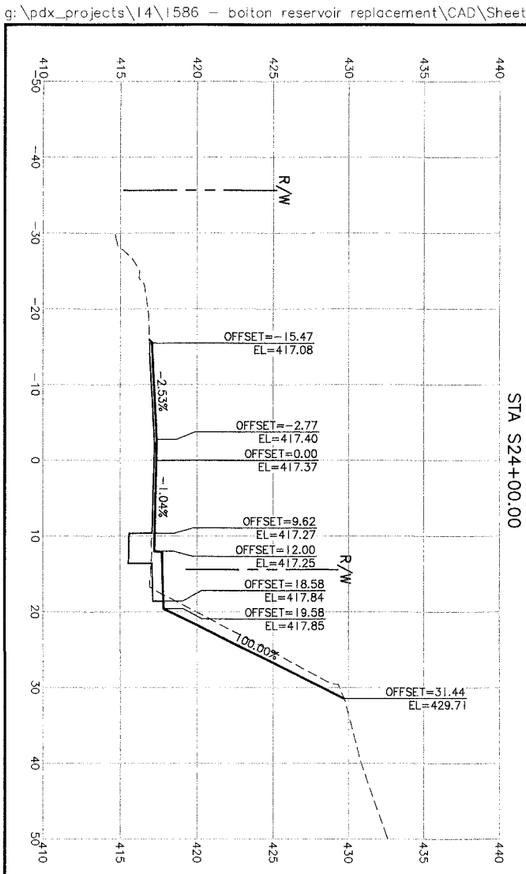
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

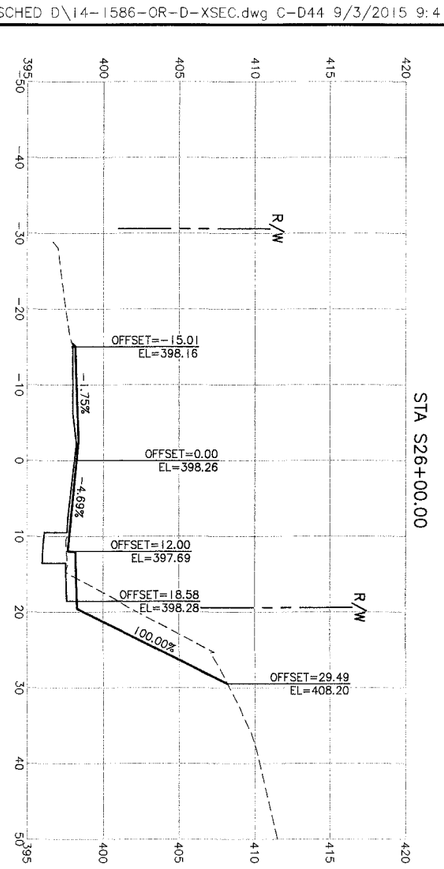
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

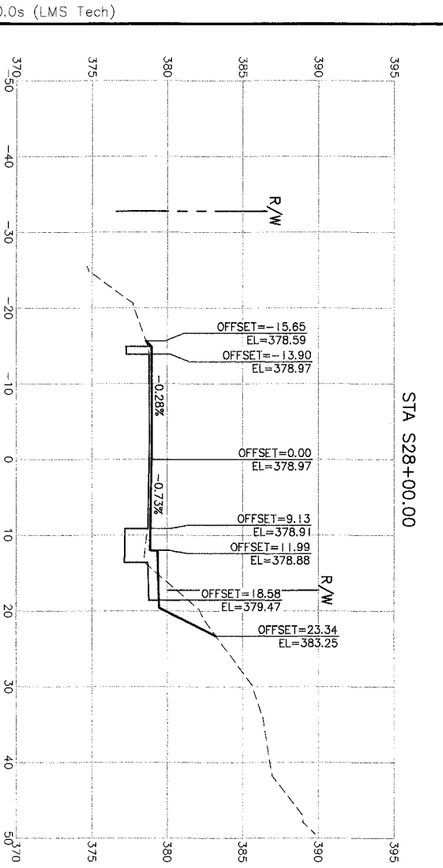
SHEET TITLE:
CIVIL DETAILS - 6
CROSS SECTIONS

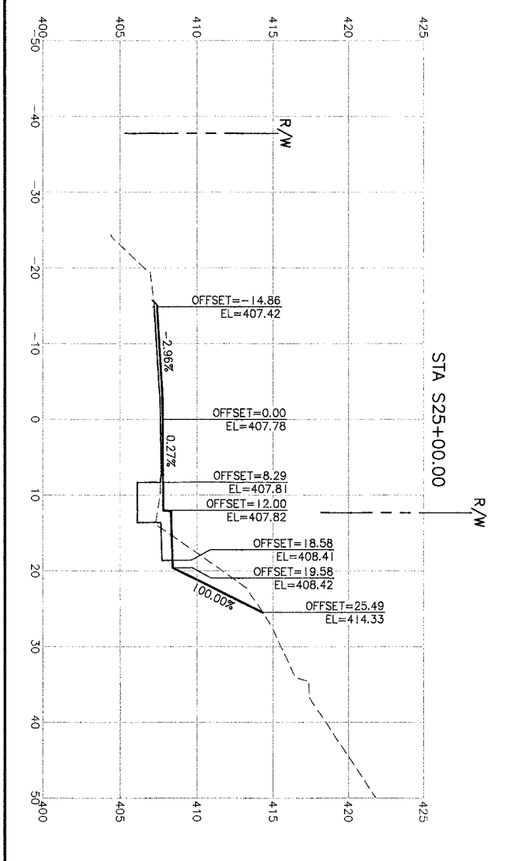
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-8022

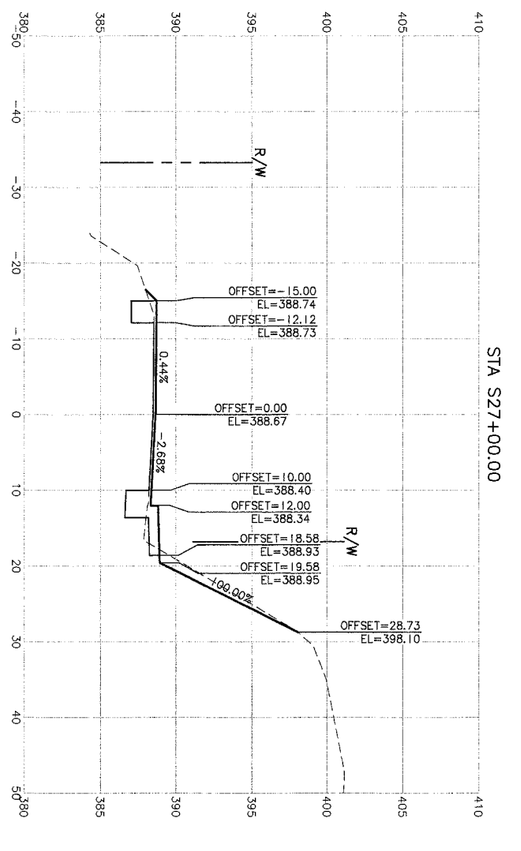
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015











MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CIVIL DETAILS - 7
CROSS SECTIONS

SCALE: VERT: 1"=2'
HORIZ: 1"=10'

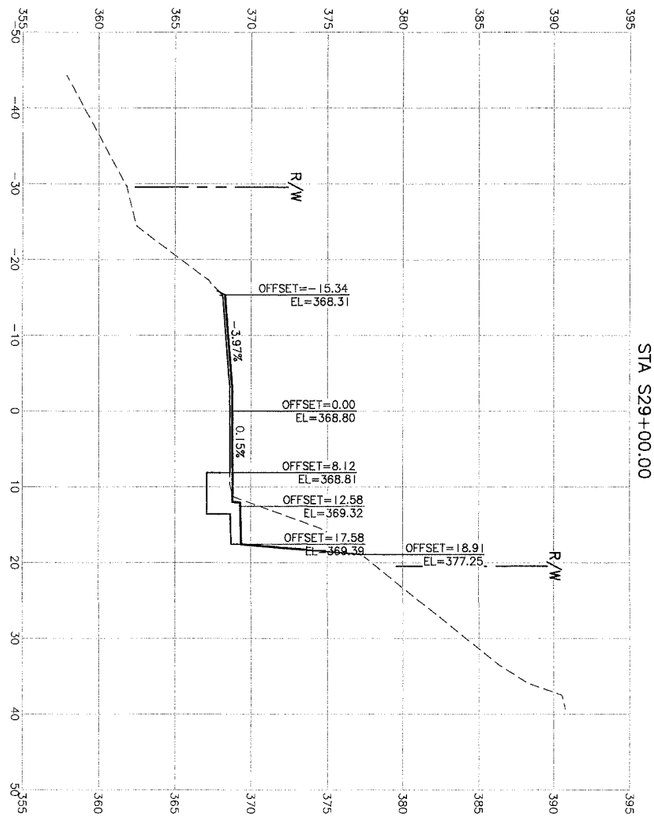
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

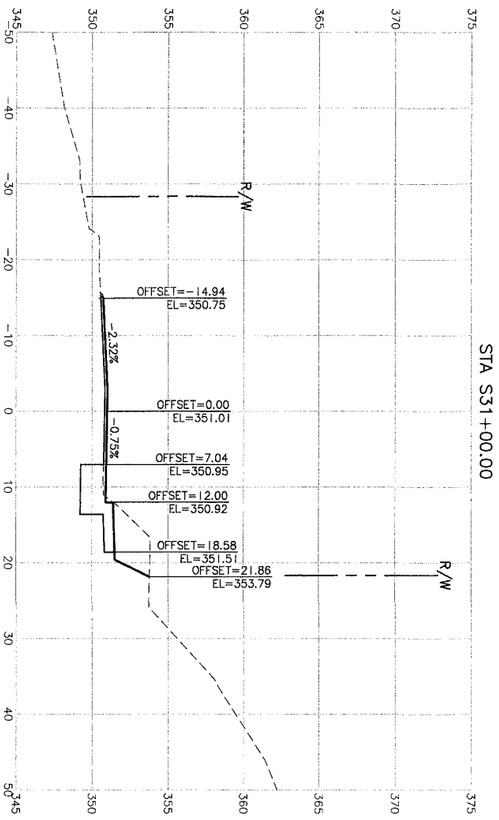
REGISTERED PROFESSIONAL ENGINEER
77739
OREGON
DECEMBER 9, 2014
ROBERT EDWARD RIPPEE
RENEWS 12-31-16

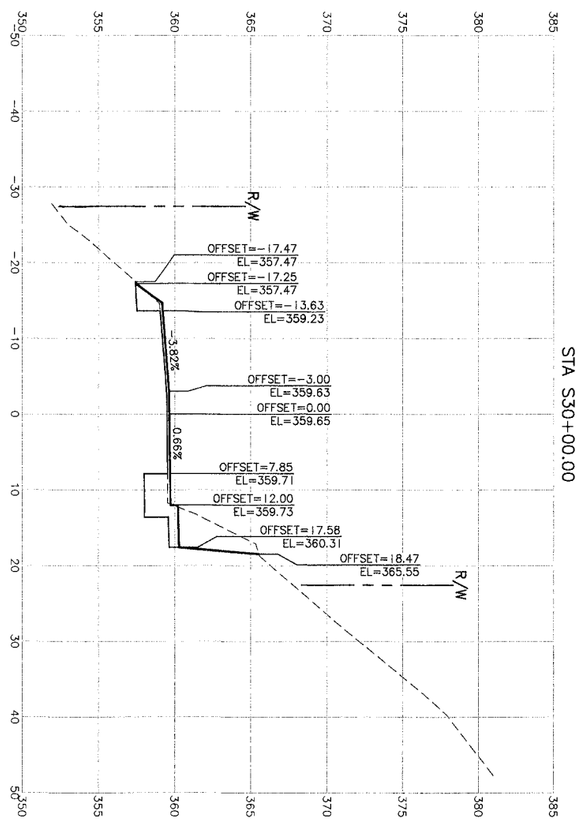
NO.	DATE	REVISION	BY

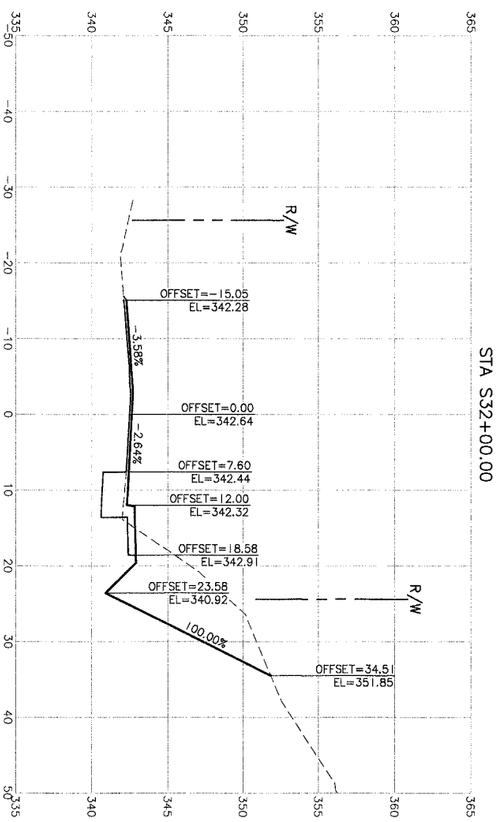
DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D44









MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CIVIL DETAILS - 8
CROSS SECTIONS

SCALE VERT: 1"=2'
HORIZ: 1"=10'

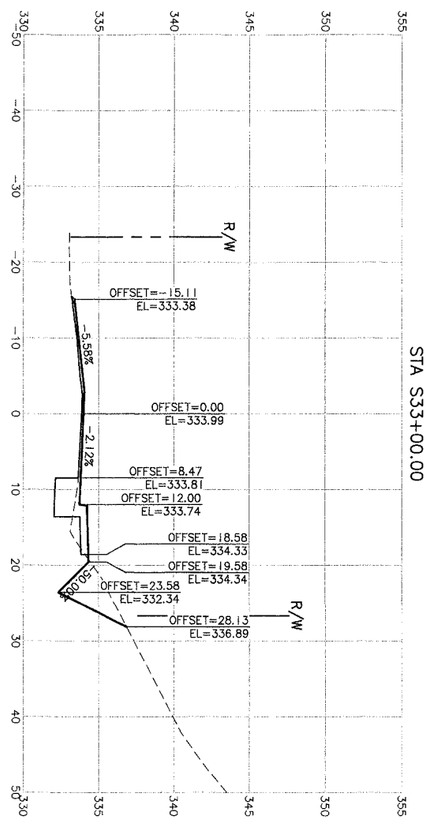
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

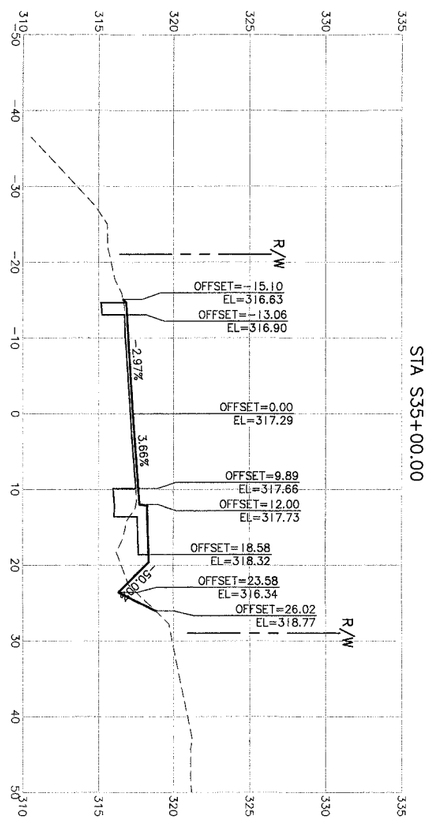
REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 9, 2003 ROBERT EDWARD RIPPLE
RENEWS 12-31-16

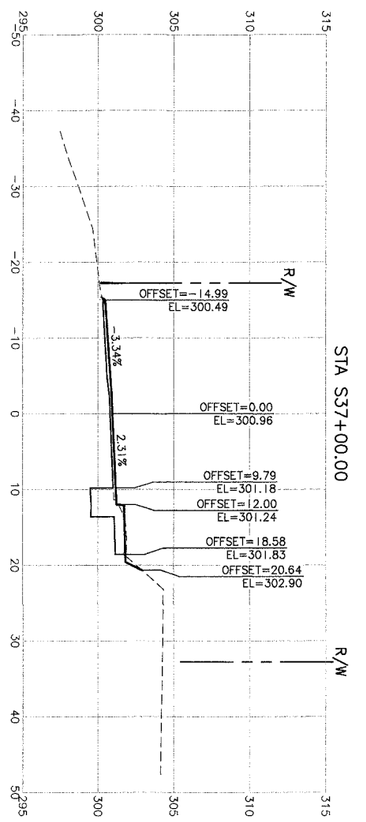
NO.	DATE	REVISION	BY

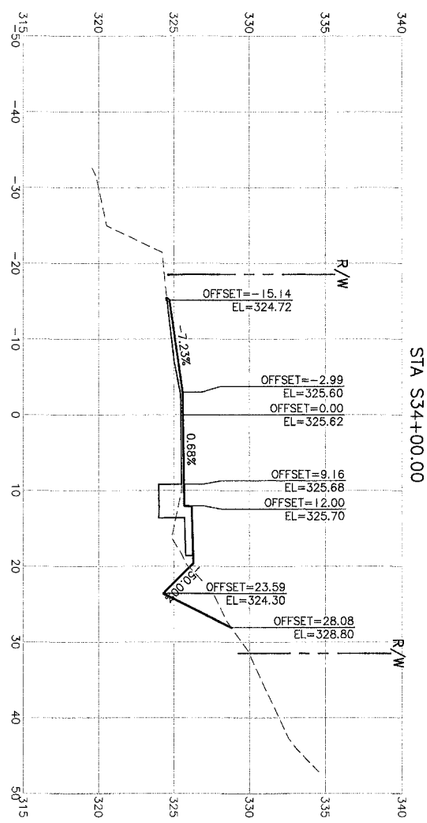
DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

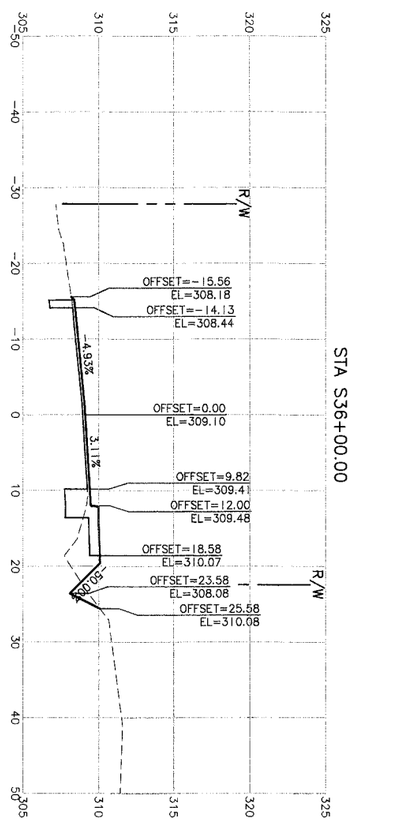
SHEET C-D45

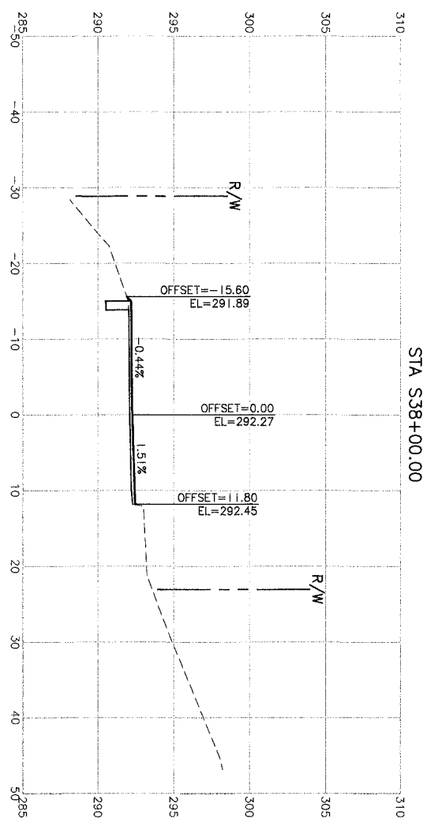












Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586

DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:

CIVIL DETAILS - 9
CROSS SECTIONS

SCALE VERT: 1"=2'
HORIZ: 1"=10'

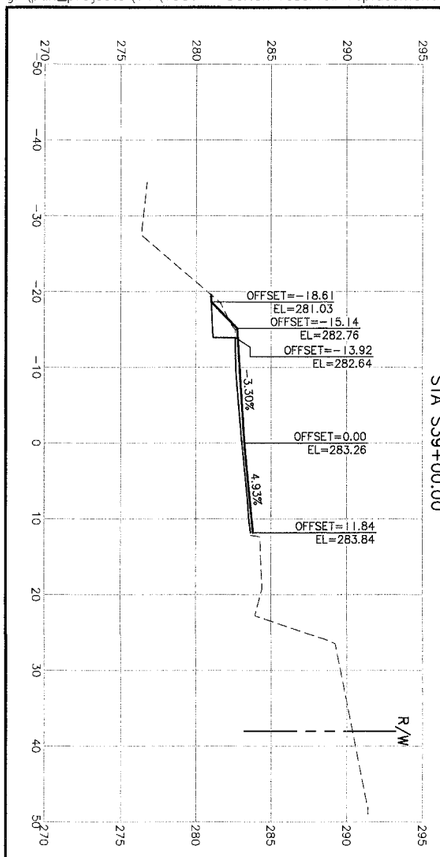
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

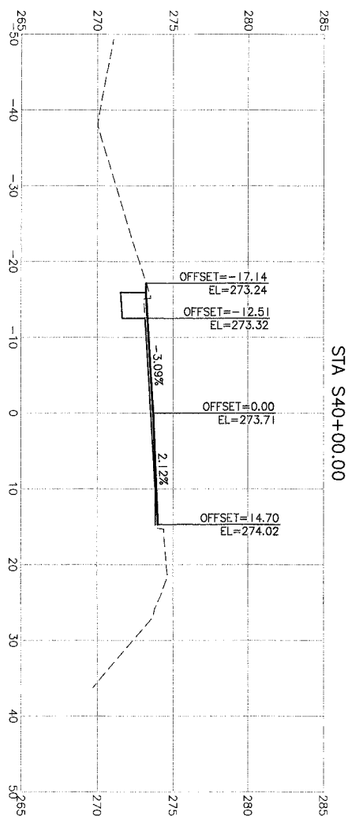
REGISTERED PROFESSIONAL ENGINEER
77739
OREGON
DECEMBER 9, 2005
ROBERT EDWARD RIPPEE
RENEWS 12-31-16

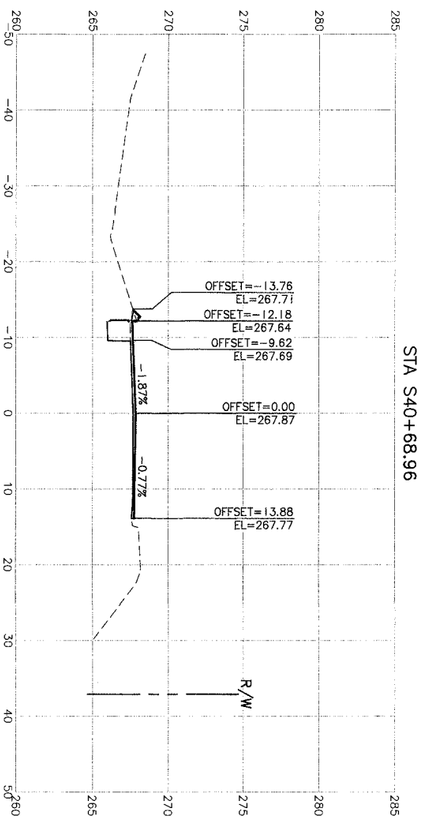
NO.	DATE	REVISION	BY

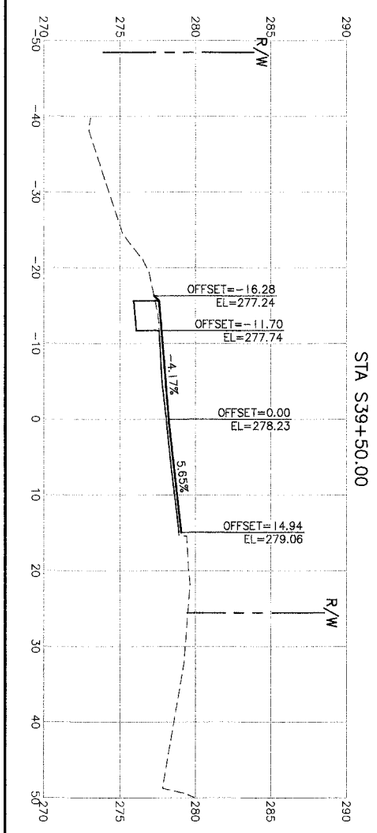
DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

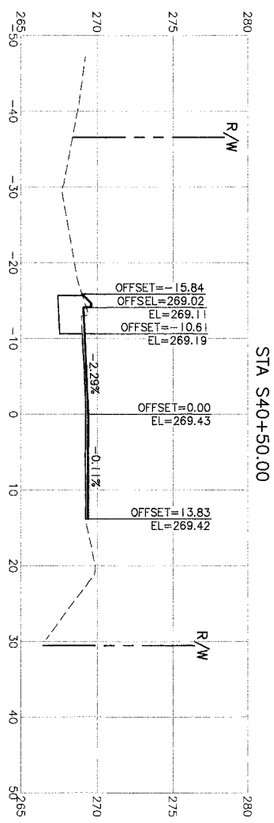
SHEET
C-D46
137 of 167











MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CIVIL DETAILS - 10
CROSS SECTIONS

SCALE VERT: 1"=2'
HORIZ: 1"=10'

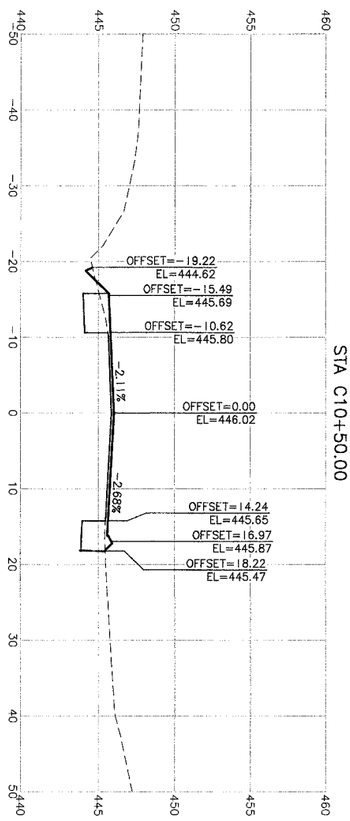
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

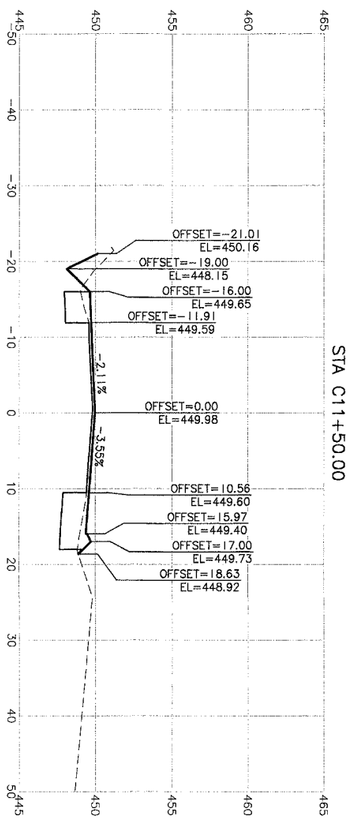
REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 6, 2005 ROBERT EDWARD RIPPEE
RENEWS 12-31-16

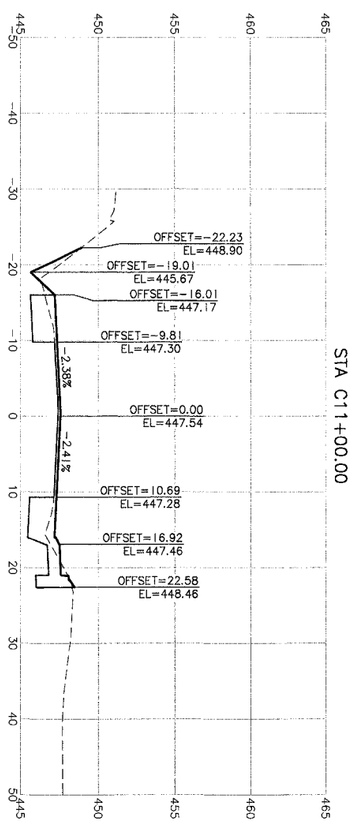
NO.	DATE	REVISION	BY

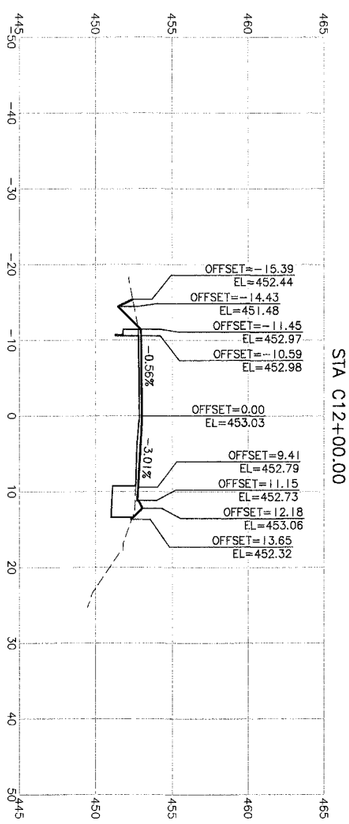
DESIGNED: AHG/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET C-D47









MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CIVIL DETAILS - 11
CROSS SECTIONS

SCALE: VERT: 1"=2' | HORIZ: 1"=10'

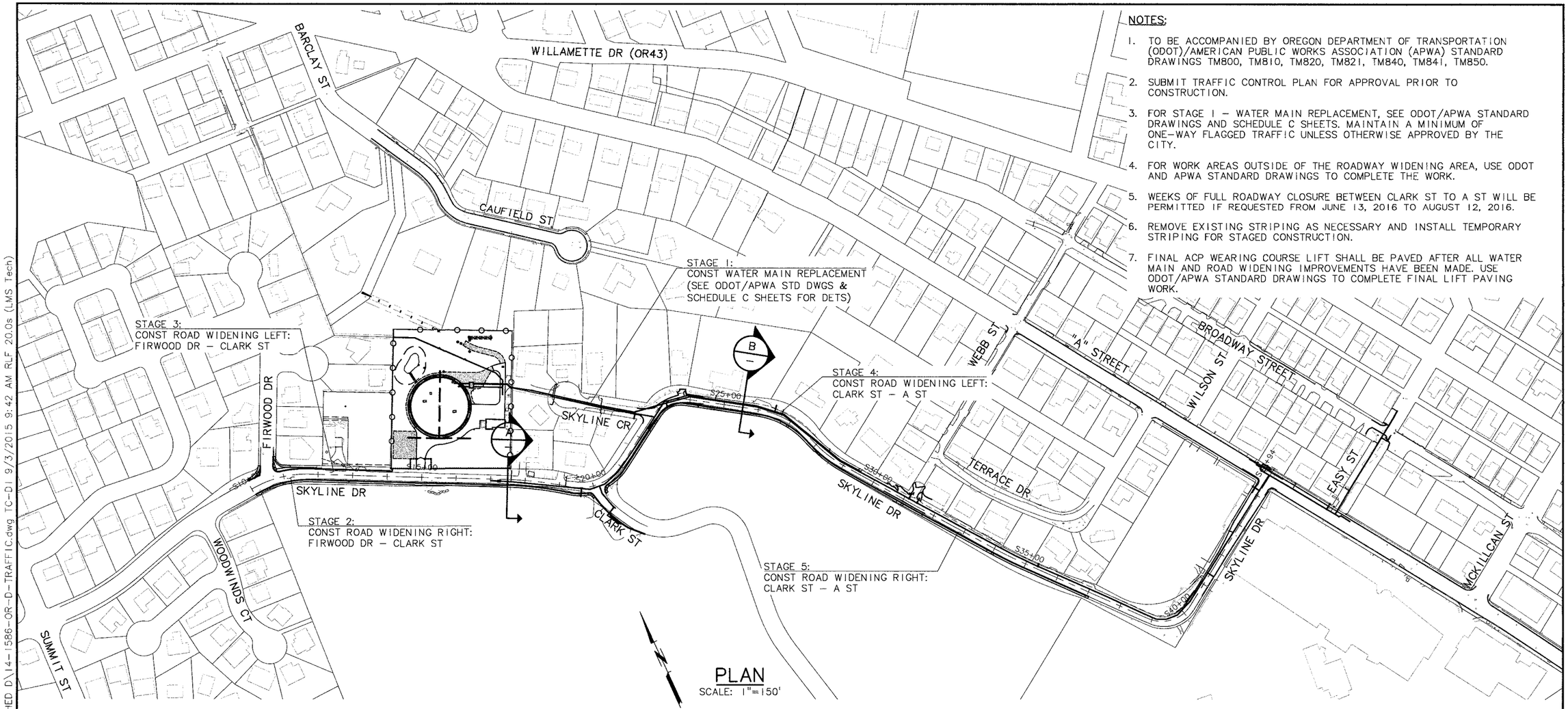
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER 77739 OREGON DECEMBER 8, 1978 ROBERT EDWARD RIPPLE
RENEWS 12-31-16

NO.	DATE	REVISION	BY

DESIGNED: AHC/RER
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

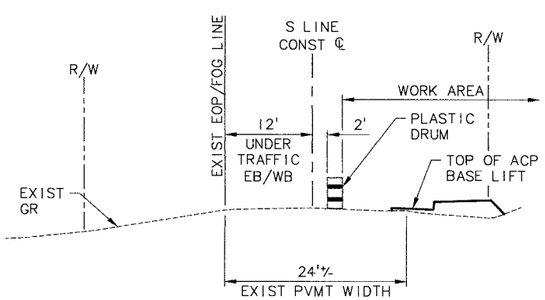
SHEET C-D48
139 of 167



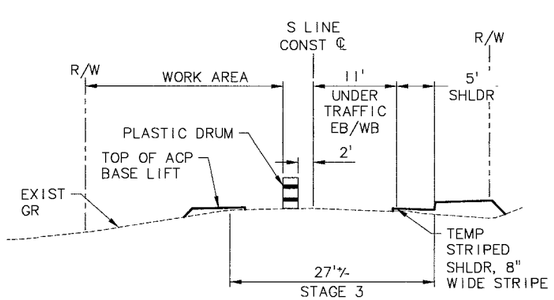
PLAN
SCALE: 1"=150'

NOTES:

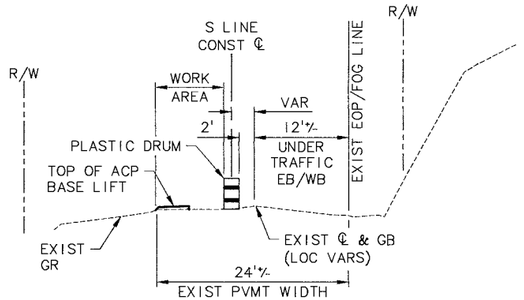
1. TO BE ACCOMPANIED BY OREGON DEPARTMENT OF TRANSPORTATION (ODOT)/AMERICAN PUBLIC WORKS ASSOCIATION (APWA) STANDARD DRAWINGS TM800, TM810, TM820, TM821, TM840, TM841, TM850.
2. SUBMIT TRAFFIC CONTROL PLAN FOR APPROVAL PRIOR TO CONSTRUCTION.
3. FOR STAGE 1 – WATER MAIN REPLACEMENT, SEE ODOT/APWA STANDARD DRAWINGS AND SCHEDULE C SHEETS. MAINTAIN A MINIMUM OF ONE-WAY FLAGGED TRAFFIC UNLESS OTHERWISE APPROVED BY THE CITY.
4. FOR WORK AREAS OUTSIDE OF THE ROADWAY WIDENING AREA, USE ODOT AND APWA STANDARD DRAWINGS TO COMPLETE THE WORK.
5. WEEKS OF FULL ROADWAY CLOSURE BETWEEN CLARK ST TO A ST WILL BE PERMITTED IF REQUESTED FROM JUNE 13, 2016 TO AUGUST 12, 2016.
6. REMOVE EXISTING STRIPING AS necessary AND INSTALL TEMPORARY STRIPING FOR STAGED CONSTRUCTION.
7. FINAL ACP WEARING COURSE LIFT SHALL BE PAVED AFTER ALL WATER MAIN AND ROAD WIDENING IMPROVEMENTS HAVE BEEN MADE. USE ODOT/APWA STANDARD DRAWINGS TO COMPLETE FINAL LIFT PAVING WORK.



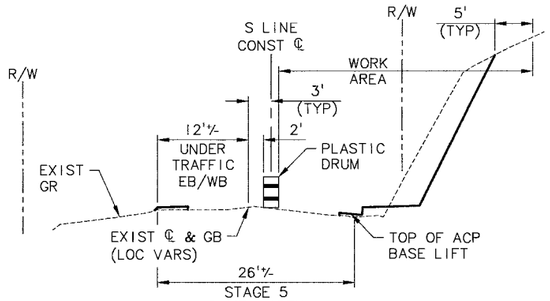
STAGE 2 – WIDENING RIGHT: FIRWOOD DR – CLARK ST
SCALE: NTS (A–)



STAGE 3 – WIDENING LEFT: FIRWOOD DR – CLARK ST
SCALE: NTS (A–)



STAGE 4 – WIDENING LEFT: CLARK ST – A ST
SCALE: NTS (B–)



STAGE 5 – WIDENING RIGHT: CLARK ST – A ST
SCALE: NTS (B–)

NO.	DATE	REVISION	BY

DESIGNED: AHG
DRAWN: HCM
CHECKED: GEC
APPROVED: TPB

SHEET TC-01 140 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON JUNE 2, 2015 ANDREW HENRY 76447
RENEWS 6-30-17

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **TRAFFIC CONTROL - STAGING PLAN**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

LEGEND

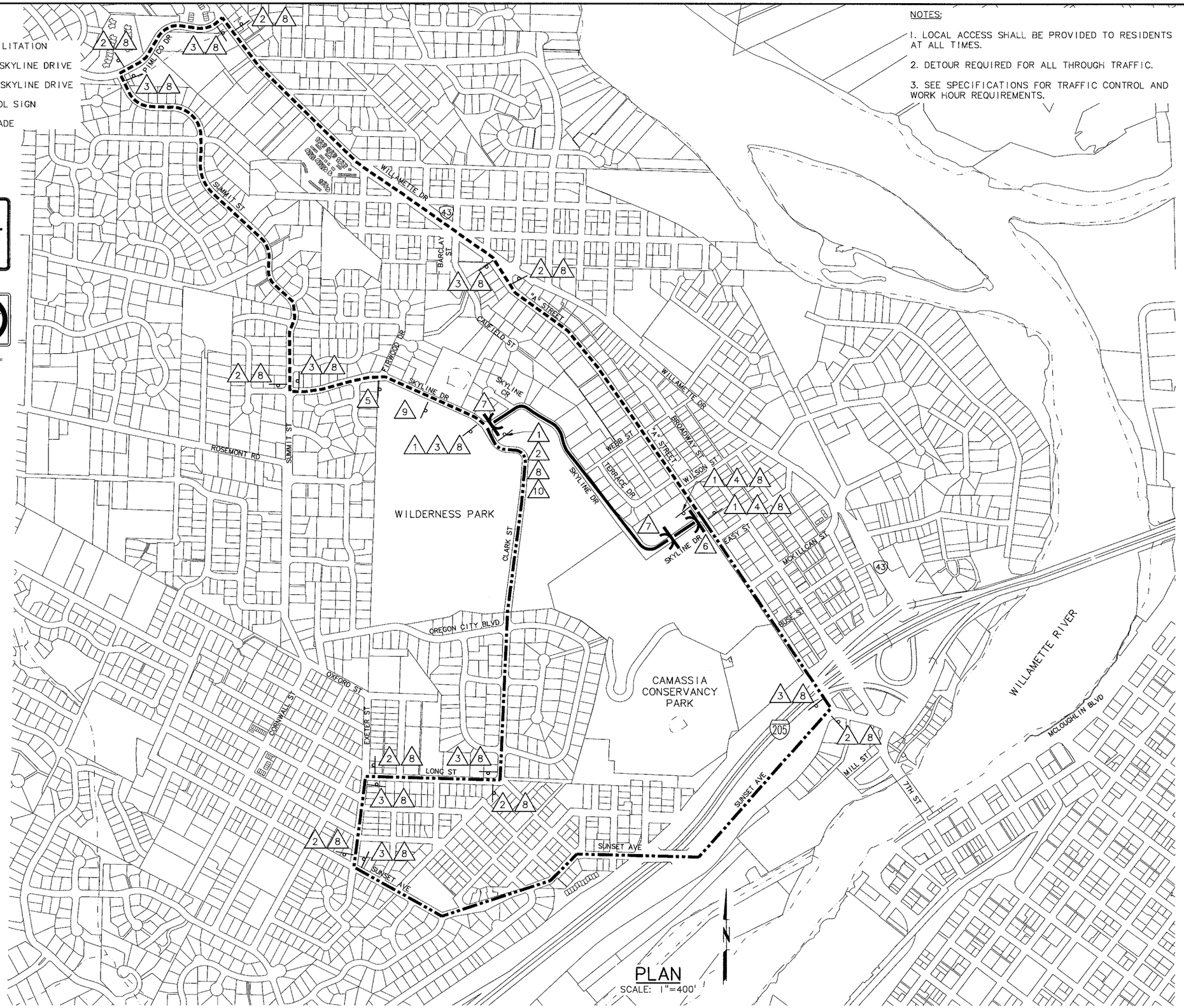
- STREET WIDENING & REHABILITATION
- DETOUR ROUTE: EASTBOUND SKYLINE DRIVE
- DETOUR ROUTE: WESTBOUND SKYLINE DRIVE
- TEMPORARY TRAFFIC CONTROL SIGN
- TEMPORARY TYPE 3 BARRICADE

SIGN LEGEND

1. **SKYLINE DR CLOSED**
   CLARK ST TO WEST A ST
   XXX TO XXX
2. DETOUR
   M4-9L
   30"x24"
3. DETOUR
   M4-9R
   30"x24"
4. DETOUR
   M3
   30"x36"
5. ROAD CLOSED AHEAD
   W20-3
   36"x36"
6. ROAD CLOSED TO THRU TRAFFIC
   R11-4
   60"x30"
7. ROAD CLOSED
   R11-2
   60"x30"
8. SKYLINE DRIVE
9. DETOUR AHEAD
   W20-2
   36"x36"
10. R3-1
    24"x24"

NOTES:

1. LOCAL ACCESS SHALL BE PROVIDED TO RESIDENTS AT ALL TIMES.
2. DETOUR REQUIRED FOR ALL THROUGH TRAFFIC.
3. SEE SPECIFICATIONS FOR TRAFFIC CONTROL AND WORK HOUR REQUIREMENTS.



PLAN
SCALE: 1"=400'

NO.	DATE	REVISION	BY

DESIGNED: JHF/AHG
DRAWN: DAK
CHECKED: GEC
APPROVED: TPB

SHEET TC-D2
141 of 167

REGISTERED PROFESSIONAL ENGINEER 76647 OREGON JULY 9, 2013 ANDREW HENRY
RENEWS 6-30-17

SCALE VERT.: AS SHOWN HORIZ.: AS SHOWN
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

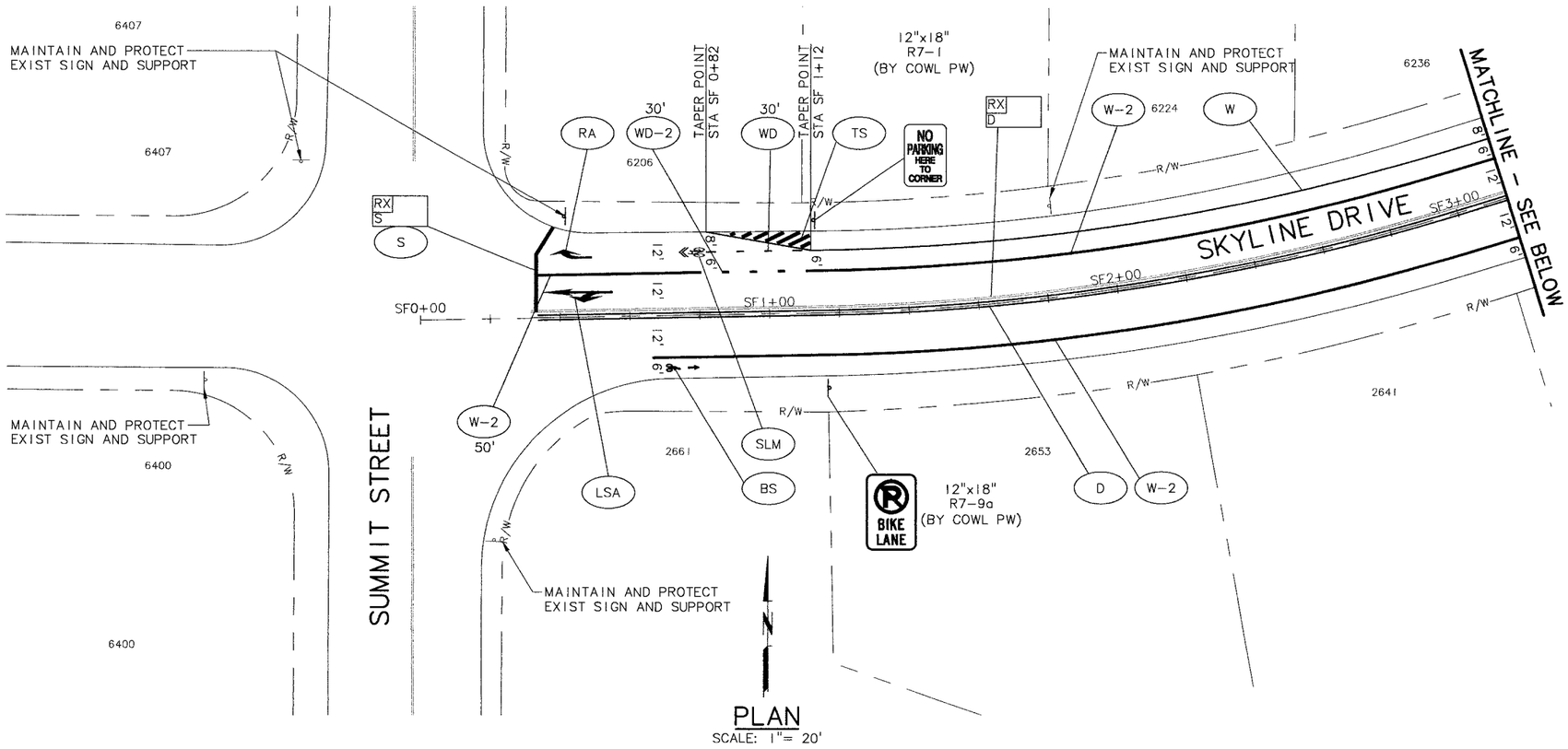
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
TRAFFIC CONTROL - DETOUR & ROAD CLOSURE PLAN

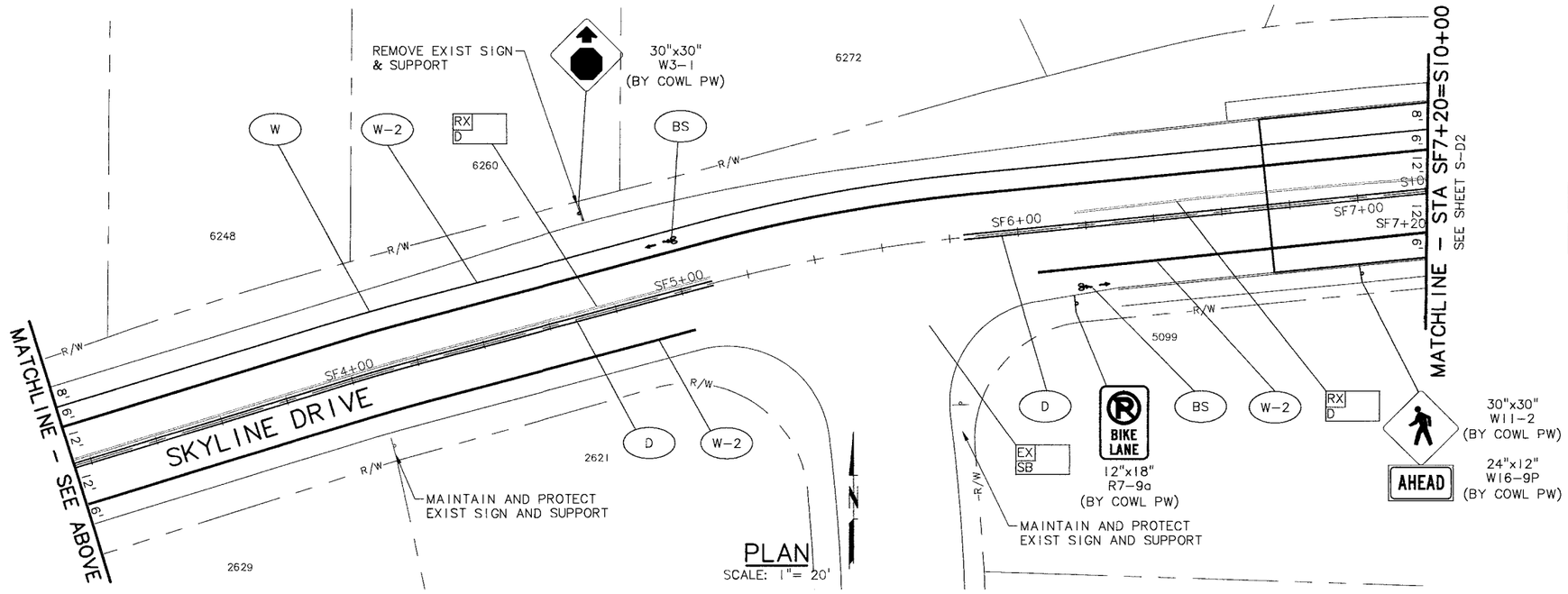
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

G:\PDX_Projects\14\1586 - Bolton Reservoir Replacement\CAD\Sheets\SCHED D\14-1586-OR-D-TC.dwg TC-D2 9/3/2015 9:42 AM RLF 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'



PLAN
SCALE: 1"= 20'

SHEET NOTES:

1. ALL LONGITUDINAL CENTERLINE PERMANENT PAVEMENT MARKINGS SHALL BE METHOD "A" THERMOPLASTIC, EXTRUDED, SURFACE, PROFILED.

2. ALL LONGITUDINAL FOG LINE AND BIKE LANE LINE PERMANENT PAVEMENT MARKINGS SHALL BE METHOD "A" SURFACE, THERMOPLASTIC, NON-PROFILED.

3. ALL TRANSVERSE PAVEMENT MARKINGS AND LEGENDS SHALL BE METHOD "B-HS", PREFORMED, FUSED THERMOPLASTIC HIGH SKID FILM.

4. MATCH POINTS TO EXISTING STRIPING CALLOUTS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

5. REMOVE ALL SIGNS SHOWN. CITY OF WEST LINN PUBLIC WORKS (COWL) WILL INSTALL ALL GROUND MOUNTED SIGNS. RETURN SIGNS TO CITY OF WEST LINN (JEFF RANDAL, 503-880-9194).

6. SIGN LOCATIONS ARE APPROXIMATE. CITY OF WEST LINN TO FIELD VERIFY LOCATIONS PRIOR TO INSTALLATION.

STRIPING KEY NOTES:

- (W) INSTALL 4" WHITE LINE
- (W-2) INSTALL 8" WHITE LINE
- (ND) INSTALL NARROW DOUBLE NO-PASS 4" YELLOW LINES
- (BS) INSTALL BIKE LANE STENCIL
- (S) INSTALL STOP BAR
- (CW-SC) INSTALL STAGGERED CONTINENTAL CROSSWALK
- (D) DOUBLE NO-PASS WITH TWO 4" YELLOW LINES
- (WD) INSTALL 4" WHITE DOTTED LINE
- (WD-2) INSTALL 8" WHITE DOTTED LINE
- (TS) INSTALL TRANSVERSE SHOULDER BARS (MODIFIED - 2' SPACING)
- (LSA) INSTALL LEFT TURN STRAIGHT ARROW
- (SLM) INSTALL SHARED LANE MARKING (SEE DET, SHT S-D6)
- (RA) INSTALL RIGHT TURN ARROW
- [EX N] MAINTAIN AND PROTECT EXIST 'N' PAVEMENT MARKING
- [RX N] REMOVE EXIST 'N' PAVEMENT MARKING

TO BE ACCOMPANIED BY ODOT STD DWGS: TM500, TM501, TM503, TM520, TM521, TM530, TM560, TM561

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET S-D1
142 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 21, 1977 — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

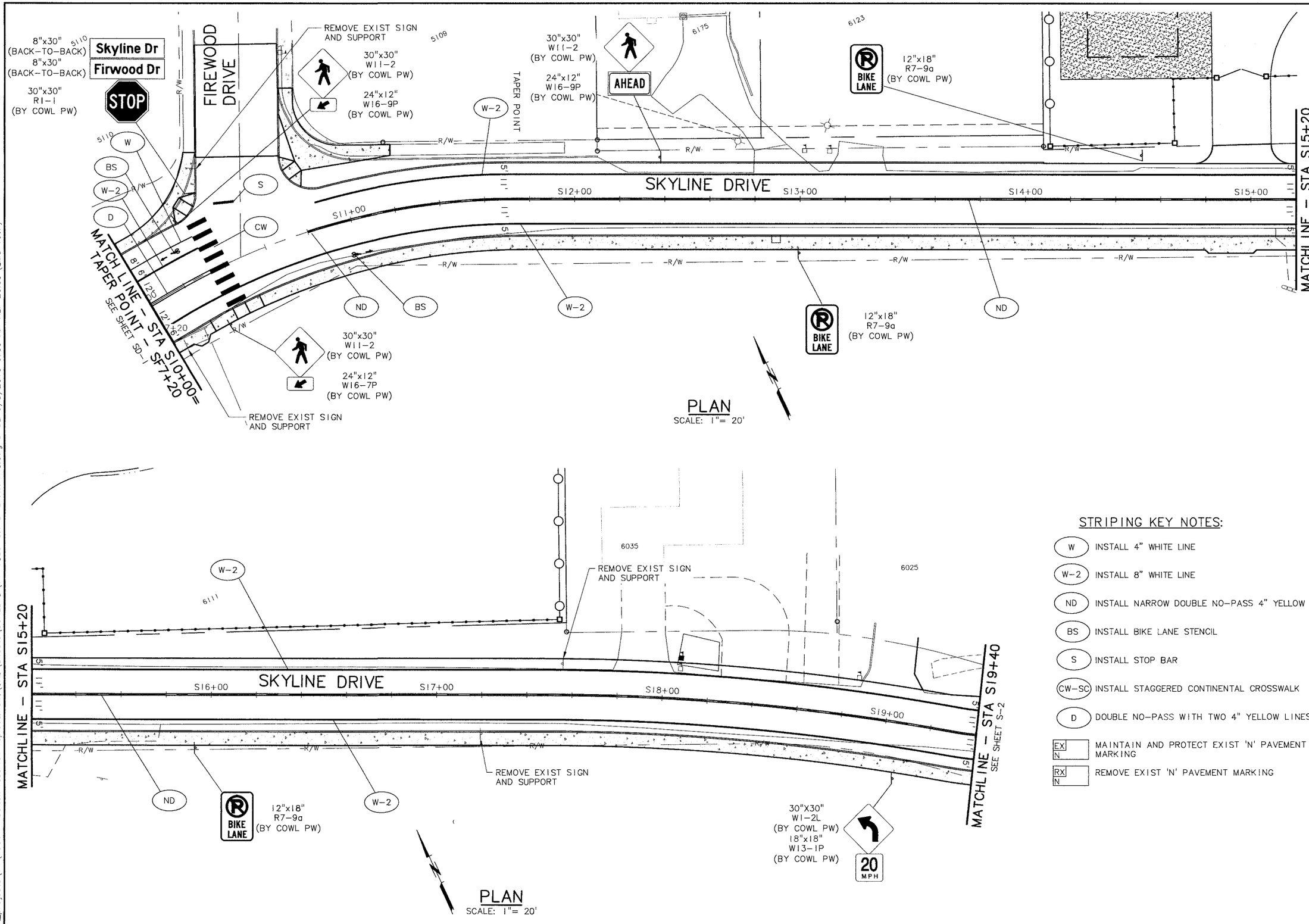
SHEET TITLE: **SIGNING AND STRIPING PLAN - 1**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

DATE: SEPTEMBER 2015

MSA PROJECT: 14-1586

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-STRIPING.dwg S-D1 9/3/2015 9:53 AM RLF 20.0s (LMS Tech)



STRIPING KEY NOTES:

- (W) INSTALL 4" WHITE LINE
- (W-2) INSTALL 8" WHITE LINE
- (ND) INSTALL NARROW DOUBLE NO-PASS 4" YELLOW LINES
- (BS) INSTALL BIKE LANE STENCIL
- (S) INSTALL STOP BAR
- (CW-SC) INSTALL STAGGERED CONTINENTAL CROSSWALK
- (D) DOUBLE NO-PASS WITH TWO 4" YELLOW LINES
- [EX N] MAINTAIN AND PROTECT EXIST 'N' PAVEMENT MARKING
- [RX N] REMOVE EXIST 'N' PAVEMENT MARKING

NO. | DATE | REVISION | BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE — VERT: 1"=5' HORIZ: 1"=20'

NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

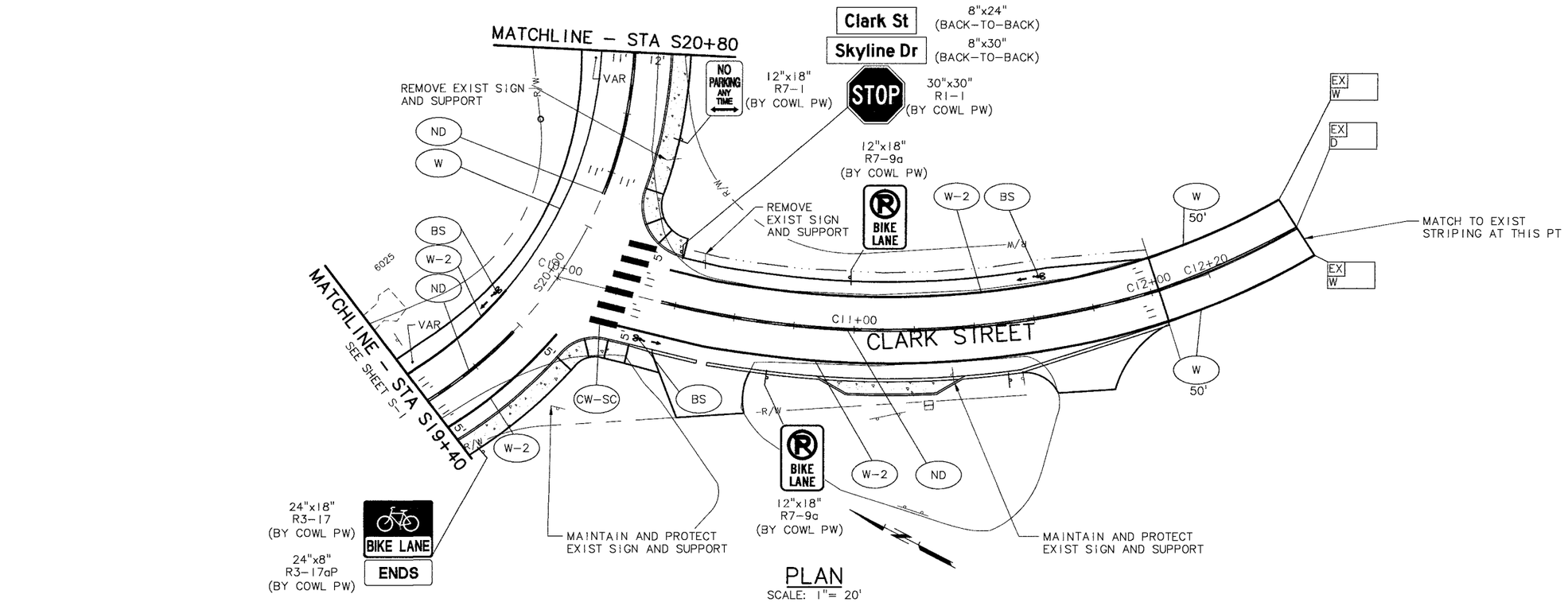
SHEET TITLE: **SIGNING AND STRIPING PLAN - 2**

SHEET S-D2
143 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-STRIPING.dwg S-D2 9/3/2015 9:53 AM RLF 20.0s (LMS Tech)



STRIPING KEY NOTES:

- W — INSTALL 4" WHITE LINE
- W-2 — INSTALL 8" WHITE LINE
- ND — INSTALL NARROW DOUBLE NO-PASS 4" YELLOW LINES
- BS — INSTALL BIKE LANE STENCIL
- S — INSTALL STOP BAR
- CW-SC — INSTALL STAGGERED CONTINENTAL CROSSWALK
- D — DOUBLE NO-PASS WITH TWO 4" YELLOW LINES
- EX N — MAINTAIN AND PROTECT EXIST 'N' PAVEMENT MARKING
- RX N — REMOVE EXIST 'N' PAVEMENT MARKING

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

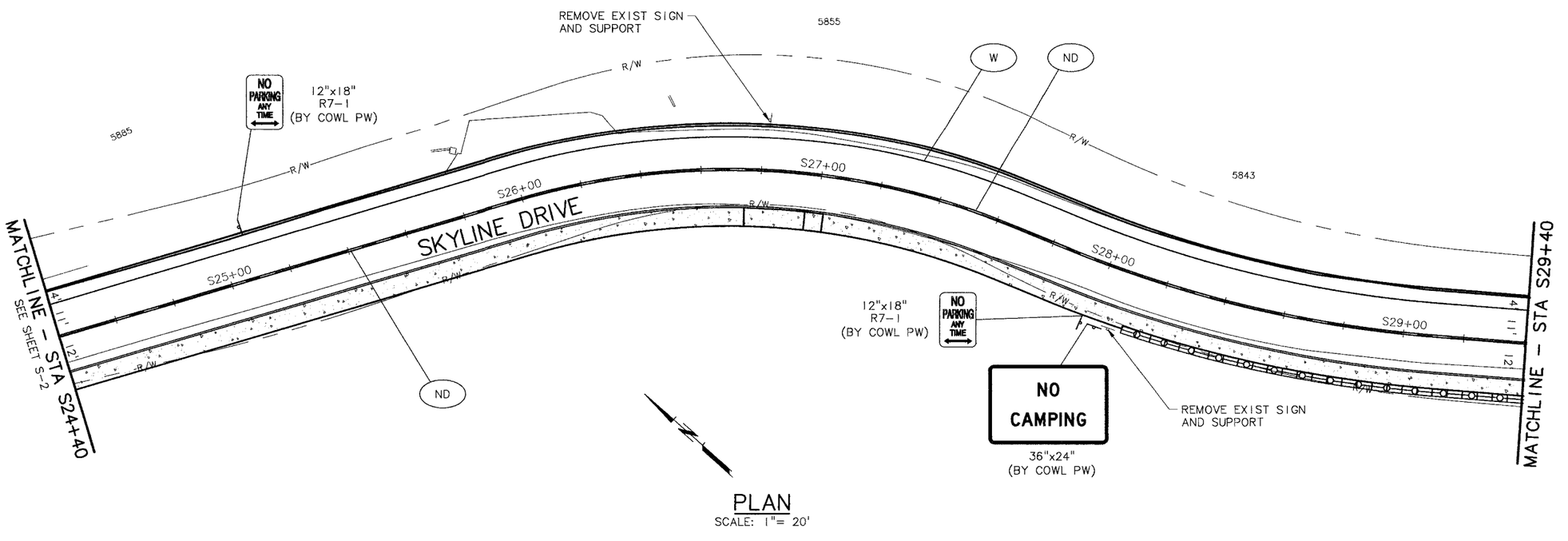
SHEET TITLE: **SIGNING AND STRIPING PLAN - 3**

SHEET S-D3
144 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

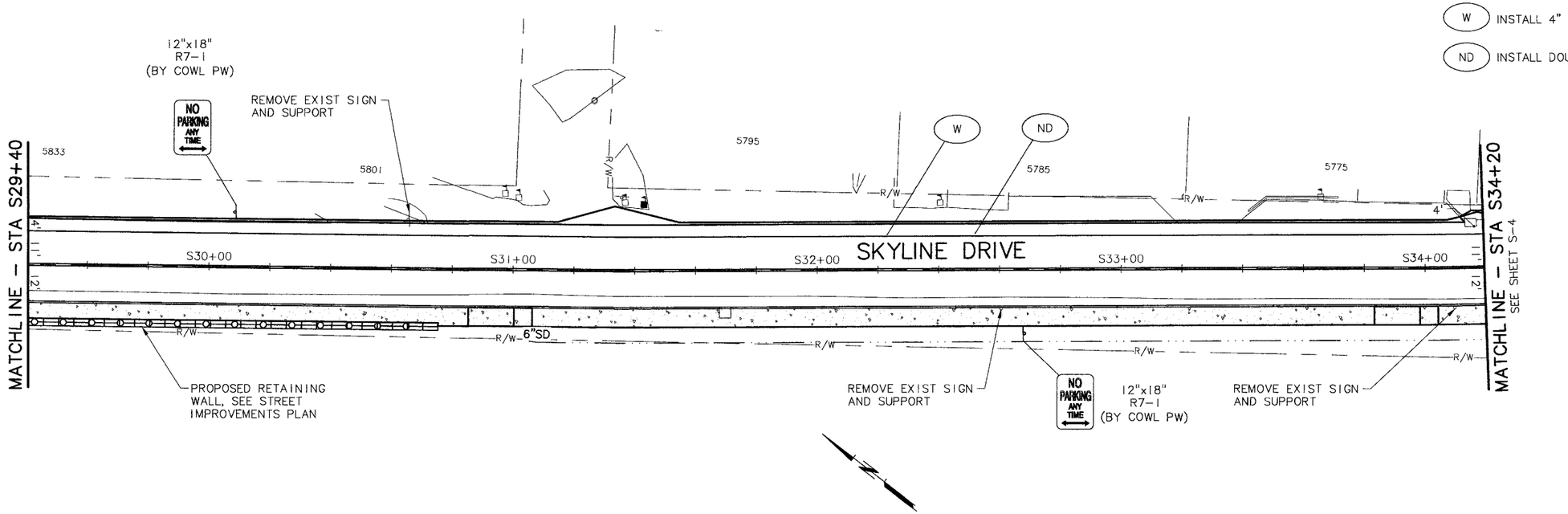
g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-STRIPING.dwg S-D3 9/3/2015 9:53 AM RLF 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'

STRIPING KEY NOTES:

- W — INSTALL 4" WHITE LINE
- ND — INSTALL DOUBLE NO-PASS 4" YELLOW LINES



PLAN
SCALE: 1"= 20'

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 2, 1987 — ANDREW HENRY — 76447 — RENEWS 6-30-17

SHEET S-D4
145 of 167

SCALE: VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

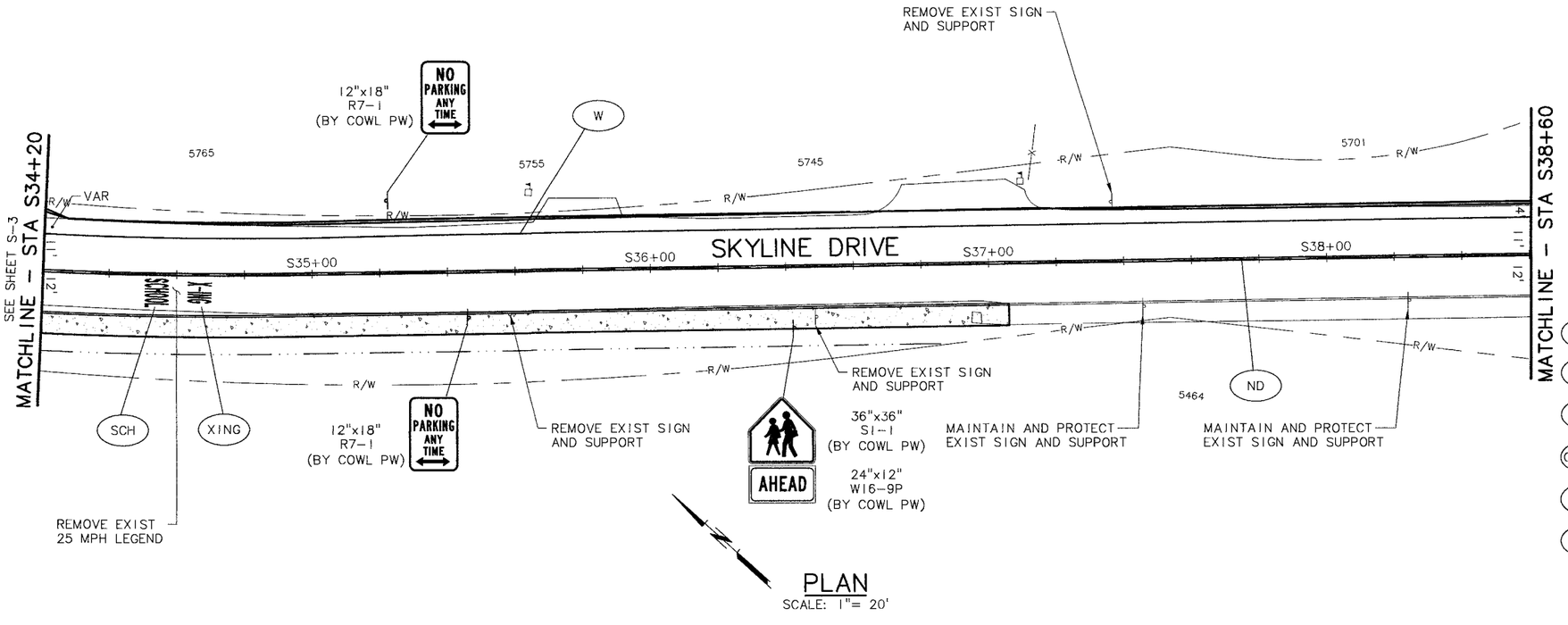
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **SIGNING AND STRIPING PLAN - 4**

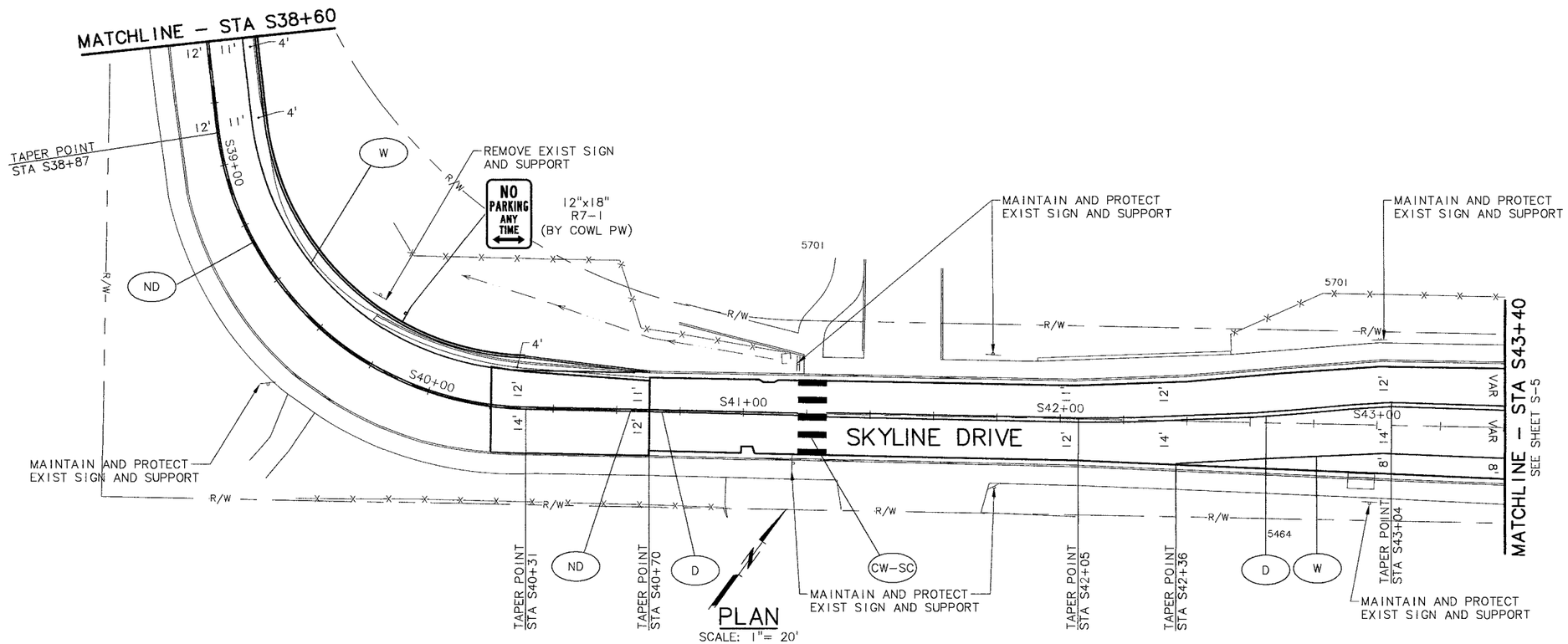
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-226-0622

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-STRIPING.dwg S-D4 9/3/2015 9:53 AM RLF 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'



PLAN
SCALE: 1"= 20'

STRIPING KEY NOTES:

- (W) INSTALL 4" WHITE LINE
- (ND) INSTALL NARROW DOUBLE NO-PASS 4" YELLOW LINES
- (D) INSTALL DOUBLE NO-PASS 4" YELLOW LINES
- (CW-SC) INSTALL STANDARD CROSSWALK
- (SCH) INSTALL 'SCHOOL' LEGEND
- (XING) INSTALL 'XING' LEGEND

NO.	DATE	REVISION	BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER
OREGON JULY 25, 1978 ANDREW HENRY HENRY 76647
RENEWS 6-30-17

SCALE: VERT: 1"=5' HORIZ: 1"=20'
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

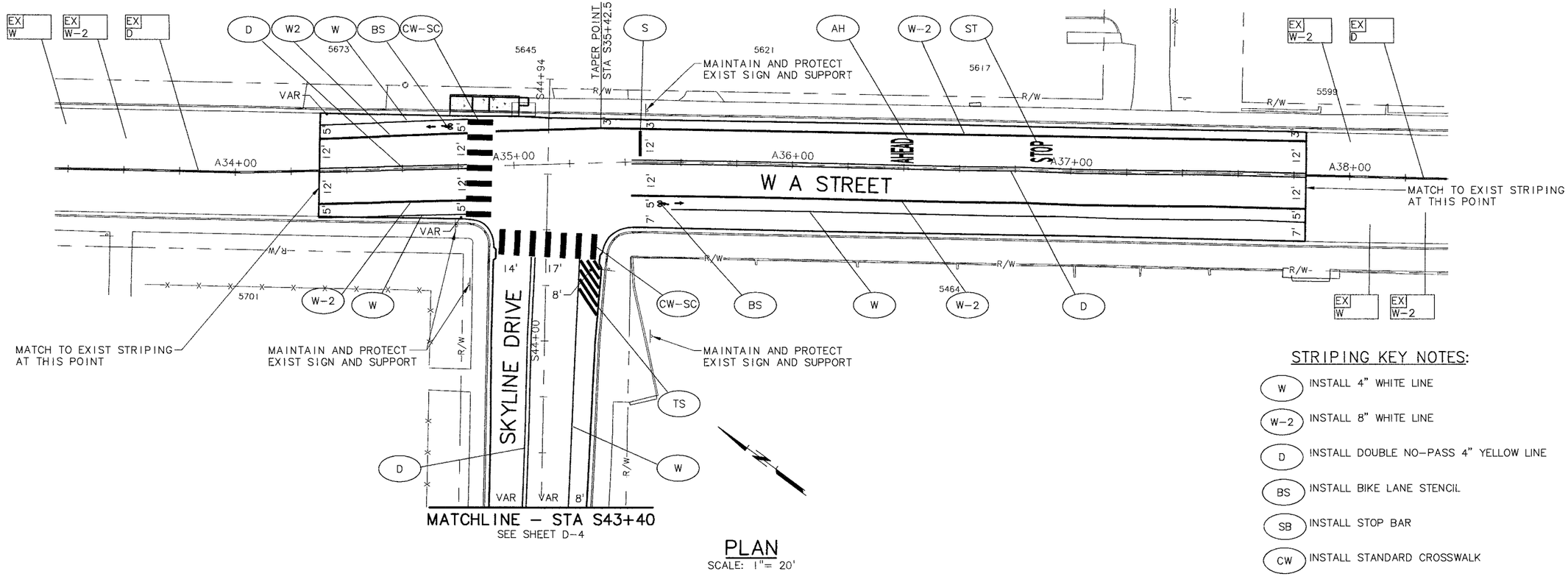
SHEET TITLE: **SIGNING AND STRIPING PLAN - 5**

SHEET S-D5
146 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586
DATE: SEPTEMBER 2015

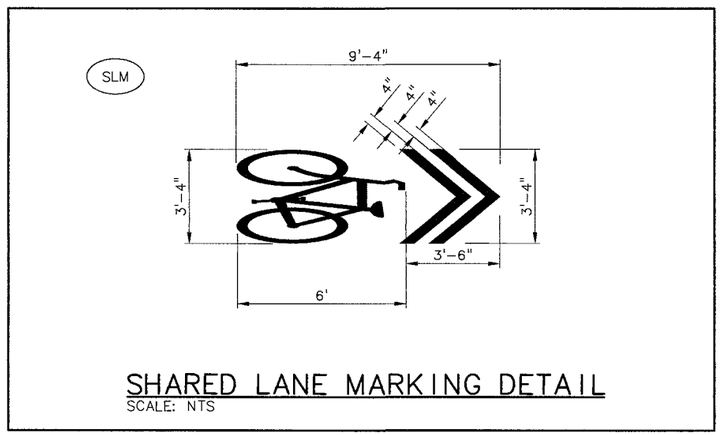
g:\pdx_projects\14\1586 - bolton reservoir replacement\CAD\Sheets\SCHED D\14-1586-OR-D-STRIPING.dwg S-D5 9/3/2015 9:53 AM RLF 20.0s (LMS Tech)



PLAN
SCALE: 1"= 20'

STRIPING KEY NOTES:

- (W) INSTALL 4" WHITE LINE
- (W-2) INSTALL 8" WHITE LINE
- (D) INSTALL DOUBLE NO-PASS 4" YELLOW LINE
- (BS) INSTALL BIKE LANE STENCIL
- (SB) INSTALL STOP BAR
- (CW) INSTALL STANDARD CROSSWALK
- (ST) INSTALL 'STOP' MARKING PER MUTCD
- (AH) INSTALL 'AHEAD' MARKING PER MUTCD
- (TS) INSTALL TRANSVERSE SHOULDER BARS (MODIFIED 2' SPACING)
- [EX N] MAINTAIN AND PROTECT EXIST 'N' PAVEMENT MARKING
- [RX N] REMOVE EXIST 'N' PAVEMENT MARKING



SHARED LANE MARKING DETAIL
SCALE: NTS

NO. | DATE | REVISION | BY

DESIGNED: AHG/RER/ANB
DRAWN: HCM/RLF
CHECKED: GEC
APPROVED: TPB

SHEET S-D6
147 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 2, 1978 — ANDREW HENRY 76447 — RENEWS 6-30-17

SCALE | VERT: 1"=5' HORIZ: 1"=20'

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SIGNING AND STRIPING PLAN - 6

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-0022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

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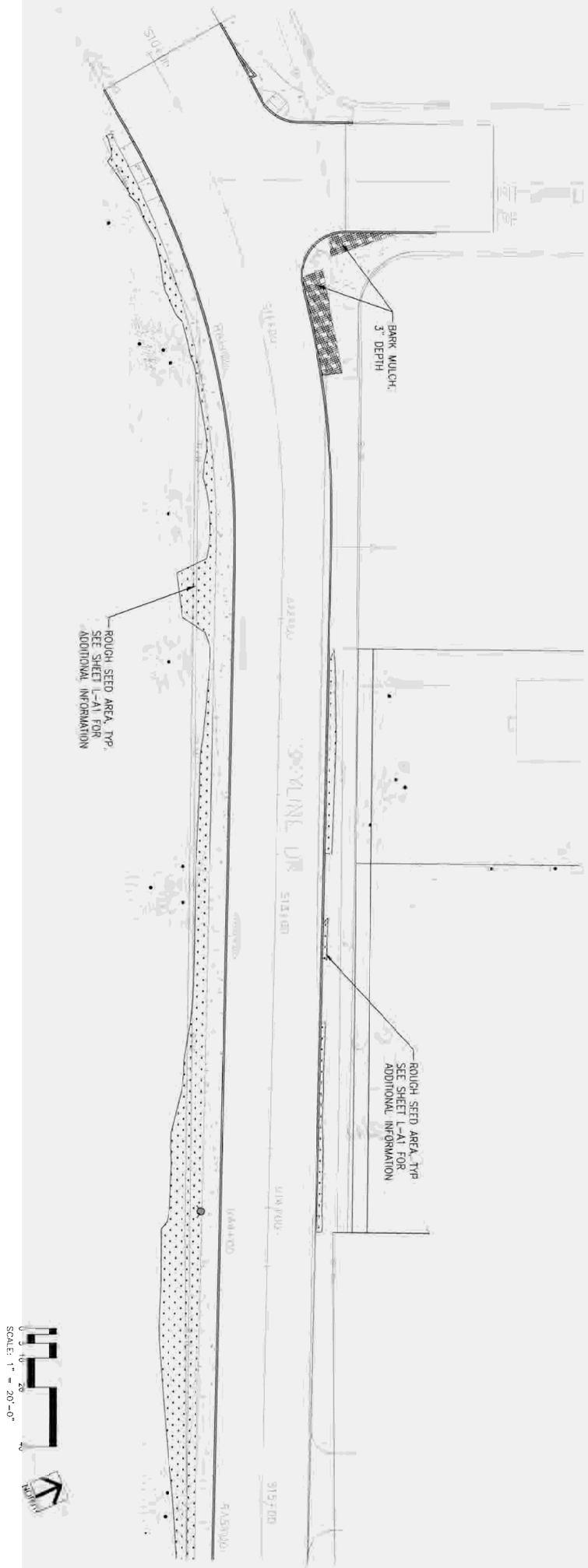


WALKER MACY
111 SW OAK, SUITE 2
PORTLAND, OR 97204
503-228-3122

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586.060L

DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:

SKYLINE DRIVE, LANDSCAPE PLAN-1

SCALE VERT: AS SHOWN
HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT
OREGON
Chelsea M. McCann
558

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET
L-D1
148 of 167

WALKER | MACY

111 SW OAK, SUITE 240
PORTLAND, OR 97204
503-228-3122

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET L-D2 149 of 167

REGISTERED 588
Chelsea M. McCann
12/31/06
OREGON LANDSCAPE ARCHITECT

SCALE VERT: AS SHOWN HORIZ: AS SHOWN

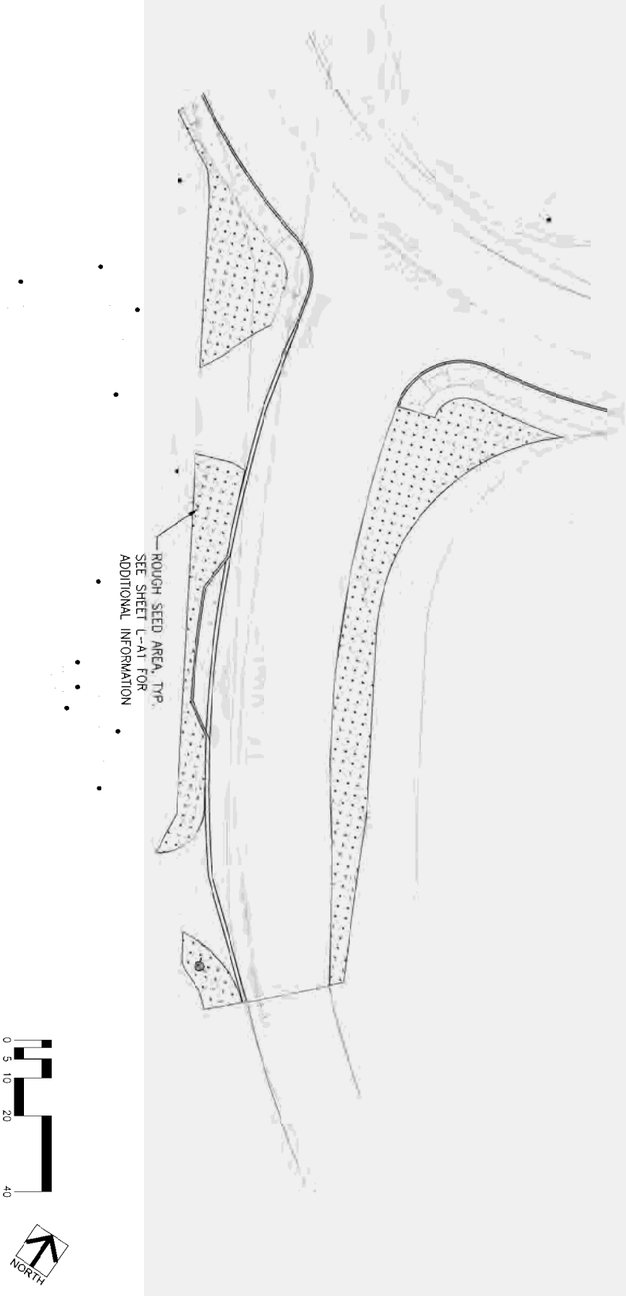
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-2

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1565.050 DATE: SEPTEMBER 2015



WALKER
111 SW OAK, SUITE 2
PORTLAND, OR 97204
503-228-3122

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586.060L | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-3

SCALE VERT: AS SHOWN
HORIZ: AS SHOWN

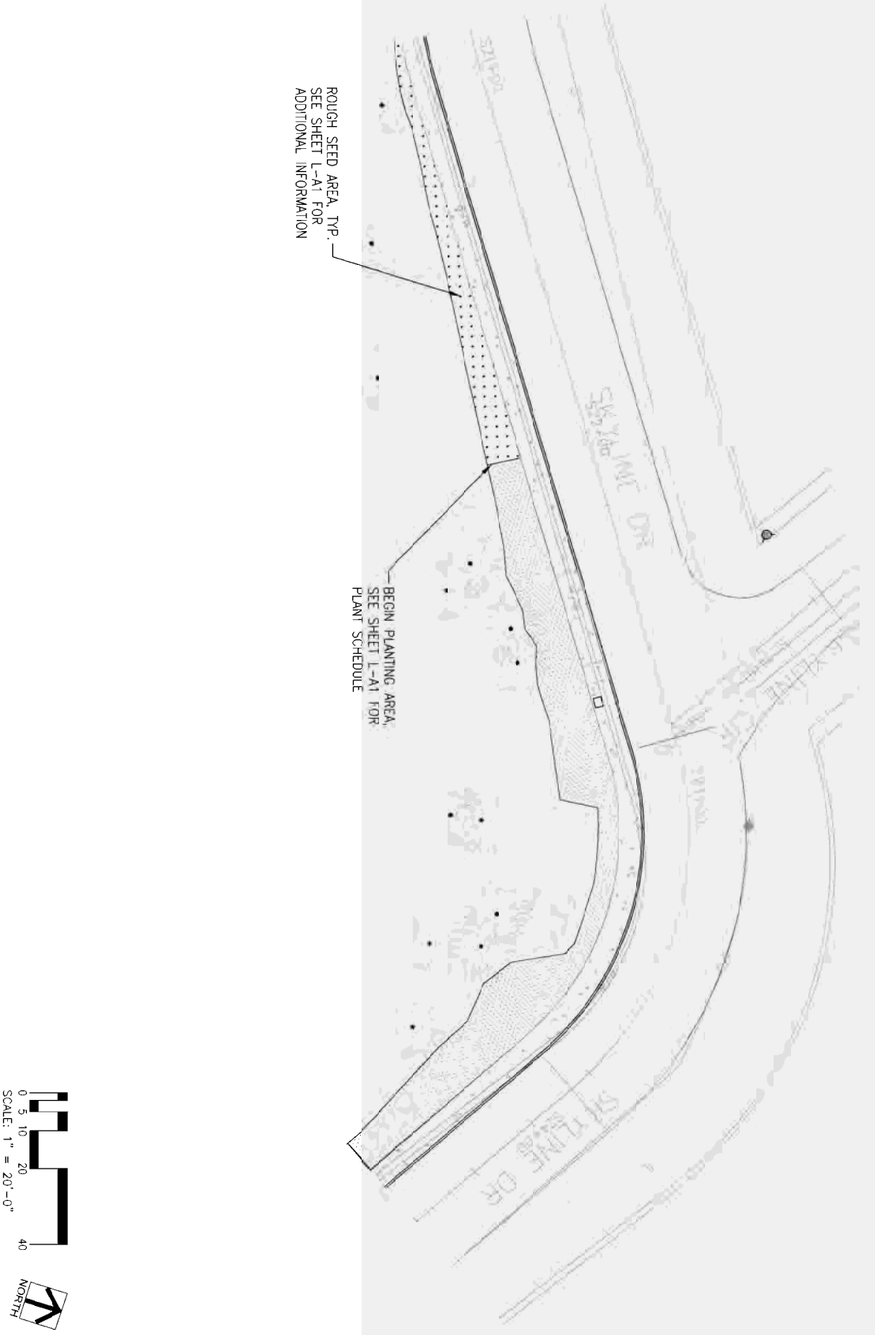
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT
OREGON
Christine M. McCann
558

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET
L-D3
150 of 167



WALKER | MACY
111 SW OAK, SUITE 263
PORTLAND, OR 97204
503-228-3122

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586.060 | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-4

SCALE | VERT: AS SHOWN | HORIZ: AS SHOWN

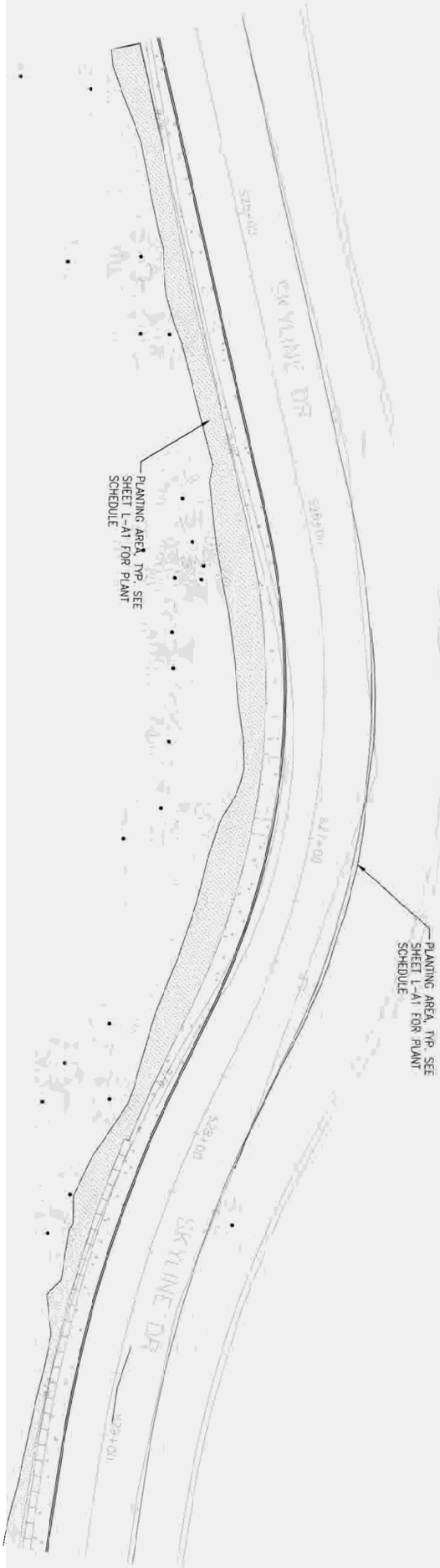
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

OREGON LANDSCAPE ARCHITECT
Christine M. McCann
5008
REGISTERED
568

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET
L-D4
151 of 167



SCALE: 1" = 20'-0"
0 5 10 20 40

NORTH

WALKER MACY
111 SW OAK, SUITE 2
PORTLAND, OR 97204
503-228-3122

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586.060L
DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-5

SCALE VERT: AS SHOWN
HORIZ: AS SHOWN

NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT
OREGON
Chelsea M. McCann
558

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET
L-D5
152 of 167

WALKER | MACY

111 SW OAK, SUITE 260
PORTLAND, OR 97204
503-228-3122

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.E. Alder, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1568.060

DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-6

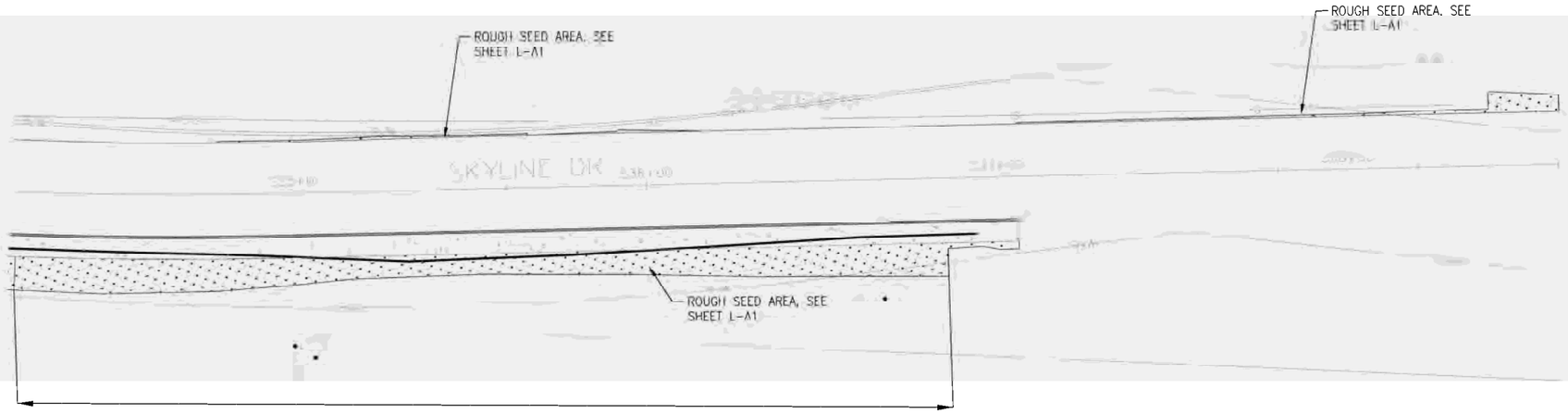
SHEET L-D6
153 of 167

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

REGISTERED
588
Chelsea M. McCann
12/31/15
OREGON
LANDSCAPE ARCHITECT

SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NO. DATE DESCRIPTION BY



0 5 10 20 40
SCALE: 1" = 20'-0"

NORTH

WALKER MACY
111 SW OAK, SUITE 240
PORTLAND, OR 97204
503-228-3122

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

SHEET L-D7
154 of 167

REGISTERED 588
Chelsea M. McCann
OREGON LANDSCAPE ARCHITECT

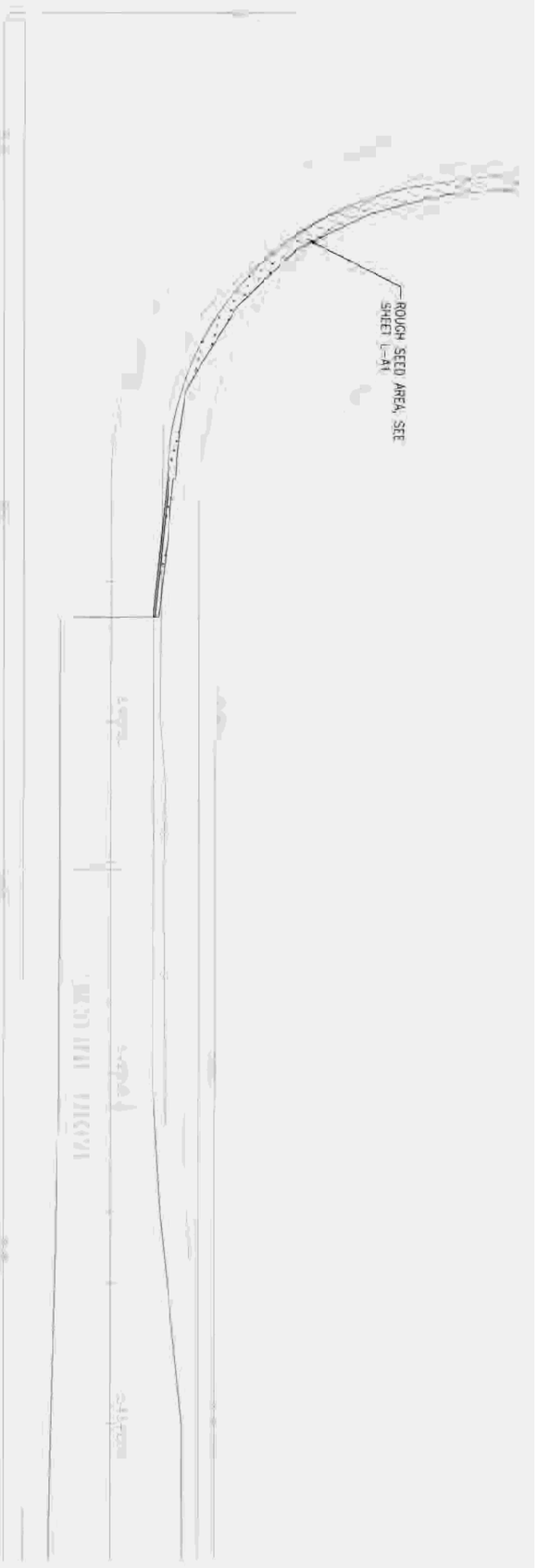
SCALE VERT: AS SHOWN HORIZ: AS SHOWN
NOTICE 0 1" IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

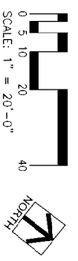
PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-7

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 400 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1568.060
DATE: SEPTEMBER 2015





WALKER | MACY
111 SW OAK, SUITE 263
PORTLAND, OR 97204
503-228-3122

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 PHONE 503-225-9010
Portland, Oregon 97204 FAX 503-225-9022

MSA PROJECT: 14-1586.060 | DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
SKYLINE DRIVE, LANDSCAPE PLAN-8

SCALE | VERT: AS SHOWN | HORIZ: AS SHOWN

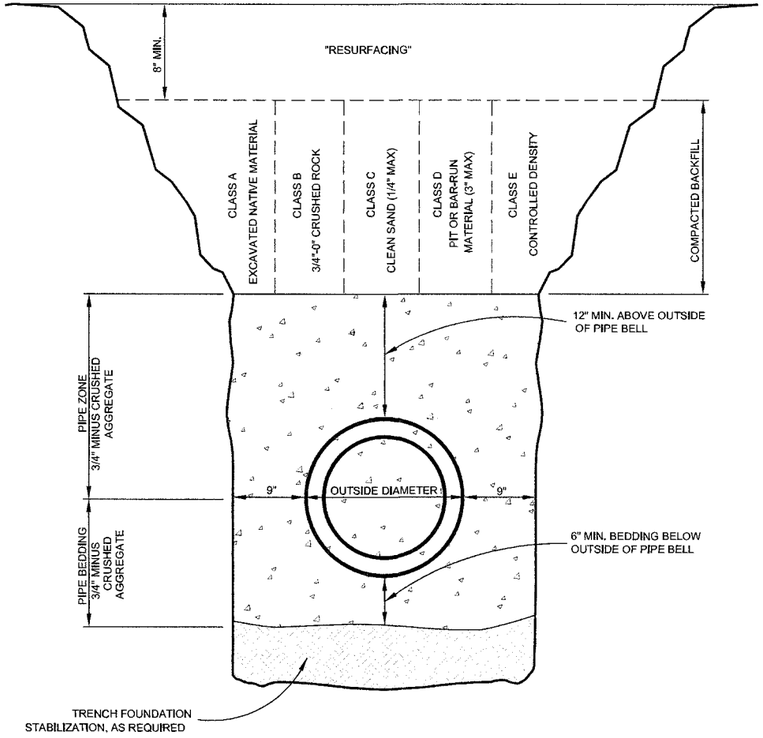
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT OREGON 568 Christina M. McCann 2/29/16

NO.	DATE	REVISION	BY

DESIGNED: JP/KD
DRAWN: KD
CHECKED: JP/KD
APPROVED: CM

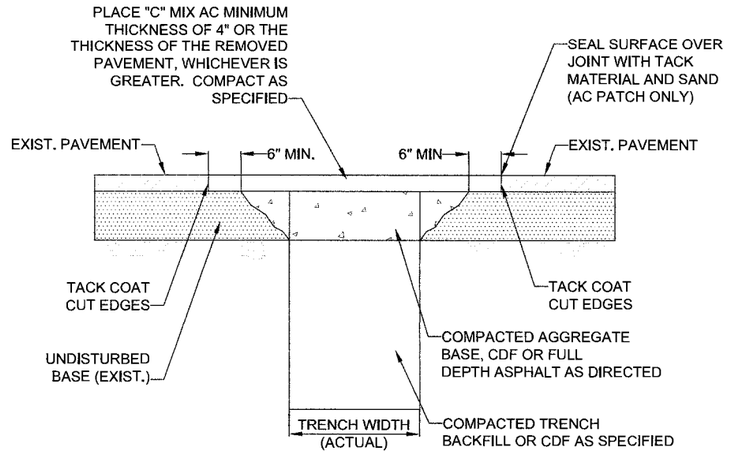
SHEET L-D8



TRENCH BACKFILL BEDDING AND PIPE ZONE

City of West Linn

DATE: 2010
DRAWING NO. WL-200
FILE NO.



NOTE:

1. ALL EXISTING AC OR PCC PAVEMENT SHALL BE SAWCUT TO NEAT, STRAIGHT LINES PRIOR TO REPAVING.
2. CONCRETE PAVEMENT SHALL BE REPLACED WITH CONCRETE TO A MINIMUM THICKNESS OF REMOVED PAVEMENT, WHICHEVER IS GREATER.
3. IF EXISTING BASE MATERIAL IS CTB OR ATB, THEN REPLACEMENT BASE MATERIAL SHALL MATCH EXISTING.
4. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 36".
5. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
6. ALL TRENCH BACKFILL AND PATCHING SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF WEST LINN.
7. APPROVED CDF SHALL BE USED OR 3/4 - 0" GRAVEL BACKFILL SHALL BE PLACED AND COMPACTED IN 12" MAXIMUM LIFTS. IF 3/4-0" GRAVEL BACKFILL IS USED, COMPACTION TESTING BY A CERTIFIED TESTING COMPANY IS REQUIRED AT DEPTH INTERVALS AS SPECIFIED BY THE CITY ENGINEER.
8. T-CUT MAY BE ENLARGED AT THE DISCRETION OF THE CITY ENGINEER OR CITY INSPECTOR DUE TO SITE CONDITIONS OR PROJECT REQUIREMENTS.
9. ALL CUT EDGES SHALL BE SAND SEALED.
10. COMPACTED BACKFILL OR CDF MUST EXTEND 2 FEET OUTSIDE OF PAVEMENT SURFACE.

STREET T-CUT

City of West Linn

DATE: 2010
DRAWING NO. WL-203
FILE NO.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-1 156 of 167

REGISTERED PROFESSIONAL ENGINEER 65640 OREGON MICHAEL L. MCCLELLAN RENEWS 12-31-16

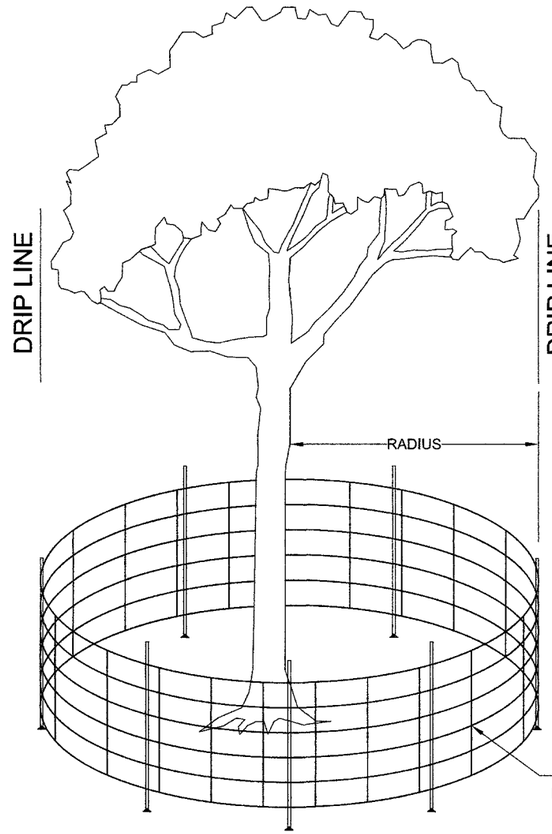
SCALE VERT: NONE HORIZ: NONE
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: CITY STANDARD DETAILS - 1

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



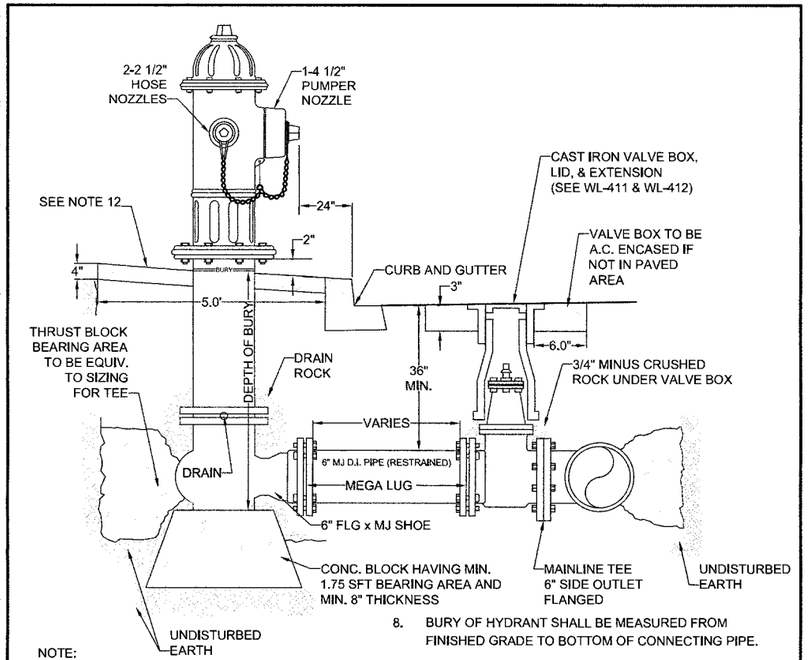
NOTE:

1. 6' CHAIN LINK ON 2" POST AT 10' SPACING, DRIVEN 2' INTO GROUND
2. RADIUS IS EITHER 1/2' PER CALIPER INCH OR 10' OUTSIDE OF DRIPLINE - SEE PLANS

TREE PROTECTION FENCE

City of West Linn

DATE: 2010
DRAWING NO. WL-219
FILE NO.



NOTE:

1. HYDRANT TO BE MUELLER CENTURION MDL A-423 ONLY WITH 1 1/2" OPER. NUTS OR CLOW MEDALLION F-2545.
2. HYDRANT COLOR TO BE MILLER EQUIP. ENAMEL 0 E 40 (SAFETY YELLOW).
3. JOINTS TO BE RESTRAINED BY 3/4" DIA. GALVANIZED STEEL RODS AND THRUST BLOCKS OR MEGALUGS AND THRUST BLOCKS.
4. ALL FITTINGS IN CONTACT W/CONCRETE SHALL BE WRAPPED IN PLASTIC, HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL.
5. MIN. 4 CFT OF 1 1/2" - 3/4" CLEAN DRAIN ROCK SHALL BE PLACED AROUND SHOE UP TO A MIN. OF 6" ABOVE DRAIN OUTLETS.
6. WHERE PLANTER STRIP EXISTS, HYDRANT SHALL BE PLACED SO THE FRONT PORT IS A MINIMUM OF 24" BEHIND THE FACE OF THE CURB.
7. WHERE INTEGRAL S/W & CURB EXISTS, HYDRANT SHALL BE PLACED AT BACK OF THE SIDEWALK, OR AS DIRECTED BY ENGINEER.
8. BURY OF HYDRANT SHALL BE MEASURED FROM FINISHED GRADE TO BOTTOM OF CONNECTING PIPE.
9. THRUST BLOCK AT FIRE HYDRANT TEE SHALL BE EQUIVALENT TO TEE PIPE SIZING (SEE WL-406).
10. HYDRANT VALVE SHALL BE MUELLER RESILIENT WEDGE GATE VALVE #A-2360-16 ONLY.
11. NO EXTENSIONS ALLOWED
12. HYDRANT SHALL HAVE A 5' x5' x 4" THICK CONCRETE APRON. THERE SHALL BE 2" OF CLEARANCE BETWEEN THE TOP OF THE APRON AND THE BOTTOM OF THE FLANGED BOLT PATTERN OF THE HYDRANT.
13. CONCRETE SHALL BE COMMERCIALLY MIXED WITH A BREAKING STRENGTH OF NOT LESS THAN 3000 PSI.

STANDARD FIRE HYDRANT ASSEMBLY

City of West Linn

DATE: 2010
DRAWING NO. WL-401
FILE NO.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER OREGON MICHAEL L. MAC NEILL 85540 RENEWS: 12-31-16

SCALE VERT: NONE HORIZ: NONE
NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1", THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: CITY STANDARD DETAILS - 2

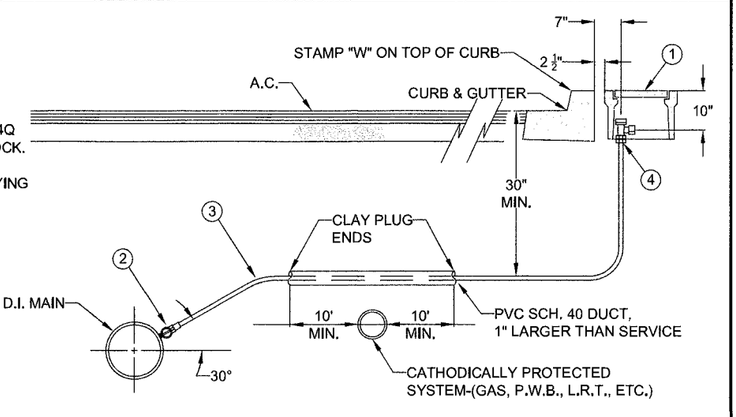
SHEET DET-2
157 of 167

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

MATERIAL:

1. BROOKS METER BOX, BODY NO. 37, LID AND COVER NO.37-S.
2. MUELLER CORP. STOP NO. H-15008 OR FORD F1000-4Q CORP. STOP WITH OPERATING NUT AT 3 OR 9 O'CLOCK.
3. 1" SOFT TEMPER, TYPE "K" COPPER TUBING COMPLYING WITH ASTM B-88.
4. MUELLER ANGLE METER STOP NO. H-14258 (FORD NO. KV43-444W-Q).



NOTE:

1. MACHINE DRILLED AND TAPPED ONLY. NO HAND DRILLING IS ALLOWED.
2. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
3. ALL PIPE AND STRUCTURE ZONE SHALL BE BACKFILLED USING 3/4" MINUS CRUSHED AGG. AND COMPACTED TO 95% MAX DENSITY AS DETERMINED BY AASHTO T-180.
4. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED AS SHOWN ABOVE WITH CLAY PLUG.
5. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY.
6. TAPS INTO MAIN TO HAVE 18" SEPARATION ON CENTER MINIMUM.
7. ANGLE METER STOPS TO BE 18" FROM PROPERTY LINE AND NOT IN DRIVEWAY APPROACH.
8. METER BOXES IN CURB TIGHT SIDEWALK AND THOSE SUBJECT TO INCIDENTAL AUTO TRAFFIC MUST HAVE METAL LIDS AND BE TRAFFIC RATED.

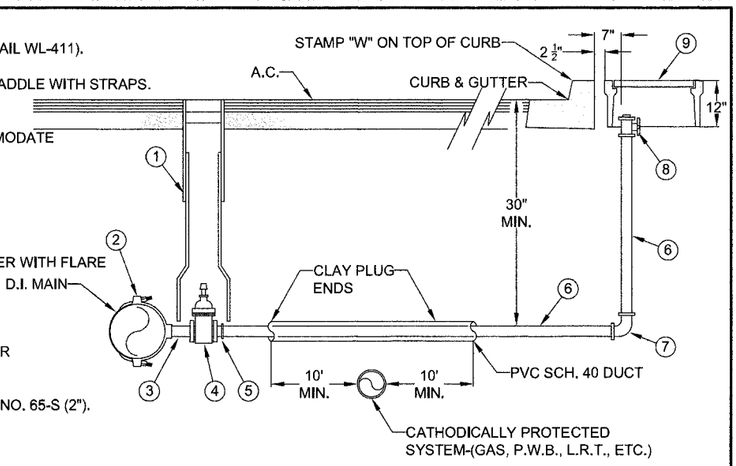
City of West Linn

STANDARD
1" WATER SERVICE

FILE NO.	DRAWING NO.	DATE:
	WL-402	2010

MATERIAL:

1. CAST IRON VALVE BOX AND LID (SEE STANDARD DETAIL WL-411).
2. PIPE O.D. x 2" TEE OR ROCKWELL NO. 317 SERVICE SADDLE WITH STRAPS.
3. 2" x 6" BRASS I.P.T. NIPPLE. 6" LENGTH MAY BE REDUCED IF NEEDED TO ACCOMMODATE CERTAIN TAPPING MACHINES.
4. 2" I.P.T. x I.P.T. GATE VALVE WITH RESILIENT WEDGE.
5. 2" x 3" I.P.T. x MUELLER 110 COMP. COUPLING.
6. 2" ASTM B-88 TYPE "K" COPPER TUBING. SOFT TEMPER WITH FLARE FITTING WILL NOT BE APPROVED.
7. 2" 90° ELL, MUELLER 110 CTS COMPRESSION.
8. 1 1/2" - 2" ANGLE METER STOP, MUELLER NO. 14276 OR 14277, FORD NO. FV23-777W.
9. BROOKS METER BOX, BODY NO. 65 (2"), LID & COVER NO. 65-S (2").



NOTE:

1. MACHINE DRILLED AND TAPPED ONLY. NO HAND DRILLING IS ALLOWED.
2. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
3. ALL PIPE AND STRUCTURE ZONE SHALL BE BACKFILLED USING 3/4" MINUS CRUSHED AGG. AND COMPACTED TO 95% MAX DENSITY AS DETERMINED BY AASHTO T-180.
4. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED AS SHOWN ABOVE WITH CLAY PLUG.
5. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER AND FITTING ASSEMBLY.
6. CUSTOMER SHALL INSTALL AN APPROVED BACKFLOW PREVENTION DEVICE.
7. METER BOXES IN CURB TIGHT SIDEWALK AND THOSE SUBJECT TO INCIDENTAL AUTO TRAFFIC MUST HAVE METAL LIDS AND BE TRAFFIC RATED.

City of West Linn

STANDARD 1 1/2" - 2"
WATER SERVICE

FILE NO.	DRAWING NO.	DATE:
	WL-403	2010

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CITY STANDARD DETAILS - 3**

SCALE VERT: NONE HORIZ: NONE
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

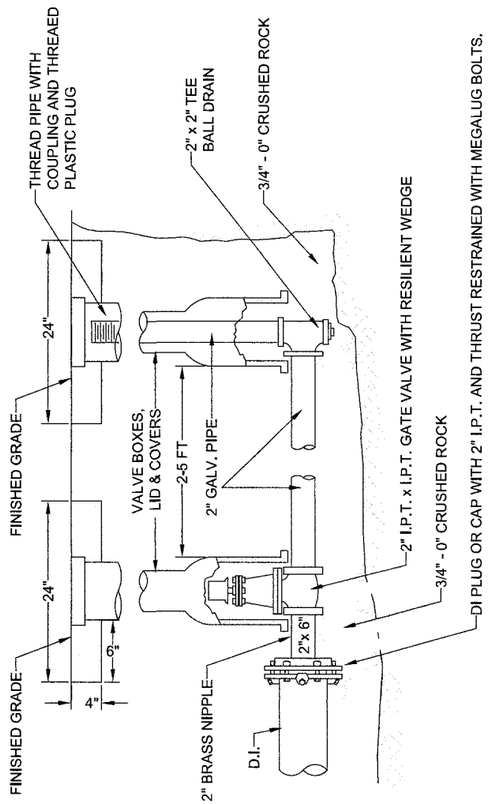
REGISTERED PROFESSIONAL ENGINEER 65640 OREGON DECEMBER 29, 1995 MICHAEL L. McELLIP
RENEWS 12-31-16

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-3

BLOW-OFF SIZES REQUIRED	
MAIN SIZE	BLOW-OFF SIZE
4" TO 6"	2"



NOTE:

1. VALVE BOX SHALL BE PER STANDARD DETAIL WL-411.
2. VALVE BOX TO BE CONCRETE ENCASED AS SHOWN, IF NOT IN PAVED AREA.
3. BLOW-OFF UNIT SHALL BE BACKFILLED WITH 3/4"-0" CRUSHED ROCK AND COMPACTED TO 95% OF MAXIMUM DENSITY DETERMINED BY AASHTO T-180.
4. PLACE BLOW-OFF STANDPIPE 3 FT. INSIDE R.O.W. LINE AT END OF STREET (2 FT FROM BARRICADE).

STANDARD 2" BLOW-OFF ASSEMBLY

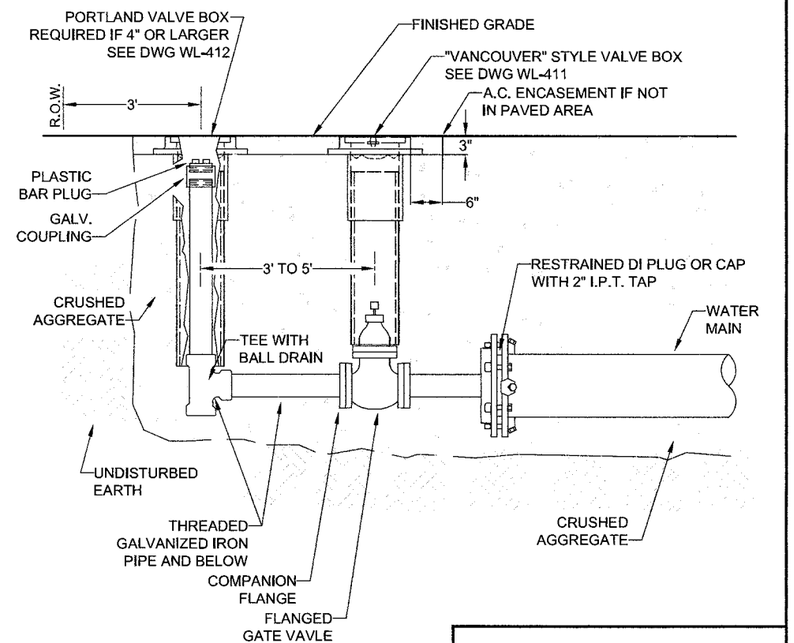
City of West Linn

DATE: 2010
DRAWING NO. WL-404A
FILE NO.

BLOW-OFF SIZES REQUIRED	
MAIN SIZE	BLOW-OFF SIZE
4" TO 6"	2"
8" TO 12"	4"
14" TO 18"	6"
20" & UP	PER ENGR.

NOTE:

1. BACKFILL WITH SELECT CRUSHED AGGREGATE A MINIMUM OF 6" ON ALL SIDES. COMPACTED TO 95% OF MAX DENSITY AS DETERMINED BY AASHTO T180.
2. ON TEMPORARY BLOW-OFFS ONLY, AN MJ CAP TAPPED 4" OR 6" MAY BE SUBSTITUTED FOR REDUCER.
3. TEMPORARY BLOW-OFF IS ONE REMOVED AT THE END OF PROJECT CONSTRUCTION. A PERMANENT BLOW-OFF REMAINS ON THE PROJECT AFTER ACCEPTANCE.
4. PLACE BLOW-OFF STANDPIPE 3 FT. INSIDE R.O.W. LINE AT END OF STREET (2 FT FROM BARRICADE).



PERMANENT OR TEMPORARY 4" AND 6" BLOW-OFF

City of West Linn

DATE: 2010
DRAWING NO. WL-404B
FILE NO.

NO.	DATE	REVISION	BY

REGISTERED PROFESSIONAL ENGINEER 65840 OREGON MICHAEL L. MAH RENEWS: 12-31-16

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-4
159 of 167

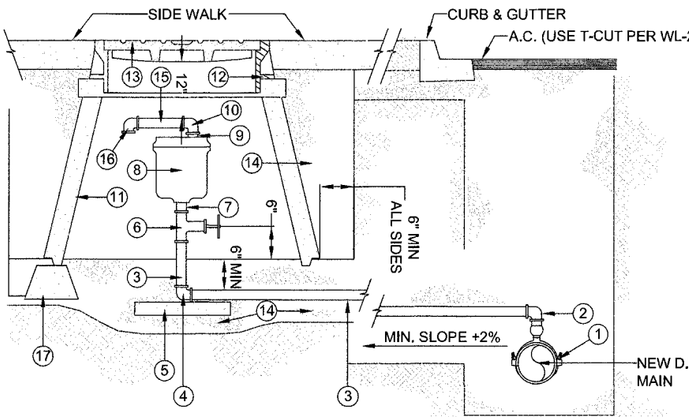
SCALE VERT: NONE HORIZ: NONE
NOTICE IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: CITY STANDARD DETAILS - 4

Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



NOTE:

1. INSTALLATION LOCATED AT HIGH POINT OF MAIN
2. 48" MANHOLE BARREL SECTIONS SHALL BE USED TO INCREASE DEPTH IF NECESSARY
3. ALL PIPE AND STRUCTURE ZONES SHALL BE COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS
4. STD. DETAIL IS NOT FOR SHALLOWER THAN TYPICAL INSTALLATIONS. CONTACT CITY WATER DEPT. FOR OPTIONS

MATERIAL:

1. ROCKWELL NO. 317 SERVICE SADDLE WITH STAINLESS STRAPS
2. MUELLER NO. H15045 2" CORPORATION STOP WITH 1/4 BEND ADAPT (I.P.T. MUELLER 110 CTS)
3. 2" X VARIABLE LENGTH BRASS I.P.T. NIPPLE
4. 2" BRASS 90 DEGREE ELL (MUELLER 110 CTS)
5. 12" X 12" X 4" CONCRETE BLOCK
6. NIBCO NO. 113 2" BRASS GATE VALVE
7. 2" X 3" BRASS I.P.T. NIPPLE
8. 2" AIR RELEASE VALVE (VAL-MATIC #38 OR APCO #205 FOR TYPICAL INSTALLATIONS. IN SOME INSTANCES THE CITY MAY REQUIRE COMBINATION AIR RELEASE & VACUUM UNIT.) INSTALL WALL BRACKETS TO SUPPORT VALVE AS NECESSARY
9. 1/2" X 1 1/2" OR 2" X 1 1/2" BRASS I.P.T. NIPPLE
10. 1/2" OR 2" BRASS 90 DEGREE ELL (F.M. I.P.T. X F.M. I.P.T.)
11. STD. 48" CONCRETE MANHOLE CONE
12. FRAME PER STD. DWG. WL-214.
13. TAMPERPROOF MANHOLE COVER PER STD. DWG. WL-214.
14. 3/4" MINUS CRUSHED AGG.
15. 1/2" X 6" OR 2" X 6" BRASS NIPPLE, I.P.T.
16. 1/2" OR 2" BRASS 90 DEGREE ELL WITH SCREEN ON OUTLET
17. 3 EA. 12" CONCRETE PIER BLOCKS

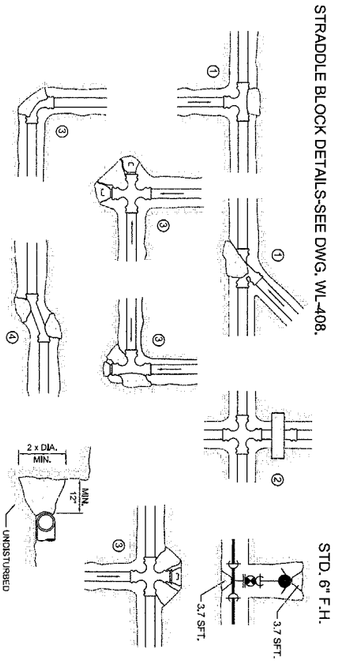
City of West Linn

STANDARD AIR RELEASE VALVE UNIT

DATE: 2010
DRAWING NO. WL-405
FILE NO.

FITTING SIZE (Inches)	TEE, WYE, & HYDRANTS ①	STRADDLE BLOCK ②	90° BEND PLUGGED CROSS TEE PLUGGED-RUNS ③	45° BEND ④	22 1/2° BEND ④	11 1/2° BEND ④
	BEARING AREA OF THRUST BLOCKS (sq. ft.)					
2	*	*	*	*	*	*
4	1.7	2.1	2.4	1.3	*	*
6	3.7	4.9	5.3	2.9	1.5	*
8	6.7	8.7	9.5	5.1	2.7	1.3
10	10.5	13.6	14.8	8	4.1	2
12	15.1	19.6	21.3	11.6	5.9	2.9
14	26.8	34.8	37.9	20.5	10.4	5.2
16	33.9	44	47.9	25.9	12.8	6.7
18 LARGER	**	**	**	**	**	**

1. ALL VALUES ARE BASED ON THE FOLLOWING ASSUMPTIONS: AVG. PRESSURE = 100 PSI X 2 (safety factor); 1500 PSF SOIL BEARING CAPACITY; NORMAL DISTRIBUTION DESIGN VELOCITY NOT TO EXCEED 5 F/S.
2. ALL FITTINGS SHALL BE WRAPPED IN 8 MM PLASTIC PRIOR TO PLACEMENT OF CONCRETE.
3. BEARING SURFACE OF THRUST BLOCKING SHALL BE AGAINST UNDISTURBED SOIL
4. ALL CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3000 PSI.
5. ALL PIPE ZONES SHALL BE GRAVEL FILLED AND COMPACTED.
6. THRUST BLOCKS FOR PLUGGED CROSS AND PLUGGED TEE SHALL HAVE #4 REBAR LIFTING LOOPS INSTALLED AS SHOWN.
7. VERTICAL THRUST DETAILS-SEE DWG. WL-407.
8. STRADDLE BLOCK DETAILS-SEE DWG. WL-408.



* BLOCK TO UNDISTURBED TRENCH WALLS.

** THRUST BLOCKS FOR PIPES LARGER THAN 18" WILL BE INDIVIDUALLY DESIGNED BY THE ENGINEER.

City of West Linn

HORIZONTAL THRUST BLOCKING

DATE: 2010
DRAWING NO. WL-406
FILE NO.

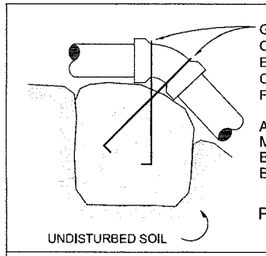
Murray, Smith & Associates, Inc. Engineers/Planners	PROJECT NAME: CITY OF WEST LINN, OREGON BOLTON RESERVOIR REPLACEMENT PROJECT NO. PW 14-06	SCALE VERT: NONE HORIZ: NONE NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	REGISTERED PROFESSIONAL ENGINEER 65640 OREGON DECEMBER 29, 2006 MICHAEL L. McMILLIP RENEWS 12-31-16
121 S.W. Salmon, Suite 900 Portland, Oregon 97204 PHONE 503-225-9010 FAX 503-225-9022	SHEET TITLE: CITY STANDARD DETAILS - 5		
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015			

NO.	DATE	REVISION	BY
DESIGNED: MLM			
DRAWN: RLF			
CHECKED: TPB			
APPROVED: TPB			

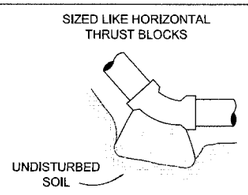
SHEET DET-5

NOTE:

1. GRAVITY VERTICAL THRUST BLOCKS SHALL BE DESIGNED BY THE ENGINEER.
2. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES. FITTINGS SHALL BE WRAPPED IN 8MM PLASTIC PRIOR TO PLACEMENT OF CONCRETE.
3. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3300 P.S.I.
5. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS SHALL BE BASED ON TEST PRESSURE OF 180 PSI AND THE WEIGHT OF CONCRETE = 4050 LBS./CU.YD.
6. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN INSIDE HEAVY LINE IN TABLE BELOW.
7. PAYMENT SHALL BE THE SAME AS FOR HORIZONTAL THRUST BLOCKS.
8. ALL REBAR SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM-123 (MIN. 3.4 MIL). REBAR SHALL BE BENT BEFORE GALVANIZATION, AND LAST 4" OF BAR SHALL BE BENT 90 DEGREES WITH A 1/2" RADIUS BEND. REBAR SHALL BE TIGHTLY FIT TO RESTRAINED FITTING.
9. FOR HORIZONTAL THRUST BLOCK DETAILS SEE DWG NO. WL-406.



GRAVITY VERTICAL THRUST BLOCK



NORMAL VERTICAL THRUST BLOCK

VOLUME OF THRUST BLOCK IN CUBIC YARDS (VERTICAL BENDS)			
FITTING SIZE	BEND ANGLE		
	45 °	22 1/2 °	11 1/4 °
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
10	6.0	2.3	0.9
12	8.5	3.2	1.3
14	11.5	4.3	1.8
16	14.8	5.6	2.3

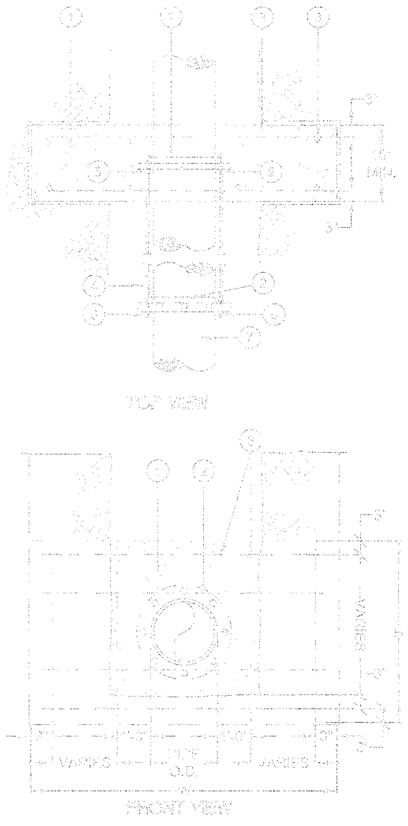
FITTING SIZE	ROD SIZE	EMBED-MENT
12" AND LESS	#6	30"
14" - 16"	#8	36"

VERTICAL THRUST BLOCKING

City of West Linn

DATE: 2010
DRAWING NO. WL-407
FILE NO.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY ENGINEER. IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



MATERIAL:

1. CONCRETE STRADDLE BLOCK.
2. STEEL FLANGE, SERIES 400, CLASS 125
3. #6 REBAR EACH WAY, 12" O.C.
4. 3/4" ALL THREAD GALVANIZED STEEL TIE RODS, QUANTITY PER ENGINEER.
5. 3/4" GALVANIZED NUTS, 2 EACH SIDE
6. 3/4" GALVANIZED NUTS, 1 EACH SIDE
7. FLANGED FITTING

NOTE:

1. STRADDLE BLOCKS SHOULD BE DESIGNED INDIVIDUALLY BY THE ENGINEER AND SHALL BE BASED ON THE FOLLOWING:
   a.) 200 PSI WATER PRESSURE.
   b.) SOIL BRG. CAPACITY, STEEL SIZE AND SPACING BY THE ENGINEER.
2. BEARING AREA OF BLOCK SHALL BE AGAINST UNDISTURBED SOIL.
3. STRADDLE BLOCK SHALL HAVE A MINIMUM OF 18" COVER.
4. CONCRETE SHALL HAVE A MIN. 28-DAY STRENGTH OF 3000 PSI
5. ALL FITTINGS WITHIN THE CONC. SHALL BE WRAPPED IN PLASTIC OR BE COATED W/ KOPPERS #300.
6. STRADDLE BLOCK PROPORTIONS (WIDTH W) SHALL BE DETERMINED BY THE ENGINEER.

STANDARD STRADDLE BLOCK

DATE: JULY 2015
West Linn DRAWING NO. WL-408
FILE NO.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-6
16 of 167

REGISTERED PROFESSIONAL ENGINEER 85540 OREGON DECEMBER 31, 2016 MICHAEL L. MAH
RENEWS 12-31-16

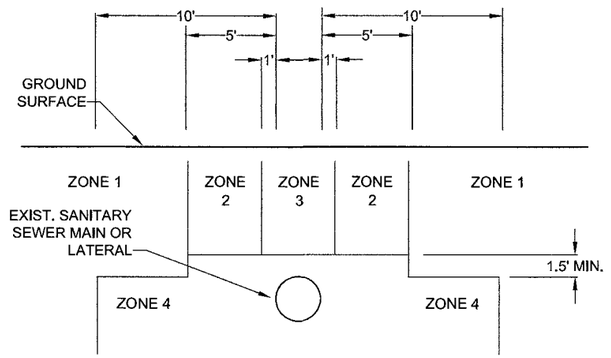
SCALE VERT: NONE HORIZ: NONE
NOTICE 0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CITY STANDARD DETAILS - 6**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



ZONE 1: ONLY CROSSING RESTRICTIONS APPLY
ZONE 2: CASE-BY-CASE DETERMINATION
ZONE 3: PARALLEL WATERLINE PROHIBITED
ZONE 4: PARALLEL WATERLINE PROHIBITED

NOTE:

1. WHERE THE PROPOSED WATERLINE WILL BE INSTALLED PARALLEL TO AN EXISTING GRAVITY SANITARY SEWER MAIN OR LATERAL LINE, THE SEPARATION BETWEEN THE TWO SHALL BE AS INDICATED ABOVE.

2. CROSSINGS:

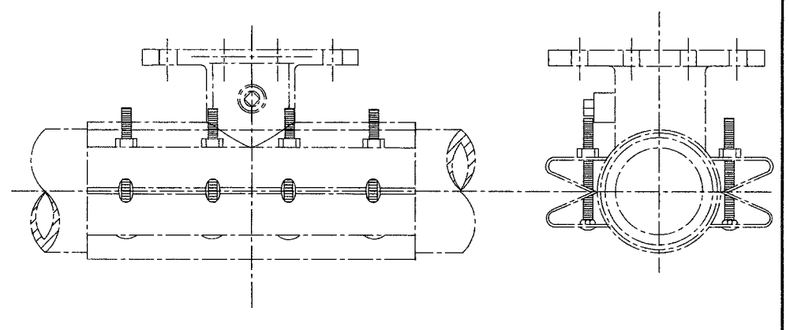
   A. WHEREVER POSSIBLE, THE BOTTOM OF THE WATERLINE SHALL BE 1.5 FEET ABOVE THE TOP OF THE SEWER LINE, AND ONE FULL LENGTH OF WATERLINE SHALL BE CENTERED AT THE CROSSING.

   B. WHERE IT IS NOT POSSIBLE FOR THE WATER LINE TO BE 1.5 FEET ABOVE THE SEWER LINE, OR THE WATERLINE PASSES UNDER THE SEWER LINE, THE EXISTING SEWER LINE SHALL BE EXPOSED FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, AND SHALL BE REPLACED WITH C-900 PVC WITH STRUCTURAL REQUIREMENT OF DR18 OR DR 25 OR CLASS 50 DUCTILE IRON PIPE AS APPROVED BY THE CITY ENGINEER, AND A LENGTH OF WATER PIPE SHALL BE CENTERED AT THE CROSSING, OR AS APPROVED BY THE CITY ENGINEER.

STANDARD SANITARY SEWER CROSSING

City of West Linn

DATE: 2010
DRAWING NO. WL-409
FILE NO.



NOTE:

1. WATER MAIN SHALL BE CLEANED BEFORE ATTACHING SLEEVE.
2. SLEEVE AND VALVE SHALL BE PRESSURE TESTED BEFORE MAKING TAP.
3. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.
4. PROPER TAPPING MACHINE SHALL BE USED TO MAKE TAP.
5. THRUST BLOCKING REQUIREMENTS SHALL BE DETERMINED BY THE ENGINEER OR PER DWG. WL-406.
6. TAP SHALL BE MADE NO CLOSER THAN 18 INCHES FROM THE NEAREST JOINT OR TAP.
7. SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL PLASTIC.
8. SLEEVES TO BE USED ARE JCM OR MUELLER STAINLESS STEEL TAPPING SLEEVES. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
9. SLEEVE SHALL BE AS LEVEL AS POSSIBLE.
10. ALL BOLTS SHALL HAVE NEVER SIEZE ON THREADS.

STANDARD WET TAP

City of West Linn

DATE: 2010
DRAWING NO. WL-410
FILE NO.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-7
162 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 19, 1978 MICHAEL L. MURRAY
RENEWS 12-31-16

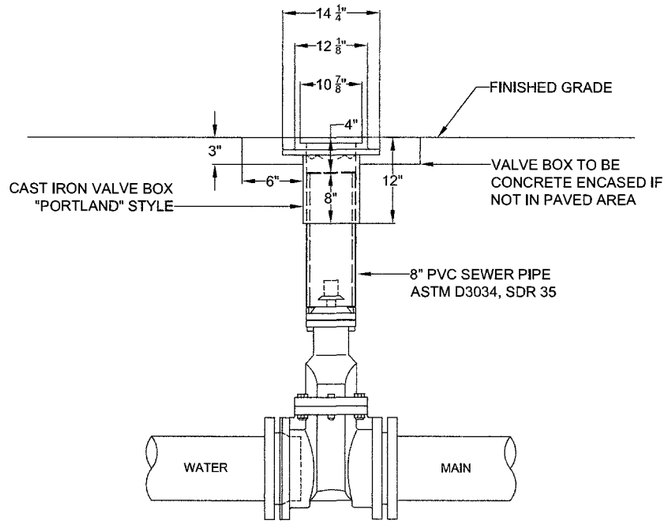
SCALE VERT: NONE HORIZ: NONE
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CITY STANDARD DETAILS - 7**

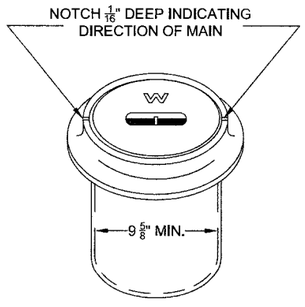
MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



NOTE:

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE- NO BELLS OR COUPLERS.

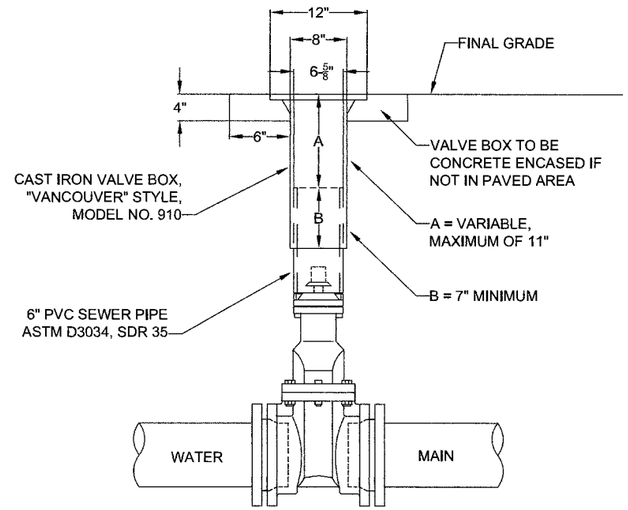


"PORTLAND"
VALVE BOX

STANDARD VALVE BOX DETAIL FOR 4" OR LARGER BLOW-OFF

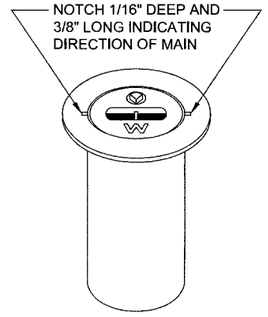
City of West Linn

DATE: 2010
DRAWING NO. WL-412
FILE NO.



NOTE:

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE-NO BELLS OR COUPLERS.
4. ON VALVES 8" AND LARGER, PVC SHALL BE NOTCHED OVER VALVE PACKING BOLTS SO PVC SITS ON BONNET.



"VANCOUVER"
18" TALL VALVE BOX

STANDARD VALVE BOX DETAIL

City of West Linn

DATE: 2010
DRAWING NO. WL-411
FILE NO.

NO.	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-8
163 of 167

REGISTERED PROFESSIONAL ENGINEER 65540 OREGON DECEMBER 31, 1981 MICHAEL L. MAY RENEWS 12-31-16

SCALE VERT: NONE HORIZ: NONE

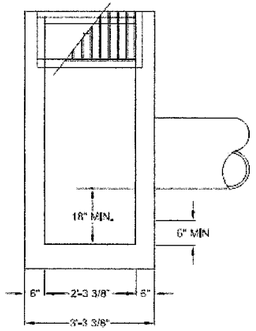
NOTICE
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

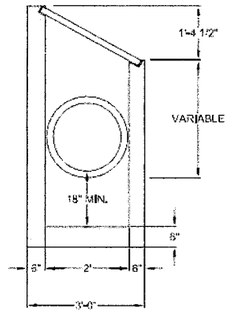
SHEET TITLE: **CITY STANDARD DETAILS - 8**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

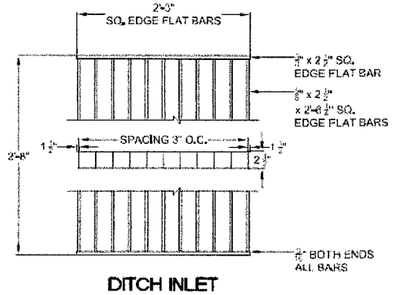
MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



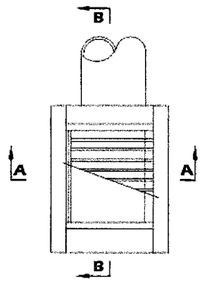
SECTION B-B



SECTION A-A



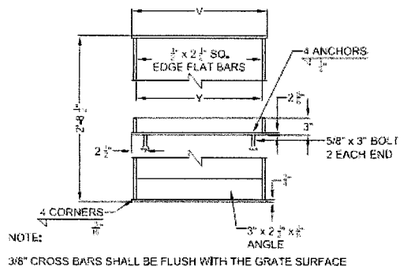
DITCH INLET



PLAN

NOTE:

1. CONCRETE STRENGTH SHALL BE 3300 PSI.
2. CATCH BASIN, FRAME, AND GRATES SHALL MEET H20 LOADING.
3. INSIDE FRAME DIMENSIONS: 2'-3 3/8", 2'-8 1/2".



NOTE:

3/8" CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.

DITCH INLET FRAME

INLET TYPE	V	Y	Y1	NO. OF BARS	TYPE
D	2'-4 3/4"	2'-3 3/8"	2'-3"	9	1

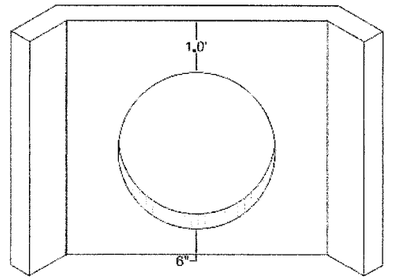
STANDARD DITCH INLET

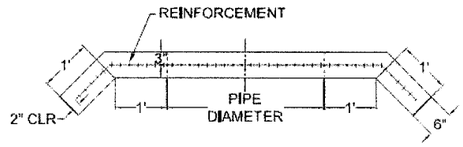
City of West Linn

DATE: 2010

DRAWING NO. WL-603

FILE NO.





NOTE:

1. USE CONCRETE HAVING A 28 DAY DESIGN STRENGTH OF 3300 PSI.
2. OUTLET WING WALL SHALL BE USED FOR ALL OUTFALL PIPES FROM 10" TO 36".
3. THIS DETAIL REPRESENTS THE MINIMUM REQUIREMENT. THE NEED FOR ADDITIONAL STEEL, A FOOTING AND DRAINAGE BEHIND THE WALL SHALL BE INVESTIGATED BY THE DESIGN ENGINEER.
4. FOR PIPES LARGER THAN 33" OR MULTIPLE PIPE OUTLETS, USE DETAIL WL-612.
5. CONCRETE REINFORCEMENT SHALL CONSIST OF:
   A) ADDING A POLY-FIBER MESH TO THE CONCRETE MIX OR
   B) USE (2) #4 BARS ABOVE AND BELOW PIPE AND #4 BARS AT 6" O.C. VERTICALLY.

OUTLET HEADWALL (FOR OUTLET PIPES OF 10" TO 33")

City of West Linn

DATE: 2010

DRAWING NO. WL-613

FILE NO.

NO.	DATE	REVISION	BY

REGISTERED PROFESSIONAL ENGINEER 65640 OREGON MICHAEL L. MAH

RENEWS: 12-31-16

SCALE: VERT: NONE HORIZ: NONE

NOTICE 0 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-9

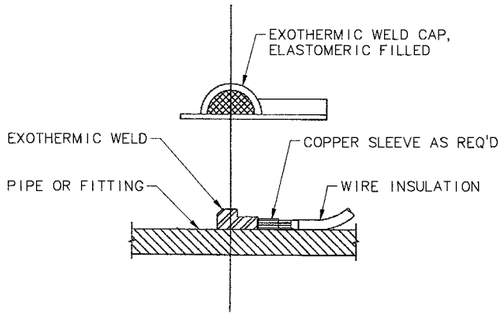
164 of 167

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CITY STANDARD DETAILS - 9**

MSA Murray, Smith & Associates, Inc. Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 DATE: SEPTEMBER 2015



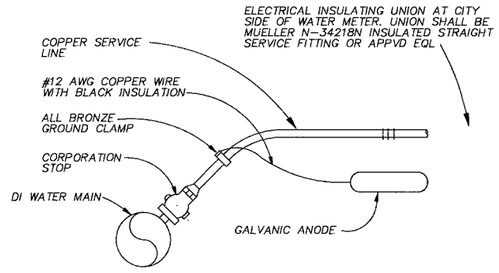
NOTES:

1. APPLY WELD CAP DIRECTLY TO PIPE, NOT TO PIPE WRAP. USE PRIMER AS REQUIRED BY THE MANUFACTURER.

2. COMPLETELY ENCLOSE WIRE WITHIN WELD CAP.

3. REPAIR ANY DAMAGED COATING NOT COVERED BY WELD CAP.

EXOTHERMIC WELD DI & STEEL PIPE (1/-)
SCALE: NTS



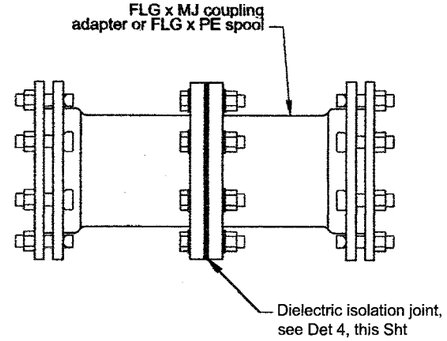
NOTES:

1) INSTALL ANODE 2'-3' FROM PIPE AND 1'-0" BELOW PIPE INVERT ELEVATION. TAPE COAT LINE FROM METALLIC WATER MAIN, MIN. 5' OR AS SPECIFIED, APPLY TAPE COATING PER SPECIFICATION.

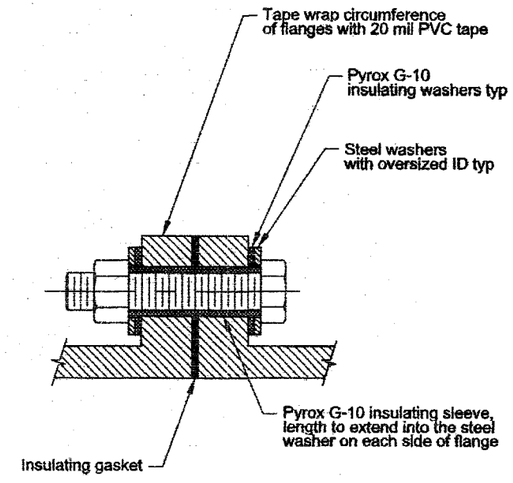
2) ACTUAL ORIENTATION OF SERVICE LINE IS IN THE HORIZONTAL PLANE.

3) FURNISH AND INSTALL WATER SERVICE MATERIALS PER CITY STANDARD DRAWINGS.

WIRE CONNECTION TO COPPER SERVICE PIPELINE (2/-)
SCALE: NTS



DI ISOLATION JOINT ASSEMBLY (3/-)
SCALE: NTS

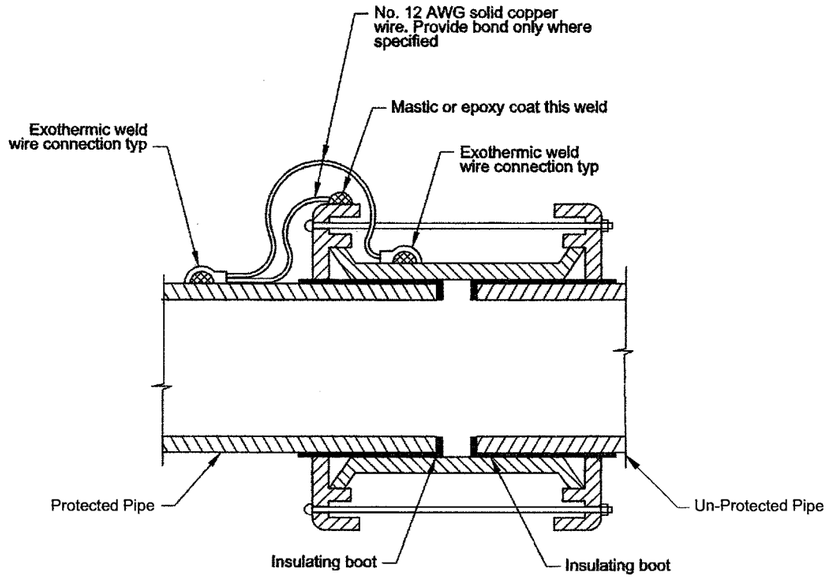


NOTES:

1. FOR BURIED OR SUBMERGED INSULATING FLANGE INSTALLATION, DO NOT INSTALL INSULATING WASHER ON PROTECTED SIDE OF INSULATING FLANGE.

2. COAT BURIED OR SUBMERGED INSULATING FLANGES WITH COLD APPLIED COAL TAR MASTIC AFTER ASSEMBLING JOINT AND WRAP WITH A BUTYL RUBBER ADHESIVE, POLYETHYLENE BACKED TAPE.

DIELECTRIC ISOLATION FLANGE JOINT DETAIL (4/-)
SCALE: NTS



Notes:

1. Center flexible coupling over insulating boots.
2. Exothermic weld to coupling prior to assembly. Do not burn boots.
3. Bond the coupling to a protected side of the joint where specified.

DIELECTRIC ISOLATION FLEXIBLE SLEEVE COUPLING (5/-)
SCALE: NTS

NO.	DATE	REVISION	BY

SHEET DET-10 165 of 167

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 8, 2006 — LAEL L. ALDERMAN — RENEWS 12-31-15

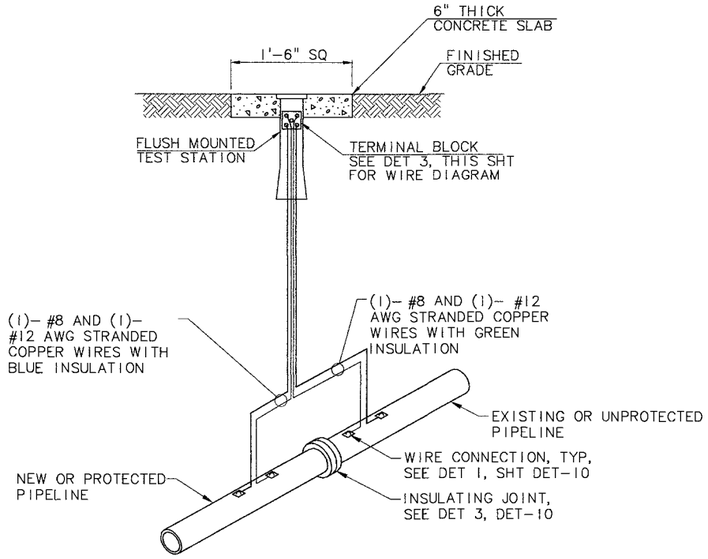
SCALE VERT: NONE HORIZ: NONE
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE: **CORROSION CONTROL DETAILS - 1**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

DATE: SEPTEMBER 2015
MSA PROJECT: 14-1586



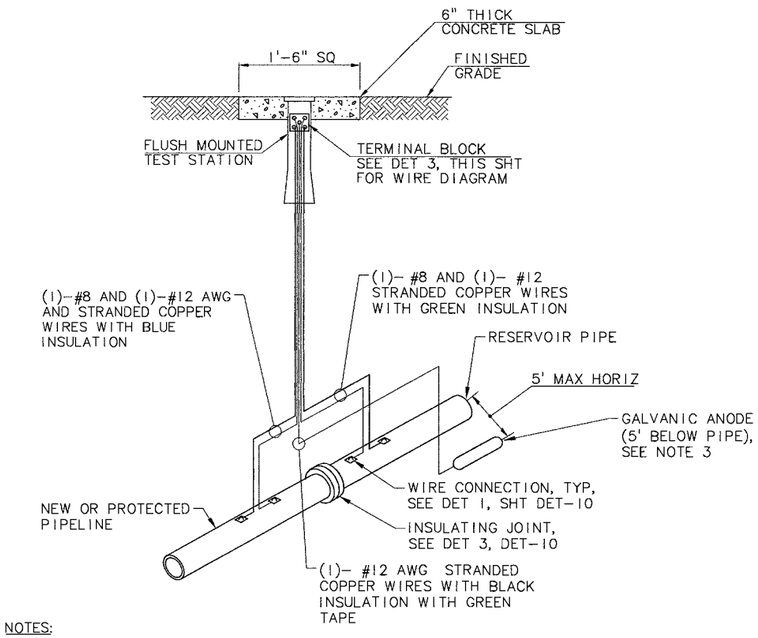
NOTES:

1. FINAL LOCATIONS OF TEST STATIONS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

2. PROVIDE SUFFICIENT SLACK IN TEST WIRES TO ALLOW TERMINAL BLOCK TO EXTEND 18" OUT OF TEST STATION. COIL WIRES IN TEST STATION.

FLUSH-MOUNTED TEST STATION (TS/IJ-1) — 1/—

SCALE: NTS



NOTES:

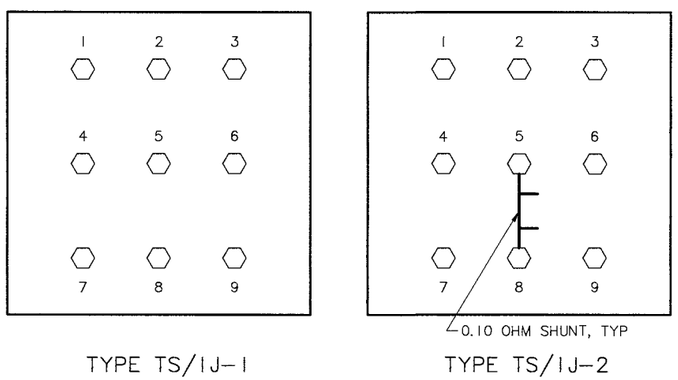
1. FINAL LOCATIONS OF TEST STATIONS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

2. PROVIDE SUFFICIENT SLACK IN TEST WIRES TO ALLOW TERMINAL BLOCK TO EXTEND 18" OUT OF TEST STATION. COIL WIRES IN TEST STATION.

3. PLACE ANODE IN CLEAN NATIVE BACKFILL AND COMPACT TO 12" ABOVE ANODE PRIOR TO POURING 10 GALLONS OF WATER OVER THE INSTALLATION. CONTINUE WITH BACKFILL TO FINISHED GRADE.

FLUSH-MOUNTED TEST STATION (TS/IJ-2) — 2/—

SCALE: NTS



TEST STATION WIRING — 3/—

SCALE: NTS

TS TYPE	#1			#2			#3			#4			#5			#6			#7			#8			#9		
	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE	IDENTIFICATION	WIRE SIZE	COLOR CODE
IJ-1	N	12	BL	E	12	W				N	8	BL	E	8	W												
IJ-2	N	12	BL	RP	12	G				N	8	BL	RP	8	G							A	12	BT			

IDENTIFICATION	WIRE SIZE	COLOR CODE
N = NEW PIPE WITH CP	#8 & 12	BL = BLUE
E = EXISTING PIPE	#8 & 12	W = WHITE
RP = RESERVOIR PIPE	#8 & 12	G = GREEN
A = ANODE/RESERVOIR SIDE	#12	BT = BLACK W/ GREEN TAPE

TEST STATION IDENTIFICATION & COLOR CODE — 4/—

SCALE: NTS

BY | REVISION | NO. | DATE

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-1 166 of 167

REGISTERED PROFESSIONAL ENGINEER — OREGON — DECEMBER 31, 1980 — LAEL L. ALBERTSON — RENEWS 12-31-15

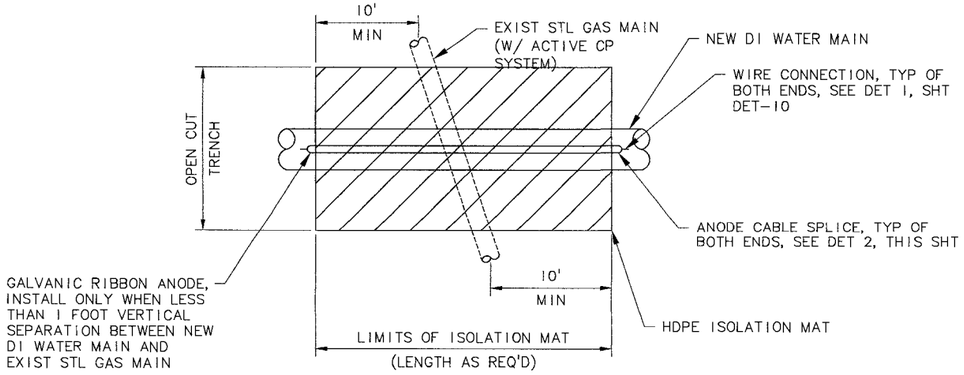
SCALE: VERT: NONE HORIZ: NONE
NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

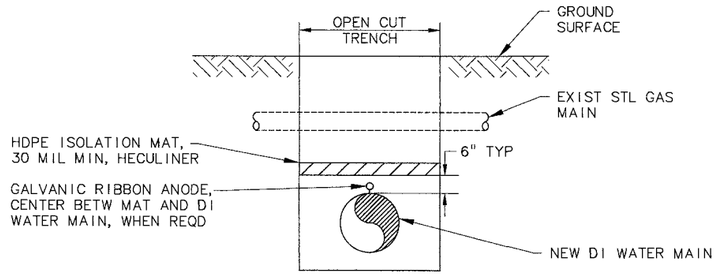
SHEET TITLE: **CORROSION CONTROL DETAILS - 2**

Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900
Portland, Oregon 97204
PHONE 503-225-9010
FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015

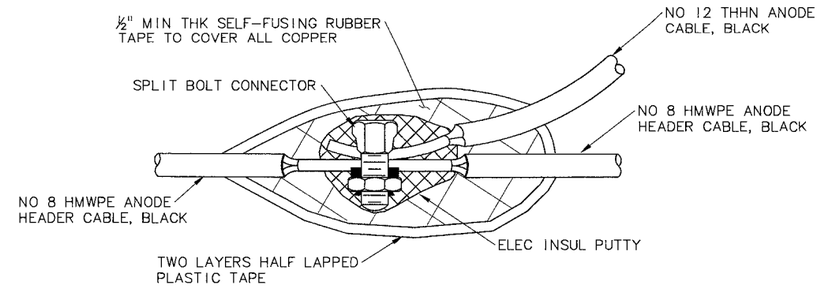


PLAN



SECTION

ISOLATION MAT 1
SCALE: NTS



ANODE CABLE SPLICE 2
SCALE: NTS

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NO	DATE	REVISION	BY

DESIGNED: MLM
DRAWN: RLF
CHECKED: TPB
APPROVED: TPB

SHEET DET-12
167 of 167

REGISTERED PROFESSIONAL ENGINEER OREGON DECEMBER 19, 1978 LAEL A. LUBERSKY RENEWS 12-31-15

SCALE VERT: NONE HORIZ: NONE
NOTICE
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 1

PROJECT NAME: CITY OF WEST LINN, OREGON
BOLTON RESERVOIR REPLACEMENT
PROJECT NO. PW 14-06

SHEET TITLE:
CORROSION CONTROL DETAILS - 3

MSA Murray, Smith & Associates, Inc.
Engineers/Planners
121 S.W. Salmon, Suite 900 Portland, Oregon 97204
PHONE 503-225-9010 FAX 503-225-9022

MSA PROJECT: 14-1586 | DATE: SEPTEMBER 2015