

GRADING & EXCAVATION PERMIT SET  
FOR  
GREEN HORN RANCH

LOCATED IN THE SE1/4 SECTION 22, THE SW1/4 SECTION 23, AND IN THE NW1/4 SECTION 26  
TOWNSHIP 6 NORTH, RANGE 84 WEST, 6TH P.M.;  
COUNTY OF ROUTT, STATE OF COLORADO

CONTACT INFORMATION

PROJECT TEAM:



**OWNER**  
STEAMBOAT SKI & RESORT CORP.  
2305 MT. WERNER CIRCLE  
STEAMBOAT SPRINGS, CO 80487  
(303) 749-8262  
ATTN: MIKE SCHMIDT

**DESIGNER**  
SE GROUP  
131 CHURCH ST, SUITE 200  
BURLINGTON, VT 05401  
(802) 681-0874  
ATTN: MITCH LEFEVRE

**GENERAL CONTRACTOR**  
SAUNDERS CONSTRUCTION, INC.  
86 INVERNESS PLACE NORTH  
CENTENNIAL, CO 80112  
(303) 699-9000  
ATTN: ADAM CLEVELAND

**CIVIL ENGINEERS & SURVEYORS**  
LANDMARK CONSULTANTS, INC.  
141 9TH STREET  
STEAMBOAT SPRINGS, CO 80487  
(970) 871-9494  
ATTN: ERIK GRIEPENTROG, P.E.

**GEOTECHNICAL ENGINEER**  
NORTHWEST COLORADO CONSULTANTS, INC.  
2580 COPPER RIDGE DRIVE  
STEAMBOAT SPRINGS, CO 80487  
(970) 879-7888  
ATTN: BRIAN LEN

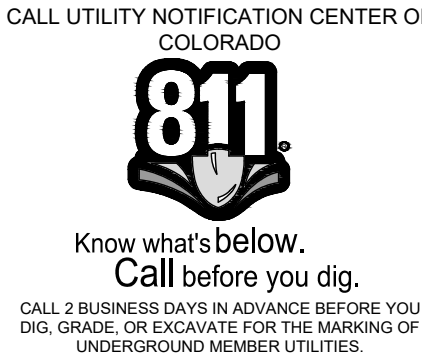
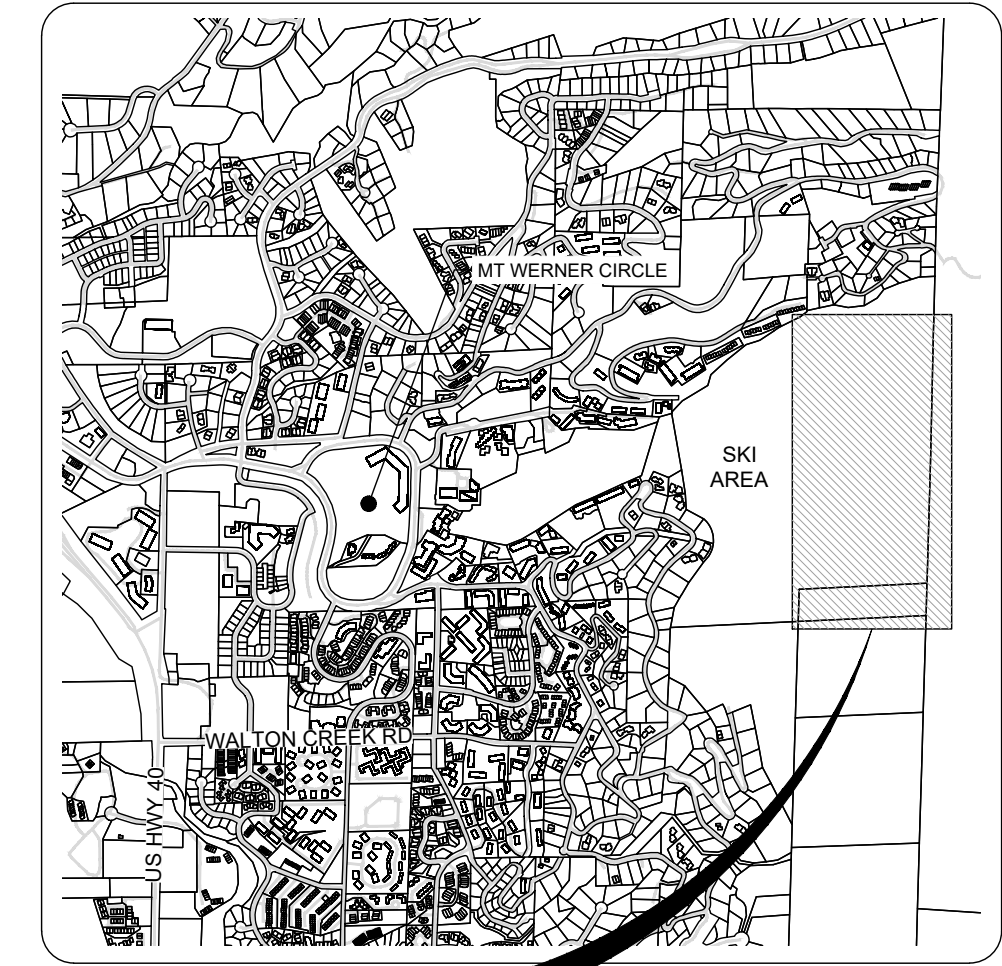
UTILITY CONTACT LIST:

UTILITY COMPANY	CONTACT	PHONE NUMBER
CITY PUBLIC WORKS	EMRICK SOLTIS	(970) 871.8271
CITY OF STEAMBOAT SPRINGS UTILITIES	MICHELLE CARR, P.E.	(970) 871.8207
MT. WERNER WATER	RICHARD BUCCINO	(970) 879.2424
YAMPA VALLEY ELECTRIC ASSOC.	LARRY BALL	(970) 871.2282
ATMOS ENERGY	DON CRANE	(970) 879.3223
CENTURY LINK	JASON SHARPE	(970) 328.8290
COMCAST	ANDY NEWBY	(303) 547.4584
UTILITY NOTIFICATION CTR. OF CO	N/A	(800) 922.1987

THIS LIST IS PROVIDED AS A COURTESY REFERENCE ONLY. LANDMARK CONSULTANTS, INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THIS LIST. IN NO WAY SHALL THIS LIST RELINQUISH THE CONTRACTOR'S RESPONSIBILITY FOR LOCATING ALL UTILITIES PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITY. PLEASE CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811 FOR ADDITIONAL INFORMATION.

SHEET INDEX

- C.001 - Cover
- C.002 - Notes - General
- C.003 - Notes - SSRC Wildfire Plan
- C.004 - Notes - SSRC Emergency & Seeding Plan
- C.005 - Existing Conditions - Overall
- C.006 - Existing Conditions - Detailed
- C.100 - Site Plan - Overall
- C.110 - Site Plan - Detailed
- C.111 - Site Plan - Detailed
- C.300 - Grading Plan - Overall
- C.301 - Grading Plan - Detailed
- C.302 - Grading Plan - Detailed
- C.310 - Grading Cut-Fill Heatmap
- C.410 - Roadway Plan - Boulevard
- C.411 - Roadway Profile - Boulevard
- C.412 - Roadway Cross-Sections - Boulevard
- C.500 - Details



NOT VALID WITHOUT ORIGINAL SIGNATURE AND DATE

REVIEWED  
FOR  
CODE  
COMPLIANCE  
08/25/2022

GREEN HORN RANCH

Cover

SHEET  
C.001

CIVIL ENGINEERS | SURVEYORS  
141 9th Street -- P.O. Box 774943  
Steamboat, Colorado 80477  
(970) 871-9494  
www.LANDMARK-CO.com



THESE DRAWINGS AND INSTRUMENTS ARE PROVIDED BY LANDMARK CONSULTANTS, INC. AND ARE NOT TO BE USED FOR ANY CONSTRUCTION OR CONTRACTING UNLESS SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER OR SURVEYOR EMPLOYED BY LANDMARK CONSULTANTS, INC.

NO.	DATE	BY	DESCRIPTION
	6/14/2022	NG	REVISIONS PER DESIGN DEVELOPMENT
	8/10/2022	DCS	ADDENDUM 2

PROJECT:	1012-048
DATE:	06/18/2021
CONTACT:	Erik Griepentrog
EMAIL:	eng@landmark-co.com











DRAWING FILENAME: P:\1101346\DWG\CD\Production - Drawings\SSRC Permit\SSRC Permit\SSRC Permit\SSRC Permit.dwg DATE: Aug 15, 2022 - 12:46pm CAD OPERATOR: shs  
LIST OF REVISIONS: [REDACTED]

Emergency Response:

Fire plan- Steamboat has a fire plan (Appendix F) which outlines preventative measures and responses related to fire mitigation. Additionally, this plan outlines necessary measures for exemptions to Stage 2 fire restrictions for welding and using vehicles off-road. This operating plan and authorized officer approval of the plan equates to the requirement that an exemption must be applied for in writing, include an appropriate mitigation plan (see Appendix) and must be authorized in writing by the appropriate Forest Service official.

Notice regarding Exemptions: Holders of valid Forest Service permits, leases and authorizations and all other persons are on notice that when proceeding with activities that are authorized pursuant to these Exemptions, such persons are responsible for conducting authorized activities in a safe and prudent manner using extra precautions and are electing to proceed at their own risk. An exemption does not absolve an individual or organization from liability or responsibility for damage, injury or loss to the United States for any fire started while undertaking the exempted activity.

Fire, Health & Sanitation Plan- The Colorado Department of Health, Routt County Building Department, Environmental Health Department, Steamboat Springs Rural Fire Protection District, as well as SSRC's insurance companies (both property and worker's compensation carriers) actively inspect the facilities and operations owned by SSRC. SSRC maintains a separate file of all fire inspections in the Facilities Maintenance offices, health and sanitation inspections in the Food & Beverage offices and other safety reviews in office of the Risk Manager. These files are available for inspection by the Forest Service administering offices. As a function of Hahns Peak/Bear's Ears District's monitoring role of the Special Use Permittee, Forest Service representatives may from time to time participate in insurance and/or regulatory agency inspections and reviews.

Emergency Management Plan- SSRC maintains an up-to-date Emergency Management Plan with copies distributed to key directors and supervisors that might have involvement in a crisis situation.

Law Enforcement- The USFS is responsible for enforcing National Forest regulations as established in Title 36, Code of Federal Regulations.

- SSRC will cooperate with federal, state, and local law enforcement agencies in the performance of their respective duties, i.e., enforcement of Colorado Ski Safety Act of 1979, local ordinances, state laws, etc.
- The Routt County Sheriff has jurisdiction to enforce county and state law on the Steamboat Ski Area.
- The Colorado Division of Wildlife has jurisdiction to enforce state law on the Steamboat Ski Area.

7. Vegetation Management

Trees or shrubbery may be removed or destroyed only after the authorized officer or designated representative has approved in writing and marked or otherwise identified what may be removed or destroyed (Permit III G). See Appendix E for administrative use documentation. It is understood that tree removal could change the character of the forest and affect forest health where concentrated removal is proposed. Therefore, if concentrated removal is proposed through an operating plan or project record sheet, approval would be contingent upon consultation with the Forest Service and conformance with the ski area's vegetation management plan.

Trees that pose a safety concern to guests and infrastructure are authorized for removal.

Currently, SSRC cuts vegetation on groomed runs and mostly focused on those that receive snowmaking; this practice is authorized. Hollyhock, Rabbit Ears gilia, lady fern, broad-leaved twayblade, and white-veined wintergreen may not be damaged. Additionally, a 100-foot buffer around intermittent and perennial streams must be maintained unless authorized by the Forest Service botanist and/or hydrologist. The following ski runs have buffer exemptions: none (Permit III G).

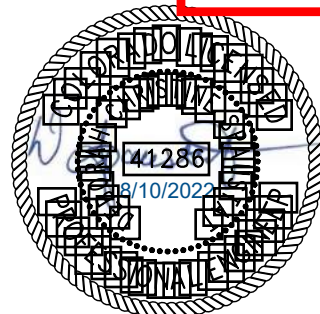
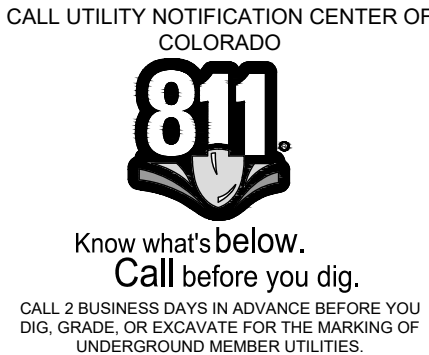
Trees are authorized to be planted or transplanted following consultation with Forest Service botanist (Permit III G).

To the extent possible, management actions shall integrate SSRC's vegetation management plan recommendations when changing the vegetative component or when efficiencies can be made when working in a coincident area.

SSRC is responsible for nonnative and invasive species treatment. Treatments within the resort shall be reported on an annual basis and include: weed species, treatment locations (a map or GPS), acres treated, name of the herbicide(s) used and the quantity applied (total chemical used and application rate, if possible). Known invasive/noxious species on the resort include but are not limited to: These include whitetop or hoary cress, Canada thistle, bull thistle, yellow toadflax, houndstongue, and scentless chamomile, and reed canarygrass.

Herbicide and pesticide use required annual written approval (Permit V E). This operating plan authorizes the use of: Kernight (6oz/gallon), Curtail (2oz/gallon), 2-4-D (16oz 2-4-D, 4 grams Escort, splash of Activator 90 per 20 gallons).

The approved seed mix for the resort is:  
40% mountain brome, 33% blue wildrye, 23% slender wheatgrass and 4% Poa ampla or canbyi.



REVIEWED  
FOR  
CODE  
COMPLIANCE  
08/25/2022

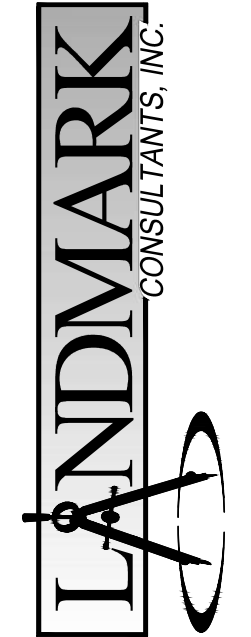
GREEN HORN RANCH  
Notes  
SSRC Emergency & Seeding Plan

SHEET  
C.004

THIS DRAWING IS A  
PERMIT TO CONSTRUCT  
AND IS NOT A  
CONTRACT. IT IS THE  
PROPERTY OF LANDMARK  
CONSULTANTS, INC. AND  
IS NOT TO BE REPRODUCED  
OR COPIED IN ANY MANNER  
WITHOUT THE WRITTEN  
CONSENT OF LANDMARK  
CONSULTANTS, INC.

NO.	DATE:	BY:	DESCRIPTION:
	6/14/2022	NG	REVISIONS PER DESIGN DEVELOPMENT
	8/10/2022	DCS	ADDENDUM 2

PROJECT:	1012-048
DATE:	6/18/2021
CONTACT:	Erik Gripenberg
EMAIL:	eng@landmark-co.com



CIVIL ENGINEERS | SURVEYORS  
141 9th Street -- P.O. Box 774943  
Steamboat, Colorado 80477  
(970) 871-9393  
www.LANDMARK-CO.com

















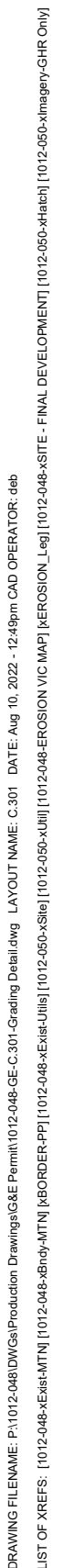












EXISTING STORM SEWER

EXISTING STORM SEWER  
PROPOSED STORM SEWER

PROPOSED CULVERT W/ OUTLET PROTECTION

FUTURE CULVERT W/ OUTLET PROTECTION  
(SEE NOTE 6)

PROPOSED STORM INLET (CURB & AREA)  
PROPOSED MAJOR CONTOUR  
PROPOSED MINOR CONTOUR  
EXISTING MAJOR CONTOUR  
EXISTING MINOR CONTOUR

PROPOSED SWALE W/ DITCH CHECKS

PROPERTY BOUNDARY  
PROPOSED LOT LINE  
EXISTING RIGHT OF WAY

PROPOSED SPOT ELEVATION

EXISTING SPOT ELEVATION

PROPOSED OVERLAND FLOW DIRECTION W/SLOPE

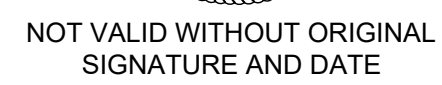
PROPOSED CHANNELIZED FLOW DIRECTION W/ SLOPE

FLOOD HAZARD LIMITS

30-FT WATER BODY SETBACK

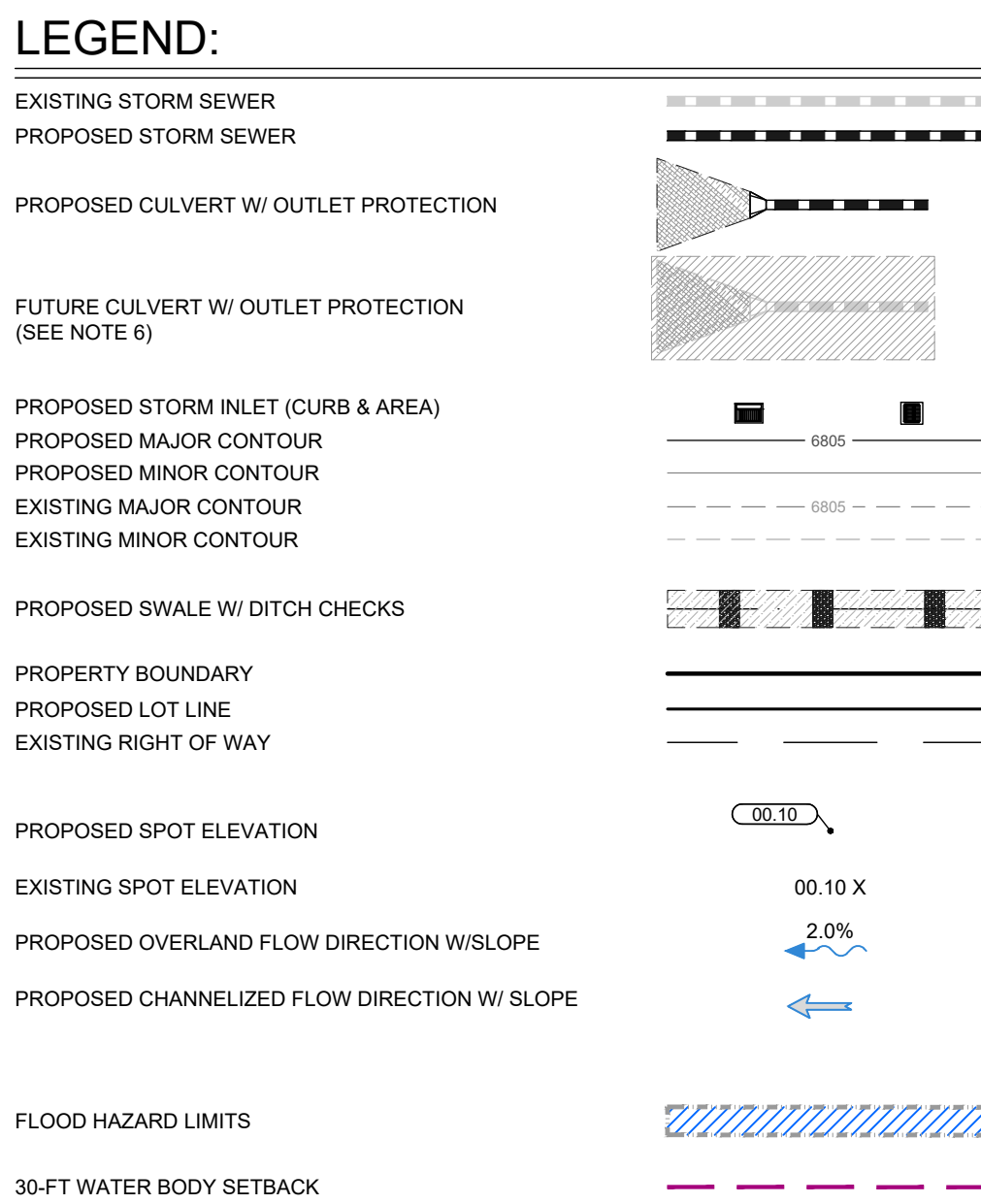
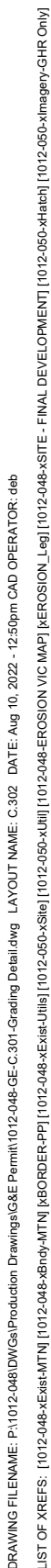
1. THE SIZE, TYPE, AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK. BEFORE COMMENCING NEW CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL BE RESPONSIBLE FOR ALL UNKNOWN UNDERGROUND UTILITIES.
2. ALL PROJECT DATA IS ON VERTICAL DATUM: NAVD 88. SEE NOTES SHEET FOR BENCHMARK REFERENCES.
3. ELEVATIONS FOR IMPROVEMENTS THAT ARE CONTROLLED BY ADJACENT EXISTING FACILITIES (SUCH AS PROPOSED GUTTERS ALONG EXISTING ASPHALT) MAY REQUIRE ADJUSTMENT BASED ON ACTUAL CONDITIONS. COORDINATE WITH ENGINEER TO ENSURE A CONSISTENT SECTION WITH SMOOTH TRANSITIONS WHERE NECESSARY.
4. SEE SOILS REPORT FOR PAVEMENT, SUBGRADE AND MATERIAL PREPARATION, DESIGN AND RECOMMENDATIONS.
5. ALL CURB SPOTS SHOWN ARE FLOWLINE ELEVATIONS, UNLESS NOTED OTHERWISE. ALL OTHER SPOTS ARE FINISHED GRADE ELEVATIONS.
6. FUTURE CULVERTS TO BE INSTALLED ONCE RECEIVING SLOPES HAVE BEEN FULLY STABILIZED.

CALL UTILITY NOTIFICATION CENTER OF



PROJECT:	1012-048	NO.	DATE:	BY:	DESCRIPTION:
DATE:	6/19/2021		6/14/2022	MG	REVISIONS PER DESIGN DEVELOPMENT
CONTACT:	Erk Griepentrog		8/10/2022	DCS	ADDENDUM 2
EMAIL:	erk@gundmark-co.com				





- REVIEW  
FOR  
CODE  
COMPLIANCE  
08/25/20

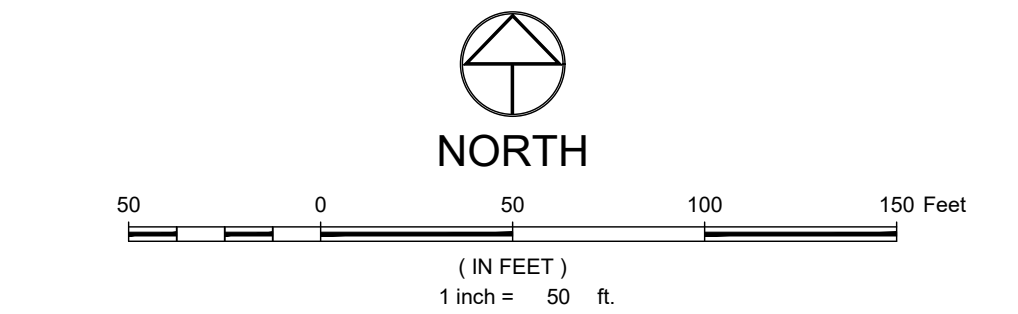
NOT VALID WITHOUT ORIGINAL  
SIGNATURE AND DATE



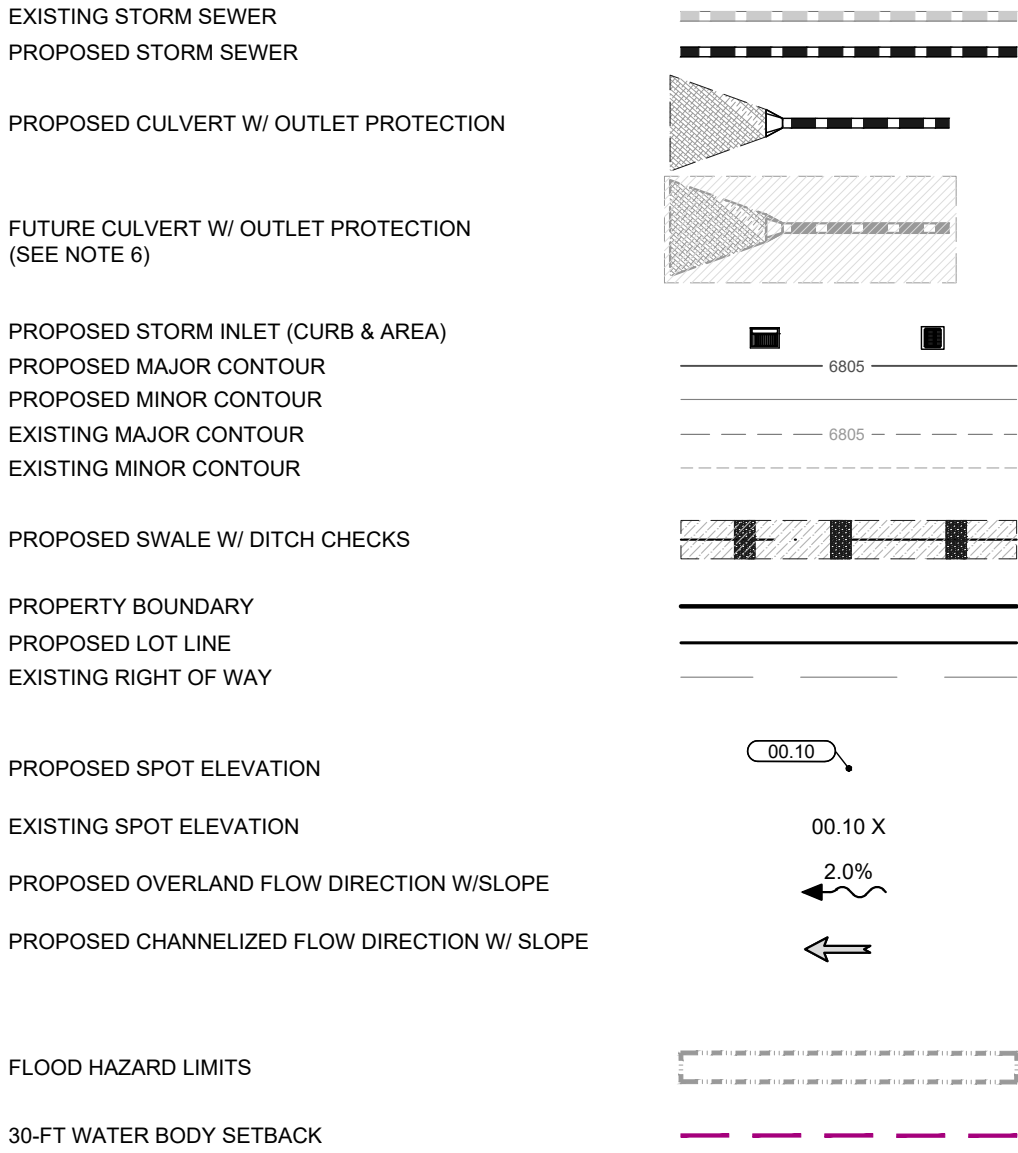




DRAWING FILENAME: P:\11134620\Drawings\Drawings\11134620\11134620-01-01-Roadway Plan and Profile.dwg DATE: Aug 10, 2022 - 1:55 PM CAD OPERATOR: ars  
LIST OF REVISIONS: jacobson\lucy\lucy [11134620-01-01-01-01-01] [11134620-01-01-01-01-01] [11134620-01-01-01-01-01] [11134620-01-01-01-01-01] [11134620-01-01-01-01-01]

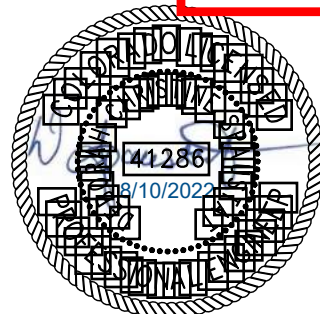
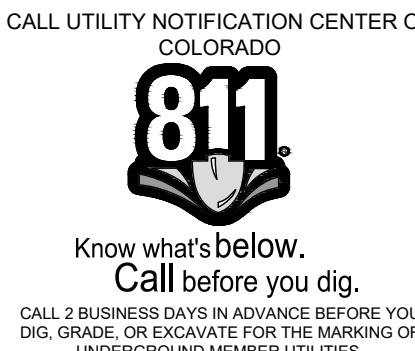


**LEGEND:**



**NOTES:**

1. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK. BEFORE COMMENCING NEW CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL BE RESPONSIBLE FOR ALL UNKNOWN UNDERGROUND UTILITIES.
2. ALL PROJECT DATA IS ON VERTICAL DATUM: NAVD 88. SEE NOTES SHEET FOR BENCHMARK REFERENCES.
3. ELEVATIONS FOR IMPROVEMENTS THAT ARE CONTROLLED BY ADJACENT EXISTING FACILITIES (SUCH AS PROPOSED GUTTERS ALONG EXISTING ASPHALT) MAY REQUIRE ADJUSTMENT BASED ON ACTUAL CONDITIONS. COORDINATE WITH ENGINEER TO ENSURE A CONSISTENT SECTION WITH SMOOTH TRANSITIONS WHERE NECESSARY.
4. SEE SOILS REPORT FOR PAVEMENT, SUBGRADE AND MATERIAL PREPARATION, DESIGN AND RECOMMENDATIONS.
5. ALL CURB SPOTS SHOWN ARE FLOWLINE ELEVATIONS, UNLESS NOTED OTHERWISE. ALL OTHER SPOTS ARE FINISHED GRADE ELEVATIONS.
6. FUTURE CULVERTS TO BE INSTALLED ONCE RECEIVING SLOPES HAVE BEEN FULLY STABILIZED



NOT VALID WITHOUT ORIGINAL SIGNATURE AND DATE

CIVIL ENGINEERS | SURVEYORS  
141 9th Street -- P.O. Box 774943  
Steamboat, Colorado 80477  
(970) 871-9393  
www.LANDMARK-co.com



These drawings are prepared by the staff of Landmark Consultants, Inc. and are not to be used for construction or contracting unless signed and sealed by a professional engineer or surveyor employed by Landmark Consultants, Inc.

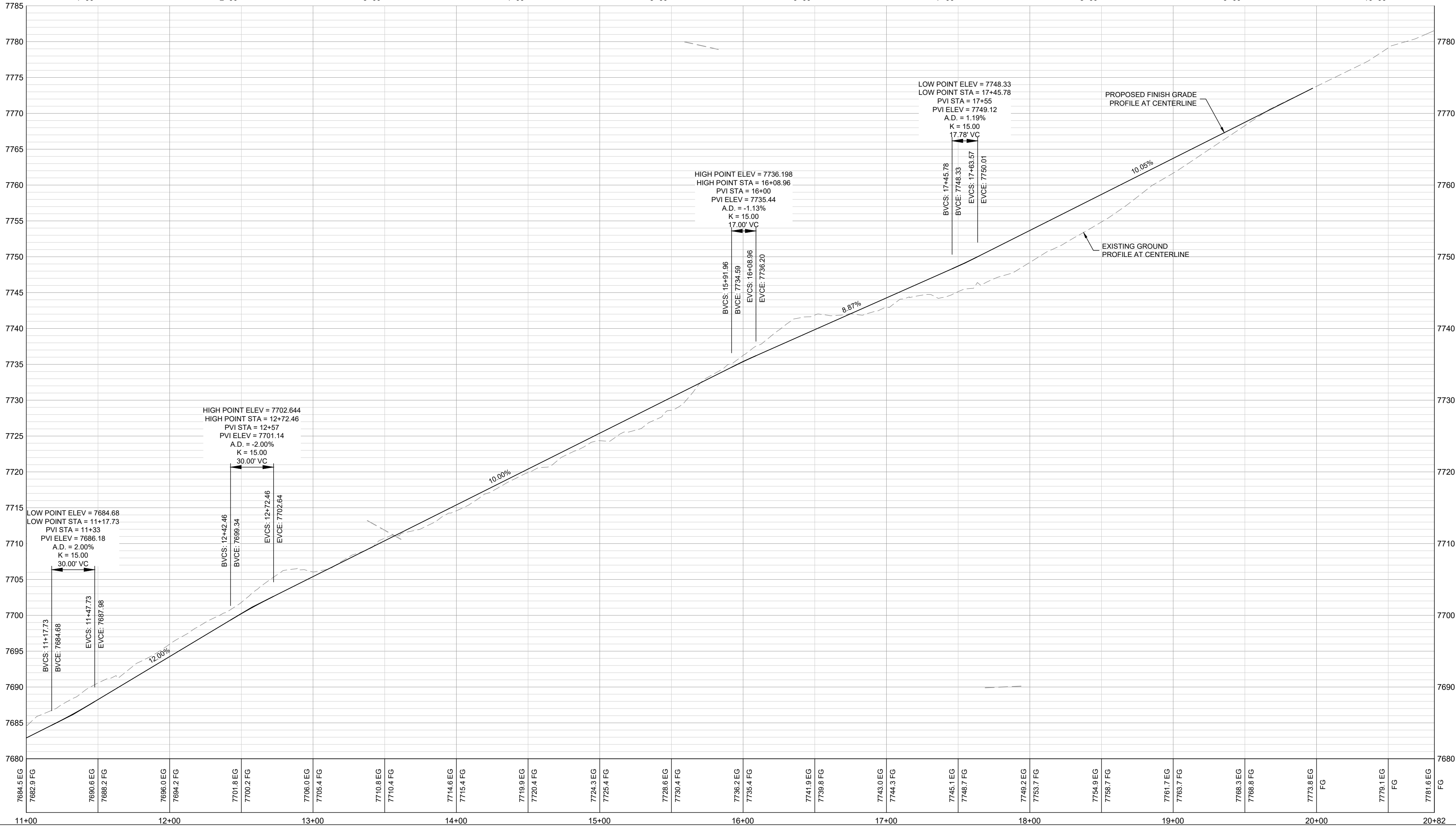
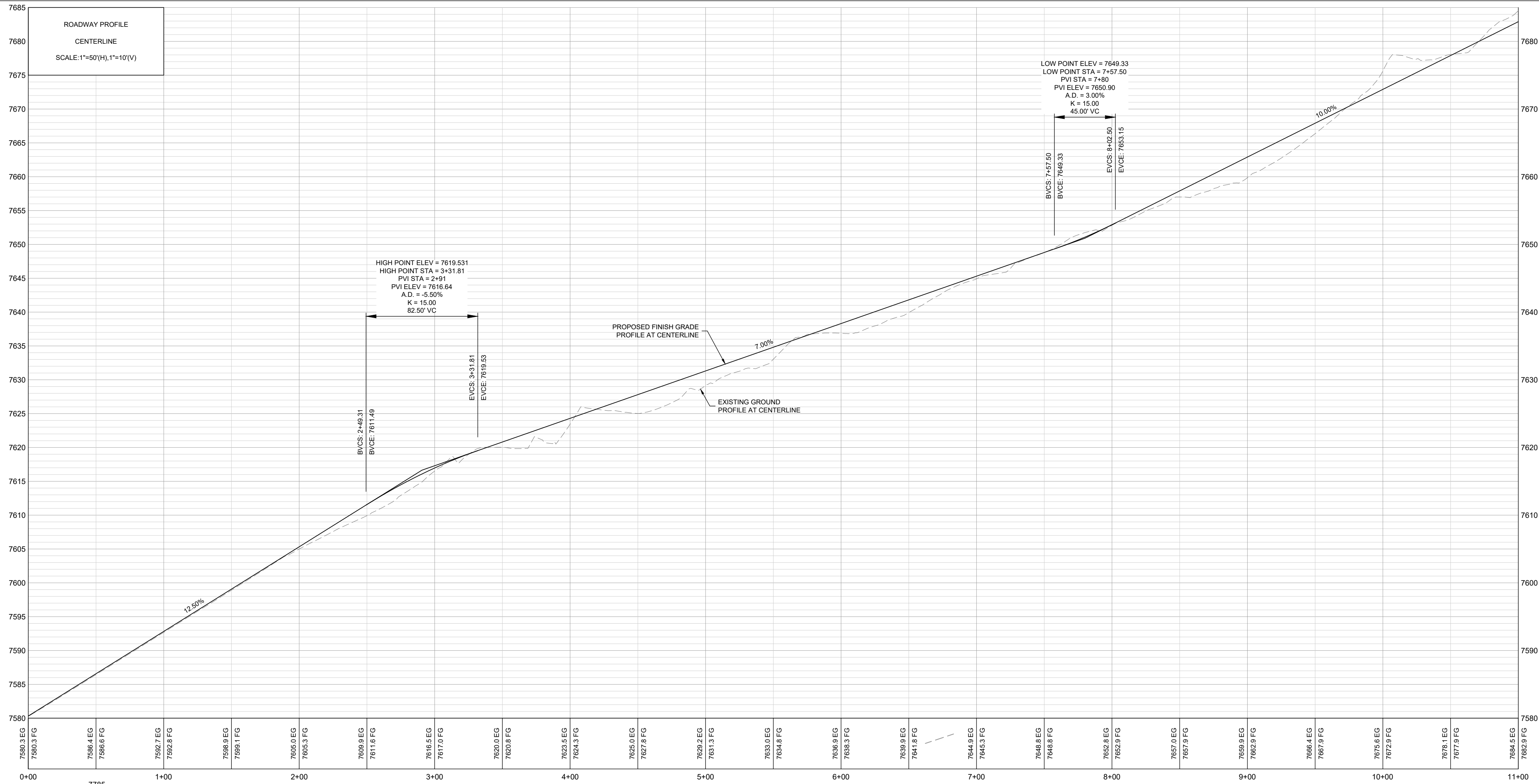
NO.	DATE:	BY:	DESCRIPTION:
1	6/14/2022	NG	REVISIONS PER DESIGN DEVELOPMENT
2	8/10/2022	DCS	ADDENDUM 2
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			
64			
65			
66			
67			
68			
69			
70			
71			
72			
73			
74			
75			
76			
77			
78			
79			
80			
81			
82			
83			
84			
85			
86			
87			
88			
89			
90			
91			
92			
93			
94			
95			
96			
97			
98			
99			
100			

GREEN HORN RANCH  
Roadway Plan  
Boulevard

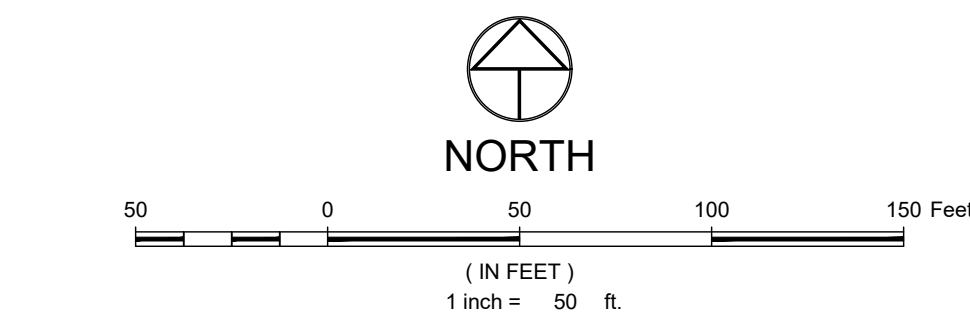
SHEET  
C.410



DRAWING FILENAME: P:\1134620\Drawings\Drawings\1134620\1134620-01-01-Roadway Profile and Profile View.dwg DATE: Aug 10, 2022 - 1:55 PM CAD OPERATOR: aas  
LIST OF REVISIONS: (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z) (aa) (ab) (ac) (ad) (ae) (af) (ag) (ah) (ai) (aj) (ak) (al) (am) (an) (ao) (ap) (aq) (ar) (as) (at) (au) (av) (aw) (ax) (ay) (az) (ba) (bb) (bc) (bd) (be) (bf) (bg) (bh) (bi) (bj) (bk) (bl) (bm) (bn) (bo) (bp) (bq) (br) (bs) (bt) (bu) (bv) (bw) (bx) (by) (bz) (ca) (cb) (cc) (cd) (ce) (cf) (cg) (ch) (ci) (cj) (ck) (cl) (cm) (cn) (co) (cp) (cq) (cr) (cs) (ct) (cu) (cv) (cw) (cx) (cy) (cz) (da) (db) (dc) (dd) (de) (df) (dg) (dh) (di) (dj) (dk) (dl) (dm) (dn) (do) (dp) (dq) (dr) (ds) (dt) (du) (dv) (dw) (dx) (dy) (dz) (ea) (eb) (ec) (ed) (ee) (ef) (eg) (eh) (ei) (ej) (ek) (el) (em) (en) (eo) (ep) (eq) (er) (es) (et) (eu) (ev) (ew) (ex) (ey) (ez) (fa) (fb) (fc) (fd) (fe) (ff) (fg) (fh) (fi) (fj) (fk) (fl) (fm) (fn) (fo) (fp) (fq) (fr) (fs) (ft) (fu) (fv) (fw) (fx) (fy) (fz) (ga) (gb) (gc) (gd) (ge) (gf) (gg) (gh) (gi) (gj) (gk) (gl) (gm) (gn) (go) (gp) (gq) (gr) (gs) (gt) (gu) (gv) (gw) (gx) (gy) (gz) (ha) (hb) (hc) (hd) (he) (hf) (hg) (hh) (hi) (hj) (hk) (hl) (hm) (hn) (ho) (hp) (hq) (hr) (hs) (ht) (hu) (hv) (hw) (hx) (hy) (hz) (ia) (ib) (ic) (id) (ie) (if) (ig) (ih) (ii) (ij) (ik) (il) (im) (in) (io) (ip) (iq) (ir) (is) (it) (iu) (iv) (iw) (ix) (iy) (iz) (ja) (jb) (jc) (jd) (je) (jf) (jg) (jh) (ji) (jj) (jk) (jl) (jm) (jn) (jo) (jp) (jq) (jr) (js) (jt) (ju) (jv) (jw) (jx) (jy) (jz) (ka) (kb) (kc) (kd) (ke) (kf) (kg) (kh) (ki) (kj) (kk) (kl) (km) (kn) (ko) (kp) (kq) (kr) (ks) (kt) (ku) (kv) (kw) (kx) (ky) (kz) (la) (lb) (lc) (ld) (le) (lf) (lg) (lh) (li) (lj) (lk) (ll) (lm) (ln) (lo) (lp) (lq) (lr) (ls) (lt) (lu) (lv) (lw) (lx) (ly) (lz) (ma) (mb) (mc) (md) (me) (mf) (mg) (mh) (mi) (mj) (mk) (ml) (mm) (mn) (mo) (mp) (mq) (mr) (ms) (mt) (mu) (mv) (mw) (mx) (my) (mz) (na) (nb) (nc) (nd) (ne) (nf) (ng) (nh) (ni) (nj) (nk) (nl) (nm) (nn) (no) (np) (np) (nr) (ns) (nt) (nu) (nv) (nw) (nx) (ny) (nz) (oa) (ob) (oc) (od) (oe) (of) (og) (oh) (oi) (oj) (ok) (ol) (om) (on) (oo) (op) (oq) (or) (os) (ot) (ou) (ov) (ow) (ox) (oy) (oz) (pa) (pb) (pc) (pd) (pe) (pf) (pg) (ph) (pi) (pj) (pk) (pl) (pm) (pn) (po) (pp) (pq) (pr) (ps) (pt) (pu) (pv) (pw) (px) (py) (pz) (qa) (qb) (qc) (qd) (qe) (qf) (qg) (qh) (qi) (qj) (qk) (ql) (qm) (qn) (qo) (qp) (qq) (qr) (qs) (qt) (qu) (qv) (qw) (qx) (qy) (qz) (ra) (rb) (rc) (rd) (re) (rf) (rg) (rh) (ri) (rj) (rk) (rl) (rm) (rn) (ro) (rp) (rq) (rr) (rs) (rt) (ru) (rv) (rw) (rx) (ry) (rz) (sa) (sb) (sc) (sd) (se) (sf) (sg) (sh) (si) (sj) (sk) (sl) (sm) (sn) (so) (sp) (sq) (sr) (ss) (st) (su) (sv) (sw) (sx) (sy) (sz) (ta) (tb) (tc) (td) (te) (tf) (tg) (th) (ti) (tj) (tk) (tl) (tm) (tn) (to) (tp) (tq) (tr) (ts) (tt) (tu) (tv) (tw) (tx) (ty) (tz) (ua) (ub) (uc) (ud) (ue) (uf) (ug) (uh) (ui) (uj) (uk) (ul) (um) (un) (uo) (up) (uq) (ur) (us) (ut) (uu) (uv) (uw) (ux) (uy) (uz) (va) (vb) (vc) (vd) (ve) (vf) (vg) (vh) (vi) (vj) (vk) (vl) (vm) (vn) (vo) (vp) (vq) (vr) (vs) (vt) (vu) (vv) (vw) (vx) (vy) (vz) (wa) (wb) (wc) (wd) (we) (wf) (wg) (wh) (wi) (wj) (wk) (wl) (wm) (wn) (wo) (wp) (wq) (wr) (ws) (wt) (wu) (wv) (ww) (wx) (wy) (wz) (xa) (xb) (xc) (xd) (xe) (xf) (xg) (xh) (xi) (xj) (xk) (xl) (xm) (xn) (xo) (xp) (xq) (xr) (xs) (xt) (xu) (xv) (xw) (xx) (xy) (xz) (ya) (yb) (yc) (yd) (ye) (yf) (yg) (yh) (yi) (yj) (yk) (yl) (ym) (yn) (yo) (yp) (yq) (yr) (ys) (yt) (yu) (yv) (yw) (yx) (yy) (yz) (za) (zb) (zc) (zd) (ze) (zf) (zg) (zh) (zi) (zj) (zk) (zl) (zm) (zn) (zo) (zp) (zq) (zr) (zs) (zt) (zu) (zv) (zw) (zx) (zy) (zz)



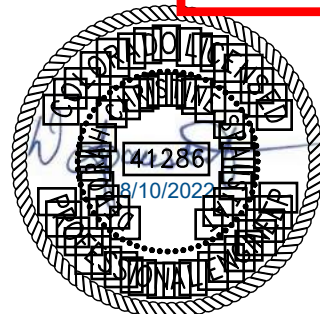




EXISTING GRADE \_\_\_\_\_

PROPOSED FINISHED GRADE \_\_\_\_\_

- CALL UTILITY NOTIFICATION CENTER OF  
COLORADO
- 811**
- Know what's below.  
Call before you dig.
- CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU  
DIG, GRADE, OR EXCAVATE FOR THE MARKING OF  
UNDERGROUND MEMBER UTILITIES.



NOT VALID WITHOUT ORIGINAL  
SIGNATURE AND DATE

GREEN HORN RANCH  
Roadway Cross-Sections  
Boulevard

SHEET

412

CIVIL ENGINEERS | SURVEYORS

141 9th Street ~ P.O. Box 774943  
Steamboat Springs, Colorado 80477  
(970) 871-9494  
[www.LANDMARK-CO.com](http://www.LANDMARK-CO.com)



These drawings are instruments of service provided by Landmark Consultants, Inc. and are not to be used for any type of construction or contracting unless signed and sealed by a Professional Engineer in the employ of Landmark Consultants, Inc.

NO.	DATE:	BY:	DESCRIPTION:
	6/14/2022	MG	REVISIONS PER DESIGN DEVELOPMENT
	8/10/2022	DCS	ADDENDUM 2

PROJECT:	1012-048
DATE:	6/18/2021
CONTACT:	Erk Griepentrog
EMAIL:	erikg@landmark-co.com

[illegible]



The diagram illustrates a square manhole structure with a circular opening. Key dimensions and components are labeled:

- Dimensions:**
  - SPAN:** The width of the square structure.
  - RISE:** The height of the square structure.
  - BACKFILL TO FINISHED GRADE:** The area above the structure.
  - 12" RISE:** A specific vertical dimension on the left side.
  - D:** The diameter of the circular opening.
- Construction Details:**
  - COMPACTED GRANULAR BEDDING:** The material supporting the structure.
  - Clearance:** The space between the structure and the bedding.

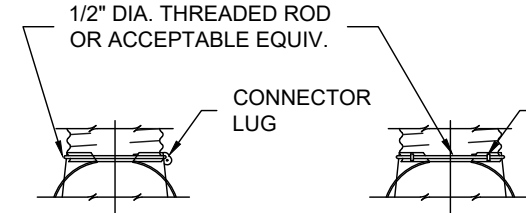
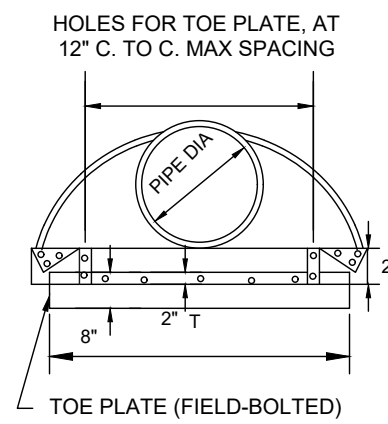
1. ADEQUATE COVER SHALL BE PROVIDED DURING CONSTRUCTION TO PROTECT THE STRUCTURE FROM DAMAGE.
2. PIPE SHALL BE PLACED WITH LONGITUDINAL SEAMS AT THE SIDES OR QUARTER POINTS BUT NOT ALONG TOP OF VERTICAL AXIS.
3. STRUCTURAL PLATE PIPE SHALL BE EQUAL OR GREATER CAPACITY THAN SPECIFICATIONS, MATCHED WITH PERMISSION OF THE ENGINEER.
4. WHEN A CULVERT IS TO BE EXCHANGED WITH PIPE OF A DIFFERENT MATERIAL, THE CONNECTION SHALL CONFORM TO THE DETAILS ON PLANS OR BE APPROVED.
5. EXTERIOR JOINTS SHALL BE HIGH QUALITY JOINTS WITH PROPER GASKETS AND RISE DIMENSIONS SHALL BE THE SAME AS THE CULVERT TO BE EXTENDED.
6. MINIMUM COVER FOR METAL OR PLASTIC PIPE IS THE DISTANCE FROM THE TOP OF THE PIPE TO THE TOP OF RIGID PAVEMENT OR TO THE SUBGRADE FOR FLEXIBLE PAVEMENT.
7. ALL FOUNDATION, BEDDING AND BACKFILL SHALL BE COMPACTED TO NO LESS THAN 90% DENSITY AND WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT OF THE MODIFIED PROCTOR.
8. THE DITCH MINIMUM COVER SHALL BE REQUIRED TO BE MAINTAINED UNDER SAME CONDITIONS.
9. LENGTHS ARE MEASURED HORIZONTALLY FROM END OF SECTION TO END OF SECTION OR CENTER OF MANHOLE.

STORM PIPE TRENCH DETAIL

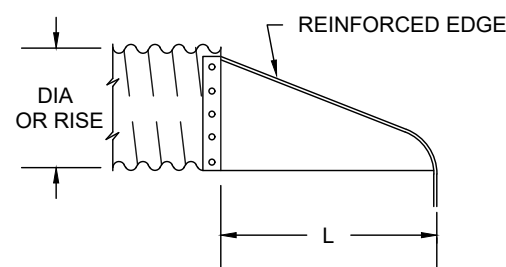
---

N T S

Diagram illustrating the geometry of a parabolic arch. The plan view shows a horizontal span divided into three equal parts of length  $A$ , with a central width  $W$ . The elevation view shows a parabolic arch with a total height  $L$ , a central width  $B$ , and a top diameter or span. A horizontal and vertical control point is marked at the base of the central width  $W$ .



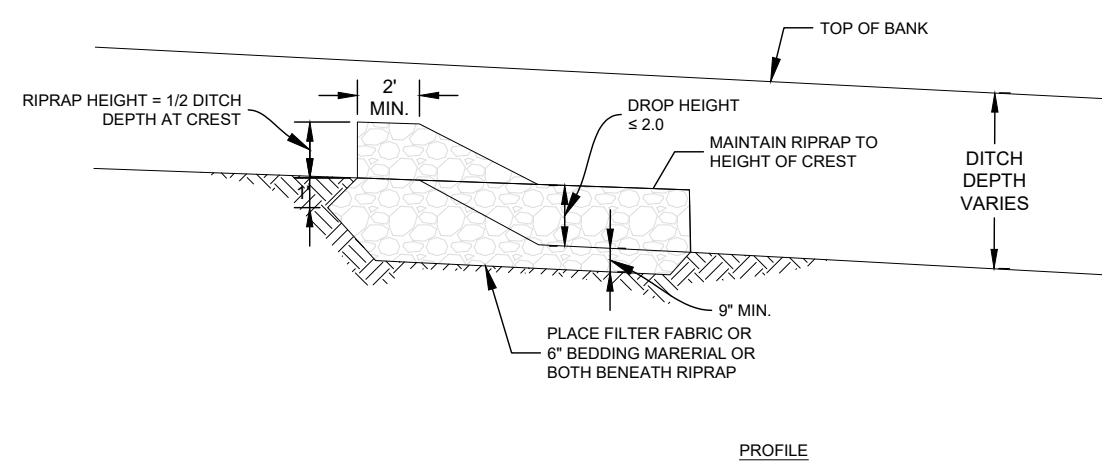
FOR 18 IN. THRU 24 IN. ROUND PIPE WITH ANNULAR CORRUGATIONS. NOT TO BE USED ON HELICALLY FORMED PIPE UNLESS RECORRUGATED	FOR 30 IN. THRU 36 IN. ROUND PIPE WITH ANNULAR CORRUGATIONS. NOT TO BE USED ON HELICALLY-FORMED PIPE UNLESS RECORRUGATED.
---	---



END SECTION AND CONNECTION DETAILS FOR THIN WALL PIPE CULVERTS

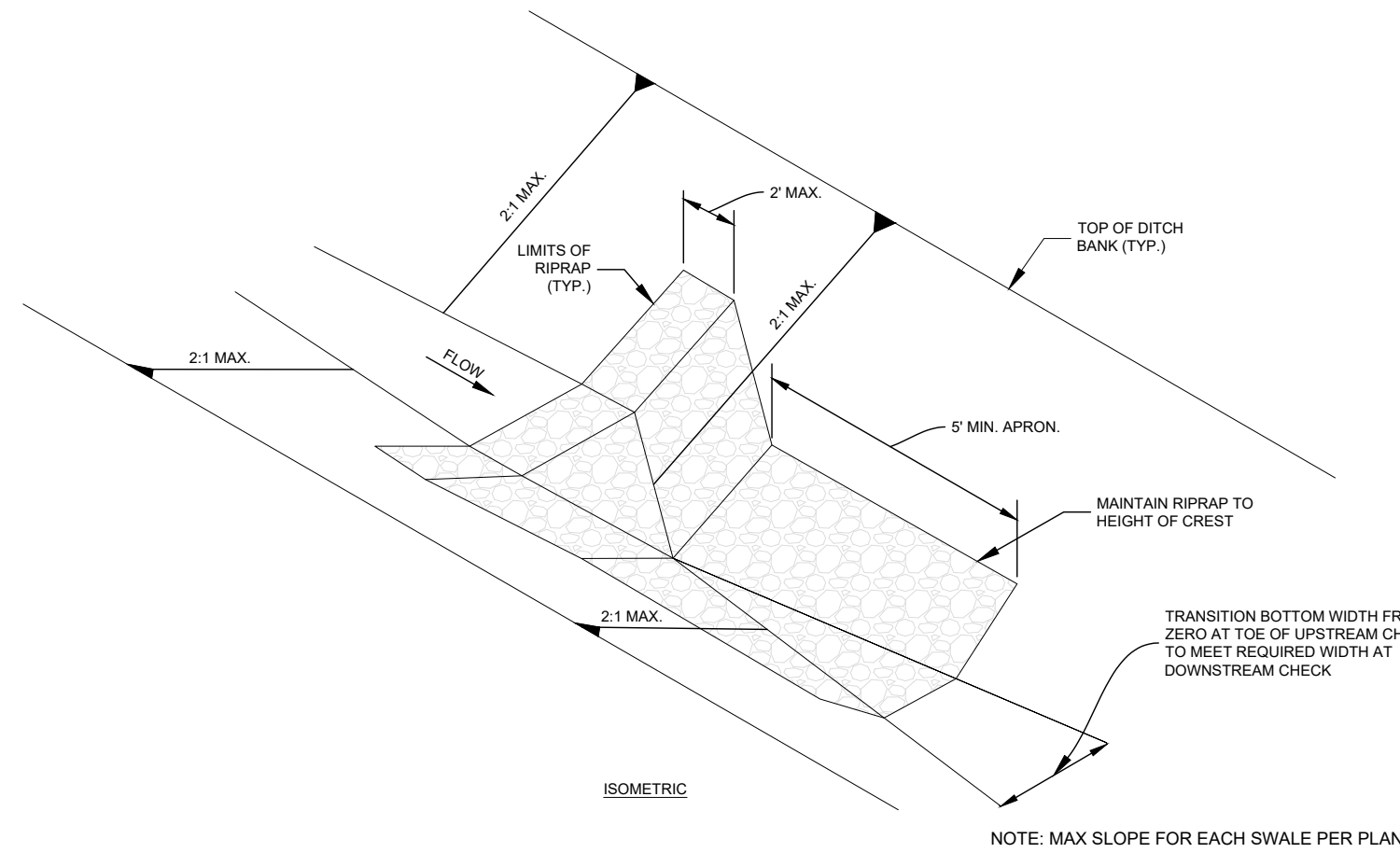
1. DIMENSIONS OF END SECTIONS MAY VARY SLIGHTLY FROM THOSE SHOWN ON THE TABLES DUE TO DIFFERENT MANUFACTURER'S VARIATIONS.
2. END SECTIONS FOR CMP ARCH CULVERT SHALL MATCH THE DIMENSIONS OF THE CULVERT SHOWN ON THE PLANS.
3. GALVANIZED TIE PLATE, AS SHOWN, REQUIRED ON END SECTIONS FOR ALL THIN WALL PIPE AND SHALL BE THE SAME THICKNESS AS END SECTIONS. TIE PLATE SHALL BE FIELD-BOLTED TO END SECTION WITH 3/8" GALVANIZED BOLTS, NUTS AND WASHERS.
4. GALVANIZED STEEL SHALL BE IN CONFORMANCE WITH AASHTO M 111, M 218 OR M 232

FLARED END SECTION



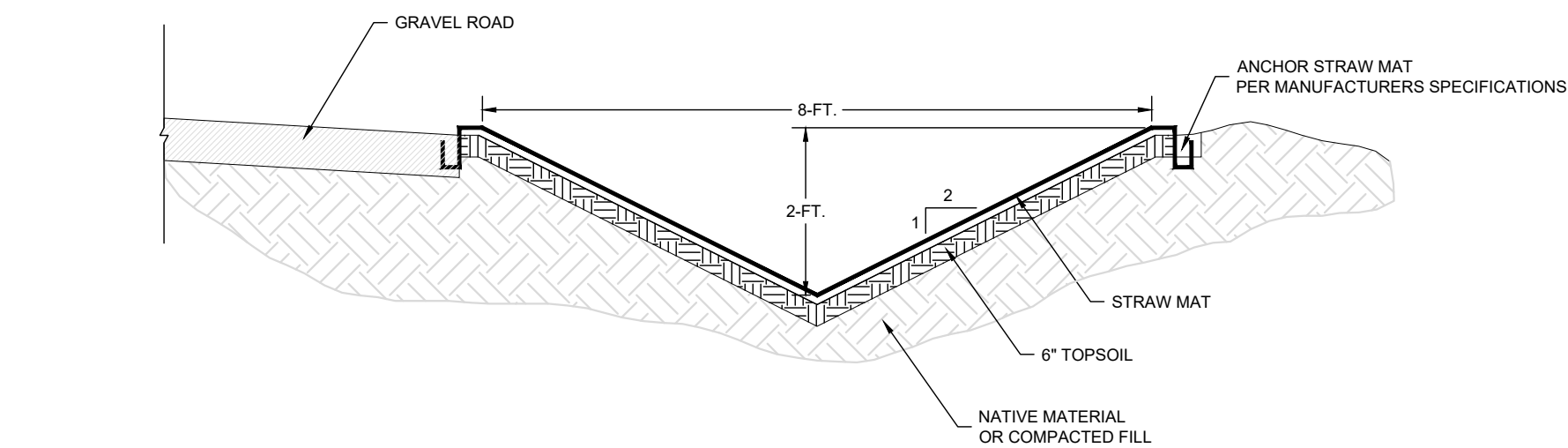
1. RIPRAP SHALL BE CRUSHED, ANGULAR, WASHED ROCK HAVING THE SMALLEST DIMENSIONS AT LEAST 3" AND A LARGEST DIMENSION NO MORE THAN 12" UNLESS OTHERWISE SPECIFIED AND APPROVED. INCREASE ROCK SIZE BY 25% IF ROUNDED ROCK MUST BE USED.
2. RIPRAP SHALL HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
3. FILTER FABRIC AND BEDDING SHALL MEET THE REQUIREMENTS F THE CITY'S STANDARD SPECIFICATIONS.
4. INSTALLATION SHALL BE PER THE CITY'S STANDARD SPECIFICATIONS.

## PROFILE



CK TYPICAL DETAIL  
N.T.S

ROADSIDE SWALE TYPICAL SECTION  
N.T.S



ROADSIDE SWALE TYPICAL SECTION  
N.T.S

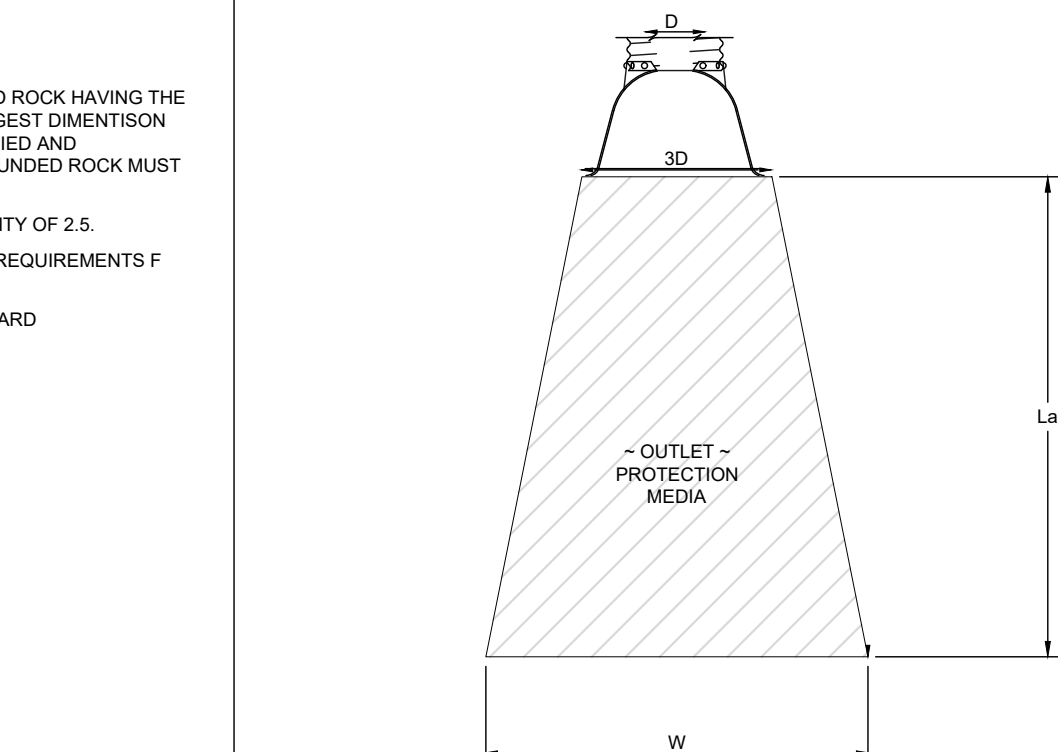
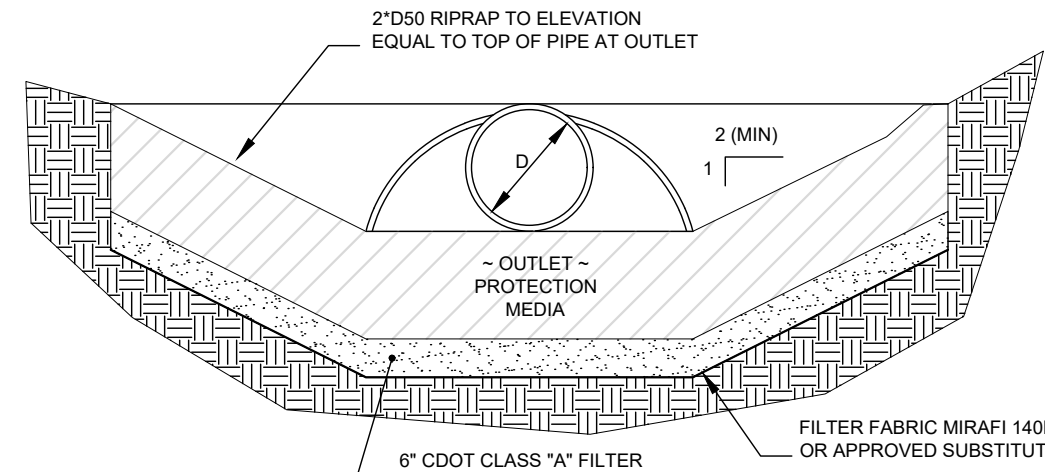


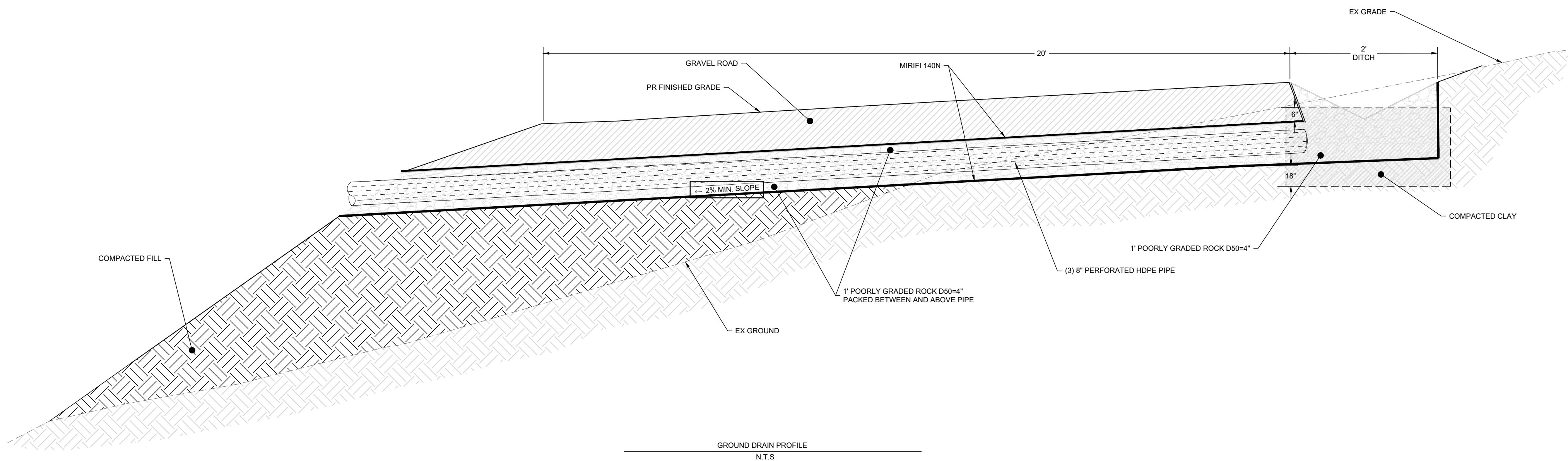
Diagram illustrating the outlet protection dimensions for a culvert. The culvert has a width  $W$  and a height  $H$ . The outlet is protected by a structure with a width  $w$  and a height  $La$ . The outlet is labeled "OUTLET PROTECTION DIMENSIONS". The outlet is also labeled "2'D50 RIPRAP TO ELEVATION EQUAL TO TOP OF PIPE AT OUTLET".

1. A 4-INCH LAYER OF SAND MAY BE USED IN PLACE OF THE FILTER FABRIC
2. OUTLET PROTECTION MEDIA SHALL BE ANGULAR RIPRAP D50= 8".
3. IF ROUNDED COBBLE IS USED INCREASE D50 TO 10".
4. ALTERNATIVE MEDIA SUCH AS BRUSH BERMS AND BOULDERS MAY BE USED WITH ENGINEER AND USFS APPROVAL.

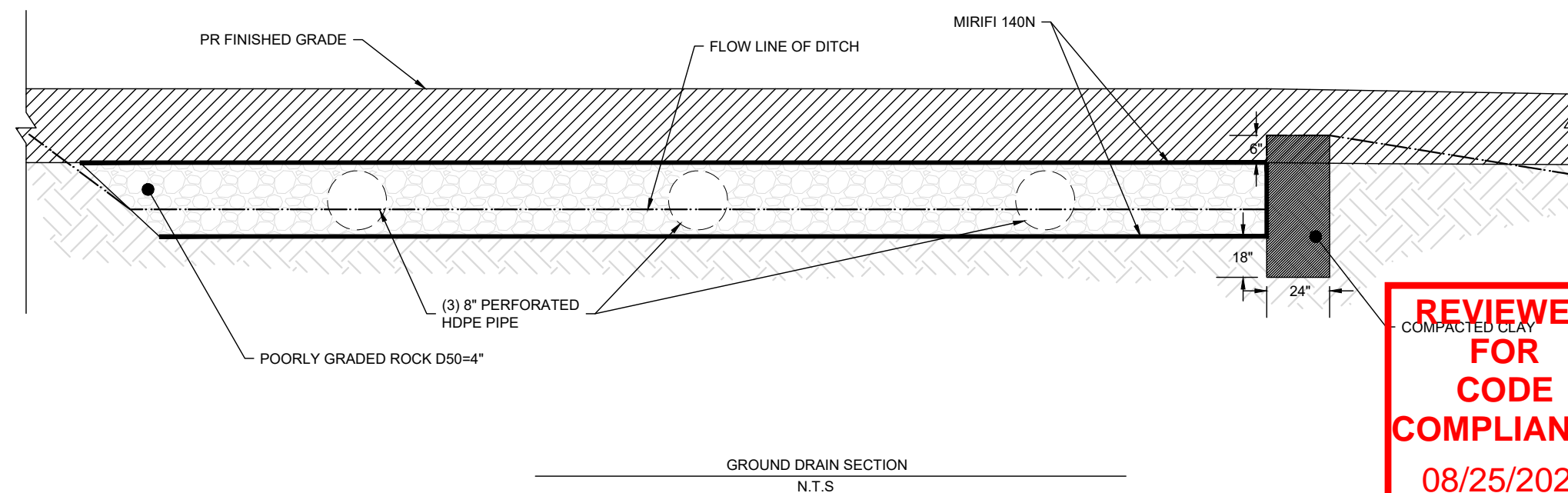
OUTLET PROTECTION
N.T.S



OUTLET PROTECTION
N.T.S




DRAIN PROFILE  
N.T.S



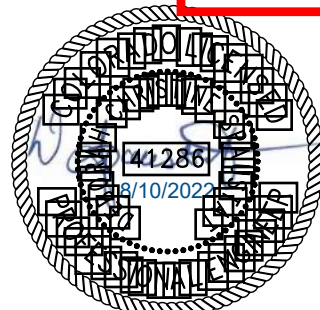
GROUND DRAIN SECTION  
N.T.S

CALL UTILITY NOTIFICATION CENTER OF  
COLORADO



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

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



NOT VALID WITHOUT ORIGINAL  
SIGNATURE AND DATE

These drawings are instruments of service provided by Landmark Consultants, Inc. and are not to be used for any type of construction or contracting unless signed and sealed by a Professional Engineer in the employ of Landmark Consultants, Inc.

NO.	DATE:	BY:	DESCRIPTION:
	6/14/2022	MG	REVISIONS PER DESIGN DEVELOPMENT
	8/10/2022	DCS	ADDENDUM 2

PROJECT:	1012-048
DATE:	6/18/2021
CONTACT:	Erk Griepentrog
EMAIL:	erikg@landmark-co.com

## Details

00