

COTTONWOOD HEIGHTS CITY ADMINISTRATIVE HEARING AGENDA

August 2nd, 2023



Notice is hereby given that the **Cottonwood Heights Hearing Officer** will convene on **Wednesday August 2nd**, at **Cottonwood Heights City Hall** (2277 E. Bengal Blvd., Cottonwood Heights, UT 84121) for an **Administrative Hearing Meeting**.

The meeting will begin at **12:00 p.m.** in the City Hall Room 5 (Council Chambers).

12:00 p.m. ADMINISTRATIVE HEARING MEETING

1.0 Business Items

1.1 Project CUP-23-010

Request from Vizion Construction and Landscape, LLC for conditional use approval to construct an eight-foot retaining wall along the west property line at 7834 S. Danish Pine Ln.

1.2 Project CUP-23-011

~~Request from Wes Jones for conditional use approval of construct a ten-foot fence along the northeast property line at 2199 E. Farm Brook Way~~ **(Withdrawn by the homeowner)**

2.0 Consent Agenda

2.1 Approval of Administrative Hearing Meeting Minutes from August 2nd, 2023

(The Administrative Hearing Officer will approve the minutes of the August 2nd, 2023 meeting after the following process is met. The City Recorder will prepare the minutes and email them to the Hearing Officer. The Hearing Officer will have five days to review the minutes and provide any changes to the Recorder. If, after five days there are no changes, the minutes will stand approved. If there are changes, the process will be followed until the changes are made and the hearing officer is in agreement, at which time the minutes shall be deemed approved.)

3.0 Adjourn

Meeting Procedures

Items will generally be considered in the following order:

1. Staff Presentation
2. Applicant Presentation
3. Open Public Hearing (if item has been noticed for public hearing). Each speaker during the public hearing will be limited to three minutes.
4. Close Public Hearing
5. Administrative Hearing Officer Deliberation
6. Administrative Hearing Officer Decision

Administrative Hearing applications may be tabled if: 1) Additional information is needed in order to act on the item; OR 2) The Hearing Officer feels there are unresolved issues that may need further attention before the Officer is ready to make a decision. The Hearing Officer may carry over agenda items to the next regularly scheduled meeting.

Submission of Written Public Comment

Written comments on any agenda item should be received by the Cottonwood Heights Community and Economic Development Department no later than 12:00 p.m. MDT on Monday, August 1st, 2023, a day before the meeting. Comments should be emailed to Planning@ch.utah.gov. After the public hearing has been closed, the Community and Economic Development Department will not accept any additional written or verbal comments on the application.

Notice of Compliance with the Americans with Disabilities Act (ADA)

In compliance with the Americans with Disabilities Act, individuals needing special accommodations or assistance during this meeting shall notify the City Recorder at (801) 944-7021 at least 24 hours prior to the meeting. TDD number is (801) 270-2425 or call Relay Utah at #711.

Confirmation of Public Notice

On Friday, July 28th, 2023, a copy of the foregoing notice was posted in conspicuous view in the front foyer of the Cottonwood Heights City Offices. The agenda was also posted on the City's website at www.cottonwoodheights.utah.gov and the Utah public notice website at <http://pmn.utah.gov>.

DATED THIS 28th DAY OF July, 2023

Attest: Paula Melgar, City Recorder

COTTONWOOD HEIGHTS CITY ARCHITECTURAL REVIEW COMMISSION STAFF REPORT



August 2nd, 2023

Summary

Project #:

CUP-23-010

Subject Property:

7834 S. Danish Pine Ln.

Action Requested:

Conditional Use Wall Height
Extension

Owner:

Kevin Hughes

Applicant:

Vizion Construction and
Landscape, LLC

Recommendation:

Approve, with conditions



This aerial image shows the subject property in context of the neighborhood. The blue line shows the location of the proposed wall height extension. Red lines show the other property lines of the home.

APPLICANT'S PROPOSAL

The applicant proposes the construction of an eight-foot retaining wall along the west and a portion of the north property line. The eight-foot retaining wall is requested because the applicant's lot slopes down from the foundation to the property line. The elevation change is eight feet in height over a width of twenty-five feet. The owner desires to create a level space in the backyard for family activities. This retaining wall, standing at a height of eight feet, further enhances and creates some family activities space in the backyard.



Existing Fence

- No fence and retaining wall



Proposed Retaining Wall

- Eight feet of retaining wall
- The proposed retaining wall will change the backyard grading and creates some family activities space.

BACKGROUND

Zoning

The zoning designation of the property is R-1-10 (Residential Single-Family). Fences and walls may be allowed to a maximum height of eight feet in any zone as a conditional use, and up to 12 feet as a conditional use with neighbor consent, as outlined in section 19.76.050.E CH Code.

As this proposal is requesting eight feet, consent was not required.

Conditional use. Fences in the side and rear yards may be erected to a maximum height of eight feet as a conditional use upon a clear and convincing showing by the property owner in accordance with subsections (a) and (b) below:

- a. The existence of unique or special circumstances of a natural, material and adverse nature relating to the property that will be substantially minimized or eliminated by the increased height of the requested fence; and
- b. That erection of such a fence is the most reasonable solution under the circumstances. Any such conditional use permit may be granted by the director or his designee following an administrative hearing preceded by all required notifications. A building permit shall be required for all fences approved as a conditional use.

Neighbor consent. Side and rear yard fences may exceed eight feet in height to a maximum height of 12 feet in cases where the applicant has neighbor consent, and has received conditional use approval in accordance with subsection 19.76.050(E)(3).

IMPACT ANALYSIS

Staff Analysis: Staff finds the increased wall height proposed by this application to be reasonable to create some usable space for family activities. Staff recommends a condition of approval that the applicant needs to finish the impacted drainage system permit application process and record it with Salt Lake County.

Noticing

Property owners within 300 feet of the subject property have been mailed notices. Notices were mailed, as well as posted on noticing websites and the City Hall bulletin board, on July 20th, 2023.

Conditional Use Permit Determining Criteria

Staff has found enough evidence that the standards for the issuance of a conditional use permit have been satisfied (see Section 19.84.080 CH Code).

FINDINGS FOR APPROVAL

1. There is clear and convincing evidence shown by the property owner relating to privacy will be substantially minimized or eliminated by the implementation of the requested wall and fence combination; (19.76.050.E.1.e)
2. That construction of such wall and fence is the most reasonable solution under the circumstances. The additional fence height is necessary to ensure mitigation of aforementioned issues.
3. The conditional use permit is granted by the director or his designee following an administrative hearing preceded by all required notifications. (19.76.050.E.1.b)
4. The evidence presented with the proposed conditional use has been found to be compliant with the requirements of section 19.84.080 (Conditional Uses – Determination) and section 19.76.050.E (Miscellaneous – Fences).
5. There is sufficient evidence that the standards for the issuance of a conditional use permit as outlined in Section 19.84.080 CH Code have been satisfied.

RECOMMENDED CONDITIONS OF APPROVAL

1. A building permit and all necessary inspections shall be obtained and completed.
2. The building permit will clearly state materials, design, landscape plan and shall not exceed a total height of eight feet from existing grade.

3. The conditional approval does not include a hot tub and outdoor court lighting or fencing. They need a separate building permit.
4. Applicant needs to finish the impacted drainage system permit application process and record it with Salt Lake County.

Model Motions

Approval

I move to approve item CUP-23-010 pursuant to the conditions of approval outlined in the item's staff report

- Add any additional conditions of approval...

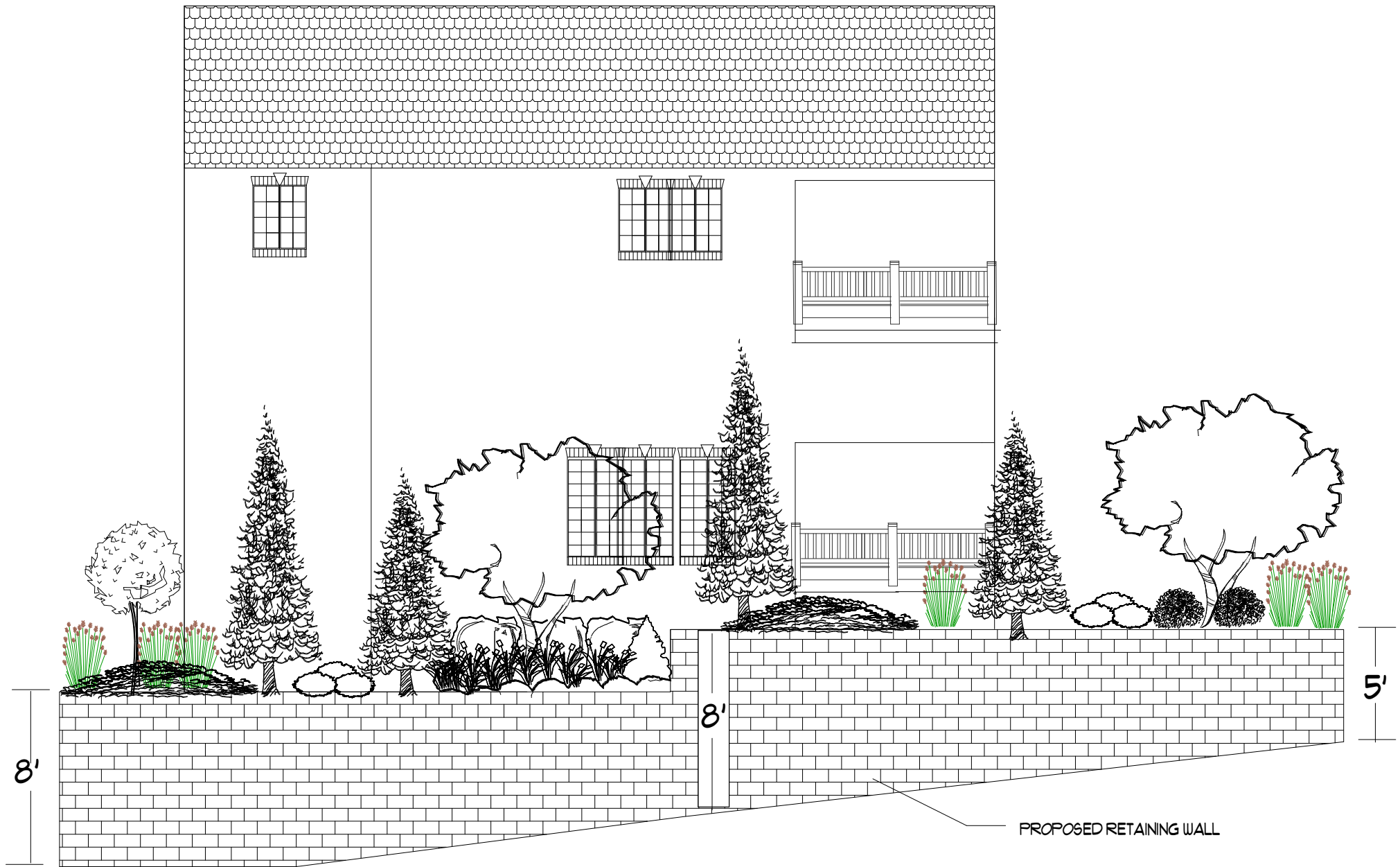
Denial

I move to deny item CUP-23-010 based on the following findings..."

- List reasons for denial...

Attachments

1. Existing conditions
2. Proposed layout
3. Proposed materials



HUGHES RESIDENCE - REAR ELEVATION

7834 SOUTH DANISH PINES LANE

ANCHOR DIAMOND PRO PS MSE RETAINING WALL DESIGN PACKAGE HUGHES RESIDENCE 7834 SOUTH DANISH PINE LANE COTTONWOOD HEIGHTS, UTAH



NOTE: THIS PLAN SET HAS BEEN PREPARED WITH COLOR LINE-TYPES TO MAKE SOME DETAILS AND SPECIFICATIONS MORE CLEAR. ANY COPIES OF THESE PLANS SHOULD BE MADE IN COLOR.

PROJECT AERIAL VIEW
REFERENCE IMAGE FROM GOOGLE EARTH PRO.
IMAGE TAKEN JUNE 14, 2022.

SCALE: 1" = 100'

REV	ADDED PROPERTY LINE	6-7-2023	DIH/B	BMJ
REVISION DESCRIPTION	DATE	BY	CHK	
REVISIONS				



12429 SOUTH 300 EAST
DRAVER, UTAH 84020
(801) 748-4044

ANCHOR DIAMOND PRO PS MSE RETAINING WALL
HUGHES RESIDENCE
7834 SOUTH DANISH PINE LANE
COTTONWOOD HEIGHTS, UTAH

COVER SHEET

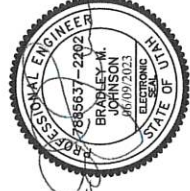
DESIGNED BY: DIH/B	5-19-2023	PLOT SCALE	1"=1
DRAWN BY: DIH/B	5-19-2023	DWG SCALE	1"=100'
CHECKED BY: BMJ	5-19-2023	1"=100'	
APPROVED BY: BMJ	5-19-2023	SHEET NO:	1
IGES PROJECT NO:	03272-003	REV	N/A

DESIGN PACKAGE CONTENTS	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	PLAN VIEW
3	ELEVATION VIEW
4	TYPICAL SECTION VIEW
5	CONSTRUCTION SPECIFICATIONS & NOTES
6	ANCHOR DIAMOND PRO PS DETAILS
7	DESIGN CRITERIA
8	SITE PHOTOS
SECTION 2	STABILITY CALCULATIONS
SECTION 3	GLOBAL STABILITY RESULTS
SECTION 4	SEISMIC CRITERIA

PREPARED FOR:

VIZION CONSTRUCTION & LANDSCAPING
14034 SOUTH 145 EAST, SUITE 204
DRAVER, UTAH 84020
ATTN: GREG PAINTER

APPROVED BY: BRADLEY M. JOHNSON, P.E.





Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah 84020
T: (801) 748-4044, F: (801) 748-4045

June 9, 2023

Vizion Construction & Landscaping
14034 South 145 East, Suite 204
Draper, Utah 84020
Attn: Greg Painter

IGES Project No. 03222-003

**Subject: Engineering Review Response
 Anchor Diamond Pro PS MSE Retaining Walls
 Hughes Residence
 7834 South Danish Pine Lane
 Cottonwood Heights, Utah**

Greg,

IGES received review comments regarding an engineering design package titled “*Anchor Diamond Pro PS MSE Retaining Wall Design Package, Hughes Residence, 7834 South Danish Pine Lane, Cottonwood Heights, Utah*”, dated May 19, 2023, Project No. 03222-003. IGES received review comments from the Cottonwood Heights engineering and zoning departments on June 6, 2023, regarding the walls. The review comments and IGES’ responses follow (the review comments are italicized):

Zoning Comment No. 1

The wall/fence higher than 6’ need apply the conditional use permit (wall height extension) and the wall higher than 8’ also need neighbor consent form. Please fill out the application and send the application to Planning department.

IGES Response to Zoning Comment No. 1

IGES takes no exception to this comment.

Engineering Comment No. 1

Show updated lot drainage plan, with on-site retention (288 cu-ft).

IGES Response to Engineering Comment No. 1

IGES understands that the Client (Vizion Construction & Landscaping) is relocating the retention system to the front yard. Specific application for open storage versus in-ground storage (i.e., ADS system) to be determined by Client in conjunction with the city.



Engineering Comment No. 2

Show property line on wall cross-section and site plan.

IGES Response to Engineering Comment No. 2

The design package has been updated to show the property line on the wall cross-section (see Sheet 4) and on the site plan (see Sheet 2).

Engineering Comment No. 3

Underground retention system will require a long-term storm water covenant agreement.

IGES Response to Engineering Comment No. 3

IGES takes no exception to this comment.

Closure

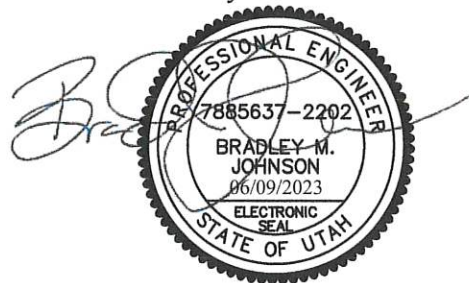
We appreciate being of continued service on this project – please call or email the undersigned if you have any questions.

Respectfully Submitted,
IGES, Inc.

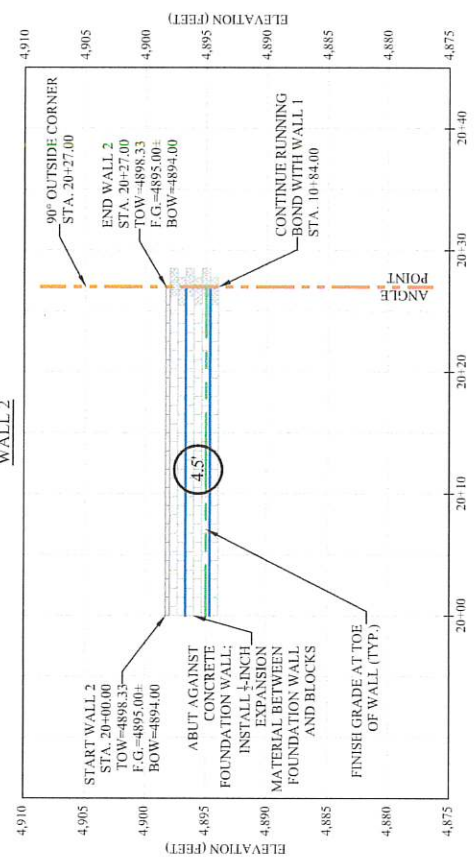
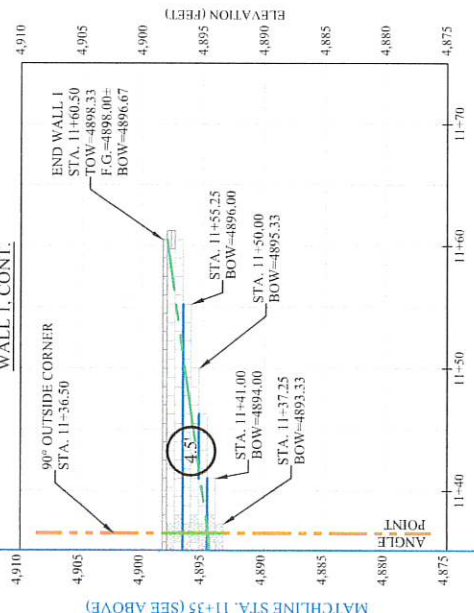
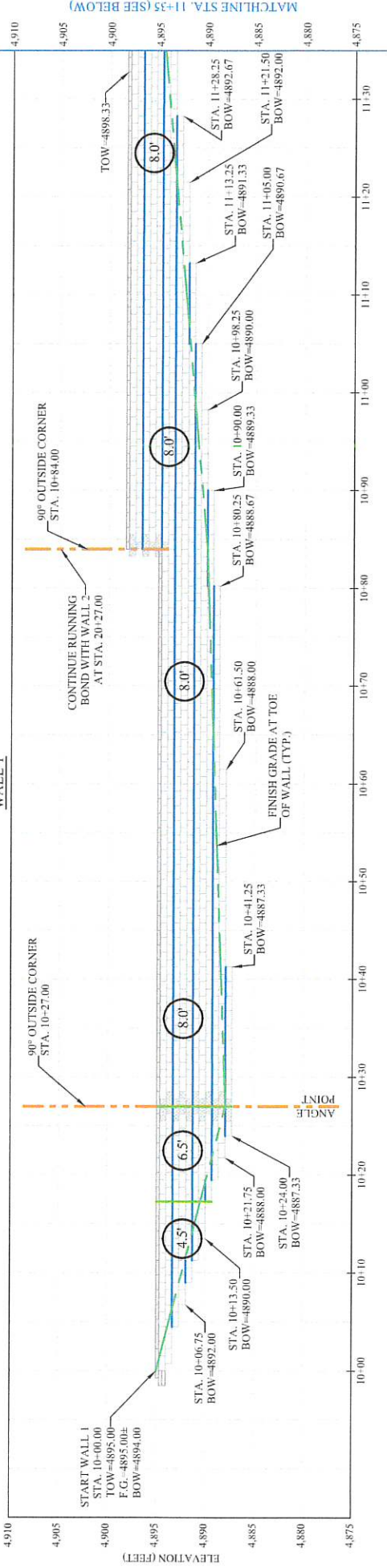
David H. Blake

David H. Blake, E.I.T.
Staff Engineer

Reviewed By:



Bradley M. Johnson, P.E.
Senior Engineer



ELEVATION VIEW

REFERENCE ELEVATIONS FROM FOCUS ENGINEERING AND SURVEYING, DANISH PINES LOT 114, 7834 SOUTH DANISH PINE LANE, COTTONWOOD HEIGHTS, UT, SITE PLAN, SHEET SP-1, DATED APRIL 12, 2021. FIELD ADJUSTMENTS/CHANGES SHOULD BE EXPECTED ONCE CONSTRUCTION COMMENCES. ICES SHOULD BE CONSULTED WHERE FIELD CHANGES ARE REQUIRED.

LEGEND

TOW = TOP OF RETAINING WALL
BOW = BOTTOM OF RETAINING WALL
FG = FINISHED GRADE AT BOTTOM OF WALL



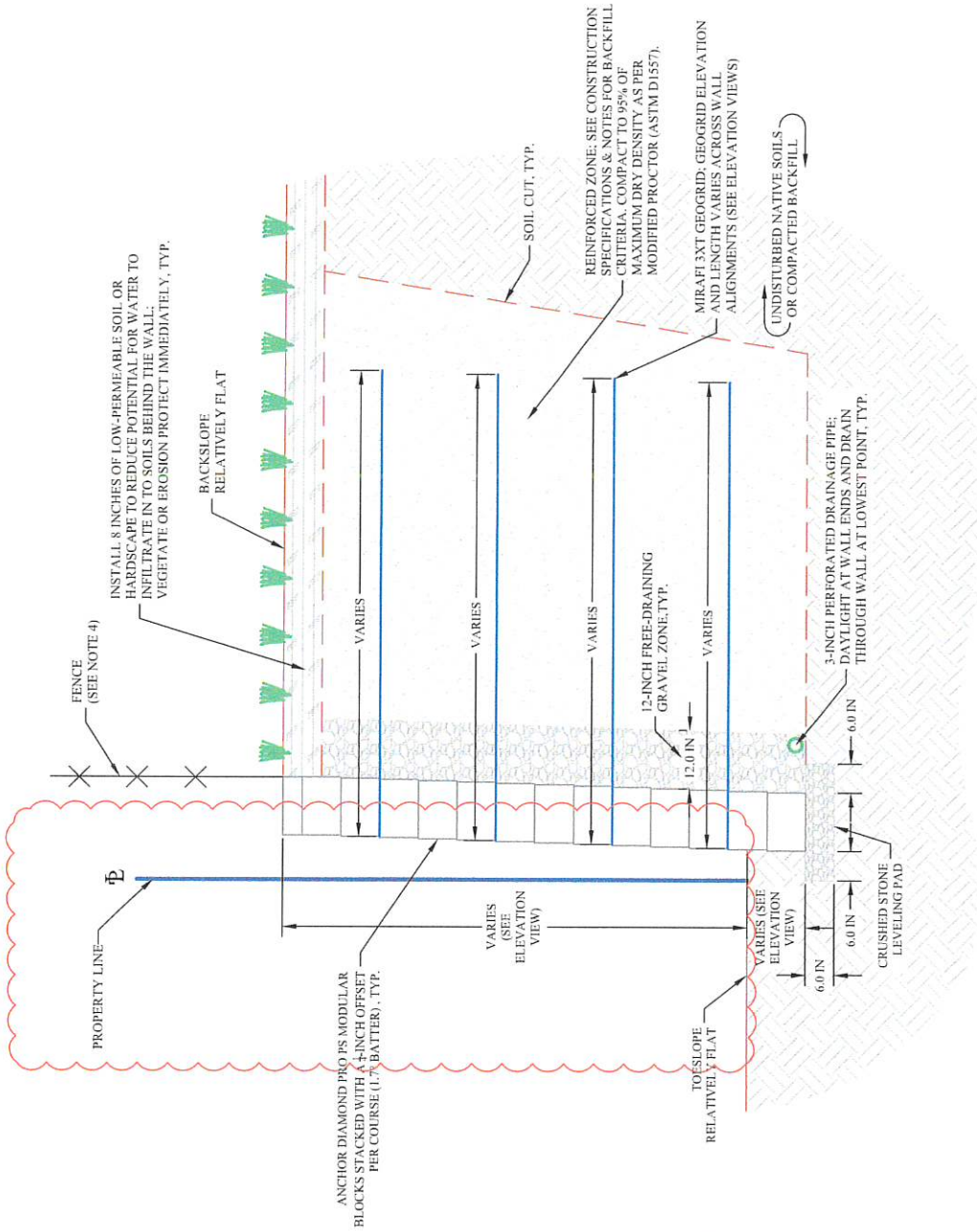
DESIGNED BY: DHB	5-19-2023	PLOT SCALE 1"=10'
DRAWN BY: DHB	5-19-2023	
CHECKED BY: BMJ	5-19-2023	DWG SCALE 1"=10'
APPROVED BY: BMJ	5-19-2023	REV
IGES PROJECT NO:		SHEET NO:
		3
		0322-003



NOTES:

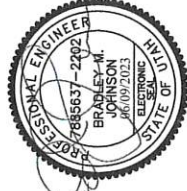
1. MAXIMUM SECTION SHOWN. ALL OTHER SECTIONS TO MEET THESE SAME SPECIFICATIONS, UNLESS NOTED OTHERWISE.
2. SHOULD BE BENCH AS NEEDED TO PROTECT WORKERS. RETAINING WALLS ARE VULNERABLE TO COLLAPSE AND HYDROSTATIC PRESSURES IMMEDIATELY AFTER INSTALLATION BUT PRIOR TO THE PLACEMENT OF LANDSCAPING/FINISHING ELEMENTS (E.G., LANDSCAPING, HARDSCAPE, CURB & GUTTER, PAVEMENT, ETC.) TO PREVENT DAMAGE TO THE WALLS DURING ADDITIONAL SITE WORK. ALL SURFACE DRAINAGE SHOULD BE DIRECTED AWAY FROM THE WALLS. EXCESS WATER DURING HEAVY PRECIPITATION EVENTS, IF NOT DRAINED PROPERLY, CAN CAUSE WASHOUTS AT WALL ENDS AND 'BLOWOUTS' OF INTERIOR SECTIONS. THESE PRECAUTIONS SHOULD BE TAKEN DURING AND AFTER WALL CONSTRUCTION, UNTIL THE FINAL SITE DRAINAGE, LANDSCAPING, AND FINISHING ARE COMPLETE.
3. WE RECOMMEND THAT A PROFESSIONAL SAFETY FENCE-BARRICADE BE CONSIDERED BY THE OWNER ABOVE THE RETAINING WALLS.
- 4.1. IF FENCING SYSTEM WILL BE A CHAIN LINK, WROUGHT IRON FENCE OR RAILING, FOLLOW BLOCK MANUFACTURER'S GUIDELINES.
- 4.2. IF FENCING SYSTEM WILL BE A PRIVACY FENCE (E.G., VINYL, WOOD, PRECAST), IGES SHOULD BE CONTACTED TO PROVIDE CONSTRUCTION RECOMMENDATIONS FOR THE FENCE FOUNDATION SYSTEM.
- 4.3. POSTS SHOULD BE PLACED DURING INSTALLATION OF THE RETAINING WALL. GROUND OR SIMILAR SHOULD BE INSTALLED TO RECEIVE THE FENCE POSTS. DO NOT AUGER THROUGH GEOGRID TO INSTALL POSTS.
- 4.4. WE RECOMMEND THAT ONCE FENCING SYSTEM IS DETERMINED IGES BE CONTACTED TO ASSESS THE IMPACT OF THE FENCE ON THE RETAINING WALLS.

ANCHOR DIAMOND PRO PS MSE RETAINING WALL				
MATERIAL QUANTITY ESTIMATES				
MATERIAL	WALL 1	WALL 2	TOTAL	
TOTAL WALL AREA (sq ft)	947	123	1,070	
4-INCH ANCHOR DIAMOND PRO PS CAP BLOCKS	113	18	131	
ANCHOR DIAMOND PRO PS MODULAR BLOCKS	863	105	968	
ANCHOR DIAMOND PRO PS CORNER BLOCKS	18	6	24	
MIRAFI 3XT GEOGRID REINFORCEMENT (yd ²)	370	30	400	
GRANULAR FILL FOR REINFORCED ZONE (yd ³)	270	20	290	
UNIT FILL AND DRAINAGE GRAVEL (yd ³)	50	10	60	
CRUSHED STONE LEVELING PAD (yd ³)	10	5	15	
3-INCH PERFORATED DRAINAGE PIPE (ft)	175	40	215	



TYPICAL SECTION VIEW

APPROXIMATE GRAPHICAL SCALE: 1"=2' (11x17 ONLY)

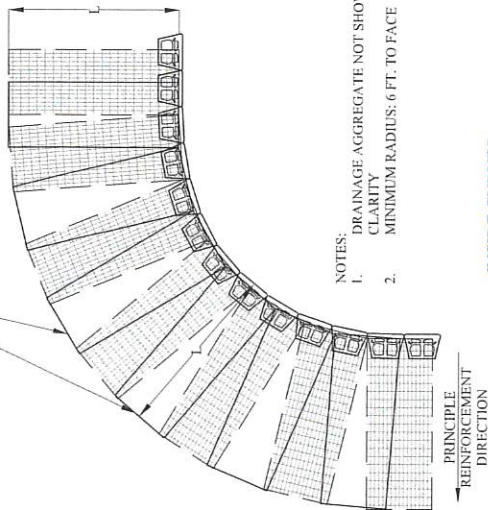


12429 SOUTH 300 EAST DRAPER, UTAH 84020 (801) 748-4044		ANCHOR DIAMOND PRO PS MSE RETAINING WALL HUGHES RESIDENCE 7834 SOUTH DANISH PINE LANE COTTONWOOD HEIGHTS, UTAH		DESIGNED BY: DJH 5-19-2023	PILOT SCALE
				DRAWN BY: DJH 5-19-2023	1=1
				CHECKED BY: BMJ 5-19-2023	DWG SCALE
				APPROVED BY: BMJ 5-19-2023	1"=2'
				IGES PROJECT NO: 03222-003	REV
				SHEET NO: 4	N/A

CONSTRUCTION SPECIFICATIONS & NOTES:			
1. INTRODUCTION			
1.1. FOLLOW THE GUIDANCE CONTAINED IN THE ANCHOR WALL CONSTRUCTION MANUAL UNLESS SPECIFICALLY SUPERSEDED BY MORE STRINGENT SPECIFICATION OR MATERIAL PROPERTIES PROVIDED HEREIN OR ON THE DRAWINGS.			
1.1.1. IN THE EVENT THERE IS ANY CONFLICT OR AMBIGUITY BETWEEN THE FOLLOWING SPECIFICATIONS AND THE REFERENCED GUIDANCE, BRING ANY SUCH ISSUE IMMEDIATELY TO THE ATTENTION OF IGES, INC. FOR WRITTEN CLARIFICATION.			
1.2. DESIGN AND CONSTRUCTION INFORMATION IS BASED ON PROJECT PLANS, DISCUSSIONS WITH THE CLIENT AND THE ENGINEERING ANALYSIS PERFORMED AS PART OF THE SCOPE OF WORK FOR THIS PROJECT BY IGES, INC.			
1.3. LOCATE ALL EXISTING UTILITIES PRIOR TO RETAINING WALL CONSTRUCTION.			
1.4. COMPLY WITH ALL ASPECTS OF OSHA 1926 SUBPART P APP B, SLOPING AND BENCHING FOR ALL EXCAVATED SLOPES.			
1.5. IMPLEMENT THE FOLLOWING MEASURES TO REDUCE THE POTENTIAL FOR HYDROSTATIC PRESSURES TO BUILDUP BEHIND THE RETAINING WALLS:			
1.5.1. HARDCAPE VEGETATION OR EROSION CONTROL MEASURES SHALL BE ESTABLISHED ABOVE AND BELOW THE RETAINING WALLS IMMEDIATELY FOLLOWING CONSTRUCTION.			
1.5.2. A 12-INCH WIDE GRAVEL ZONE INSTALLED BEHIND THE RETAINING WALL BLOCKS WITH A 3-INCH MINIMUM PERFORATED DRAINAGE PIPE AT THE BASE OF THE GRAVEL ZONE.			
1.6. CONDITIONS SUCH AS LEAKY OR BROKEN IRRIGATION LINES AND/OR UNCONTROLLED RUNOFF FROM IMPROPER SITE GRADING (E.G., ALLOWING WATER TO POND ABOVE RETAINING WALLS) CAN LEAD TO UNDERMINING OR HYDROSTATIC PRESSURES BUILDING UP BEHIND THE WALLS, WHICH CAN LEAD TO SLOPE OR WALL MOVEMENT.			
1.6.1. HYDROSTATIC CONDITIONS WERE NOT CONSIDERED IN THE ANALYSIS OF THE RETAINING WALLS AND MUST BE AVOIDED.			
1.6.2. RETAINING WALLS ARE VULNERABLE TO EROSION AND HYDROSTATIC PRESSURES IMMEDIATELY AFTER INSTALLATION OF THE RETAINING WALL BLOCKS, AND PRIOR TO THE PLACEMENT OF THE 8 INCHES OF LOW-PERMEABLE SOIL/HARDCAPE AND VEGETATION, AS THESE ARE CRITICAL COMPONENTS TO THE OVERALL STABILITY OF THE RETAINING WALLS. THE WALLS ARE NOT CONSIDERED COMPLETELY STABLE UNTIL THEY ARE IN PLACE. WE RECOMMEND THESE ELEMENTS BE INSTALLED IMMEDIATELY FOLLOWING THE INSTALLATION OF THE BLOCKS.			
1.6.3. THE OWNER SHALL BE AWARE OF THE RISKS IF THESE OR OTHER CONDITIONS OCCUR THAT COULD SATURATE OR ERODE THE SOIL BEHIND THE WALLS OR IF THE FINISHING/LANDSCAPING ELEMENTS ARE NOT INSTALLED IMMEDIATELY FOLLOWING THE INSTALLATION OF THE RETAINING WALL BLOCKS.			
2. ANCHOR DIAMOND PRO PS MSE RETAINING WALL MATERIALS			
2.1. GEOGRID SOIL REINFORCEMENTS			
2.1.1. MIRAFI MIRAGRID 3XT GEOGRID AS SHOWN ON THE ELEVATION AND TYPICAL SECTION DRAWING.			
2.2. REINFORCED BACKFILL SOILS			
2.2.1. APPROVED, IMPORTED, GRANULAR BACKFILL, BORROW OR APPROVED GRANULAR NATIVE SOILS THAT HAVE BEEN SCREENED AND PROCESSED COMPLYING WITH THE FOLLOWING CRITERIA:			
2.2.1.1. GRANULAR MATERIALS CONTAINING LESS THAN 35% FINES			
2.2.1.2. MAXIMUM NOMINAL PARTICLE SIZE OF 4 INCHES			
2.2.1.3. PI OF 6 OR LESS			
2.2.1.4. pH GREATER THAN 3 BUT LESS THAN 9			
2.2.1.5. REASONABLY FREE FROM FROZEN, ORGANIC, OR OTHER DILUTERIOUS MATERIALS			
2.2.1.6. MINIMUM EFFECTIVE FRICTION ANGLE OF 34 DEGREES			
2.3. THE LEVELING PAD			
2.3.1. 6-INCHES (MINIMUM) OF CRUSHED STONE.			
2.4. USE NEW ANCHOR DIAMOND PRO PS BLOCK MATERIALS THAT MEET THE MINIMUM REQUIREMENTS OF BELGARD COMMERCIAL.			
2.5. FACING FILL AND DRAINAGE GRAVEL FILL			
2.5.1. A CLEAN 1-INCH MINUS CRUSHED STONE OR CRUSHED GRAVEL THAT COMPLIES WITH THE FOLLOWING CRITERIA:			
2.5.1.1. SIEVE SIZE	1"	% PASSING	
	100		
	4	75-100	
	20	0-15	
	NO. 4	0-10	
	NO. 200	0-5	
2.6. THE DRAINAGE PIPE			
2.6.1. 3-INCH PERFORATED PIPE (NO SOCK IS REQUIRED).			
3. ANCHOR DIAMOND PRO PS MSE RETAINING WALL INSTALLATION			
3.1. FIELD-VERIFY PROPOSED FINISHED GRADE AT BOTTOM OF WALL TO PROVIDE THE MINIMUM WALL EMBEDMENT AS SHOWN ON THE ELEVATION AND SECTION VIEW DRAWINGS.			
3.2. GRADE AND COMPACT THE FOUNDATION SUBGRADE SOILS FOR THE FULL LENGTH OF THE LEVELING PAD AND THE REINFORCED SECTION PRIOR TO PLACEMENT OF THE LEVELING PAD AND ANY BACKFILL.			
3.2.1. REMOVE AND REPLACE ANY FOUNDATION SOILS FOUND TO BE UNSUITABLE OR UNSTABLE WITH APPROVED GRANULAR FILL COMPLYING WITH THE CRITERIA OUTLINED IN THE SECTIONS ABOVE.			
CONSTRUCTION SPECIFICATIONS & NOTES			
ANCHOR DIAMOND PRO PS MSE RETAINING WALL		DESIGNED BY: DHB 5-19-2023	
HUGHES RESIDENCE		DRAWN BY: DHB 5-19-2023	
7834 SOUTH DANISH PINE LANE		CHECKED BY: BMJ 5-19-2023	
COTTONWOOD HEIGHTS, UTAH		APPROVED BY: BMJ 5-19-2023	
		IGES PROJECT NO: 03272-003	
		SHEET NO: 5	
		REV N/A	



PLACE ADDITIONAL REINFORCEMENT ON THE NEXT COURSE OF SEGMENTAL UNITS IMMEDIATELY ABOVE THE SPECIFIED PLACEMENT ELEVATION IN A MANNER THAT ELIMINATES GAPS LEFT BY THE PREVIOUS LAYER OF GEOSYNTHETIC AT THE SPECIFIED REINFORCEMENT ELEVATION.

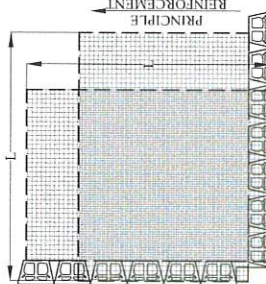


- NOTES:
1. DRAINAGE AGGREGATE NOT SHOWN FOR CLARITY
 2. MINIMUM RADIUS: 6 FT. TO FACE

INSIDE CURVES

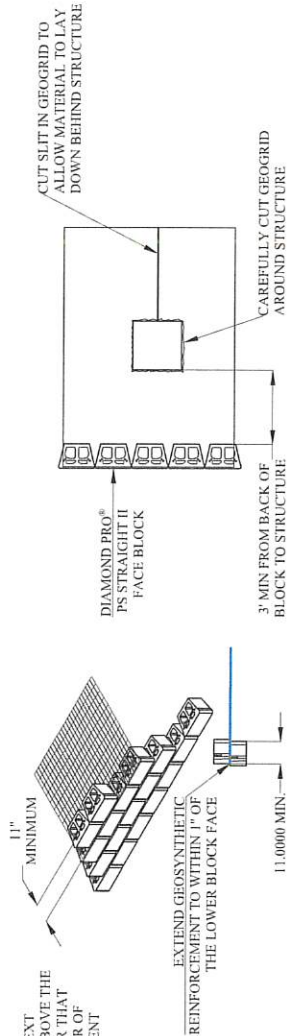
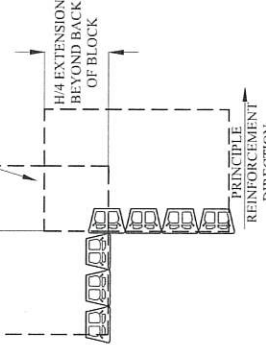
NOTE: IN THE "CROSS-OVER AREA" OF REINFORCEMENT, ONE OF THE LAYERS OF REINFORCEMENT SHOULD BE LOWERED OR RAISED ONE COURSE TO ALLOW PLACEMENT OF THE REINFORCEMENT WITH THE PRINCIPLE REINFORCEMENT STRENGTH DIRECTION PROPERLY ORIENTED. THE REINFORCEMENT SHOULD NOT EXTEND INTO THE SEGMENTAL RETAINING WALL UNITS ON THE RETURN LEG OF THE 90-DEGREE CORNER.

PRINCIPLE REINFORCEMENT DIRECTION

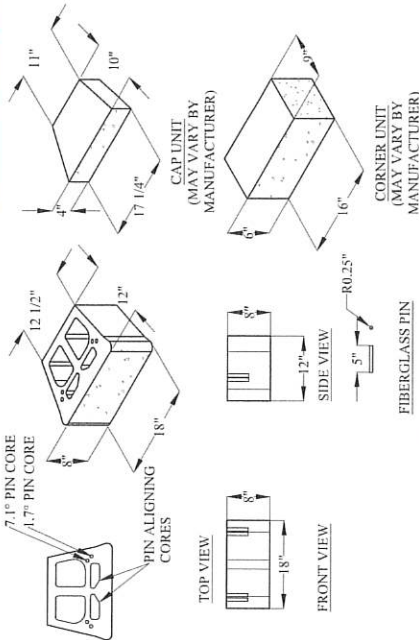


OUTSIDE AND INSIDE CORNERS

REINFORCEMENT H/4 BEYOND THE CORNER AT THE SPECIFIED REINFORCEMENT ELEVATIONS

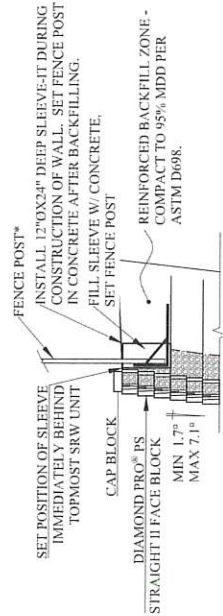


REINFORCEMENT CONNECTION DETAIL

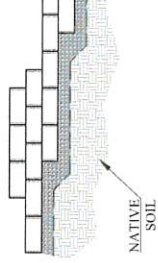


ALTERNATE DROP STRUCTURE BEHIND WALL

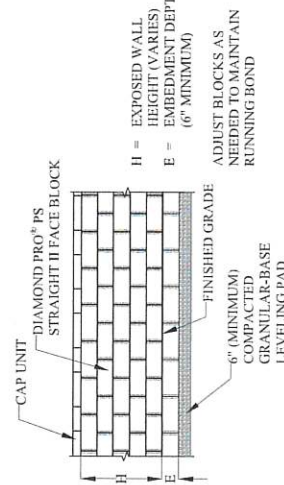
- *FENCING SYSTEMS APPROVED FOR USE WITH SLEEVE-IT ARE LIMITED TO THE FOLLOWING HEIGHTS:
- A. CHAIN LINK UP TO 8 FEET ABOVE FINISHED GRADE WITH POST SPACING OF 8 FEET (MIN)
 - B. ORNAMENTAL (STEEL, ALUMINUM, WROUGHT IRON) POST UP TO 6 FEET ABOVE GRADE WITH POST SPACING OF 10 FEET (MIN)
 - C. OPEN BOARD / GAP BOARD (70% OPEN) POST UP TO 6 FEET ABOVE FINISHED GRADE WITH POST SPACING OF 6 FEET (MIN)



ALTERNATE FENCE CROSS SECTION



TYPICAL BASE STEP-UP



TYPICAL ELEVATION VIEW



12429 SOUTH 340 EAST
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ANCHOR DIAMOND PRO PS MSE RETAINING WALL

HUGHES RESIDENCE
7834 SOUTH DANISH PINE LANE
COTTONWOOD HEIGHTS, UTAH

ANCHOR DIAMOND PRO PS DETAILS

DESIGNED BY:	DHB	5-19-2023	PLOT SCALE
DRAWN BY:	DHB	5-19-2023	1=1
CHECKED BY:	BMJ	5-19-2023	DWG SCALE
APPROVED BY:	BMJ	5-19-2023	NTS
IGES PROJECT NO:			
SHEET NO:	6		
REV			
N/A			



RETAINING WALL GEOMETRY AND LOADING CONDITIONS				
WALL	LENGTH (FEET)	MAXIMUM HEIGHT (FEET)	BACKSLOPE CONDITIONS	SURCHARGE LOADING
1	160	9.0	RELATIVELY FLAT	75 PSF (YARD)
2	27	4.3	RELATIVELY FLAT	75 PSF (YARD)

SOIL CONDITIONS USED IN DESIGN (ASSUMED)				
EARTH MATERIALS	FRICTION ANGLE	COHESION	UNIT WEIGHT	
REINFORCED SOIL (SEE CONSTRUCTION SPECIFICATIONS & NOTES FOR BACKFILL CRITERIA)	34°	0 PSF	135 PCF	
RETAINED SOIL	32°	50 PSF	125 PCF	
FOUNDATION SOIL	32°	50 PSF	125 PCF	

SOURCES & NOTES:

- IGES, INC., 2023. FIELD OBSERVATIONS ON MAY 2, 2023.
- COHESION USED ONLY DURING GLOBAL STABILITY ANALYSES.

GENERAL NOTES:

- THE ENGINEERING PRESENTED IN THIS DESIGN PACKAGE IS BASED ON SPECIFIC PRODUCTS (E.G., ANCHOR DIAMOND PRO PS BLOCKS, MIRAFIX GEOGRID, SOIL STRENGTHS GIVEN ABOVE, ETC.). ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS WILL INVALIDATE THIS ENGINEERING. ANY CHANGES IN WALL LOCATIONS, ELEVATIONS OF LEVELING PADS, GRADES AT THE TOE OR TOP OF THE WALLS, AND SOIL PARAMETERS AT THE SITE WILL ALSO INVALIDATE THE ENGINEERING. FIELD ADJUSTMENTS/CHANGES MAY BE NEEDED TO MEET ACTUAL CONDITIONS ONCE CONSTRUCTION COMMENCES. IGES SHOULD BE CONSULTED WHERE FIELD CHANGES ARE REQUIRED.
- THESE DOCUMENTS ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE INTELLECTUAL PROPERTY OF IGES, INC. THE DESIGN PACKAGE HAS BEEN FURNISHED FOR THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT NO USE OR RE-USE OF THESE DOCUMENTS (EITHER IN WHOLE OR IN PART) SHALL BE PERMITTED UNLESS EXPRESSLY AUTHORIZED IN WRITING BY IGES, INC.
- RETAINING WALLS ARE VULNERABLE TO EROSION AND HYDROSTATIC PRESSURES IMMEDIATELY AFTER INSTALLATION BUT PRIOR TO THE PLACEMENT OF LANDSCAPING/FINISHING ELEMENTS AT THE SITE (E.G., LANDSCAPING, HARDSCAPE, CURB & GUTTER, PAVEMENT, ETC.). TO PREVENT DAMAGE TO THE WALLS DURING ADDITIONAL SITE WORK, ALL SURFACE DRAINAGE SHOULD BE DIRECTED AWAY FROM THE WALLS EXCESS WATER DURING HEAVY RAIN EVENTS, IF NOT DRAINED PROPERLY, CAN CAUSE WASHOUTS AT WALL ENDS AND 'BLOWOUTS' OF INTERIOR SECTIONS. THESE PRECAUTIONS SHOULD BE TAKEN DURING AND AFTER WALL CONSTRUCTION, UNTIL THE FINAL SITE DRAINAGE, LANDSCAPING AND PAVING ARE COMPLETE.
- MINIMUM EMBEDMENT OF THE WALLS VARIES AS SHOWN ON THE ELEVATION VIEW SHEET. EMBEDMENT AT THE WALL TOES MUST BE MAINTAINED THROUGHOUT THE LIFE OF THE RETAINING WALLS.
- WE RECOMMEND THAT AN APPROPRIATE SAFETY FENCE/BARRICADE BE CONSIDERED BY THE OWNER ABOVE THE RETAINING WALLS. DESIGN OF THE FENCE/BARRICADE IS SPECIFICALLY EXCLUDED FROM THE ENGINEERING OF THESE WALLS.

RETAINING WALL ANALYSIS USED IN DESIGN	
ANALYSIS	DESIGN REFERENCES/SOFTWARE
INTERNAL/EXTERNAL STABILITY	ANCHOR WALL SYSTEMS, INC., 2021. ANCHOR WALL SOFTWARE, VERSION 7.1.5.6331, NCMA 3RD EDITION DESIGN METHODOLOGY
GLOBAL STABILITY	SLIDE 2: ROCSCIENCE, INC., 1998-2023, VERSION 9.027, BUILD DATE FEBRUARY 13, 2023.

SEISMIC PARAMETERS USED IN DESIGN				
SEISMIC CRITERIA	MCE ₀ PGA	SITE CLASS	F _{PGA}	HORIZONTAL COEFFICIENT (k _h)
ASCE 7-16	0.636g	D	1.10	0.118g (EXTERNAL) 0.236g (INTERNAL) 0.350g (GLOBAL)

SOURCES & NOTES:

- SEISMIC PARAMETERS DEVELOPED FOLLOWING THE CRITERIA OUTLINED IN ASCE 7-16. THE ASCE 7 HAZARD TOOL WAS USED TO DETERMINE THE MAPPED MCE₀ PEAK GROUND ACCELERATION (MCE₀ PGA) FOR THE SITE. SITE CLASS IS A PARAMETER THAT ACCOUNTS FOR SITE AMPLIFICATION EFFECTS OF SOFT SOILS AND IS BASED ON THE AVERAGE SHEAR WAVE VELOCITY OF THE UPPER 100 FEET. BASED ON OUR ENGINEERING JUDGMENT, THE SITE SOIL CLASS IS REPRESENTED BY A SITE CLASS D. USING A SITE CLASS D, THE MCE₀ PEAK GROUND ACCELERATION WAS ADJUSTED FOR SITE CLASS EFFECTS (PGA_M).
- HORIZONTAL SEISMIC COEFFICIENT (k_h)
 - TO DETERMINE THE EXTERNAL SEISMIC COEFFICIENT (k_{h,ext}), THE BRAY ET AL. (2010) METHODOLOGY WAS APPLIED (SEE SECTION 4).
 - TO DETERMINE THE INTERNAL SEISMIC COEFFICIENT (k_{h,int}), THE BRAY ET AL. (2010) METHODOLOGY WAS APPLIED (SEE SECTION 4).
 - 1.1. LACKING ANY CRITICAL STRUCTURES OF FACILITIES WITHIN THE INFLUENCE ZONE OF THE WALLS, AN ALLOWABLE DISPLACEMENT OF 15 CENTIMETERS (~6 INCHES) WAS CONSIDERED ACCEPTABLE FOR THE WALLS ON THIS PROJECT.
 - TO DETERMINE THE INTERNAL COEFFICIENT (k_{h,int}), THE FOLLOWING METHODOLOGY WAS USED:
 - DETERMINE k_{h,ext} USING THE BRAY ET AL. (2010) METHODOLOGY
 - CALCULATE AN EQUIVALENT PEAK GROUND ACCELERATION (PGA_{eq}) [PGA_{eq} = (k_{h,ext}) * 2]
 - APPLY THE STANDARD INTERNAL COEFFICIENT EQUATION TO THE PGA_{eq}

$$(k_{h,internal}) = (1.45 - PGA_{eq}) * PGA_{eq}$$
 - THE BRAY METHOD WAS ALSO COUPLED WITH A NEWMARK DISPLACEMENT BLOCK MODEL TO ESTIMATE DISPLACEMENT FOR THE MAXIMUM WALL SECTION (SEE SECTION 4 FOR RESULTS). BASED ON OUR ANALYSIS, WE ESTIMATE THAT THE ANTICIPATED MEAN DISPLACEMENT FOR THE MAXIMUM SECTION WILL BE APPROXIMATELY 0.8 INCHES (OR 1.6 INCHES WITH AN 84% CONFIDENCE LEVEL) WHICH IS WITHIN THE TOLERABLE LIMITS FOR THIS WALL TYPE.
 - ONE-HALF OF THE PGA_M WAS USED TO MODEL THE HORIZONTAL SEISMIC ACCELERATION FOR GLOBAL STABILITY ANALYSES (k_h = 0.350g).
- REFERENCES:
 - ANDERSON, D.G., MARTIN, G.R., LAM, I., WANG, J.N., 2008. SEISMIC ANALYSIS AND DESIGN OF RETAINING WALLS, BURIED STRUCTURES, SLOPES, AND EMBANKMENTS, NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 611.
 - BRAY, J.D., TRAVASAROU, T., AND ZUPAN, J., 2010. SEISMIC DISPLACEMENT DESIGN OF EARTH RETAINING STRUCTURES, ASCE EARTH RETENTION CONFERENCE 3, BELLEVUE, WA. AMERICAN SOCIETY OF CIVIL ENGINEERS, RESTON, VA, PP. 638-655.



DESIGN CRITERIA		DESIGNED BY: DHB		PLOT SCALE	
ANCHOR DIAMOND PRO PS MSE RETAINING WALL		DRAWN BY: DHB		DWG SCALE	
HUGHES RESIDENCE		CHECKED BY: BMJ		NTS	
7834 SOUTH DANISH PINE LANE		APPROVED BY: BMJ		SHEET NO. 7	
COTTONWOOD HEIGHTS, UTAH		IGES PROJECT NO. 03222-003		REV	
				N/A	



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PHOTOS TAKEN DURING SITE OBSERVATION MADE ON MAY 2, 2023

1	ADDED PROPERTY LINE			06-7-2023	JDH/BMJ
REV	REVISION DESCRIPTION	DATE	BY	CHK	
	REVISIONS				



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DRAPER, UTAH 84020
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ANCHOR DIAMOND PRO PS MSE RETAINING WALL
HUGHES RESIDENCE
7834 SOUTH DANISH PINE LANE
COTTONWOOD HEIGHTS, UTAH
SITE PHOTOS

DESIGNED BY: DHB	5-19-2023	PLOT SCALE 1"=1'
DRAWN BY: DHB	5-19-2023	
CHECKED BY: BMJ	5-19-2023	DWG SCALE
APPROVED BY: BMJ	5-19-2023	NTS
IGES PROJECT NO: 03222-003		REV N/A

