		Zone Legend  N = Native  Nt = Native Transition  S = Semi-Private  P = Private
	TREES	
Botanical Name	Common Name	Zones
Acacia abyssinica	Abyssinian Acacia	S,P
Acacia aneura	Mulga	S,P
Acacia berlandieri	Berlandier Acacia	S,P
Acacia constricta	Whitethorn Acacia	S,P
Acacia greggii	Catclaw Acacia	N,Nt,S,P
Acacia pendula	Pendulous Acacia	S,P
Acacia roemeriana	Roemer Acacia	S,P
Acacia saligna	Blue-Leaf Wattle	S,P
Acacia schaffneri	Twisted Acacia	S,P
Acacia smallii (farnesiana)	Sweet Acacia	Nt,S,P
Acacia willardiana	Palo Blanco	Nt,S,P
Bauhinia congesta	Anacacho Orchid Tree	S,P
Caesalpinia cacalaco	Cascalote	S,P
Caesalpinia mexicana	Mexican Bird of Paradise	Nt,S,P
Canotia holacantha	Crucifixion Thorn	N,Nt,S,P
Cercidium 'Desert Museum'	Hybrid Palo Verde	S,P
Cercidium floridum	Blue Palo Verde	N,Nt,S,P
Cercidium microphyllum	Foothills Palo Verde	N,Nt,S,P
Cercis canadensis v. mexicana	Mexican Redbud	S,P
Chilopsis linearis	Desert Willow	Nt,S,P
Cordia boissieri	Anacahuita	S,P
Forestiera neomexicana	Desert Olive	5,r S,P
Fraxinus greggii	Littleleaf Ash	P
	Golden Ball Lead Tree	S,P
eucaena retusa	<u> </u>	· ·
ysiloma microphylla v. thornberi	Desert Fern	Nt,S,P
Olneya tesota	Ironwood	N,Nt,S,P
Pithecellobium flexicaule	Texas Ebony	S,P
Pithecellobium mexicanum	Mexican Ebony	Nt,S,P
Prosopis alba	Argentine Mesquite	S,P
Prosopis chilensis	Chilean Mesquite	S,P
Prosopis glandulosa v. glandulosa	Texas Honey Mesquite	Nt,S,P
Prosopis pubescens	Screwbean Mesquite	Nt,S,P
Prosopis velutina	Velvet Mesquite	N,Nt,S,P
Quercus gambelii	Gambel Oak	P
Robinia neomexicana	New Mexico Locust	S,P
Sophora secundiflora	Texas Mountain Laurel	S,P
Jngnadia speciosa	Mexican Buckeye	S,P
/itex angus-castus	Chaste Tree	S,P

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# Planting and Garden Design HORSESHOE CANYON

CACTI AND ACCENTS		
Botanical Name	Common Name	Zones
Agave americana	Century Plant	S,P
Agave bovicornuta	Cowshorn Agave	S,P
Agave deserti	Desert Agave	N,Nt,S,P
Agave desmettiana	Agave	S,P
Agave macroacantha	NCN	S,P
Agave murpheyi	Hohokam Agave	N,Nt,S,P
Agave ocahui	Agave	Nt,S,P
Agave parryi v. huachuensis	Parry's Agave	S,P
Agave parryi v. truncata	Parry's Agave	S,P
Agave potatorum	NCN	S,P
Agave scabra	NCN	S,P
Agave toumeyana	Toumey's Agave	N,Nt,S,P
Agave vilmoriana	Octopus Agave	S,P
Agave weberi	Smooth-Leaf Agave	S,P
Aloe barbadensis	Aloe Vera	S,P
Aloe ferox	Cape Aloe	S,P
Aloe saponaria	Tiger Aloe	S,P
Aloe species	Aloe	S,P
Aloe striata	Coral Aloe	S,P
Asclepias subulata	Desert Milkweed	Nt,S,P
Aspidistra elatior	Cast-Iron Plant	P
Carnegiea gigantea	Saguaro	N,Nt,S,P
Cereus hildmannianus	Hildmann's Cereus	S,P
Cereus hildmannianus v. monstrose	Curiosity Plant	S,P
Cereus peruvianus	Night Blooming Cereus	S,P
Cycas revoluta	Sago Palm	P
Cyperus alternifolius	Umbrella Plant	P
Dasylirion acrotriche	Green Desert Spoon	S,P
Dasylirion longissimum	NCN	S,P
Dasylirion wheeleri	Desert Spoon	N,Nt,S,P
Dietes bicolor	Fortnight Lily	P
Dietes vegeta	Evergreen Iris	P
Dioon edule	Mexican Sago	P
Echinocactus grusonii	Golden Barrel Cactus	S,P
Echinocactus horizonthalonius	Turk's Head	Nt,S,P
Echinocereus engelmannii	Engelmann's Hedgehog	N,Nt,S,P
Echinocereus pectinatus v. rigidissimus	Rainbow Cactus	S,P
Euphorbia antisyphilitica	Candelilla	S,P
Euphorbia myrsinites	Euphorbia	S,P
Euphorbia rigida	Gopher Plant	S,P
Euphorbia tirucalli	Pencil Bush	S,P
Ferocactus acanthodes	Fire Barrel	N,Nt,S,P
Ferocactus wislizenii	Fishhook Barrel	N,Nt,S,P
Fouquieria splendens	Ocotillo	N,Nt,S,P
Hesperaloe funifera	Coahuilan Hesperaloe	S,P
Hesperaloe parviflora	Red Hesperaloe	S,P

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Hesperaloe parviflora (yellow)  Lophocereus schottii  Lophocereus schottii v. monstrosus	Common Namo	Zones
Lophocereus schottii	Common Name Yellow Hesperaloe	S,P
•	· · · · · · · · · · · · · · · · · · ·	
	Senita Cactus  Totem Pole Cactus	Nt,S,P
•		Nt,S,P N,Nt,S,P
Aammillaria microcarpa	Pincushion Cactus	
Jolina bigelovii	Bigelow Nolina	Nt,S,P
Jolina microcarpa	Beargrass Park to the United States Challes	Nt,S,P
Opuntia acanthocarpa	Buckhorn Cholla	N,Nt,S,P
Opuntia basilaris	Beavertail Prickly Pear	Nt,S,P
Opuntia bigelovii	Teddybear Cholla	N,Nt,S,P
Opuntia chlorotica	Pancake Prickly Pear	Nt,S,P
Opuntia engelmannii	Engelmann's Prickly Pear	N,Nt,S,P
puntia ficus-indica	Indian Fig Prickly Pear	S,P
Opuntia fulgida	Chainfruit Cholla	N,Nt,S,P
puntia imbricata	Tree Cholla	S,P
Opuntia leptocaulis	Christmas Cactus	N,Nt,S,P
Opuntia microdasys	Bunny Ears	S,P
puntia robusta	Prickly Pear	S,P
)puntia santa-rita	Santa Rita Prickly Pear	Nt,S,P
Opuntia spinosior	Cane Cholla	S,P
Opuntia violacea v. 'Santa Rita'	Purple Prickly Pear	Nt,S,P
hilodendron selloum	Selloum Philodendron	Р
ansevieria species	Mother-in-Law's Tongue	P
tenocereus marginatus	Mexican Fence Post	S,P
tenocereus thurberi	Organ Pipe Cactus	Nt,S,P
richocereus species	Trichocereus	S,P
′ucca aloifolia	Spanish Bayonet	Р
ucca angustifolia	Narrow-Leaf Yucca	S,P
ucca baccata	Banana Yucca	N,Nt,S,P
ucca brevifolia	Joshua Tree	S,P
rucca carnerosana	Spanish Bayonet	S,P
ucca elata	Soaptree Yucca	Nt,S,P
'ucca gloriosa	Spanish Dagger	Р
′ucca pallida	NCN	S,P
'ucca recurvifolia	Curveleaf Yucca	P
'ucca rigida	Blue Yucca	S,P
	Beaked Yucca	S,P
′ucca rostrata		
⁄ucca rostrata ⁄ucca rupicola	Twisted-Leaf Yucca	S,P

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# Planting and Garden Design HORSESHOE CANYON

	LARGE SHRUBS	
Botanical Name	Common Name	Zones
Abutilon incanum	Indian Mallow	N,Nt,S,P
Abutilon palmeri	Indian Mallow	N,Nt,S,P
Abutilon pringlei	Indian Mallow	Nt,S,P
Acacia constricta	Whitethorn Acacia	S,P
Acacia craspedocarpa	Leatherleaf Acacia	S,P
Aloysia wrightii	Wright Lippia	S,P
Alyogyne huegelii	Blue Hibiscus	S,P
Anisacanthus quadrifidus v. brevilobus	Mountain Flame	S,P
Anisacanthus quadrifidus v. wrightii 'Mexican Flame' TM	Flame Honeysuckle	S,P
Atriplex canescens	Fourwing Saltbush	N,Nt,S,P
Atriplex lentiformis	Quail Brush	Nt,S,P
ougainvillea species*	Bush Bougainvillea	S,P
Buddleia marrubifolia	Wooly Butterfly Bush	S,P
Caesalpinia gilliesii	Desert Bird of Paradise	S,P
Caesalpinia mexicana	Mexican Bird of Paradise	S,P
Caesalpinia pulcherrima	Red Bird of Paradise	S,P
Calliandra californica	Baja Red Fairy Duster	S,P
Cassia artemisioides	Feathery Cassia	S,P
Cassia oligophylla	Outback Cassia	S,P
Cassia nemophilia	Desert Cassia	S,P
Cassia phyllodenia	Silver-Leaf Cassia	S,P
Celtis pallida	Desert Hackberry	N,Nt,S,P
Cordia boissieri	Anacahuite	S,P
Cordia parvifolia	Small Leaf Cordia	Nt,S,P
Coursetia glandulosa	Coursetia	Nt,S,P
Dalea versicolor var. sessilis	Wislizenus Dalea	Nt,S,P
Oodonaea viscosa	Hopseed Bush	N,Nt,S,P
Oodonaea viscosa 'Purpurea'	Purple Hopseed Bush	S,P
phedra trifurca	Mormon Tea	·
		N,Nt,S,P
atsia japonica	Japanese Aralia	P
feijoa sellowiana	Pineapple Guava	
Hamelia patens	Firebush	S,P
Hyptis emoryi	Desert Lavender	Nt,S,P
usticia californica	Chuparosa	N,Nt,S,P
antana camara	Bush Lantana	S,P
arrea tridentata	Creosote Bush	N,Nt,S,P
eucophyllum frutescens	Texas Sage	S,P
eucophyllum frutescens 'Compacta'	Compact Texas Sage	S,P
eucophyllum frutescens 'Green Cloud'	Green Cloud Sage	S,P
eucophyllum frutescens 'White Cloud'	White Cloud Sage	S,P
eucophyllum hybrid 'Rain Cloud'	Rain Cloud Sage	S,P
eucophyllum laevigatum	Chihuahuan Sage	S,P
eucophyllum langmaniae 'Rio Bravo' TM	Rio Bravo Sage	S,P
Leucophyllum pruinosum 'Sierra Bouquet' TM	Sierra Bouquet Sage	S,P
ycium andersonii	Wolfberry	N,Nt,S,P
Lycium exsertum	Desert-Thorn	N,Nt,S,P

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Determinal Name	LARGE SHRUBS (CONTINUED)	7
Botanical Name	Common Name	Zones
Lycium fremontii	Fremont Lycium	N,Nt,S,P
Maytenus phyllanthioides	Mangle Dulce	S,P
Mimosa dysocarpa	Mimosa	S,P
Myrtus communis 'Boetica'	Twisted Myrtle	P
Nandina domestica	Heavenly Bamboo	P
Pittosporum tobira	Japanese Mock Orange	P
Plumbago auriculata	Cape Plumbago	S,P
Quercus turbinella	Scrub Oak	S,P
Rhus microphylla	Littleleaf Sumac	Nt,S,P
Rhus ovata	Sugar Bush	Nt,S,P
Senna goldmannii	Goldmann's Senna	Nt,S,P
Senna wislizenii	Shrubby Senna	S,P
Simmondsia chinensis	Jojoba	N,Nt,S,P
Sophora secundiflora	Texas Mountain Laurel	S,P
Strelitzia reginae	Bird of Paradise	P
Tagetes lemmoni	Mt. Lemmon Marigold	S,P
Tecoma stans	Yellow Bells	S,P
Vaquelinia californica	Arizona Rosewood	Nt,S,P
Zizyphus obtusifolia	Graythorn	Nt,S,P
71	MEDIUM AND SMALL SHRUBS	4.1
Botanical Name	Common Name	Zones
Acacia schottii	Schott Acacia	S,P
Acanthus mollis	Acanthus	P
Anigozanthos flavidus	Kangaroo Paw	S,P
Anisacanthus thurberi	Desert Honeysuckle	Nt,S,P
Asclepias linaria	Pineleaf Milkweed	Nt,S,P
Bebbia juncea	Chuckwalla's Delight	N,Nt,S,P
Brickellia coulteri	Brickellia Brickellia	N,Nt,S,P
Bulbine frutescens	Bulbine	S,P
Calliandra eriophylla	Fairy Duster	N,Nt,S,P
	Damianita	
Chrysactinia mexicana		S,P
Coreopsis lanceolata	Lanceleaf Coreopsis	S,P
Dalea frutescens 'Sierra Negra' TM	Sierra Negra Dalea	S,P
Dalea pulchra	Indigo Bush	S,P
Dicliptera suberecta	Velvet Honeysuckle	S,P
Encelia farinosa	Brittlebush	N,Nt,S,P
Ephedra fasciculata	Joint Fir	N,Nt,S,P
Equisetum laevigatum	Horsetail	S,P
Eremophila glabra	Emu Bush	S,P
Ericameria laricifolia	Turpentine Bush	N,Nt,S,P
Eriogonum fasciculatum v. poliofolium	Wild Buckwheat	N,Nt,S,P
Eriogonum wrightii	Wright Buckwheat	N,Nt,S,P
Euryops pectinatus	Golden Euryops	P
Euryops pectinatus 'Viridus'	Euryops Daisy	P
Gaura lindheimeri	Gaura	S,P

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# Planting and Garden Design HORSESHOE CANYON

Botanical Name	Common Name	Zones
Haplopappus gooddingii	Goldenweed	N,Nt,S,P
Herissantia crispa	Indian Mallow	N,Nt,S,P
Hibiscus coulteri	Desert Rose-Mallow	Nt,S,P
Horsfordia newberryi	Horsfordia	N,Nt,S,P
Hymenoxis acaulis	Angelita Daisy	S,P
Janusia gracilis	Slender Janusia	N,Nt,S,P
lusticia ovata (candicans)	Red Justicia	Nt,S,P
Krameria parvifolia	Ratany	N,Nt,S,P
eucophyllum candidum 'Thunder Cloud' TM	Thunder Cloud Sage	S,P
eucophyllum revolutum 'Sierra Magic' TM	Sierra Magic Sage	S,P
eucophyllum zygophyllum	Blue Ranger	S,P
iatris spicata	Gayfeather	P
obelia laxiflora	Lobelia	S,P
otus rigidus	Deer Vetch	Nt,S,P
Maytenus phyllanthioides	Mangle Dulce	S,P
Menodora scabra	Menodora	N,Nt,S,P
Mimosa dysocarpa	Mimosa	S,P
Muhlenbergia capillaris 'Regal Mist' TM	Regal Mist Muhley	S,P
Muhlenbergia dumosa	Bamboo Muhley	Nt,S,P
Muhlenbergia emersleyi 'El Toro' TM	Bull Grass	S,P
Muhlenbergia lindheimeri 'Autumn Glow' TM	Autumn Glow Muhley	S,P
Muhlenbergia rigens	Deer Grass	N,Nt,S,P
Muhlenbergia rigida 'Nashville' TM	Nashville Grass	S,P
Parthenium incanum	Mariola	S,P
Plumbago scandens 'Summer Snow' TM	Summer Snow Plumbago	Nt,S,P
Psilostrophe cooperi	Cooper's Paperflower	Nt,S,P
Psilostrophe tagetina	Wooly Paperflower	Nt,S,P
Punica granatum 'Nana'	Dwarf Pomegranate	P
Rosmarinus officinalis	Rosemary	P
Ruellia brittoniana	Ruellia	S,P
Ruellia peninsularis	Baja Ruellia	Nt,S,P
Salazaria mexicana	Paperbag Bush	Nt,S,P
Salvia chamaedryoides	Mexican Blue Sage	S,P
Salvia clevelandii	Chaparral Sage	S,P
Salvia coccinea	Cherry Red Sage	Р
Salvia farinacea	Mealy-Cup Sage	S,P
Salvia greggii	Autumn Sage	S,P
Salvia leucantha	Mexican Bush Sage	S,P
Salvia leucophylla	Purple Sage	S,P
Salvia microphylla	Salvia	S,P
iphaeralcea ambigua	Desert Globemallow	N,Nt,S,P
rixis californica	Trixis	N,Nt,S,P
/iguiera deltoidea	Goldeneye	N,Nt,S,P
Zauschneria californica	California Fuchsia	Nt,S,P
Zexmenia hispida "Devil's River"	Zexem	S,P

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	GROUNDCOVERS/GRASSES/HERBACEOUS PLANT	
Botanical Name	Common Name	Zones
Acacia redolens	Prostrate Acacia	S,P
Aizoaceae species	Ice Plant	S,P
Asparagus densiflorus 'Sprengeri'	Asparagus Fern	P
Aspidistra elatior	Cast-Iron Plant	P
Aster tanacetifolius	Purple Aster	Nt,S,P
Baileya multiradiata	Desert Marigold	Nt,S,P
Berlandiera lyrata	Chocolate Flower	S,P
Buchloe dactyloides	Buffalo Grass	S,P
Calylophus hartwegii 'Sierra Sundrop'	Calylophus	S,P
Convolvulus mauritanicus	Ground Morning Glory	S,P
Cooperia drummondii	Rain Lily	S,P
Coreopsis bigelovii	Desert Coreopsis	Nt,S,P
Cuphea llavea	Bat Faced Cuphea	S,P
Cynodon dactylon	Hybrid Bermuda	S, P
Dalea capitata 'Sierra Gold' TM	Sierra Gold Dalea	S,P
Dichelostemma pulchellum	Bluedicks	Nt,S,P
Ditaxis lanceolata	Common Ditaxis	N,Nt,S,P
Drosanthemum speciosum 'Rosa'	Ice Plant	S,P
Dyssodia pentachaeta	Dyssodia	Nt,S,P
Erigeron divergens	Spreading Fleabane	Nt,S,P
Erigeron 'Profusion'	Profusion Fleabane Daisy	S,P
Erogrostis intermedia	Plains Lovegrass	Nt,S,P
Eschscholtzia mexicana	Mexican Gold Poppy	Nt,S,P
Eupatorium greggii "Boothill"	Eupatoria	Nt,S,P
Fatshedera lizei	Aralia Ivy	P
Gaillardia arizonica	Arizona Blanketflower	Nt,S,P
Gaillardia pulchella	Indian Blanket	S,P
Gazania rigens 'Sun Gold'	Gazania	S,P
Gelsemium sempervirens	Yellow Flowering Jessamine	P
pomopsis longiflora	Pale Blue Trumpets	Nt,S,P
Kallstroemia grandiflora	Arizona Poppy	Nt,S,P
Lantana montevidensis	Trailing Purple Lantana	S,P
Liriope muscari	Lilyturf	P
Lupinus sparsiflorus	Lupine	Nt,S,P
Lupinus species	Lupine	S,P
Machaeranthera tortifolia	Mohave Aster	S,P
Martynia species	Devil's Claw	Nt,S,P
Melampodium leucanthum	Blackfoot Daisy	Nt,S,P
Mesembryanthemum species	Ice Plant	S,P
Mimulus cardinalis	Monkey Flower	Nt,S,P
Mirabilis bigelovii	Mirabilis	N,Nt,S,P
Mirabilis coccinea	Four-O'Clock	N,Nt,S,P
Oenothera berlandieri	Mexican Evening Primrose	S,P
	Evening Primrose  Evening Primrose	
Oenothera ctubbii		Nt,S,P
Denothera stubbii	Saltillo Primrose	S,P
Ophiopogon japonicus	Mondo Grass	P

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# Planting and Garden Design HORSESHOE CANYON

Orthocarpus purpurascens Osteospermum fruticosum Pectis papposa Penstemon baccharifolius Penstemon eatonii Penstemon grandiflorus	Common Name Owl-Clover	Zones
Osteospermum fruticosum Pectis papposa Penstemon baccharifolius Penstemon eatonii	Owl-Clover	
Pectis papposa Penstemon baccharifolius Penstemon eatonii	T 111 ACC B 1	Nt,S,P
Penstemon baccharifolius Penstemon eatonii	Trailing African Daisy	S,P
Penstemon eatonii	Chinchweed	Nt,S,P
	Rock Penstemon	S,P
Panstamon granditlorus	Firecracker Penstemon	Nt,S,P
	Penstemon	S,P
Penstemon palmeri	Palmer's Penstemon	Nt,S,P
Penstemon parryi	Parry's Penstemon	Nt,S,P
Penstemon pseudospectabilis	Desert Penstemon	Nt,S,P
Penstemon superbus	Superb Penstemon	S,P
Penstemon wrightii	Penstemon	S,P
Phacelia campanularia	Desert Bluebell	Nt,S,P
Portulacaria afra	Elephant Food	S,P
Rafinesquia neomexicana	Desert-Chicory	Nt,S,P
Rosmarinus officinalis 'Prostratus'	Dwarf Rosemary	P
Ruellia brittoniana 'Katie'	Katie Ruellia	S,P
Salvia sp. 'Quicksilver' TM	Quicksilver Salvia	S,P
Santolina chamaecyparissus	Lavender Cotton	S,P
Santolina virens	Green Santolina	S,P
Sedum species	Stonecrop	S,P
Senecio douglasii	Threadleaf Groundsel	Nt,S,P
Senna covesii	Desert Senna	N,Nt,S,P
Senna lindheimeriana	Lindheimer Senna	S,P
Stachys byzantina	Lambs Ears	Р
Stachys coccinea	Betony	Nt,S,P
Stephanomeria pauciflora	Wire Lettuce	N,Nt,S,P
Trachelospermum asiaticum	Asiatic Jasmine	Р
Tridens pulchellus	Fluffgrass	Nt,S,P
Tulbaghia violacea	Society Garlic	S,P
√erbena gooddingii	Goodding's Verbena	Nt,S,P
Verbena peruviana	Peruvian Verbena	S,P
Verbena pulchella	Moss Verbena	S,P
Verbena rigida	Sandpaper Verbena	S,P
	Vinca	P
Vinca maior	Wedelia	Р
•		· .
Vinca major Wedelia trilobata Zephyranthes candida	I Rain Lilv	I S.P
	Rain Lily  Desert Zinnia	S,P Nt,S,P

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	VINES	
Botanical Name	Common Name	Zones
Antigonon leptopus	Queen's Wreath	Nt,S,P
Bougainvillea species*	Bougainvillea	S,P
Campsis radicans	Common Trumpetcreeper	P
Cissus trifoliata	Native Grape Ivy	Nt,S,P
Ficus pumila	Creeping Fig	P
Hardenbergia comptoniana	Lilac Vine	S,P
Hedera canariensis	Algerian Ivy	P
Hedera helix	English Ivy	P
Macfadyena unguis-cati	Cat's Claw Vine	S,P
Marah gilensis	Wild-Cucumber	Nt,S,P
Mascagnia lilacina	Lilac Orchid Vine	S,P
Mascagnia macroptera	Yellow Orchid Vine	Nt,S,P
Maurandya antirrhiniflora	Snapdragon Vine	Nt,S,P
Podranea ricasoliana	Pink Trumpet Vine	S,P
Rosa banksiae 'Alba Plena'	White Lady Bank's Rose	Р
Vitis arizonica	Arizona Grape	Nt,S,P
not acceptable for use.		

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## Design of the Irrigation System

### General Irrigation Design Considerations

- All landscape areas (private and other) shall be maintained on a permanent, automatic drip irrigation system.
- Salvaged or nursery-grown native trees and cacti must receive supplemental water, consistent with local standards.
- Valve or other flush-mounted boxes shall match the color of the ground surface (desert tan or green when
  in turf).
- Locate valve boxes, flush caps, and so on in inconspicuous areas of the site, no further than three (3) feet
  away from the Home. Set boxes on flat ground to minimize visibility.
- Conceal boxes from view with small shrubs. Avoid setting boxes on a tilted plane; instead, always set boxes
  flat.
- Locate wall-mounted or above-ground equipment behind rear yard enclosure walls or within refuse enclosure walls.
- Paint free-standing or wall-mounted equipment to match the exterior color of the house or the walls on which they are mounted.

#### Valves

- Different plant species require varying amounts of water and frequency of application. Proper valving can significantly reduce maintenance and water costs. Separate valves are required for:
  - Trees
  - Low-water-use shrubs
  - · Ornamental shrubs
  - Turf
  - · Pots or Garden

Additional valves should be considered to accommodate exposure differences. For example, most
groundcovers and shrubs planted in a shady zone will require less water than the same plant placed in an
exposure that receives full sun. If both plants receive the same quantity and frequency of water, the plant
in the shady location will not have an opportunity to dry out and may rot while the plant in full sun will
suffer from infrequent watering.

#### **Turf Irrigation**

- · Spray irrigation is limited to turf areas only.
- If both rotors and low trajectory heads are needed to irrigate turf areas, provide separate valves for each to maximize control and efficiency of the system.
- Runoff into streets, onto sidewalks, onto neighboring properties, or into natural areas not previously part
  of the site drainage pattern is prohibited.
- Offset heads six (6) to twelve (12) inches from pavement.

### Irrigation Installation in Native Areas

For Homes on Foothill Lots only, supplemental landscape improvements may be required in native areas. In the event that landscape and irrigation is required to be provided in native areas, the following shall apply:

Locate all mainlines, and as many lateral lines as possible, within the existing disturbed areas. Minimize
trenching for irrigation to new plants to just those natural areas of seams between existing plantings.

### Irrigation for Performance and Reduced Consumption

Spray irrigation can create significant runoff after only a few minutes of operation. Homeowners must manage their irrigation water properly by:

- · Properly grading and sloping the land to hold runoff.
- · Preparing the soil prior to planting to ensure good drainage.
- · Selecting heads to fit the size and configuration of the turf area.
- Managing the duration of the irrigation cycle to avoid runoff conditions. Select several short irrigation intervals during the day rather than one long setting.

Section Thirteen:

Exterior Lighting Design

## Exterior Lighting Design

The lighting philosophy for Horseshoe Canyon is to achieve overall reduced light levels throughout the Community by strategically illuminating landscape and outdoor spaces. The objective is to preserve the night sky ambiance, yet permit lighting as required for safety and aesthetics. Another objective is to allow provisions for intermittent use of enhanced lighting that achieves a quality of illumination for entertaining purposes that closely reflects the Estate Character. This section will establish a concise and consistent methodology of design and construction of lighting components.

### Design Philosophy and Objectives

The following guidelines serve as criteria for lighting the residential environment of Horseshoe Canyon and have been developed to direct the Homeowner, Builder, and designer in selecting appropriate lighting fixtures. These guidelines outline lighting criteria that will provide proper aesthetics and functionality for the residential exterior environment. The issues addressed identify specific needs that can be integrated into a cohesive and pleasing lighting composition for the Homeowner and Community.

These guidelines further serve to guide future development and maintenance for the lighting environment of Horseshoe Canyon. The Owner, Builder, or lighting designer needs to assess the visual importance of each element in the exterior environment, and define the nighttime use of the areas.

When identifying areas of the outdoor environment to be illuminated, the following should be considered:

- The lighting philosophy for Horseshoe Canyon is to integrate quality lighting solutions into the Community that will be minimally obtrusive yet provide functional value.
- The key to achieving this goal is to minimize overall light levels within the Community and strategically
  illuminate areas for nighttime functions, security, and enhancement of nighttime experience within the
  Community.
- Lighting should in general be used only where needed; however, the Estate architecture can be enhanced by exterior illumination when executed artfully for special entertaining purposes.

The following definitions relate to lighting design:

- Function: The activities and uses for the intended area.
- · Safety: The level of comfort and security.
- $\bullet \quad \textbf{Aesthetics} \colon \textbf{The look and feel desired for the landscaped grounds and the Estate Character.}$

#### Lighting Design Objectives and Criteria

The lighting design must meet the following objectives after identifying areas to be illuminated. The following objectives apply to either the Normal Daily Lighting Concepts or to the Enhanced Lighting Concepts, which are addressed separately.

#### Normal Daily Lighting Concepts

The following are objectives that apply to normal daily lighting concepts for the Horseshoe Canyon Estate Character. Individual Homes are required to utilize the following concepts as part of their lighting design.

#### The Landscaped Grounds

- Integrate lighting hardware with hardscape and landscape features. Lighted accentuation of formal tree layouts along guest arrival areas will be considered.
- Utilize moonlighting effects by placing fixtures in the tree canopy in addition to ground-mounted fixtures.
- Locate light fixtures only where needed for general purpose or security lighting.
- · Select lighting hardware that blends with the landscape and architectural character of the Home.
- In general, minimize environmental impact and observe the "Dark Sky" Philosophy. Attain low overall light levels versus inconsistent accents.
- · Conserve energy.

#### The Exterior Facades

- Limited use of ground-mounted uplights or downlights located in eaves to illuminate architectural facades.
- Wall-hung or ceiling-hung ornamental coach lights with translucent glass and bulbs at a maximum wattage
  of forty (40) are acceptable at primary and secondary entrances.
- · Decorative ceiling-hung lights with opaque shades that cast light downward are acceptable in arcades.

#### **Enhanced Lighting Concepts**

The following are objectives that apply to Enhanced Lighting for the Horseshoe Canyon Estate Character. The intent is to provide an enhanced level of illumination for entertainment purposes beyond the daily condition described in the Normal Daily Lighting Concepts. Individual Homes are not required to utilize the following Enhanced Lighting Concepts, but these guidelines are offered for those interested in providing a nighttime ambiance to the landscaped Grounds or the Home that is beyond the normal daily allowable standards. A computerized control system must be used in conjunction with these concepts to control the use of the following Enhanced Lighting Criteria, thereby preventing the undesirable condition of Homes using the Enhanced Lighting Concepts for more than intermittent entertaining purposes. The selected control system needs to be clearly noted on lighting plans submitted for review. The selected settings will be subject to a nighttime inspection upon completion of the Home, and the Covenant Commission representative may request alterations to the settings. Ongoing review of the frequency of enhanced lighting conditions will occur, especially if a complaint is received by the Covenant Commission.

#### The Landscaped Grounds

- Integrate lighting hardware with hardscape and landscape features. Lighted accentuation of formal tree
  layouts along guest arrival areas will be considered.
- Utilize moonlighting effects by placing fixtures in the tree canopy in addition to ground-mounted fixtures.
- Locate light fixtures selectively for enhancement of trees and planting areas, and for limited accentuation
  of site wall surfaces.
- Select lighting hardware that blends with the landscape and the architectural character of the Home.
- Attain consistent, moderate overall light levels versus inconsistent bright accents.

#### The Exterior Facades

- The use of additional ground-mounted uplights or downlights located in eaves to illuminate architectural
  facades will be considered for intermittent use.
- Selective accenting of accessory structures such as garden gazebos, trellises, arbors, arched arcades, and so
  on, will be considered for intermittent use.

## Quantity of Illumination

DC Ranch promotes a "Dark Sky" Philosophy by encouraging a minimal approach to nighttime outdoor lighting, other than that allowed in the Horseshoe Canyon Enhanced Lighting Concepts. The amount of illumination from individual light fixtures is controlled to minimize light pollution and maximize visual comfort.

## Quality of Illumination

Lighting is the fourth dimension of architecture. Sensitively integrated, quality lighting conveys the spirit of a Home or exterior environments. A quality lighting design sets the mood, enhances the space, and achieves specific needs such as safety and energy conservation. A quality design requires significant time and consideration to meet all of the objectives as outlined within the lighting design guidelines. Well-crafted and durable lighting fixtures are recommended for use in Homes in the Horseshoe Canyon community.

## Shielding and Diffused Light

At night the eye becomes sensitive to sources of light that are unshielded or not adequately diffused. The most effective way to control uncomfortable brightness is to shield light sources so they cannot be seen in your normal field of view. Another effective technique is to diffuse the light source with a translucent medium; however, it is essential that the translucent medium be adequately diffused so that an image or silhouette of the light source is not visible through the medium when the light source is operating.

All light fixtures should be well-shielded to conceal the light source and eliminate glare or have translucent glass shades that significantly reduce glare. This reduces light "hot spots" and greatly enhances the overall look and feel of the nighttime environment.

Light fixtures with good optical control enable light to be distributed in the most effective and efficient manner. Cut-off fixtures emit light from zero (0) (down) to ninety (90) (horizontal) degrees and have no light above the horizontal. Use of shielded outdoor light fixtures is required except for decorative wall sconces and wall-mounted or ceiling-mounted lights, for which translucent glass and maximum forty (40) watt bulbs must be used.

## Safety and Security

Effective security lighting can be achieved by placing lights only where needed, instead of overlighting around the Home. The objective of security lighting is to provide visibility that enhances a sense of safety. Security lighting does not necessarily mean large amounts of illumination, but rather strategically placed fixtures. The result should be an effective yet efficient lighting scheme.

Security lighting must be completely shielded (no exposed lamps allowed). Glare should be avoided when considering security lighting; therefore, care must be taken when aiming such lighting. Placing lights at door locations, pathways, and driveways wired to a combination photocell/infrared sensor can act as a deterrent to intruders.

#### Combination Photocell/Infrared Sensors

The use of building-mounted security flood lighting is discouraged. Building-mounted security lights that function as floodlights must be controlled by a combination photocell/infrared sensor. These devices have two sensors, one for light sensing and one for concentrated heat detection (warm-blooded mammals). The infrared sensor can only turn on the light at night, avoiding nuisance operation during the daytime and minimizing operation of security lighting at night.

## Light Trespass

Light fixtures should be selected and aimed to deliver light only for the intended location and purpose. Care must be taken to prevent unwanted light spill.

Light trespass is defined as unwanted light received in adjacent properties and excessive brightness occurring in the normal field of vision. The following recommendations will help control light trespass:

 Select luminaires that have tightly controlled intensity distributions using cut-off reflectors and refractors.

- Contain light within the design area (property) by carefully selecting, locating, mounting, and aiming the luminaires.
- Use well-shielded luminaires or select hardware that can be shielded.
- · Keep aiming angles high so the light beam falls within the intended area.
- · Aim lighting fixtures away from streets and neighboring properties.

### Aiming Light Fixtures

Placement and aiming of light fixtures are crucial elements of a successful lighting design. Aiming should be exercised in a manner in which glare to surrounding properties is avoided. When uplighting large plants and trees, fixtures should not be aimed below an angle of sixty (60) degrees, measured from the horizontal axis. Where uplighting is proposed, the beam spread of the lamp must be selected to focus all available light on the object being illuminated. For example, do not use a wide beam lamp (flood) to uplight a tall, narrow tree; a narrow beam lamp (spot) is appropriate for this application. However, a wide beam lamp would be effective and appropriate for uplighting a large palo verde or mesquite tree.

## Light Sources

Various light sources are permitted for the exterior environment at Horseshoe Canyon. Light sources should be selected for quality and quantity of light provided.

### Color of Light

Slight differences in the color composition of light are measured using the color temperature scale. Warm light sources have low color temperatures  $(2,700^{\circ}\text{K}-3,000^{\circ}\text{K})$  and feature more light in the red/orange/yellow range. Cool light sources have a higher color temperature  $(4,000^{\circ}\text{K})$  and feature more light in the green/blue/purple range. A neutral or midrange color temperature  $(3,500^{\circ}\text{K})$  enhances most colors equally.

The following lists lamp types that have a range of light colors acceptable for use in Horseshoe Canyon:

- Incandescent: A-lamps, T-lamps, R-lamps, and candelabra-based lamps are the warmest in color and have a "soft" output, but are not as compact as some halogen sources.
- Halogen: These are available in both one hundred twenty (120) volt and twelve (12) volt configurations.
   An example of a one hundred twenty (120) volt halogen source is a PAR lamp. Some examples of a twelve (12) volt halogen source are an MR-II, an MR-I6, or a bi-pin, which would typically be used for landscape lighting.
- Compact Fluorescent: These are available in warm (2,700°K) and cool (3,500°K) color temperatures, and typically have long life properties (10,000 hours).

High-intensity discharge sources like metal halide and high pressure sodium are not permitted and do not comply with the maximum lumen output. Because lamp technology changes rapidly, lamp resources not currently approved by the Covenant Commission may be approved; however, any additional source must first be submitted to the Covenant Commission for review.

### **Energy Conservation**

New lighting techniques and equipment, as well as more efficient light sources, provide the tools to meet the requirements for the outdoor environment and increasing energy cost. Maintenance is essential to energy efficiency.

The three major lamp (bulb) manufacturers (General Electric, Osram Sylvania, and Philips) have improved lamp technology. Lamp sources now have high efficiencies, excellent color rendering properties, long life, and lower wattages, and some are available at low costs. Most lamp sources are available in an energy-saving configuration. Most energy-efficient sources have:

- · Longer rated life
- · Lower wattages
- · Lower energy consumption

## Typical Fixtures and Applications

Lighting hardware should be selected for its quality, ease of maintenance, and maximum useful life. The goal is to use the appropriate number and type of fixtures for a particular application. Criteria for specific applications and examples of fixtures are described in this section. Other fixtures that meet the lighting criteria described in this section may also be approved.

### **Approved Fixtures and Characteristics**

The following section includes types of approved lighting fixtures with descriptions of each.

#### Quality of Lighting Fixtures

Quality lighting hardware is recommended for Horseshoe Canyon because it is durable, UL listed, tested for various environments it could be exposed to, and warranted for a minimum of one (I) year. The lighting hardware finishes recommended at Horseshoe Canyon are natural materials such as copper, solid brass, bronze, and wrought iron and must match the architectural Style of the Home. All light fixtures must comply with the shielding criteria.

To conform with the natural setting of the Horseshoe Canyon desert landscape, the lighting is to be concealed, shielded, and low-wattage, and the quantities of fixtures should be minimized. Natural hardware finishes blending with the rustic color palette of the project site, including copper, dull brass, and bronze, are preferred.

#### Wall Sconces and Lanterns

Wall sconces and lanterns are intended to provide low-level general illumination at doorways, gates, and patios. Providing comfortable illumination and controlling glare are the most important features of this type of luminaire.

Shielded luminaires provide the most effective glare control and minimize spill light to the night sky. Diffused luminaires allow more light to spill to the night sky; however, they provide more uniform illumination and therefore better visibility in areas such as entries, patios, and driveways. Transparent lenses (e.g., "seeded" glass lenses), lightly sandblasted clear glass, and acrylic prismatic lenses do not adequately diffuse the lamp image. The best diffusers include thick translucent colored glass where the color is integral to the glass or lenses that have a combination perforated screen and translucent diffuser.



Decorative wall-mounted light in a character matching a Spanishinfluenced Home Style



Hanging lantern with translucent lens casting diffused light creates soft ambient illumination for outdoor rooms and patios



Wall-mounted hanging light fixture using a honey-swirled diffused glass lens casts a warm glow while directing light in a downward direction to accent a wall



Small decorative wall sconce with a frosted glass cover to allow a diffused glow of light

#### Garden Lights

Garden lights provide illumination for paths, walkways, gardens, and patio perimeters. Aesthetically, they are most effective when installed next to colorful flowers and/or plants. Luminaires mounted thirty (30) inches above grade are more effective than luminaires mounted closer to the ground. To avoid a contrived appearance, luminaires must not be installed in a row along the edge of a path or driveway, unless they support formal tree or hardscape design elements.



Adjustable uplight for low mounting in planter beds to highlight plant massings or garden features



Decorative path light with shielded light source aimed downward to create small pools of light along intimate walkways



Garden light with shielded light source spread over a wider area



Small garden path light with gooseneck pole directing light downward to pathways and patio edges

#### Step Lights

Step lights provide task illumination for stairways and doorways and are most effective when the light source is completely shielded. Luminaires mounted thirty (30) inches above grade are more effective than those mounted closer to the ground. Luminaires with fluorescent lamps and louvers use less energy and require less maintenance.



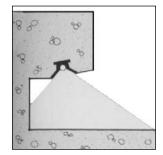
Step light with half shield casting light on stairways and low walls, this type shall not be Visible to public view



Compact step light with louvers direct shielded light towards surface of stair



Round step light fully shielded with louvers discretely focusing light towards surface of stair



Fully concealed step light mounted under step tread casting a soft and even light across stair risers

#### Trees and Specimen Plants

Ground mounted twelve (12) volt halogen accent lights are the most effective way to uplight trees and specimen plants, and simultaneously minimize light spill to the night sky. These luminaires combine efficient use of a twelve (12) volt halogen lamp in a fixture package that provides a high degree of glare control.

The largest trees allowed in Horseshoe Canyon can be effectively illuminated with a maximum of three (3) luminaires. Smaller specimens can be attractively lighted with one (I) luminaire, if viewed from a single direction. Tree-mounted twelve (I2) volt halogen downlights provide a pleasant way to accent plant material under trees while providing low-level area illumination.



Shielded and adjustable plant uplight appropriate for highlighting the structural forms of trees and specimen material



Hanging down light pendant mounted in trees to focus light downward onto shrubs and accent plants, creating a moonlighting effect



Directional moonlighting and high branching uplighting is achieved using slender fixtures strapped to a tree trunk above eve level



In Grade uplight with adjustable luminaire casting light up to trees while light source is concealed from view

#### **Security Lighting**

Installing wall-mounted security floodlights is not encouraged; however, when desired by the Homeowner, twelve (12)-volt MR I6 floodlights are required. These floodlights are very compact and, when painted to match the wall to which they are mounted, can be unobtrusive.



Motion- or switch-activated wallmounted security light with shielded hood



Directional wall-mounted security light in matching wall color



Simple, wall-mounted security light casting illumination in a downward direction



Ground-mounted security uplight with shielded lens on an adjustable arm

#### **Underwater Lighting**

Underwater lamps are preferred because they incorporate the functionality and energy efficiency of twelve (12) volt halogen lamps. They can be used in a wide variety of applications including pools, fountains, and custom water features. Thoughtful placement of these lamps is important to avoid a source of glare to adjacent properties.



Underwater light with adjustable cover and openings for controlled aiming and concealment of the light source



Ground-set underwater light with adjustable body and perpendicular louvers for light shielding



Underwater flush-mounted niche light with multi-directional cover placing diffused light in desired location



Underwater wall-mounted light with frosted lens casting soft light horizontally from a concealed position

#### **Sport Court Lighting**

Pole-mounted light fixtures with cut-off shielding that comply with these guidelines are allowable for the purpose of illuminating allowable sport courts on an as-needed basis with written approval from the Covenant Commission. Wall-mounted sport court lighting fixtures are not allowed.

#### Fixtures to Avoid

Homes in Horseshoe Canyon are designed to be elegant and built with authentic and durable materials. Fixtures that are not properly shielded, made of low-quality materials, or are not complementary to the character of the Home Style are not allowed.



Avoid using unshielded, pole mounted light fixtures for architectural accenting, sport court lighting, or security illumination.



Lighting fixtures made from low quality materials that do not match the character of the architectural Style are strongly discouraged.



Lighting fixtures designed primarily for commercial use, or of contemporary Styles, do not fit in the character of Estates at Horseshoe Canyon.



Ground-mounted fixtures casting light in all directions are visually disruptive due to glare, and should be avoided.